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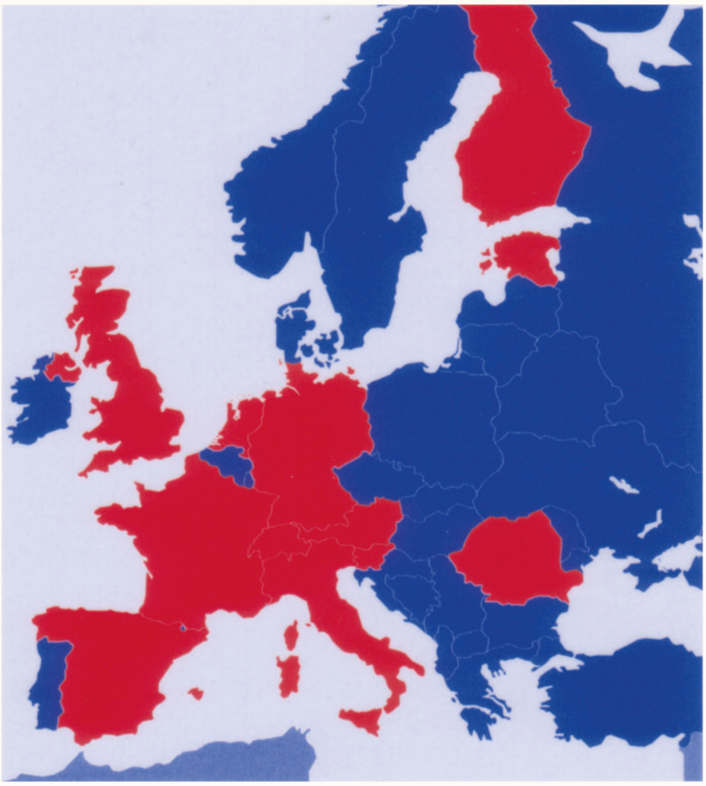
MEDIEN IN DER WISSENSCHAFT : BAND 35

Ullrich Dittler, Helge Kahler, Michael Kindt & Christine Schwarz (Eds.)

E-Learning in Europe – Learning Europe

How have new media contributed to the development of higher education?



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Content

Vorwort: E-Learning in Europa – lernendes Europa: Welchen Beitrag leisten die neuen Medien zur Hochschulentwicklung?

Die Gesellschaft für Medien in der Wissenschaft (GMW) veranstaltet in diesem Jahr ihre 10. internationale Jahrestagung und gibt ihrem Jubiläum das Motto „Auf zu neuen Ufern". Dieser Leitspruch eröffnet den Blick auf mehrere Perspektiven: Er deutet hin auf eine Spannung zwischen Bekanntem und Bewährtem sowie entfernten oder visionären Zielen. Neben der didaktischen Betrachtung, die stets die Hauptwarte der GMW war, geht es dabei um eine europäische Dimension, die mit dem hier vorliegenden Buch besonders gewürdigt wird. Die Beiträge aus zwölf Ländern skizzieren den Einsatz neuer Medien als grenzüberschreitendes Thema „E-Learning in Europa – lernendes Europa". Wie die GMW, so vermittelt auch dieser Sammelband zwischen unterschiedlichen didaktischen, räumlichen und kulturellen Sichtweisen, indem er Brücken schlägt zwischen den GMW-Kernländern und anderen europäischen Nationen.

Die GMW hat sich zur Aufgabe gemacht, den zunehmenden Gebrauch von Lehr- und Lernmedien in der wissenschaftlichen Aus- und Weiterbildung reflektierend, gestaltend und beratend zu begleiten. Sie begreift sich als Netzwerk zum interdisziplinären Austausch zwischen Theorie und Praxis bei der Nutzung neuer Medien für wissenschaftliche Zwecke: Ob anwendungsorientierte Nutzung oder Forschung, durch die GMW kommen Menschen aus den unterschiedlichsten Disziplinen miteinander in Kontakt. Die gestalterischen, didaktischen und evaluativen Aspekte des mediengestützten Lernens sowie dessen strategisches Potenzial für die Hochschulentwicklung stehen dabei im Vordergrund des Interesses. Jährlicher Höhepunkt der GMW-Aktivitäten ist die europäische Fachtagung im September. Gastgeber sind im Wechsel deutsche, österreichische und schweizerische Veranstaltungsorte. Die Konferenz fördert die Entwicklung medienspezifischer Kompetenzen, unterstützt innovative Prozesse an Hochschulen und Bildungseinrichtungen, verdeutlicht das Innovationspotenzial neuer Medien für Reformen an den Hochschulen, stellt strategische Fragen in den Blickpunkt des Interesses und bietet ein Forum für GMW-Mitglieder und diejenigen, die es werden wollen.

Eng verbunden mit der Tagung ist die jährliche Ausrichtung und Verleihung des MEDIDA-PRIX durch die GMW für herausragende mediendidaktische Konzepte und Entwicklungen. Seit dem Jahr 2000 ist es damit gelungen, unter Schirmherrschaft und mit Förderung der Bundesministerien aus Deutschland, Österreich und der Schweiz gemeinsame Kriterien für gute E-Learning-Praxis an Hochschulen zu entwickeln und zu verbreiten. Der Preis hat mittlerweile in der E-Learning-

Gemeinschaft große Anerkennung gefunden und setzt richtungsweisende Impulse für Projekt-, Produkt- und Organisationsentwicklungen. Die jährliche Preisverleihung lenkt die öffentliche Aufmerksamkeit auf mediendidaktische Innovationen und Lösungen, wie dies kaum einer anderen Medien-Auszeichnung im nichtkommerziellen Bereich gelingt.

Sowohl die 10. internationale Jahrestagung als auch dieses Buch geben Anlass für ein international ausgerichtetes Resümee. In den vergangenen Jahren sind die technischen, didaktischen und organisatorischen Grenzen des E-Learning an Hochschulen erkennbar geworden: Mit viel lokalem, nationalem und internationalem Engagement wurden Produkte und Strukturen konzipiert, entwickelt und eingeführt, welche die Basis für den nachhaltigen Einsatz mediengestützter Lehre bieten. Nach der Phase der Euphorie und der Ernüchterung sind wir in einer Phase der Verstetigung angekommen, die Gelegenheit zu einem reflektierten Rückblick auf das Erreichte bietet. Es ist Zeit für eine vorsichtige Zwischenbilanz der E-Learning-Aktivitäten einzelner Länder. Der europäische Fokus dieses Buches verdeutlicht Unterschiedlichkeit und Gemeinsamkeit von Schwerpunktsetzungen, Vorgehensweisen und nationalen Einflüssen auf die Hochschulentwicklung und erweitert vor diesem Hintergrund auch den Blick auf die medialen Aktivitäten der Länder. Zentrales Anliegen dieses Buches ist es, neue Impulse bei der Entwicklung von E-Learning zu setzen, indem Vielfalt und Bewährtes in den internationalen E-Learning-Szenarien verdeutlicht werden. Der Blick über die Ländergrenzen hinweg bestärkt darin, eigene Erfahrungen und Sichtweisen zu relativieren und bietet somit Inspirationen für die weitere eigene Arbeit und Kooperation mit Anderen.

Nach der Medien-Euphorie Anfang der 1990er Jahre und den Versuchen der Konsolidierung Anfang dieses Jahrzehnts ist die derzeitige Phase dadurch gekennzeichnet, dass didaktische und technische Herausforderungen in der öffentlichen Wahrnehmung scheinbar an Gewicht verlieren. Gleichzeitig zeichnet sich allerdings eine neue Bedeutung von E-Learning in den Hochschulen ab – ausgelöst von einer Entwicklung, die viele bisher (noch) nicht als treibende Kraft und nachhaltigen Impuls für E-Learning erkannt haben: den Bologna-Prozess.

Bisher waren die meisten aus öffentlichen Mitteln geförderten E-Learning-Projekte auf die Erstellung einzelner Lernmodule fokussiert. Deren nachhaltige Integration in die Präsenzlehre galt eher als zusätzliche Anforderung statt als notwendiges Erfolgskriterium. Dieser Ansatz ändert sich nun durch die zunehmende Umstellung der Studiengänge auf das Bachelor- und Mastersystem. Die im Rahmen von Bachelor- und Masterstudiengängen vorgesehenen umfangreichen Selbstlernphasen erfordern zunehmend E-Learning-Angebote – und zwar nicht mehr länger „nur" als eine ergänzende Lehr- und Lernform, sondern als europaweit notwendige Methode, um die Anforderungen, die sich durch den Bologna-Prozess ergeben, sinnvoll erfüllen zu können. Gefordert wird ein Wechsel vom lehrerzentrierten zum lernerzentrierten Unterricht, weg von der Vermittlung von Faktenwissen hin zur Vermittlung von Handlungskompetenzen. Hier kann sich E-Learning als erfolgreiches Instrument der Veränderungen erweisen: Einer der Schwerpunkte von E-Learning-Projekten und Hochschul-Initiativen sind über alle Fachgebiete hinweg Module zum selbstgesteuerten Lernen, die auf Seiten der Studierenden zunehmendes Interesse finden. Das Konzept des lebenslangen Lernens hat auch in der Bologna-Strategie zentralen Stellenwert und lässt eine steigende Nachfrage von Berufstätigen nach Bildungs- und Qualifizierungsangeboten erwarten. IT-gestützte Kurs-Angebote ermöglichen die erforderliche zeitliche und räumliche Flexibilisierung auf Seiten der Anbieter – ohne dabei auf Diskurs und Kooperation unter den Studierenden verzichten zu müssen. Der Einsatz von Informations- und Kommunikationstechnologien wird mehr und mehr zur notwendigen Bedingung, je transparenter verschiedene Lehr- und Forschungsschwerpunkte und kulturelle Unterschiede europäischer Hochschulen wahrgenommen und genutzt werden. Voraussetzung für virtuelle Mobilität ist eine Basisinfrastruktur für internetgestützte Verwaltung, Beratungs- und Betreuungsangebote und für den direkten Zugriff auf Studienmaterialien. Nicht mehr herausragende Einzelprodukte, sondern die Entwicklung von fakultären und hochschulweiten Strategien zur Integration mediengestützten Lernens werden benötigt, um E-Learning nachhaltig sowohl bei Lehrenden und Lernenden als auch im gemeinsam gestalteten Präsenzunterricht und den Selbstlernphasen zu verankern.

Vor diesem Hintergrund versuchen wir in diesem Buch gemeinsam mit internationalen Experten und Expertinnen den Brückenschlag zwischen der didaktischen und der geografisch-kulturellen Perspektive sowie zwischen den GMW-Kernländern und anderen europäischen Nationen.

Die Herausgeber haben E-Learning-Expertinnen und -Experten aus Europa eingeladen, darüber zu berichten, auf welche Weise die neuen Medien in ihrem nationalen Kontext zur Hochschulentwicklung in den letzten etwa zehn Jahren beigetragen haben. Die Artikel können nicht alle Aspekte des E-Learning behandeln, geben aber Aufschluss sowohl über die Vielfalt von E-Learning Szenarien als auch über Umgang und Betrachtungsweise mit E-Learning in den jeweiligen Länderkontexten. Zur Orientierung haben wir den Autorinnen und Autoren einen Leitfaden angeboten, der dabei hilft, die heterogenen Anwendungssituationen in Ansätzen vergleichbar bzw. unterscheidbar zu machen:

- Welche Perspektiven und Hoffnungen werden üblicherweise in dem jeweiligen Land mit E-Learning in der Hochschulentwicklung verknüpft und welche dominanten (oder häufig erwähnten) Ziele für die akademische Ausbildung haben sich herausgebildet?
- Welche Akteure haben welche typischen E-Learning-Szenarien hervorgebracht? Wie haben sich Hochschul- und Medienentwicklung gegenseitig be-

einflusst und sind für beide Seiten möglicherweise auch langfristig strukturbildend geworden? Gibt es ländertypische Kooperations- und Kommunikationsbeziehungen und dominante Formen der Förderung und Unterstützung von Medien- und Hochschulentwicklungen (z.B. öffentliche oder kommerzielle E-Learning-Programme, Organisations- und Geschäftsmodelle)?

Die so gewonnenen Informationen erlauben uns, heutige Medien-Erwartungen besser abzuwägen und sie vor dem historischen Hintergrund der Bildungstechnologien zu beurteilen, die mit je wechselnden Ansprüchen und Argumenten aufgetreten sind. Vor dem Hintergrund der Länderportraits lassen sich sowohl die Erfahrungen und Meilensteine des E-Learning einschätzen als auch die Enttäuschungen und Flops. Letzen Endes beinhalten die Artikel auch persönliche Vermutungen über den Status quo des E-Learning sowie Mutmaßungen über Zukunftsperspektiven und Visionen von E-Learning und Hochschulentwicklung. Dieser Sammelband bietet somit ein zwar begrenztes aber inspirierendes Spektrum von E-Learning-Porträts in verschiedenen nationalen Settings. Wir haben die Autoren und Autorinnen dazu ermutigt, die E-Learning-Entwicklungen möglichst aus sozio-technischer Perspektive zu schildern. Denn wenn Technik und Gesellschaft bzw. Organisation in ihrem Wechselverhältnis betrachtet werden, ergeben sich auch interessante Einblicke in den Status quo des E-Learning: Wie technische Innovationspotenziale in verschiedenen sozialen Kontexten wahrgenommen und ausgestaltet werden und wie diese soziale Aneignung und Prägung von Technik wiederum auf weitere technische Entwicklungen entscheidend rückwirkt.

Werfen wir vorab einen Blick auf den Inhalt der Beiträge: Den Anfang machen die Texte aus Deutschland, der Schweiz und Österreich Es folgen Berichte aus Nord-Europa (Finnland, Großbritannien und die Niederlande), aus den Mittelmeer-Anrainer-Staaten Frankreich, Spanien und Italien und den Beitrittsländern Slowenien, Rumänien und Estland. Den Abschluss bildet ein länderübergreifender Blick auf das Geschehen.

Deutschland, Österreich und die Schweiz

Michael Kerres und Ilke Nübel sehen die aktuellen Entwicklungen an deutschen Hochschulen im Zusammenhang mit dem Verlauf und Scheitern der ersten bildungstechnologischen Welle aus den 1960ern bis in den Anfang der achtziger Jahre.

Vor diesem Hintergrund beschreiben sie die zweite „Multimedia-Welle“ ab Mitte der neunziger Jahre. Die Entwicklung in Österreich ist nach Ansicht von Roland Mittermeir geprägt durch den Wandel von zentralistischen Strukturen hin zur weitgehenden Autonomie, in die Hochschulen seit 2002 entlassen sind. Wie die Einführung von E-Learning in die schweizerische Hochschullehre von zwei parallelen interaktiven Entwicklungslinien geprägt wird, beschreiben Bachmann, Dittler und Schegg.

Deutliche Parallelen finden sich in der Entwicklung und Nutzung neuer Medien an schweizerischen, österreichischen und deutschen Hochschulen in den letzten Jahren: In allen drei Ländern dominieren staatliche Förderprogramme. Auf eine erste Phase hoher Investitionen mit der Ausrichtung auf die Digitalisierung von Lehrmaterialien folgte ein Umschwenken der Zielsetzung in Richtung auf die Förderung von organisatorischen Entwicklungen, die den nachhaltigen Einsatz von E-Learning unterstützen.

Diese erste Phase wird in der Schweiz durch das Swiss Virtual Campus (SVC) Impuls-Programm repräsentiert, in Deutschland durch das Programm Neue Medien in der Bildung (NMB) und in Österreich durch das Programm Neue Medien in der Lehre an Universitäten und Fachhochschulen (NML). In sämtlichen dieser Programme wurde auf die vernetzende Wirkung hochschulübergreifender Verbünde gesetzt und es entstanden zahlreiche mediengestützte Lehrangebote von sehr unterschiedlicher Qualität. Als Erfolg ist zu verzeichnen, dass sowohl Lehrende wie Studierende E-Learning-Möglichkeiten in verstärktem Umfang wahrnehmen. Damit sind wichtige Voraussetzungen geschaffen, das Potenzial der neuen Medien für die Hochschullehre zu nutzen. Die angestrebte Integration als Voraussetzung für eine Fortführung und Verbreitung ohne spezielle Förderprogramme wurde allerdings nicht erreicht. Zu viele (forschungs-)projektspezifische Eigenarten bestimmten den Fortgang der Projekte: Die Verortung an der Peripherie der Hochschulorganisation, fehlende Anreizsysteme für zu beteiligende Lehrende, fehlerhaftes Management bezüglich einer konsequenten Ressourcenplanung und -verteilung auf kompetente Entwicklungspartner auch außerhalb der Hochschulen, unzureichende Qualifizierungs- und Beratungsangebote für Lehrende. Die strategischen Chancen griffen lediglich einzelne Hochschulen bereits in dieser Phase konsequent auf und machten E-Learning zur Chefsache.

Vor dem Hintergrund der abflauenden Computer-Euphorie, der teilweise desillusionierenden Projektergebnisse und des mit dem wirtschaftlichen Rückgang verbundenen Abbaus der staatlichen Fördermöglichkeiten folgt in allen drei Ländern eine zweite Programm-Phase. Damit soll der Umschwung eingeleitet werden, E-Learning in die Verantwortung der Hochschulen zu übergeben und letztlich von Sonderprogrammen unabhängig zu machen. In der Schweiz startete 2004 das SVC-Konsolidierungs-Programm, in Deutschland werden seit 2005 E-Learning-Dienste für die Wissenschaft gefördert: Integrationskonzepte von Hochschulen und die Entwicklung hochschulübergreifender Instanzen zur Fortführung und Verbreitung bestehender Angebote. Mit beiden Initiativen soll ein möglichst großer Transfer der mit hohen Investitionen verbundenen Angebote aus der ersten Phase sichergestellt werden. In Österreich hatten die geförderten Projekte zwar eine Nachhaltigkeitsverpflichtung und stehen Kraft dieser unter einer dreijährigen

Beobachtungs- und Berichtspflicht. Doch unbeschadet der meist erfolgreichen Weiterführung einzelner Projekte ist damit noch keine blühende E-Learning-Landschaft gesichert. Auch hier wurde daher 2005 ein weiteres Förderprogramm aufgelegt, mit dem die Umsetzung einer konkreten E-Learning-Strategie an den einzelnen Institutionen (oder in Verbünden von Institutionen) einen Anschub erhält. Unterstützt werden soll der Aufbau von Support-Strukturen an den Institutionen, deren Leitungen E-Learning im Rahmen ihrer Weiterentwicklungsstrategie verankert haben.

Unterschiede zwischen den Ländern lassen sich z.B. in der Verzahnung von Aktivitäten an der Basis (Lehrende, Hochschulen) mit denen staatlicher Initiativen und Förderung ausmachen. Während in der Schweiz Impulse, die von den Hochschulen ausgehen, sehr direkt in die Förderpolitik des Landes Eingang finden und umgekehrt, ist diese Interaktion in Deutschland weit weniger ausgeprägt. Schweizer Hochschulen begreifen sich frühzeitig in diesem Entwicklungsprozess als strategisch agierende Organisationen, an deutschen Hochschulen herrscht noch das Bild einer „nachgeordneten Behörde“ vor.

Österreich befindet sich demgegenüber in einer Phase des Wandels. Der Ausgangspunkt ist noch zentralistisch – ein Bundesministerium, von dem entsprechende Initiativen ausgehen bzw. ausgingen – doch mit dem Universitätsgesetz 2002 werden die Hochschulen in eine weitgehende Autonomie entlassen. Bereits das erste Förderprogramm war so konzipiert, dass de-facto ein aus Experten und Delegierten der Bildungsinstitutionen zusammengesetztes Lenkungsgremium die Initiative steuerte. Bei der in diesem Jahr durchgeführten Strategieausschreibung entschied man sich, die Verantwortung an ein nur aus ausländischen Expertinnen und Experten zusammengesetztes Gremium zu übergeben. Als wichtiger Akteur neben den Projekten ist in Österreich aus dem ersten Förderprogramm ein von tertiären Bildungsinstitutionen getragenes (und vom Ministerium unterstütztes) Netzwerk, das Forum Neue Medien Austria (fnm-austria) hervorgegangen, das sowohl als Informationsdrehscheibe wie auch als Gesprächspartner des Ministeriums in E-Learning-Fragen fungiert.

Generell ist in den drei Ländern eine Fortsetzung der nationalen Förderprogramme über 2007/2008 hinaus nicht absehbar. In dieser Zeit stehen Hochschulen und die Bildungspolitik auf dem Prüfstand, den Nutzen digitaler Medien auch im Hinblick auf das Gestalten des europäischen Bildungsraumes unter Beweis zu stellen.

Finnland, Großbritannien, Niederlande

Die drei Beiträge aus den nördlichen Ländern haben zwar gänzlich unterschiedliche analytische Zugangsweisen zum Thema E-Learning, setzen sich aber allesamt mit der Wechselbeziehung zwischen nationalen Eigenheiten und internationalen Einflussgrößen von Hochschulentwicklung auseinander.

Entlang der allgemeinen These der Informations- bzw. Wissensgesellschaft skizziert Tapio Varis Finnlands E-Learning-Aktivitäten. Die finnische E-Learning-Entwicklung wirkt hier stark beeinflusst vom Paradigma einer von Kommunikation bestimmten Gesellschaft – zumindest in ihrem Anspruch, wenn auch (noch) nicht in ihrer empirisch greifbaren Realität. Charakterisiert wird Finnlands E-Learning-Szene einerseits durch regionale Hochschul-Verbünde, andererseits aber auch von einer starken internationalen Einbindung. Berichtet wird v.a. aus dem Blickwinkel politischer Entscheidungsträger und aus dem Projekt „national electronic library FinELib“, das sich sowohl nationalen als auch internationalen Herausforderungen stellt.

Visionen, die für den „Online Imperativ“ in Großbritannien bestimmend waren und sind, werden von Neil Pollock und James Cornford in den Mittelpunkt gerückt. Sie berichten von den neuen Medien als einem Übergang von der Elite- zur Massen-Hochschule. Zurückzuführen ist dieser Realitäts- und Leitbildwandel vor allem auf das Stagnieren der Bildungsausgaben bei verstärktem Zulauf von Studienanfänger/innen – einem für Großbritannien offenbar neuen Phänomen. Kritisch betrachten die Autoren das Rationalisierungsversprechen der Informations- und Kommunikationstechnologien, eine effizientere Bildungsdienstleistung bei mehr oder weniger gleich bleibenden Mitteln zu ermöglichen. Zweite zentrale Vision des E-Learning in Großbritannien ist die zunehmende Vielfalt der Ansprüche heutiger Studierender, denn nur wenigen Angehörigen der neuen und in Großbritannien international sehr heterogenen Bildungsschichten ist es möglich, drei bis vier Jahre in der herkömmlichen Campus-Präsenz zu studieren. Pollock und Cornford beziehen sich in ihrer Analyse der Online-Visionen für Hochschulen in Großbritannien vor allem auf den sozialwissenschaftlichen E-Learning-Diskurs. Dem sozialkonstruktivistischen Zugang der Wissenschafts- und Technologie Studien zum Thema E-Learning werden dabei Positionen aus der sog. „normal science“ gegenübergestellt. Die Komplexität des E-Learning wird verdeutlicht, indem postulierte Bedeutungsgehalte von und Grenzen zwischen online- und offline-Lernen nicht als gegeben hingenommen, sondern als aktiv konstruiert – und damit instrumentalisierbar – erkannt werden: Als Ausdruck und zugleich Lösung der Probleme eines Hochschulsystems, das sich in der Krise wähnt.

Petra Fisser und Joachim Wetterling berichten über E-Learning als einen fortgeschrittenen Prozess, der das niederländische Hochschulsystem organisatorisch, technisch und sozial verändert. Dabei spielen die E-Learning-Akteure, die Faktoren ihrer Beeinflussung sowie deren Implementierungsstrategien eine gewichtige Rolle. Für ein kleines, aber international sehr gut eingebundenes Land wie die Niederlande scheint die Zukunft des E-Learning verheißungsvoll vor allem in der Verstetigung internationaler Beziehungen zwischen öffentlichen und privaten Partnern. Berichtet wird hier vor allem von neuen Kooperationsmodellen in Bildungsnetzwerken und anderen strategischen Allianzen. Prognosen über die zukünftige E-Learning-Entwicklung in den Niederlanden werden aus didaktischer, technologischer und organisationaler Perspektive gegeben.

Frankreich, Spanien, Italien

Die Situation an Frankreichs Hochschulen ist Gegenstand von Alain Jaillets Beitrag. Er schaut 20 Jahre zurück, um den langen Weg zu beschreiben, den E-Learning zurückgelegt hat, um seinen gegenwärtigen Stand zu erreichen. Auf diesem Weg gab es einige erhellende aber auch enttäuschende Erfahrungen. Zum Beispiel erwiesen sich Plattformen für kollaborative Arbeit als zu komplex für die meisten Studierenden, die Fernlernkurse belegten. Versuche, einen „digitalen Campus" zu etablieren, waren zu abhängig von der Arbeit Einzelner. Als aussichtsreich wird dagegen der neue Ansatz einer „thematischen digitalen Universität" beschrieben, der stärker auf die Hochschulen als aktivitätstragende Organisation als auf einzelne Personen setzt. In seiner Zusammenfassung zeigt sich Alain Jaillet enttäuscht über die gegenwärtige Situation und das Beharrungsvermögen konventioneller Lehrpraktiken, die im Wesentlichen unberührt von jahrelanger Forschung und mehreren E-Learning-Förderprogrammen geblieben sind.

Schon im Jahr 1995 richtete die Universitat Oberta de Catalunya (UOC) in Spanien zwei offizielle Studiengänge mit Online-Angeboten für 200 Studierende ein. Albert Sangrá beschreibt in seinem Beitrag, dass ein virtueller Campus das Kernelement für dieses Studium bildete. Landesweit ging die Entwicklung allerdings langsamer voran – bestimmt von Informatikern und Ingenieuren mit technischen Zielsetzungen und von Sozialwissenschaftlern, die ein stärkeres Augenmerk auf den didaktischen Prozess legten. Projekte und Initiativen, die von Hochschullehrern gestartet wurden, litten oft an mangelnder Unterstützung durch die Hochschulleitung, durch das Management angestoßene strukturelle Veränderungen stießen auf wenig Gegenliebe bei den Lehrenden. Im Großen und Ganzen konstatiert Albert Sangrá dennoch eine positive Entwicklung an den spanischen Hochschulen, sieht allerdings den Bedarf einer umfassenderen institutionellen und strategischen Planung, kostengünstiger Infrastruktur und angemessenen pädagogischen und technologischen Trainings für Hochschullehrer.

In Italien verlief die Entwicklung, wie sie uns von Alberto Colorni, Manuela Pegoraro und Rita Giuseppina Mangione beschrieben wird, anders als in Frankreich und Spanien. Hier wurde E-Learning relativ spät aufgegriffen. Dies hatte allerdings den Vorteil, auf einem vergleichbar hohen Niveau zu beginnen und viele Fehler zu vermeiden, die in anderen Ländern beobachtet worden waren. Infolgedessen bevorzugen die italienischen Einrichtungen flexible Ansätze, die von einer Mischung verschiedener Elemente wie Präsenz- und Online-Lernen geprägt sind.

Obwohl E-Learning in Italien erst im Jahr 2000 eingeführt wurde, hat es nach Aussage der Autoren inzwischen eine Reife erreicht, die alle grundlegenden methodologischen und finanziellen Aspekte berücksichtigt. Im Wesentlichen entwickelt und verwendet jede Hochschule ihre eigenen Ansätze und Strategien – trotz einiger offiziellen Richtlinien und Erlasse. Qualitätssicherung wird gleichzeitig von verschiedenen landesweit agierenden Interessengruppen organisiert.

Slowenien, Rumänien, Estland

Vor dem Hintergrund der Informationen, die in den vorangegangenen Beiträgen dargestellt wurden, wird in den Beiträgen der neueren, östlichen EU-Beitrittsländer deren besondere, auch historisch bedingte, Situation deutlich:

Die hochschulpolitischen Impulse aus anderen europäischen Staaten, die politische und gesellschaftliche Aufbruchstimmung und die technischen und didaktischen Möglichkeiten der elektronischen Unterstützung von Lehr- und Lernprozessen sind zentrale Aspekte der Darstellung von Margerita Zagmajster und Lea Bregar, die die aktuelle Situation in Slowenien nach dem erst kürzlich erfolgten Beitritt beschreiben.

Im Beitrag zu Rumänien stellen Nicolae Nistor, Doina Banciu und Mihai Jalobeanu die veränderte Perspektive anschaulich dar. Da E-Learning in Rumänien erst nach dem Ende des kalten Krieges an Bedeutung gewann, ist sowohl die Geschichte des mediengestützten Lernens, als auch dessen gewachsenes Verständnis wesentlich geprägt von der technischen (aber auch didaktischen) Verbindung des Lernens mit dem Internet. Während man (offline) Computer-Based-Trainings aus den 80er Jahren, die beispielsweise in Deutschland das frühe Bild des computergestützten Lernens nachhaltig geprägt haben, vergeblich sucht, ist die Möglichkeit einer landesweiten Vernetzung wesentlicher Bestandteil der frühen E-Learning-Projekte in Rumänien, wie an den im angesprochenen Beitrag vorgestellten Vorhaben zu elektronischen Bibliotheken, E-Learning-Tools und virtuellen Laboren belegt wird.

Die neueren geschichtlichen Entwicklungen haben ganz wesentlich die Verfügbarkeit der für E-Learning notwendigen flächendeckenden Verbreitung der Technologie beeinflusst. Dass auch kleinere Länder erfolgreich E-Learning betrieben können, wird im Beitrag von Sirje Virkus über Angebote an Hochschulen in Estland anschaulich dargelegt. Virkus beschreibt die rasante und beispielhafte Verbreitung und Entwicklung von ICT in dem mit nur 66.000 Studierenden und 1,4 Millionen Einwohnern recht kleinen Land und benennt dabei zahlreiche Initiativen an estländischen Hochschulen.

Die Autoren des abschließenden Beitrags, Claudio Dondi, Andras Szücs und Erwin Wagner, halten beim Blick auf das europäische E-Learning-Geschehen und mögliche Prognosen eine länderübergreifende Sichtweise für zwingend. Nach ihrer Einschätzung relativiert die Nutzung von ICT die Wirkung nationaler Impulse weit mehr, als das bei der Entwicklung traditioneller Bildungskonzepte der Fall war.

Auf europäischer Ebene wurde aus Sicht der Autorengruppe E-Learning Ende der 1990er Jahre zum Top-Thema – die „Lissabon Strategie" begründete eine eigene E-Learning-Initiative der EU-Kommission. Fünf Jahre später hatte sich die Akzeptanz in der Praxis verbreitert und die Wahrnehmung in der Politik verringert. E-Learning verlor seine Schlüssel-Rolle in der Bildungspolitik und es formierte sich Widerstand innerhalb der Bildungssysteme – mit verursacht durch eine teilweise niedrige Qualität und vereinfachende Werbebotschaften.

Dondi, Szücs und Wagner sprechen von einer zweiten Ambivalenz: Mit „Blended Learning" etablierte sich ein ambitionierter und situationsgerechter Einsatz von didaktischen Konzepten und Learning Management Systemen. Wirklich innovative Formen jenseits traditioneller Lehrformen werden nach Ansicht der Autoren allerdings durch diese Ausrichtung verhindert.

Unterdessen identifizieren Kooperationsprojekte auf europäischer Ebene E-Learning als Schlüsselelement der Organisationsentwicklung und Modernisierung von Hochschulen und nennen Voraussetzungen für eine erfolgreiche Implementierung. Die Bedeutung von länderübergreifenden Netzwerken steigt, ohne jedoch gemeinsame Strukturen zu festigen – trotz virtueller Verbünde bleibt für Lehrende und Studierende der physikalische Ortswechsel die bevorzugte Art der Mobilität.

Als entscheidend für die Weiterentwicklung in den nächsten Jahren sehen die Autoren qualitative Verbesserungen. Hoffnungen verbinden sie mit dem ab 2007 beginnenden 7. Rahmenprogramm der EU, einer Ausrichtung auf lebenslanges Lernen in einer ganzheitlichen gesellschaftlichen Betrachtung und die in diesem Zusammenhang große Bedeutung der Erfahrungen aus professionellen E-Learning-Entwicklungen.

Eine Chance für die zukünftige Entwicklung besteht nach ihrer Ansicht in dem Rückbesinnen auf die authentische professionelle Umgebung für den Einsatz von ICT: Open and Distance Learning. Auf E-Learning als essentielles Werkzeug zur Steigerung der Effizienz und Qualität kann dabei nicht verzichtet werden.

Die fast dreißig in diesem Band versammelten Autorinnen und Autoren sprechen verschiedene Muttersprachen und setzen ganz unterschiedliche Akzente auf das Thema E-Learning. Das Buch bietet somit ein buntes Spektrum an nationalen bzw. kulturellen Ausgestaltungen und Kontrapunkten, nicht nur auf die Länderportraits bezogen, sondern auch auf die vereinzelt daraus abgeleiteten Generalisierungen zum Thema E-Learning.

Gleichwohl gibt es viele Gemeinsamkeiten in der Sicht auf Chancen, die mit Hilfe von E-Learning genutzt bzw. Defizite, die behoben werden können. Möglicherweise ergeben sich daraus auch Alternativen in Sichtweise und praktischem Handeln für die Leserinnen und Leser. Vielen mag es als erstrebenswert scheinen, sich jeweils das Beste, Einfachste oder Originellste aus allem herauszusuchen. Außer Acht gelassen werden sollte aber nicht, dass alle Entwicklungen stark bedingt sind durch die soziokulturellen und historischen Gegebenheiten der Gesellschafts- und Hochschulentwicklung in den genannten Ländern. Die Herausgeber möchten mit diesem Band dazu anregen, zunächst die Unterschiedlichkeiten der Entwicklungen vor ihrem jeweils spezifischen Hintergrund zu verstehen und wertzuschätzen. In keiner Weise ist damit ein Interesse verbunden, Vereinheitlichungen und eine Zentralisierung voranzutreiben. Erwiesenes Potenzial von E-Learning bleibt die Wahrung von Vielfalt und Dezentralität – und damit zwei nicht ganz uneuropäische Gestaltungsprinzipien – oder?

Zum Abschluss dieser Einleitung möchten wir, die Herausgeber, noch kurz darauf eingehen, wie es gelungen ist, so viele Mitwirkende aus allen Teilen Europas für das Buchprojekt zu gewinnen. Die Hauptlast der Arbeit hatten diejenigen zu tragen, die bereit gewesen sind, einen Länderbeitrag zu schreiben. Unser besonderer Dank gebührt den Autoren und Autorinnen, die sich die Mühe gemacht haben, den Leserinnen und Lesern der GMW-Reihe Einblicke in Hintergründe und Verständnis von E-Learning in ihrem Land zu geben. Eine große Herausforderung war es, Autorinnen und Autoren zu finden, die in das Geschehen der jeweiligen Länder ausreichend involviert sind, um einen aussagekräftigen Überblick zu geben. Dabei haben uns zahlreiche Freundinnen und Freunde, Kolleginnen und Kollegen durch ihre Kontakte und Kenntnisse unterstützt und gezeigt, wie weit E-Learning-Netzwerke in Europa bereits reichen. Wir bedanken uns deshalb auch bei all denen, die uns in der Vorbereitungsphase beraten haben und nicht selbst in diesem Buch zu Wort kommen.

Gerade unter der Voraussetzung, dass wir viele der beteiligten Personen zu Beginn der Vorbereitungen noch nicht kannten, freuen wir uns, das nun vorliegende Ergebnis pünktlich zur 10. GMW-Jahrestagung präsentieren zu können. Mit diesem Überblick über insgesamt zwölf europäische Länder hoffen wir, zum Austausch sowohl unter den hier Beteiligten als auch unter Lesern und Leserinnen beizutragen und wünschen eine unterhaltsame Lektüre.

Ullrich Dittler, August 2005
Helge Kahler,
Michael Kindt,
Christine Schwarz

Preface: E-Learning in Europe – Learning Europe: How have new media contributed to the development of higher education?

Association for Media in Higher Education (Gesellschaft für Medien in der Wissenschaft, GMW) is staging its 10th international conference this year and has given its jubilee the motto "heading for new shores". This statement opens the way for several new perspectives: It indicates a tension between the well-known and proven as well as remote or visionary aims. Besides the didactical perspective, which was always the central perspective of the GMW, this anthology pays tribute to a European dimension. The articles of this book outline the application of new media as a cross-border issue "E-learning in Europe – Learning Europe". Like the GMW, this book links different didactical, geographic and cultural points of view by bridging the three German-speaking countries and other European nations covered by the GMW.

GMW's aim is to reflect, shape and consult educational technologies in scientific higher education (HE) and functions as a network of interdisciplinary communication between theory and practice of the use of new media for scientific purposes: users and researchers from different disciplines get into touch via GMW, whereas creative, didactical and aspects of media-supported learning are put in the centre as well as their strategic potential for the development of HE systems. The annual highlight of GMW activities is its conference each September. Venues alternate between Germany, Austria and Switzerland. The conference promotes the development of media-related competencies, supports innovative processes in educational institutions, illustrates the innovation potential of new media for HE reforms, puts strategic questions in the focus of interest and offers a forum for members and future participants.

Closely connected with the conference is the annual arrangement and awards show of MEDIDA-PRIX through GMW for extraordinary media-didactical concepts and developments. Since 2000 GMW has succeeded formulating and distributing common criteria of good e-learning practice in HE under the auspices of and funded by the Federal Ministries of Germany, Austria and Switzerland. Meanwhile the price has gained very much attention in the e-learning community and places emphasis on trend-setting impulses for project-, product- and organisational development. The annual award focuses public interest on media-didactical innovations and solutions unlike any other media award in the non-commercial sector.

The 10th conference as well as this anthology offer the opportunity for an internationally aligned resume. In recent years technical, didactical and organisational borders of e-learning in HE have become more clear: With a lot of local, national and international engagement products and structures were designed, developed and implemented that provide a basis for a sustainable use of media-supported education. After a phase of euphoria, followed by disillusion we have now arrived in a phase of continuity, which offers a suitable opportunity for a reflected view back on the outputs.

It is time for a careful interim result of e-learning activities in different countries. The European focus of this book clarifies the diversity and parallels of emphasis, approaches and national influences on HE development and so broadens the attention for media activities in the own country of origin. It is a central concern of this book to face new impulses for the development of e-learning in illustrating the heterogeneity of international e-learning scenarios. A glance across national borders encourages us to put our own experiences into perspective and therefore provides inspiration for further work and cooperation with other actors. After the media hype of the early 1990s and efforts to consolidation at the beginning of this decade, today's situation is characterized by the fact that didactical and technical challenges of media seem to lose interest in the public sphere. At the same time e-learning in HE gets more attention again through a development that many of us have not recognized yet as a mover and sustainable impulse for e-learning: the Bologna-process.

Hitherto most of the publicly funded e-learning projects were focussed on the production of single learning modules. Their sustainable integration into traditional HE was mostly considered as an additional demand instead of an essential success criteria. This approach has changed through the increasing reorganization of bachelor and master course studies. Extensive phases of self-learning in bachelor- and master courses increasingly demand e-learning services – not only as an additional offer but also as a necessary method to realise the requirements of the Bologna process. Often claimed is a shift from teacher to student centred lesson, a shift from the procurement of factual knowledge to the mediation of decision-making and responsibility. Regarding these claims e-learning can prove to be an instrument of social change: modules for self-directed learning are one of the main foci in e-learning projects of all disciplines and HE initiatives that currently increasingly meet the interests of students. Lifelong learning is also a central notion of the Bologna strategy and an increasing demand for training can be expected form employed persons. IT-supported course offers enable more flexible use of time and space at least for course providers – without being forced to neglect discursive forms of cooperation among students. The use of information- and communication technologies will become more and more a necessary prerequisite the more educational, scientific and other cultural differences of European HE systems become transparent. Requirement for virtual mobility is a basis infrastructure for web-based administration and service as well for the direct access to learning material. Not only extraordinary single learning materials are demanded but the development of departmental strategies across HE for the integration of media-based learning, so that e-learning can be established in sustainable conditions in commonly shaped face-to-face-courses as well as in periods of self-learning.

In this book, international experts try to link didactical and cultural perspectives as well as the three German speaking GMW-main countries and other European nations.

E-learning experts from Europe were invited by the editors to report how New Media have contributed to HE development in their national context during the last approximately ten years. The eleven articles cannot cover all aspects of e-learning but give an impression about the diversity of e-learning scenarios as well about the approach to e-learning is recognized in the articles in the different national contexts. For their orientation, we offered the authors a guideline, which could help to make the diverse applications partly comparable or distinguishable:

- Which perspectives or hopes of academic education were usually connected with E-learning? Which were the dominant (or frequently mentioned) aims of E-learning for HE?
- Who were the actors of E-learning (Lecturers or other HE staff, companies, politics or students)? How did HE and media development mutually influence each other? How did HE manage to build up structures of support? How did E-learning change HE's organisational structures?? What can be seen as the dominant/typical structure of cooperation/ relation? (i.e. e-learning alliances, associations, awards).

The collected information allow to assess today's expectations on media, put them into perspective according to the historical background of educational technologies and evaluate how they appear with different claims and arguments. The e-learning portraits illustrate experiences and milestones of e-learning as well as disappointments and flops. In the end the articles contain personal views of the authors about the status quo of e-learning as well as speculation about future perspectives and visions of e-learning and HE. So this anthology offers a limited but inspiring spectrum of e-learning portraits in different national settings. We encouraged the authors to illustrate the e-learning developments from a socio-technical perspective. If technology and society respectively organisation are conceived in their interaction, valuable insights in the status quo of e-learning are revealed: How technical innovation potentials are discovered and shaped in different social contexts and how these social adaptations and shaping of technology affect the development of further technology in their turn.

Let's have a quick preview of the articles: We start with contributions from Germany, Switzerland and Austria. Reports from northern Europe, Finland, Great Britain and the Netherlands are followed by those from the Mediterranean countries France, Spain and Italy as well as from the new EU-member states Slovenia, Romania and Estonia. We conclude with a cross-national view on e-learning.

Germany, Austria and Switzerland

Michael Kerres and Ilke Nübel look at the current development in German HE with respect to the first wave of educational technologies from the 1960s until the beginning of the1980s as a reference. They describe the second "multimedia wave" since the middle of the 1990s. In the opinion of Roland Mittermeir the development of Austrian e-learning is shaped by a shift from central structures to more or less autonomy, to which the HE system was exposed since 2002.

How the Swiss HE system was influenced by the introduction of e-learning in two parallel interactive strands of development is described by Gudrun Bachmann, Martina Dittler und René Schegg. In recent years distinct parallels can be found in the use of New Media in the Swiss, Austrian and German HE systems: in all three countries, public funding programmes dominate. A first phase of intense investigations and a strong orientation towards the digitalisation of learning materials is followed by a reversal of the aim towards the promotion of organisational development that supports a more sustainable use of e-learning.

This first phase represents the programme Swiss Virtual Campus (SVC) in Switzerland, in Germany the programme "Neue Medien in der Bildung" (NMB) and in Austria the programme "Neue Medien in der Lehre an Universitäten und Fachhochschulen" (NML). All of these programmes aim at the network effect of clusters in HE and a variety of media-supported educational services are derived from these programmes, albeit with very different levels of quality. The success of this phase can be seen from the fact that teachers and students use e-learning much more, which is an important precondition for the use of the potential of New Media in HE. But the expected integration as a condition for further development and distribution of New Media without funding programs was not fulfilled. Too many (research-) project specific characteristics determined the continuation of these projects of the first phase: They remained too much on the periphery of HE systems, lacked systems of incentive especially for teachers, had a lack of management regarding the consequent planning and distribution of resources to competent projects partners outside the HE system as well as insufficient services for the qualification and consultancy of teachers. In this phase only very few HE institutions turn to strategic chances and declared e-learning as their highest priority.

With the decrease of computer euphoria, the partly disappointing project results and the reduction of public funding that followed the general economic downturn, in all three countries a second programme phase followed, with which a turnaround should have been introduced, so that e-learning should be become the responsibility of HE institutions and finally become independent from special programmes. In 2004 the SVC-consolidation programme started in Switzerland, and in Germany e-learning services for research have been funded since 2005: with concepts for the integration of HE institutions and the development of organisations across HE institutions for the continuation and distribution of existing services. Both initiatives guarantee as broad a transfer as possible with respect to the developments of the first phase that were produced with high investment. In Austria the funded projects were indeed obliged to maintain sustainability and therefore to respect a three-year period of observation and reporting. But although some of these projects were accepted, no flourishing landscape of e-learning can be spotted so far. Austria established a new funding programme in 2005 too, which tried to push forward concrete e-learning strategies at single institutions (or in clusters of institutions). More or less those projects were financed that developed their e-learning strategies as a part of their comprehensive management strategies.

Differences between these countries can be seen for example in how these activities are linked on the basis of teachers and single institutions with government initiatives and funding programmes. While in Switzerland impulses that start from HE institutions influence the national funding policy more or less directly and, vice versa, funding policy influences HE reorganisation, this interaction is less pronounced in Germany. Swiss HE institutions regarded themselves as strategic agitating organisations very early in the development process, while German HE institutions are still dominated by the concept of a minor institution.

In contrast to this, Austria is involved in a phase of change. The starting point of e-learning initiatives, the Federal Ministry, is still centralised but with the university laws from 2002 HE is going to be exposed to more autonomy. The first funding programme was designed as a steering committee that consists of experts and delegates from the educational institutions and that coordinates e-learning initiatives. In this year’s strategy announcement policy, makers decided to authorize a body exclusively with experts from abroad.

Besides the projects, an important actor in Austria is the “Forum Neue Medien Austria” (fnm-austria), a network that emerged from the first funding programme, supported financially by the ministry and endorsed by further educational institutions. The fnm-austria functions as a kind of turntable for information as well as a counterpart with which the ministry can conduct negotiations regarding questions pertaining to e-learning.

Generally speaking, in all three countries a continuation of the national funding programmes beyond 2007/2008 is not foreseen. Until then HE and educational policy are under scrutiny to prove the utility of digital media for the shaping of European educational systems.

Finland, Great Britain and the Netherlands

The three articles from the northern countries have indeed a completely different analytical approach to the subject of e-learning, but they all deal with the reciprocity between national characteristics and international influences of HE development.

Following the general thesis of the information and knowledge society, Tapio Varis outlines Finland's e-learning activities. Finnish e-learning development appears to be heavily influenced by the paradigm of a society that is determined by communication – at least in its claim if not in its tangible reality. Finland's e-learning scene is characterized here by regional HE-clusters on the one hand and is internationally well connected on the other hand. It is reported from the perspective of political decision-makers and from the project "national electronic library FinELib", that is forced by national as well as international challenges.

Visions that determined the "Online Imperative" in Great Britain are at the centre of Neil Pollock's and James Cornford's article. They present New Media as a transition from elite to mass HE. This shift can be traced back to the stagnation of educational expenses while at the same time the number of first year students grows – a phenomenon that seems to be comparably new for the UK. The authors express their criticism the promise of rationalisation of information and communication technologies, to make educational services more efficient with constant or even decreasing investigations. A further central vision of e-learning in Great Britain is the increasing diversity of today's students and their demands. Faced with the very heterogeneous international educational milieu in the UK, only few students are capable of studying approximately three to four years on campus in traditional face-to-face courses. Pollock's und Cornford's analysis of the online visions within Great Britain's HE refers more to the sociological e-learning discourse. Social constructivist approaches to the sociology of technology and science (STS) are confronted with positions towards e-learning from so-called "normal science". The complexity of e-learning as a socio-technical challenge is illustrated by taking semantics of and differentiations between online and offline learning not as given, but as actively constructed – and therefore one that has become instrumentalized: the online imperative is an imprint and, at the same time, as a solution for the severe problems of a HE system that likes to describe itself as in crisis.

Petra Fisser and Joachim Wetterling report about e-learning as an advanced process that has changed the Dutch HE system already in its organisational, technical and social characteristics. E-learning actors play important roles, the way they and their strategies of implementation can be influenced. For a small but internationally very well integrated country like the Netherlands, the future of e-learning seems to be promising especially in improving international relations between public and private partnerships. The authors outline new models of cooperation in educational networks and other strategic alliances and try to predict future e-learning development in the Netherlands from didactical, technological and organisational perspectives.

France, Spain and Italy

The situation in French HE is dealt with in Alain Jaillet's contribution as he looks back 20 years to trace how far e-learning has come to reach today's status quo. This way was marked by some illuminating but also by some disappointing experiences, i.e. that platforms for collaborative work have proven to be too complex for most of the students that enrolled in distance-learning courses. Efforts to establish the "digital campus" were too dependent on the work of single persons. But as a promising approach Jaillet describes the "thematic digital university" that focuses more on HE as a motor of organisation than on single actors. In his conclusion the author expresses fome frustration at the current situation and the perseverance of conventional teaching practices that have remained more or less untouched by research and several e-learning funding programmes.

As early as 1995 the Universitat Oberta de Catalunya (UOC) in Spain started to offer two official study courses with online services for 200 students. Albert Sangrá describes in his article that it was a virtual campus, which was the main element for these courses. In the rest of the country the development progress was however much slower – mostly determined by computer scientists and engineers with more technical aims as well as by social scientists who hat a stronger attention for didactical processes. Projects and initiatives that were started by HE teachers often suffered by a lack support by HE management and the other way around, structural changes that were activated through HE management were received with anything but enthusiasm by the teachers. Albert Sangrá concludes with a positive development in the Spanish HE system although he argues for a broad institutional and strategic process of planning, with a cheaper infrastructure and adequate pedagogical and technological trainings for teachers.

The Italian development was rather different from that in France and Spain, as Alberto Colorni, Manuela Pegoraro and Rita Giuseppina Mangione describe it. In Italy e-learning was practiced relatively late, which had the advantage that it started at a comparatively high level and avoided failures that had to be made in other countries. Therefore Italian institutions seem to prefer more flexible approaches that are characterized by a mixture of several elements of face-to-face and online learning. Although e-learning was introduced in Italy not before 2000, it meanwhile has reached, in the opinion of the authors, a maturity that takes into account to all basic methodological and financial aspects. Essentially institutions develop and use their own approaches and strategies despite some official standards and decree. At the same time quality assurance is organized by different national groups of interest.

Slovenia, Romania and Estonia

In comparison with the articles described above in the contributions from the new eastern EU member states, their specific historically determined situation is highlighted:

Central aspects in Margerita Zagmajster's and Lea Bregar's description of the current situation in Slovenia after its recent accession, are impulses from educational policy of other European states, Slovenia's political and social mood in response to recent changes as well as technical and didactical opportunities of the digital supported teaching and learning processes.

New perspectives for Romania are explored vividly by Nicolae Nistor, Doina Banciu and Mihai Jalobeanu. As e-learning in Romania has gained in importance just after the end of Cold War, the history of media-supported learning as well as its dominant perception is mainly characterized by the technical (but also didactical) linkage of learning and the internet. Whereas (offline) computer based training from the 1980s – which has determined the early notion of sustainable computer-based learning in Germany – no opportunities of a nation-wide networking as a basic element of early e-learning projects in Romania can be found, as the authors show by taking electronic libraries, e-learning tools and virtual laboratories as examples.

Recent historical developments have very much influenced the availability of technologies that are necessary for a widespread distribution of e-learning. The fact that even small countries can practise e-learning in a very successful way is illustrated by Sirje Virkus' contribution about HE services in Estonia. Virkus describes the quick and exemplary distribution and development of information and communication technologies in a small nation with only 66,000 students and 1.4 Million inhabitants and introduces several initiatives in Estonia's HE system.

The authors of the concluding chapter, Claudio Dondi, Andras Szücs und Erwin Wagner, find it indispensable to try a cross-national perspective regarding e-learning activities and possible forecasts. In their view the utilization of information and communication technologies relativize national influences much more than in traditional concepts of education. Because of the "Lisbon Strategy", e-learning became a major topic in Europe at the end of the 1990s, which had a particular e-learning initiative of the EU commission as a result, so the authors argue. Five years later the acceptance of e-learning had grown in practice but its recognition has increased in politics. E-learning lost its key role in educational politics and within educational systems resistance arose – which was at least partially caused by occasional low quality and advertising slogans that presented simplistic messages.

Dondi, Szucs and Wagner formulate a second ambivalence: With "blended learning" an ambitious and suitable use of didactical concepts and learning management systems was established. Indeed, in the opinion of the authors real innovations beyond traditional forms of teaching are made impossible through this orientation.

Meanwhile, cooperation projects on a European basis indicate that e-learning is a key element of organisational development and modernisation of HE; they also formulate preconditions for successful implementation. The importance of cross-national networks is increasing without strengthening common structures – despite virtual clusters, physical change of place has remained the preferred way of mobility for teachers as well as for students.

Qualitative improvements are most relevant for the further development of e-learning within the next years so the authors argue and connect their hopes with the 7th frame programme that will start from 2007. It will be orientated towards lifelong learning in a total social perception and in this context experiences of professional e-learning developments will be particularly important.

A challenge for future e-learning development can be seen by looking back on authentic and professional environments for the use of information and communication technologies: Open and Distance Learning. To increase efficiency and quality e-learning will be necessary as an essential tool.

The almost 30 authors that are gathered here speak in different mother tongues and put their different accents on the subject of e-learning. So our book offers a colourful spectrum of the national respectively cultural shaping of e-learning and illustrates counterpoints not only of the national portraits but also of generalisations about e-learning that can be found in the articles. However several parallels can be found in the author's perspectives on opportunities and deficits of e-learning. Possibly this will motivate readers to change viewpoints as well as their practical action in HE. For some it may appear desirable to pick in each case the best for their work, which can be seen as the most simple or the most original. But it should not be disregarded that e-learning is extremely influenced by the socio-cultural and historical realities of societies and their development of educational systems.

With this book the editors hope to stimulate the readers to understand and possibly appreciate the diverse developments of e-learning in their specific national backgrounds. It is not intended at all to face standardizations or centralizations. If there is one proven potential of e-learning it is in our opinion diversity and decentralisation – two design principals that are not far from being European, are they?

As editors we would finally like to draw attention to how we succeeded in gaining so many participants from almost all over Europe to contribute to this book project. Most of the work had to be done by the authors. Our very thanks belong to all of these, who made so much effort to provide the readers of the GMW-book series very specific insights in background and perceptions of e-learning in their nation.

It was a big challenge to find authors that were involved thoroughly in the e-learning activities of the different countries so that they can give a general overview. This would not have been possible without numerous friends, colleagues, their tacit knowledge and personal networks. Through this we had the chance to experience how far (e-learning) networks reach in Europe already. Therefore our special thanks go to all of those who did not have their say in this book but who advised us while we planned and produced it.

Especially because we did not know most of the participants at the beginning we are very glad to present this result at the same time as the 10th GMW conference.

With this overview of altogether twelve European countries we are happy to stimulate the dialogue (exchange of views / sharing of opinions) among all participants and readers – and we hope everybody will find this a stimulating read indeed.

Ullrich Dittler, August 2005
Helge Kahler,
Michael Kindt,
Christine Schwarz

Map showing the countries in this book

Michael Kerres and Ilke Nübel

The Status of E-Learning at German Higher Education Institutions

Focusing on the central questions specified by the editors, the following contribution outlines the development of computer-based learning at German universities and institutes of higher education. Although it is based on existing surveys and data, it has to remain subjective in many ways, simply because it is difficult to gain an overall view of the phenomenon "e-learning at German universities and institutes of higher education". Moreover, the questions posed demand evaluations that can only remain vague or general. Methodically, it remains difficult to say something more to the point about e-learning at the 330 institutes of higher education[1] in Germany.

For this reason it makes sense, in a first step, to concentrate on aspects that can be seen as typical of the "German approach" to e-learning and then, in a second step, view these aspects in a European perspective in order to evaluate the status of e-learning in Germany.

Consequently, we will focus on the following aspects:

- the shifting of attitudes towards "computer based learning" between euphoria and depression,
- the cultural sovereignty of the German federal states (Länder) competing with national educational policy,
- the surprisingly limited effect on the system of higher education as a whole,
- some characteristics of the professional discourse on education and technology.

1 Background

In Germany the discussion of computer-based learning has been characterised by two big waves, disclosing both great expectations and disappointment. Before

1 Acc. to Association of Universities and other Higher Education Institutions (HRK): 89 State Universities, 104 State Institutes of Higher Education, 11 private Universities, 32 private Institutes of Higher Education, 17 parochial Universities, 18 parochial Institutes of Higher Education and 52 Music and Art Academies. See http://www.hochschulkompass.hrk.de/

trying to understand the particularities and the results of the discussions during the "second wave" in the second half of the 1990s we should reconstruct the discourse of the first "educational-technological" wave. During this first stage, special aspects of how to deal with the tense relationship between education and technology had become apparent, which have affected the discussion in Germany to date.

1.1 The first wave of educational technology

With the availability of mainframe computers in the mid-1960s computer-based learning boomed for the first time. The government invested money in national development centres, reorganised existing educational institutions and consistently adapted the planning of new institutes of higher learning to the new approaches. Nevertheless, all high hopes were soon disappointed, and during the 1980s the development almost came to a standstill. Politicians had trusted the announcements of industrial representatives and scientists and – displaying what from today's perspective appears to be a surprisingly naïve belief in progress – taken the feasibility of the projected scenarios in terms of technology and pedagogics for granted. A closer look at the discussions at that time shows how emotionally charged this controversy was fought out even in the general public. The protagonists wanted nothing less than to fundamentally reconstruct the education system, or even to "make the whole nation fit for the future", whereas most critics questioned the involvement of technology as an element basically extrinsic to the educational sector.

The visions put forth by the supporters of computer-based learning at the time still appear rather oppressive today: Helmar Frank, the founder of "cybernetic" pedagogics, figured out how many years it would take, after a consistent introduction of computer-based teaching, to supersede teachers in schools, when the remaining teachers would predominantly work on the development of teaching materials for computer-based teaching (Frank, 1975). In fact, the available computer systems then merely made it possible to facilitate the simplest "interactive" applications in a question-answer pattern that today would be referred to as "behaviouristic". The idea of having such systems replace traditional teaching on a large scale is astonishing – today probably more than then.

These far-reaching visions and their implementation in the form of mere "automated learning machines" brought about equally vehement resistance – from educational scientists as well as from teachers. The controversy soon reached a deadlock and the topic of computer-based learning rapidly lost its significance in educational science, which was predominantly shaped by the humanities at that time, and by educational practice. A more pragmatic approach that allowed people to explore the potentials and limits of computer-based training without any bias was hard to establish. The mainstream of educational science simply could not abandon its doubts about discussing “educational technology” at all.

1.2 The multimedia wave

With the availability of multimedia systems in the 1990s, the discussion about computer-based learning was revived. The focus now was on the potentials of the presentation of multimedia information, process visualisation and animation, and the new hypertext concept. Nevertheless, it was the boom of Internet- and digital technology throughout society that gave the biggest drive to the development. Not only have these technologies spread rapidly, but people have also associated positive connotations with them, so they have in fact become almost ubiquitous.

The national funding programmes on “multimedia learning” set up in the second half of the 1990s drew on lines of argumentation that were similar to those put forward during the first wave of educational technology. Representatives of industry and science called upon the government to invest in this all-important technology in order to gain a leading position in Europe or even the world, and to at least not fall behind technological development. In their well-received article Encarnação, Leidhold & Reuter (1999) outlined a future scenario for the university of the year 2005. They believed that digital technology would dramatically change the education sector.

This scenario saw institutes of higher learning merge into a global science market:

> The classical alma mater has survived in two forms – in reduced numbers or on lower levels. Where it survived, it has expanded its range to online services. Many universities, however, had suffered a rapid drift of students. And many a private and public institution were forced to cut back investments or close down locations completely, concentrating their efforts on outstanding and seminal locations instead. Consequently, we find, especially in Germany, primarily two types in this segment: a handful of elite institutes and a lot of traditional universities struggling to survive and fighting against cutbacks, administered reforms, and agile competitors.[2] (Encarnação et al., 1999)

2 The original passage reads as follows: “Die klassische Alma Mater hat in zweierlei Form überlebt – in verringerter Zahl oder auf reduziertem Niveau. Dort wo sie überlebte, hat sie sich ebenfalls um ein Online-Angebot bereichert. Viele Universitäten hatten jedoch rasch ihre Studenten verloren und manche private und staatliche Träger sahen sich gezwungen Institutionen schrumpfen zu lassen oder ganz zu schließen, um ihre Kräfte auf herausragende und zukunftsträchtige Einrichtungen zu konzentrieren. Daher findet man in diesem Segment, besonders in Deutschland, vornehmlich zwei Typen: wenige Elite-Institutionen und eine Menge althergebrachte Universitäten, die zwischen

Against an economically rather sound background, broadly based funding programmes were initiated at federal and federal state levels. These programmes initially addressed businesses that worked on the development of adequate technologies and then all educational sectors, where manifold projects exploring forms of multimedia learning were funded. During the evolving dynamic process, the different public funders soon started to compete with each other and tried to hone their profiles.

Public discussions were initially again dominated by the question whether multimedia learning will or may replace face-to-face teaching. Influenced by the general euphoria, public opinion was clearly in favour of the use of digital technologies in education. A broader discussion of the conditions and added value of media based learning was neglected. Questions arose, if anything, concerning the predicated advantages of multimedia learning, for instance, the effectiveness of media usage.

With the growing fund of experience, the discussion was resumed about whether many of the postulated effects could be actually sustained (Keil-Slawik & Kerres, 2003). The enthusiasm about new forms of multimedia visualisation, simulation, and animation was put into perspective when it became clear how much money and energy it would take to produce appropriate materials. It had to be admitted that the implementation of learning with digital media in education was a more demanding task than many projects had accounted for.

Unlike the first wave of educational technology, the digital multimedia technologies had been firmly established as common tools in private and business life over the years. That is why, during the second wave, disillusionment did not cause the technologies to "vanish" from the world of learning. In fact, despite the disillusionment, interesting scenarios of use were developed for higher education, which emerged from different aspects that had not received much attention in the wake of the "multimedia euphoria".

But let us first take a closer look at the federal and public funding strategies and policies.

Rotstift, staatlich verordneten Reformen und einer agilen Konkurrenz um ihr Überleben kämpfen. "
Interestingly, in some aspects the authors' predictions did not turn out altogether wrong. It seems, however, that other factors – beyond the "virtualisation of education" – were significantly involved in this development as well.

2 Funding policy

Educational policy is a field in which the German Länder try to compete with each other and with the educational policies of the Federation. The constitutionally guaranteed cultural sovereignty of the Länder gives them extensive freedom to design and develop their educational systems. In addition, there are two important coordinating bodies spanning the Länder: the Standing Conference of Education Ministers (KMK) and the Commission for Educational Planning and Research Promotion of the Federation and the Länder (BLK). The scope of the Federation's responsibilities in the field of education is rather narrow and strictly defined.

Consequently, the educational landscapes of the Länder have developed differently over the past decades. Each of the Länder has followed its own approach and with a different emphasis and investments in higer education: Baden-Württemberg, for example, consistently adhered to Universities of Applied Sciences (Fachhochschulen) and Universities of Education (Pädagogische Hochschulen) as discrete types of universities, which had been expanded over the years. By contrast, Northrhine-Westphalia tended to merge the different types of institutes of higher education. And compared to the other Länder, in Baden-Württemberg and Bavaria, an absolutely and relatively big part of the total state budget goes into education. The consequences of such differences in the intensity and direction of educational policies became increasingly evident over recent years. Rankings of faculties and universities have been conducted since the late 1990s and have revealed big differences between the Länder. Nevertheless, unlike other European countries, German institutes of higher education hardly had to cope with fundamental systemic challenges or cuts until the late 1990s. In Germany, the concept of universities and institutes of higher learning as autonomous organisations responsible for establishing their strategic position on "educational markets" and "science markets" has not been explicitly developed so far. Instead, they continue to be seen as something like "authorities subordinated" to state ministries (Müller-Böling, 1994). With the ongoing implementation of the Bologna-Process, fundamental changes are currently taking place that eventually will have a fundamental impact on higher education.

The way in which German institutions of higher learning have been treating the multimedia issue has to be viewed within this framework. During the 1990s, the importance of the multimedia approach for the future development of the economy, education, and society had been widely acknowledged by the public and again addressed by politicians. Funding programmes were soon developed on federal state, national, and European levels. Due to a favourable economic background, voluminous national funding programmes could be issued that aimed to press ahead development in this field and, at the same time, create a favourable framework for Germany with regard to EU activities.

But what was the practical approach to actually disseminate multimedia and the Internet in institutes of higher education? Initially, a lot of money went into technical equipment. Consequently, German higher education institutions were by and large – and in comparison with other nations – technically quite well-equipped by the late 1990s. The practical use of the equipment, however, was not always convincing: it looked as if the opinion prevailed that it was enough to simply "provide" the technical equipment in computer rooms or via the network. The concept of technology as a means of creating added value in the crucial processes of research and education was little developed. On that basis the implementation of digital media into teaching could hardly create a clear value for learning and education.

The funding programmes which dominated the second half of the 1990s then aimed to develop content. This redirection towards multimedia content set in with the "Hochschulsonderprogramm III" in 1997. Within the framework of this programme the Federation provided the Länder with 122 million euros (1997–1999) for the funding of multimedia projects at universities and institutes of higher learning. The Federation left it to the Länder to decide on the form of the programmes and on the development of regional grants.

2.1 Funding policies on the federal state level

The Land of Baden-Württemberg consistently addressed this issue as an early mover. In 1996 plans for the "Virtual University Baden-Württemberg" already aimed to press ahead with the use of the Internet at institutes of higher learning.[3] The basic technology had been made available to the institutions during previous funding arrangements. Only the contents necessary for media based teaching and learning were lacking. A critical question was how to ensure that, given the high costs of content development, these expensive contents could be used at different institutes of higher learning. Institutes of higher learning are known to be typically prone to the "not invented here"-syndrome. Of course, for print materials, a rather low interchange rate is far less tragic than for costly multimedia products.

The most favoured type of solution was to set up joint projects based on the cooperation of scientists at several institutes of higher learning. It seemed obvious to model the cooperation of the scientists on research associations. It was expected that scientists from adjacent subjects would group around a topical centre and work out a concept for the development of media that could then used to apply for funding.

3 As the first author was a member of the planning group, the Baden-Württemberg activities are especially featured here.

From today's perspective this ambitious concept had several flaws: First of all, it did not sufficiently account for the fact that the production of digital media was a very demanding process that neither the scientists nor the media centre staff had the necessary competencies for at that time. Competencies were to be "bought in" by hiring competent project staff; but there were also the tasks of managing complex media projects, developing media-didactic concepts, project-controlling, and the development of marketing strategies that were bound to ask too much of the average "head of department" in charge of project leadership. As a consequence, some projects were renamed "research projects" instead of "media development projects", because that was exactly how they were really organised. Additionally, projects that were divided into several sub-projects to some extent worked self-sufficiently and lacked mechanisms for internal or external controlling. This way it could neither be guaranteed that the sub-projects were convergent with each other nor that the project as a whole was convergent with the programme's objectives.

Interestingly, the "Virtual University Baden-Württemberg" (1998) for the first time established a "competence centre for multimedia and telematics" in the "Deutsches Institut für Fernstudienforschung" at University of Tübingen that was to support media projects in their work and to facilitate the dissemination of concepts and results. However, after the first stage of the funding programme the centre was not continued.

Other federal states have implemented competence centres and coordinating bodies across universities as well. But these centres act more as project agencies organising tender procedures and implementing federal state funding programmes for the media sector as well as organising certain service activities of the funders and the recipients of funds. It has been recognized that installing media competence centres at all institutes of higher learning would involve excessive labour and costs, however, and no fundamentally convincing solutions have been found how competency centres across institutes can be reliably interlocked with the activities of each and every institute of higher learning. Again, the characteristic feature of German higher education institutions described above prevails: It is rather difficult to implement sustainable media concepts and strategies at institutes of higher learning and to motivate the individual actors (the scientists) to follow such a route.

A small extract of some funding initiatives on federal state level that show the different focuses and organisational models of policies in Baden-Württemberg, Bavaria, and Northrhine-Westphalia, can be found in Appendix 1 (detailed overviews can be found in Cleuvers, Dohmen, & Simons, 2004). More bottom-up structured activities, as in Northrhine-Westphalia, and more top-down strategies, as in Bavaria, become apparent here.

2.2 Funding policies on the federal level

The systematic funding of content-production on the federal level began in 1998, when the Federation gained large revenues with the sale of UMTS-licenses for next generation mobile telephones. By the end of 2003 the Federal Ministry of Education and Research invested some 550 million euros into multimedia funding programmes for secondary education, vocational education, and higher education. In the same period the Ministry of Economics and Labour invested about 13 million euros in media projects on an operational level.[4]

During the first federal funding initiative, geared towards content development starting in 1998, the Ministry of Education and Research funded five pilot projects with 70 million euros. Four of these successful projects were presented in 2005. In the sector of higher education these were the projects Vernetztes Studium – Chemie (VS-C) and Virtuelle Fachhochschule (VFH), an association of universities of applied sciences (Fachhochschulen) that implemented a distributed online course of studies in media informatics. Since October 2001 students can enrol at the Virtuelle Fachhochschule in order to study media informatics or industrial engineering (since October 2002) and use the offers of the consortium of eleven universities of applied sciences. Students at one university can thus use online modules that were developed at another university and vice versa.

In 2000 the central national funding programme "New Media in Education" then strictly focused on the production and implementation of contents. Its objective was expressed as follows: "Together with the scientific community, with industry, the *Länder* and local authorities, the Federal Ministry of Education and Research will contribute to making Germany a world leader in educational software by the year 2005."[5] For secondary education, the medium term aim was "the development and provision of teaching and learning software for all subjects and age groups."

With respect to the use of new media at institutes of higher learning, the Federal Ministry claims that:

> At higher education institutions, 100 joint projects are funded that include the development and trial of innovative multimedia forms of teaching and learning and their implementation into normal university working method. At the same time the integration of multimedia contents into teaching and the development of new forms of teaching and learning aims to improve the quality of

4 See the government's answer to a question in parliament by the members of parliament Ulrike Flach, Birgit Homburger, Horst Friedrich (Bayreuth), other members of parliament and the fraction of the FDP – Drucksache 14/9616 – Zukunft des eLearnings in Deutschland, 15.7.2002.

5 http://www.pt-dlr.de/pt_nmb/BMBF_NEUE_MEDIEN_ENG.PDF.

> teaching, the organisation of studies, and shorter study times. A second focus is the Notebook-University: In this branch projects are funded that develop and implement innovative and integrative overall concepts for mobile learning into workaday university teaching. This includes the development of strategies that provide low priced access to learning with mobile computers for all students. The objective to broadly use forms of multimedia teaching and learning in higher education will have to be funded in mid-term perspective as well. Furthermore, the establishment of a framework that will allow higher institutes of learning to develop sustainable strategies and the improvement of particularly effective learning scenarios have to be accounted for. Another potential object of funding is the use of these technologies for further education on the international educational market as well.[6]

The funding of these joint projects with 186 million euros has brought forth some high quality products and many interesting scenarios for using multimedia and the Internet in teaching. Examples in medicine particularly stand out. The intensive discussion of academic reforms and new ways of teaching in the late 1990s surely had an effect here. Case-based applications allow learners to work on cases with authentic materials. This approach has proven to be an effective way to learn about methods and procedures of diagnostics and therapy in medicine.

In sciences and engineering, and to some extent in economics, multimedia applications featuring animations and interactive simulations have also demonstrated innovative and effective approaches. Based on abstract models of parts of real life scenarios, learners can move through virtual landscapes. In this way, a different, much more intuitive approach to complex phenomena, which are rather hard to imagine, is rendered possible (see Schulmeister, 2001).

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6 http://www.bmbf.de/pub/14_9784-e-learning.pdf; the original passage reads as follows: "Gefördert werden 100 Verbundprojekte an Hochschulen, die die Entwicklung, Erprobung und die Umsetzung innovativer, multimedialer Lehr- und Lernformen in den Normalbetrieb der Hochschule umfassen. Mit dieser Integration von multimedial gestalteten Inhalten in die Lehre und mit der Entwicklung neuer Lehr- und Lernformen sollen zugleich die Qualität der Lehre verbessert, eine bessere Organisation des Studiums und eine kürzere Studiendauer erreicht werden. Im zweiten Schwerpunkt Notebook-University werden Vorhaben zur Entwicklung und Einführung einer innovativen und integrativen Mobile-learning-Gesamtkonzeption in den Regelbetrieb der Hochschule gefördert. Dabei sollen auch Strategien für den wirtschaftlich günstigen Zugang aller Studenten zum Lernen mit mobilen PCs entwickelt werden.
Das Ziel einer breiten Anwendung multimedialer Lehr- und Lerntechniken im Hochschulalltag wird auch auf mittlere Sicht Gegenstand der Förderung sein müssen. Hierbei sind die Rahmenbedingungen für nachhaltige Strategien der Hochschulen ebenso in den Blick zu nehmen, wie die Weiterentwicklung besonders effektiver Lernszenarien. Zusätzlich ist die Anwendung solcher Techniken in der Weiterbildung auch auf dem internationalen Bildungsmarkt möglicher Gegenstand von Fördermaßnahmen."

At the beginning of the multimedia funding initiative it was not always easy for Humanities and Social Sciences to develop convincing concepts for multimedia applications. Consequently, comparably few projects were initially funded. However, they got a new impetus when approaches of cooperative and distributive learning as well as other forms of net-based learning were established which emphasised communicative and discursive scenarios.

An overview of offers for online study can be found on the Internet:

http://www.studieren-im-netz.de/ in German
http://www.online-studying.de/ in English

More information on projects funded by the Federal Ministry of Education and Research (BMBF) can be accessed over the Internet portal of the Project Management Organisation “New Media in Education”: http://www.medien-bildung.net in German and English.

From 2002 to 2004, in a second branch of funding, 25 Notebook-University projects were funded with 26 million euros. In the course of these projects single universities could implement concepts on the use of notebooks in teaching on campus. Although the concepts differed in many ways, their implementation definitely proved capable of intensifying the use of IT applications on campus. In particular, these projects promoted the discussion about the sustainable integration of media into teaching and the necessary organisational structures (Kerres, 2004). Deplorably, evaluation only played a minor role in the funding programmes and, consequently, in the projects.

A serious problem for some projects was the lack of controlling mechanisms even in the bigger consortia. Therefore, there were only a few opportunities to manage large-scale projects, when – for example – sub-projects did not converge in terms of content or time schedule.

At the same time (2001), it was critically reflected to what extent the funding programmes would yield a sustainable change in teaching and learning in higher education. It was obvious that the federal and federal state funding programmes would not fulfill all expectations. It also became clear, however, that any achievements that undoubtedly had been made would come to nothing if there was no way of sensibly securing and enhancing them. Fears were raised that the enormous investment would peter out without yielding sustainable effects.

Consequently, sustainability has become the central question of the discussion since 2002. In a strategy paper dated 17 June 2002, the Commission of the Federation and the Länder for Educational Planning and Research Promotion (BLK) claimed:

> "Strategy paper: Broad use of New Media in higher education institutions"
>
> A broad use of new media is not only strategically important for the further development of higher education institutions but also an essential requirement for improving their standing in national and international competition.
>
> Planning for the use of new media should be given top priority in higher education institutions as well. The options for the use of media and for strategic focusing are manifold.
>
> Institutes of higher learning have already started many sophisticated media projects and submitted numerous interesting project outcomes. Despite all these multifarious efforts, the implementation of new media in teaching, studies, and further education has not come up to expectations. In particular, a sustainable integration into workaday university teaching is still lacking in many cases. Reasons are manifold. Teachers have no-one to turn to for technical and didactic support. There is no overall concept for the creation of local or regional competency-, support-, or service-structures (media competency centres).
>
> Higher education institutions are far from a situation where teachers can simply use existing structures for creating, storing, and presenting multimedia objects. Neither can every student choose net-based teaching offers according to their individual abilities and learn regardless of place and time.

The evaluation of the national funding programme "New Media in Education" analysed the status and perspectives of the programme. The Audit Report identified strong points and flaws as well as chances and dangers (see Appendix 2).

Systemic level

Unlike the prognosis of Encarnação (Encarnação et al., 1999), the system of higher education has proved to be surprisingly stable as a whole. Apparently, higher education did not shift to a large scale "virtualisation". Surprisingly, few complete online study programmes or courses have been established. Traditional universities opened up far fewer offerings for online courses than it was assumed earlier. With a few exceptions business and organisational models could only be established in niches, if anything. It seems that universities of applied sciences (Fachhochschulen) have provided a more fertile ground for the successful implementation of business cases, for instance the Distance Studies Association (Fernstudienverbund) of universities of applied sciences (Fachhochschulen) in Berlin-Brandenburg, the Distance Studies Centre at universities of applied sciences in Hessen, Rhineland-Palatinate and Saarland, founded in 1996,[7] or the tele-akademie of the Fachhochschule Furtwangen[8] that has offered online courses since 1994.

With distance studies, there is one German peculiarity that has lingered to date. The "FernUniversität" is the only university that has been authorised by agreement of the Länder to offer university level programmes with Bachelors and Masters degrees in distance education. This is why there still are only few institutes that offer full study programmes. Nevertheless, the FernUniversität has only reluctantly adopted the options of Internet-based learning so far. Against expectations, this process of taking up the opportunity of the Internet is not less complex for a FernUniversität working with traditional print media than it is for an on-site institute of higher learning.

All institutions involved in this topic during the 1990s had to address the challenge of digital media. Some of these institutions had severe problems managing this change. The continuation of the German Institute for Research on Distance Education at University of Tübingen, for instance, was assessed negatively during an evaluation. The institute received financing as a federal research institute independently from universities. It had emerged from the German Institute for Distance Education that had been offering distance courses for teachers and organised the Telekolleg, a course package consisting of radio broadcasts, printed materials, and accompanying learning groups held in adult education centres (Volkshochschulen). In 2001, part of the institute was integrated into the new Knowledge Media Research Centre at University of Tübingen. Its focus is predominantly on empirical research on learning with digital media.

In the media production sector we have two state financed federal media institutes, the IWF Knowledge and Media in Göttingen, working for the higher education sector, and the FWU (Media for Education) in Munich, working for the primary and secondary education sector. Both institutes were in danger of being closed down in the 1990s. Here, too, a negative evaluation led to a fundamental reorientation towards digital media.

The discourse in scientific disciplines

The German-speaking part of the discourse on educational technology seems to be dominated by scientists with a background in computer science. This can be traced back to the fact that many educational scientists had been primarily against a broader use of technology in education during the first wave of educational technology. Consequently, educational scientists partly fell behind in the discussions and their expertise in some areas was hardly sought after. It is striking how sparse-

7 http://www.zfh.de
8 http://www.tele-ak.de

ly pedagogy, as a science, has accompanied and influenced this social challenge. The problem is also evident from the rather low media competence of students, especially in pedagogics and teacher training; these students possess relatively little experience with IT-applications and computers, as a representative survey shows (Middendorf, 2002).[9]

Against the background of the controversies of the first wave of educational technology, the term "educational technology" has predominantly negative connotations in the discourse of pedagogy. It has been replaced by the term "media didactics" that generally refers to learning with media from a pedagogic perspective and is favoured by many scientists with a background in educational psychology – and is therefore empirically oriented.

In general, the issue has recently been viewed more positively in educational science and, vice versa, pedagogical problems of eLearning have gained acceptance in the other disciplines as well. This might partly be ascribed to the growing understanding that a predominantly technological perspective will not meet the requirements of educational practice and needs to be supplemented with pedagogic views as well. As some technically ambitioned projects failed in practice, didactic issues were given increasing consideration. In the late 1990s the question of an "added value" generated by digital media was an object of lively discussion and is gradually being taken less and less for granted. Many of the so-called advantages of computer-based learning turned out to be rather unconvincing.

To this day there has been a partial subliminal conflict between technologically ambitioned projects and pedagogically focused activities that can be perceived, for instance, in the discussion about the "standardisation" of learning objects. Many scientists with a bias towards informatics see this issue as the "silver bullet" regarding the future of e-learning. Authors with a rather pedagogical focus doubt that this path can lead to high quality learning offers. They point to experiences at hand with approaches based on automated instructional design and underline the importance of contexts in learning.

The fostering of scientific discussion the Society for Media in Higher Education (Gesellschaft für Medien in der Wissenschaft) has been established as an important, interdisciplinary forum in the German-speaking part of Europe. It holds an annual conference and edits a series of books documenting current trends. Moreover, the Society organises the MEDIDA-PRIX, an award for media products and e-learning innovations in higher education, which annually awards outstanding projects and initiatives. The body responsible for the award is the Ministries of Science of the Germany, Austria, and Switzerland, which inherently can be perceived as an innovation.

9 A new survey by (HIS GmbH, 2005) points out that the pronounced differences between students of different courses of studies are beginning to diminish.

The MEDIDA-PRIX has substantially contributed to the formation of a German-speaking community that promoted the discussion of quality in e-learning. An consistently important aspect of the discussion is the exchange across the Länder and nations. Equally important is that the systematic process of assessment and communication has substantially underscored the argument for the quality and added value of media-based learning (Brake, Topper, & Wedekind, 2004).

Sustainable e-learning innovations

The great waves of federal and federal state project funding have been ebbing away since the end of 2003. Against the distinctly worsening economic background, severe cuts in multimedia policies were on the horizon. At the same time there were fears that a complete halt to funding policy would endanger the present output and render the sustainable backup of current substantial investment transactions moot.

Doubtlessly, previous projects had hinted at ways how e-learning could facilitate alternative forms of teaching and learning, and e-learning has proven a substantial impetus to innovation in education. Nevertheless, it became apparent that these potentials can only be tapped if higher education institutions meet certain requirements (Seufert & Euler, 2004). E-learning would not automatically integrate into higher education institutions. And because the required changes in higher education institutions have turned out to be bigger than assumed, the discussion since 2001/2002 has increasingly focused on issues concerning the sustainable integration of e-learning. Organisational questions have been addressed as well (Schönwald, Euler & Seufert, 2004).

From the authors' perspective the project at hand shows that e-learning holds substantial potentials for alternative forms of teaching and learning at institutes of higher learning. These potentials, however, do not come along with the implementation of e-learning itself, but with the implementation of new forms of teaching and learning. As part of this process, e-learning is a powerful instrument that can be used to improve the quality and effectiveness of certain forms of teaching and learning or didactic settings in face-to-face and distant teaching. In this vein, e-learning would have to be considered as an instrumental tool for achieving certain innovations, not as the innovation itself.

Many projects have shown the different potentials of didactic innovations (Rinn et al., 2004). These innovations, however, become visible and take effect in higher education only if substantial changes and developments in higher education institutions are taking place (HIS GmbH, 2003).

The analyses of the framework necessary for a sustainable integration of e-learning innovations mentioned before show that a sustainable integration of e-learning into higher education institutions requires more far-reaching arrangements and provisions in different sectors than have been approached in many projects. At the same time it is obvious that additional investment in mere project activities will not contribute to making e-learning a common part of studies, in neither the short nor the long term. Despite substantial investments, e-learning pioneers at institutes of higher learning represent an estimated 5 % of teaching staff (Rinn et al., 2004). Teachers play an important role in this process, as their competencies can be regarded as one of the requirements for the implementation of necessary innovations. Without the interest of the teaching staff in e-learning and their willingness and ability to use it, their potentials regarding the support of innovative forms of teaching and learning cannot be tapped into.

Multimedia and e-learning have so far been a key to the acquisition of third-party funds in the hands of individual scientists acting on their own. The centrally acting entity in higher education institutions were still individual scientists cooperating on the basis of common purposes. Even the constitution of compound structures demanded by politicians as part of the application for project funds in order to establish cooperation across institutes and disciplines has not changed that.

3 Summary

Federal and federal state funding programmes have developed substantial dynamics at higher education institutions. The prognoses of Encarnação, Leidhold & Reuter (1999) have in fact become reality in some respects. Even if the explicit use of didactically prepared (e.g. multimedia) materials has reached a smaller proportion than expected, the use of the Internet for information and communication as a “workaday” learning and working tool by students and teachers on and off campus has rapidly increased – and this use will certainly be further integrated into daily routines.

Students have already incorporated the use of digital technologies into their daily routines to a great extent. According to recent surveys (2005), students can access most of the materials accompanying lectures and courses over the Internet. Interviews showed that, in 2003, 83 % of all students accessed materials accompanying lectures, and 23 % used interactive learning offers (particularly in medicine and economics). Virtual seminars/tutorials, tele-lectures, and virtual laboratories/placements have been used much less. Compared to other disciplines, medicine has a particularly high rate of e-learning use.

Compared to the survey in 2000, materials accompanying lectures and online information have been used more intensively. The use of interactive teaching offers has in fact doubled, but remains on a rather low level. The use of didactically prepared settings, like virtual seminars at on-site universities, has remained static and even partly receded:

> In some subject areas there are still different rates of use concerning the offers in the individual e-learning sectors. Apparently, only the use of materials and information is tending to level out. Materials and information have been more accepted than in 2000. Depending on the subject area, interactive teaching offers show mostly ascending developments, few are less in demand. Acceptance of virtual seminars has declined in most subject areas.

Net-based services offered by higher education institutions on the "digital campus" (e.g., online-access to libraries, net-based examinations, or evaluation) have become more and more important. They have to be considered as important building blocks of the digital learning and working environment of higher education institutions and discussed accordingly.

The consistent focus on multimedia content production that had rightly been part of the logic of the 1990s has, in fact, partly led to a cul-de-sac. The Internet is less a supplier of high-quality multimedia content, and mainly a source of data and information and the increasingly preferred way of communicating in higher education institutions.

The disillusionment at the end of the "second wave" of educational technology did not result in a principal rejection of digital media in higher education institutions. Due to the increasing general digitalisation of administrative processes, there are rather opportunities to "organically" integrate digital learning environments into university workflows: as soon as all-important data of "university life" are available online, teaching and learning on the web will be taken for granted.

The Notebook-University projects in particular pointed in this direction. These projects have shown how learning offers situated in virtual and physical environments can merge in a future digital university (Kerres, Kalz, Stratmann, & de Witt, 2004). The predominant view of a virtual campus as a universe of its own parallel to in-site university-life proved to be questionable. A central task for most (on-site) higher education institutions is to consistently use digital technologies in on-site teaching and create intelligent link-ups to net-based offers that provide gates to other learning environments.

In addition, these projects show that computers need not necessarily be used in seminars or lectures in order to capitalise on interesting approaches, but eventually beyond lecture and seminar rooms as well: the boundaries of the "experienced learning space" are expanding and the campus as a whole is more experienced as a learning space. Due to net-based forms of communication this impression is increasingly expanding as far as the students' (and teachers') homes. Precisely the

Notebook-University projects have shown us how net-based learning can support a different approach towards knowledge on the campus.

Some projects proved that e-learning can support and enhance different, more active, self-directed, and cooperative forms of learning. It became clear, however, that this added value is not inherent in e-learning as such, but has to be generated by appropriate media-didactical design. The point is to implement scenarios that create added value through e-learning and pursue different ways of teaching and learning.

Furthermore, the projects have pointed out that organisational structures have to be changed in order to be able to provide the necessary support. To this purpose, many higher education institutions have fundamentally reorganised their central units by reconsidering the layout of libraries, computing services, media services and other areas.

Higher education institutions are increasingly striving to define their positions and develop concepts about how they want to deal with e-learning. As strategic thinking has not been in given priority in this sector so far, this is a particular challenge for most German higher education institutions. By funding concepts covering higher education institutions as a whole, the current funding programme of the Federation aims in precisely this direction. The objective is to implement strategies for the integration of e-learning into higher education institutions. A second type of funding is aimed at topically focused utilisation and marketing strategies. Here, business models of consortiums are funded, which pursue the systematic and continued utilisation of products and developments.

At the same time the integration of e-learning at higher education institutions has brought about serious changes in the behaviour of students and teachers that have to be scrutinised and discussed with respect to their impact on studies. Here are a few examples:

- For many students Google has become the most important if not the only research tool. In some places the use of libraries has significantly declined. Many students hardly enter a university library.
- Seminars with a “link-list” and a possibly complete online library providing all necessary texts in downloadable form become the typical course format. The digital collection of semester texts supersedes research on one’s own account.
- Plagiarism and the handing in of copied or bought research papers are getting out of hand, especially because the legal frameworks of higher education institutes in Germany have largely ignored this problem.

The declared objective of the Federal Ministry’s funding policy, namely to make Germany the world leader in educational multimedia software, has definitely not been achieved. One important reason for this is that all other industrial nations also invested in this sector, and a global market for education has not developed as had been expected in some ways.

In general, the funding programmes have to be looked upon favourably. In addition to explicit successes in the media production sector other aspects must be pointed out that are not easily tangible. Here are a few examples:

- Funding supported progress in the broad development of competencies of teachers and students in IT-utilisation and the use of media.
- Funding and accompanying activities have supported community building and thus enhanced the interdisciplinary discourse on learning and teaching at higher education institutes.
- Over the past years, funding has substantially promoted the process of reflection on teaching and the associated reforms of studies. Without media projects some of the innovative forms of teaching and learning – that is, concepts subsumed under the term "constructivist didactics" – would certainly not have entered the discussion about higher education didactics as rapidly.

The funding programme has set the stage for the German higher education institutions in terms of the availability and use of media- and IT-applications in teaching. What they are facing now are major structural challenges that have already been systematically approached for years in other European countries. In fact, the e-learning discussion in Germany has clearly pointed out that, with their current structures and layouts, higher education institutions can by no means capitalise fully on the potential of IT-based offers. It therefore makes sense for current higher education policy to focus strongly on these systemic changes. The abilities of higher education institutions are thus braced for acting the role of strategically acting organisations competing with others and, in the process, developing as a whole.

All in all the German higher education institutions are probably facing one of the sharpest turning points in their history concerning their work and orientation. The recently introduced systems of quality management, of quantifying performance tests in all sectors, of the preparation of key data as a basis for budgeting and controlling, all this implies a drastic change for the German system of higher education institutions. Trying to learn from the experiences in other countries would – from the authors' point of view – mean that these methods should be consistently implemented, without, however, destroying the "heart" of the university, i.e. the essence of what makes the university stand out from other organisations that generate and communicate knowledge.

In this process of transformation e-learning can, depending on the specific higher education institution, make various contributions. Over the past years higher education institutions in Germany have established a large pool of relevant experience. In the years to come it will be exciting to watch how they will seize the chances of e-learning in terms of supporting sustainable innovations in higher education.

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Appendix 1

Extract of funding initiatives on the level of the 16 Länder (detailed overviews in: Cleuvers et al., 2004).

Baden-Württemberg

- In 1998 a five-year federal state funding programme named "Virtual University Baden-Württemberg" (Virtuelle Hochschule Baden-Württemberg) was initiated involving six joint projects across universities. The programme was implemented within the framework of the "Zukunftsoffensive Junge Generation" of the federal state Baden-Württemberg and was endowed with a total of 50 Million DM over five years. The projects represented all kinds of higher education institutions and covered a broad spectrum of subjects.
  - Docs 'n Drugs – Use of virtual cases in medical studies
  - VIB – Virtualisation in education. Didactical concepts enhancing university teaching
  - ViKar – Virtual Association of Universities Karlsruhe. Use of flexible knowledge modules
  - VIKI – Virtual network for cooperation. Cooperation and information network for the use of media in higher education teaching, documentation and exchange of experiences between new media projects
  - VIROR – Virtual University Oberrhein. Trial of exchange and distributed use of teaching and learning modules
  - VirtuGrade – Education of graduates at the University of Tübingen. Concepts of media-based teaching and learning
  - VVL – Joint Virtual Laboratory. Joint development of virtual laboratories at several higher education institutes
- 1998–2000 Multimedia-based courses of studies: Within the framework of a joint initiative of the German Telekom AG and the Ministry of Science, Research and the Arts, the funding programme aimed to improve the quality and effectiveness of teaching, studies, and postgraduate education.
  - University of Applied Sciences (Fachhochschule) Furtwangen digiMedi@ – Modules on digital media
  - University Tübingen BioInform@tics – Multimedia-based course of study in bioinformatics
  - Berufsakademien Baden-Württemberg, Universities Stuttgart ELBA – Multimedia-based course of study in "Electronic Commerce"
  - University Tübingen, University Heidelberg MURMEL. Multimedial training system for medical teaching
  - University Freiburg, international university-cooperation LEC online-teaching-network – "European Social Structure" and "Cultural Globalization"

- Innovative projects in teaching: The call for tenders on 8 March 2002 was answered with 30 applications, of which 14 projects were chosen and funded with some 2.3 million euros.

Bavaria

- Foundation of the Virtual University Bavaria on 16 May 1999: the objective is to sustainably integrate online-teaching into the regular courses of studies at Bavarian universities and universities of applied sciences (Fachhochschulen). Five faculties are represented ("Schools"): Informatics, Engineering, Medicine, Economics and Key Qualifications.
- The Virtual University Bavaria (vhb) is not a self-contained university, but a corporate institution of its responsible bodies, the state universities and universities of applied sciences of Bavaria.
- The responsible universities can participate in tender procedures for the extension of the vhb teaching offers and accordingly receive financial support for the creation of courses for the Virtual University Bavaria.
- The universities of Bavaria combine powers and competencies in the vhb in order to provide students with multimedia learning courses supplementing face-to-face-studies and enhancing knowledge. The vhb is a Bavarian university network facilitating professional and interdisciplinary exchange and cooperation regarding the development and provision of online-teaching offers.
- 2003 the vhb was facing closure, but is now secured and financed by the federal state of Bavaria.

Northrhine-Westphalia (NRW)

- The Kompetenznetzwerk Universitätsverbund MultiMedia NRW (UVM) was founded in 1997 in order to promote the use of new media in higher education. Multimedia activities in NRW higher education institutions was to be promoted with the help of stimuli for multimedia experts and pioneers at the universities.
- Until 2003 the UVM predominantly funded single projects based on scientific objectives. As a project management agency of the federal state NRW it has initiated the development of multimedia. Funds amounting to a total of 10.8 million Euros were distributed in 8 calls for tenders.
- 2004 saw a complete change in strategy. Instead of funding projects the systematic and sustainable integration of digital IC-technologies into higher education institutions was now to be supported. For this purpose the CeC Centre for eCompetence in NRW universities NRW was founded as a follow-up to the UVM.
- With CampusSource the federal state NRW is developing a portal for the extension and operation of learning platforms and software modules across universities. The objective is to distribute and use software programmes developed at the universities in teaching on a freeware basis. Proprietary developments will be available to developers and users at other universities based on defined licensing terms. CampusSource aims at national and international users at universities and universities of applied sciences as well as at other public and private educational institutions that want to offer online contents and means of communication between teachers and learners. Offers are geared towards software users and potential co-developers.

Appendix 2

Extract from the Audit Report on the funding programme of the Federal Ministry for Education and Research:[10]

Strong Points:

- Large pool of usable media products; good and homogeneous broad effect of the programme
- Some outstanding products (about 5-10% of product outcomes)
- Many (about 1/3) good products
- Most projects met their funding objectives fully or in part
- Community-building and networking
- Broad acceptance

Flaws:

- Gender Mainstreaming was not or only partly accounted for
- Marketing hopes did not materialise
- Sustainability was not ensured
- Products show obvious flaws regarding didactic added value
- Interests and learning styles of students was often not accounted for in many products
- Fragmentary or insufficient integration into communicative teaching and learning processes

Chances:

- Realisation of potential transferability in terms of a (horizontal) broad effect
- Pressure to sustainably integrate E-learning products can be used for structural reforms at higher education institutions (change management)
- Promotion of integration of IT-infrastructure with E-learning
- Capitalising on good products as "good practice"-examples

Dangers:

- Pending loss of competencies after radical stop of funding initiative
- Many media products might not be used any longer after funding has stopped

10 http://www.dlr.de/pt_nmb/Foerderung/Bekanntmachungen/Audit_Bericht_2003.pdf, under the supervision of Peter Baumgartner.

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Sharing while Competing: Austria's E-Learning Initiatives

1 Introduction

The Austrian system of tertiary education traditionally rests on intra-mural educational activities. Nevertheless, individual teachers and researchers found ways of integrating e-learning components in their teaching activities. Few of these activities, one might consider them as scouting, took place at an organisational level (e.g. the extramural version of the law curriculum offered by the Universität Linz). Most, however, were confined to individual courses or to the set of courses provided by a specific research group or by specific academic educators. Some of these were developed by those lecturers and their students more or less on their own. Others were developed using public funds.

In the year 2000 the Austrian Ministry of Education, Science and Culture (*bm:bwk*) started a "Millenium Initiative" of substantial visibility and impact in the tertiary sector. The initiative *Neue Medien in der Lehre an Universitäten und Fachhochschulen*, freely translated to „New media in tertiary education" and in the sequel abbreviated to *nml*-initiative was a strategic effort to engrain e-learning in Austria's tertiary education.

This chapter focuses on that initiative, its effects, and on developments that took place past the funding period. However, to understand a bit of background, it first gives an overview of the Austrian system of tertiary education. The chapter continues by describing the *nml*-initiative. The focus on this initiative is justified because it made e-learning a recognized topic in the landscape of tertiary education. Of course, it is interesting to see, what happened after the two rounds of funding provided by this initiative were over. Section 4 zooms in on the *Forum Neue Medien Austria*, for short *fnm-austria,* a network uniting those who are interested in furthering e-learning. Following chronological order, chapter 5 reports on the initiative to support the implementation of institutional e-learning strategies launched in 2005. The chapter concludes with reflections on these developments and on future needs of the e-learning domain.

2 Universities and Fachhochschulen

Austria's university system rests on pillars of high tradition. The *alma mater rudolfina*, now the University of Vienna, founded by Duke Rudolf IV in 1365, is one of the oldest universities in Europe. Since then, further general universities have been founded in Graz, Innsbruck, Salzburg, Linz, and Klagenfurt. Technical universities have been founded in Vienna and Graz, and further discipline centred universities such as the University of Economics, of Agricultural Sciences, or of Veterinary Medicine have been founded in Vienna. The Mining University is located in Leoben. A rather recent new foundation was the Donau-Universität Krems, an institution mainly dedicated to post-gradual education. With the *Universitätsgesetz* (*UG*) 2002, the faculties of medicine became independent. Thus there are now Medical Universities in Vienna, Graz and Innsbruck.

The Art-Academies, amongst them such world-renowned institutions as the Mozarteum Salzburg, used to be regulated under a special law. With a law dating from 1998 (KUOG), these six academies, specialising in music, performing or visual and plastic arts, applied arts, or design respectively, have been organizationally integrated in the university system. They are now referred to as Universities of the Arts. With the *UG* 2002, they are regulated at the same legal level as the sixteen scientific universities. Where necessary, some very specific regulations made sure that they could keep their specific identity and e.g., that students could be selected on the basis of their artistic qualifications.[1]

This traditional system of scientific and artistic universities has been extended in 1993 by the *Fachhochschul-Studiengesetz* (FHStG) allowing *Fachhochschulen*[2] to be established. While the universities mentioned so far are organized as institutions under federal governance and funding, *Fachhochschulen* were to be funded only to a certain percentage by federal funds. The remaining money should come from private business, from local governments, or from city councils.

The charter of these *Fachhochschulen* aimed at a highly streamlined form of education in fields of high demand in the labour market. Their graduates should fill the gap between those leaving school right after secondary education and univer-

1 Till July 2005, scientific universities had to accept any Austrian holder of the general maturity certificate. Foreign students had the additional requirement of showing evidence that they are eligible for university studies in their home country. In July 2005, due to a ruling of the European Constitutional Court, this additional requirement for foreign students had to be dropped. To cope with the new situation, entry examinations are now also possible for scientific universities in certain over-subscribed fields of study,.

2 According to the *Terminologiewörterbuch Hochschulwesen*, (Binder et al., 1999), this term does not translate. – To avoid a complex German word, I will occasionally refer to *Fachhochschule* by the abbreviation *FH*.

sity graduates. Teaching was to be oriented towards application and not towards research. Nevertheless, in the course of development of these institutions they have been granted the right to perform research and their graduates are allowed to continue after a one-year funnel-in period with Ph.-D.-studies at universities in the specific field they had originally studied. Taken together, this lead to the fact that the officially un-translated term *Fachhochschule* (for short *FH*) got translated by most institutions to "University of Applied Sciences". Some relate in translating their name to English to British Polytechnics.

In contrast to scientific universities, *Fachhochschulen* had *ab initio* the right to select their students by entry examinations. This of course had effects on the student population of those university degree programmes that are in direct competition. It might be just anecdotal evidence; nevertheless it well describes the situation: When a *Fachhochschule* competing with the Informatics degree I was supervising at this time, we feared a huge drop in number of students. Actually, this did not take place with the newcomers. We noticed this drop only indirectly at the end of the first semester and again at the end of the first year. Then, we also witnessed highly non-normal grade-distributions for exams. The conclusion to be drawn was that the general interest in degree programmes related to informatics prohibited a drop in the original inscription. Further, we still got the most active and most interested students. We also got those who failed in the entry exam of the *Fachhochschule* and those who did not dare to expose themselves to such an exam. The latter was the clientele that marked the drastic loss within the first year of study. The slice of the student population that was usually between these two extremes was missing though. It was to be found at the competing *FH*-programme.

Such little stories seem irrelevant with respect to e-learning. They should show, though, that the relationship between universities and *FHs* was and still is not free from friction. Representatives of each of the institutional frameworks blame the opposite structure for a number of inequities. Sometimes, this turns into local education-political wars or skirmishes. In the light of this situation, it is noteworthy that the *nml*-initiative addressed both kind of institutions and, in most cases based on personal acquaintances between university- and *FH*-lecturers, consortia were formed were universities and *FHs* productively co-operated (Mittermeir & Zwischenberger, 2003).

For sake of completeness it is to be mentioned that accredited private universities may operate in Austria since 1999. But as their role in the tertiary educational sector is limited, this chapter will not single them out specifically.

Another interesting "environmental factor" was that 2000 one could see already the contours of the new Austrian university law, the *Universitätsgesetz 2002* (*UG*). This law aimed at releasing the universities into independence from the authority dominating at this time, the Ministry of Education, Science and Culture. This had interesting organization-psychological effects. Past behaviour followed too often the pattern “We children against the powerful rich uncle”. Educational institutions were aiming to get most of the resources available, either by being nice and obedient or by being nastily persistent, whatever seemed most adequate in a given situation. Now, concepts such as self-governance and financial responsibility appeared on the horizon. The strong and mighty hand was to be withdrawn and replaced by a system of contracts. The central authority (and its responsibility) for coordination vanished with the *UG*. It gave rise for self-responsibility and identification of institution-specific research and teaching profiles and, hence, to competition.

In the year 2000 universities hat still the leadership elected under the law of 1982. However, the notion of competition between institutions was already there and hence the stipulation to look for cooperation as well as the requirement to make results freely available to other institution of tertiary education was somehow running against the current *Zeitgeist*.

Given these conditions, it might be seen as a surprise that the *nml*-initiative still became a success in crossing several borders. Besides leading to interesting projects it created also an autonomous organisation-structure, the *Forum Neue Medien in der Lehre Austria, fnm-austria*, where representatives of the tertiary sector cooperate to further e-learning and to act as a body of united interests of researchers and academic teachers aiming to improve their educational activities by proper use of information technology.

3 The *nml*-Initiative

The initiative *Neue Medien in der Lehre an Universitäten und Fachhochschulen,* New Media in tertiary education, for short, *nml*-initiative, announced in 2000 was perceived as a kind of big bang in the Austrian system of tertiary education.

Not that the ministry had not funded e-learning projects already before. The officers working in the ministry’s department of teaching innovation were instrumental in the establishment of the MeDiDa-Prix, a price for media-didactical innovations co-sponsored by Germany, Switzerland and Austria and open for nominations from educators or educational institutions of these countries. Further, this department sponsored projects for teaching innovation on the basis of individual applications.

Valuable as these activities were, there was no overall strategy behind these individual projects and the strategy behind a price like the MeDiDa-Prix is probably too high level to hit ground with the large majority of educators or heads of institutions.

The *nml*-initiative was quite different in this respect. A ministerial letter invited heads of institutions and their deputies responsible for education to an opening event where total funding in the amount of 100 millions of Austrian Schilling was announced. This sum (less impressive when converted to € 7'267.441,–) was unheard of at a time when the Schilling was still legal tender in Austria. The hundred million ATS were in everybody's mind and, as usual with big numbers, gave rise to expectations on the boundary between realism and phantasm.

Likewise, the structure to administer this initiative was innovative and unusual. Formally, the minister reserved himself[3] the ultimate right of decision. But it was clear from the outset, that the key decisions should be prepared and basically taken by a steering committee consisting of representatives of educational institutions and e-teaching experts from Austria as well as from Germany. The organisational structure has been drafted by an expert of organisational development who acted as consultant for the initiative. The cornerstones of this structure as well as the central aims of the initiative were described in the "Green book", published by the ministry, carrying in its title the name of the initiative (Ecker et al., 2000). It is perhaps worth mentioning that the initiative withstood a change in the person (and political party) of the minister.

3.1 Organisational structure of the *nml*-initiative.

Figure 1 is an attempt to show the organisational structure of this initiative; an initiative that started from a central authority and was intended to end as a kind of grass-roots movement. One might be sceptical towards such an aim. But being involved with the initiative and its aftermath in various roles from the early steps till current, I dare to say that it went already far on this way. Depending on aspirations, some might even say this goal has been reached.

The "trick" was that the roles and players having central authority stepwise recessed. Firstly, the ministerial officers gave their authority to the steering committee. Secondly, the steering committee had its mission limited in time. As the initiative officially ended, it had the vision that the body referred to as Forum (i.e. the delegates assembly) will adopt what remains as persisting tasks so far handled by the steering committee.

3 The initiative started under Minister Dr. Caspar Einem. Currently, Mrs. Elisabeth Gehrer is *Bundesminister für Bildung, Wissenschaft und Kultur.*

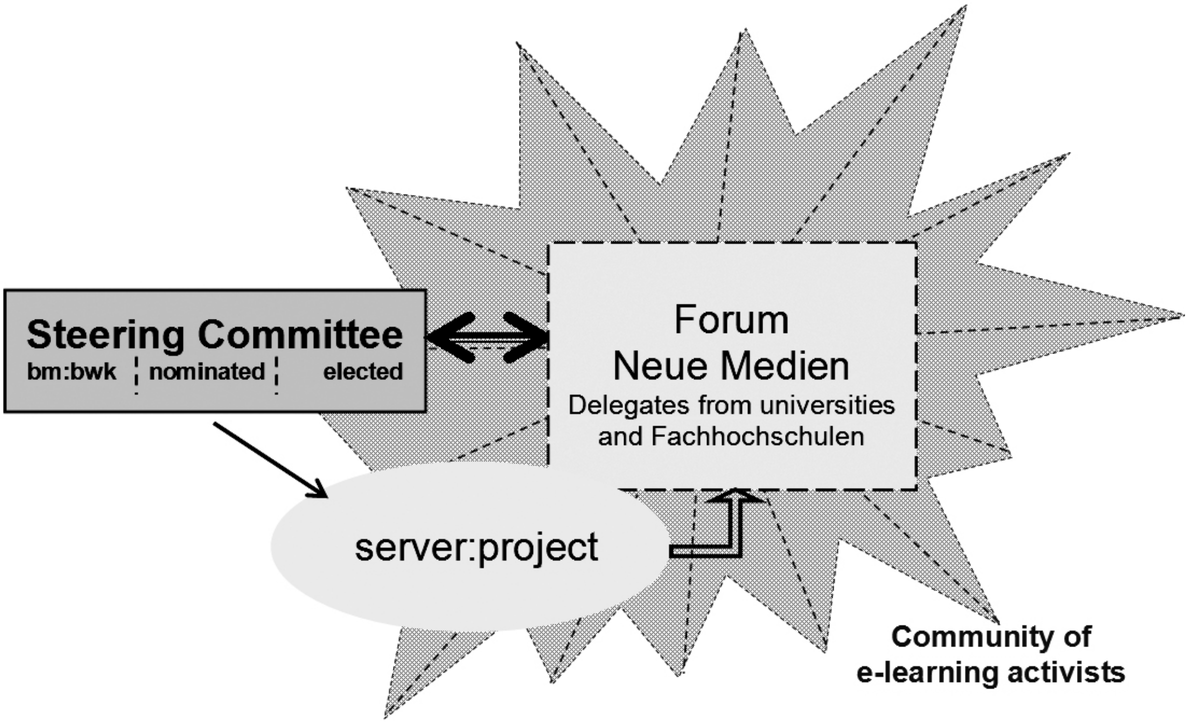

Figure 1: Organisational structure established by the *nml*-initiative

The steering committee consisted of the leading officer of the ministry's department for teaching innovation serving as chairwomen, its consultant for organisational development (without vote, but as master of the agenda), two further ministerial experts (one of them already retired, hence knowledgeable but somehow independent), six e-teaching experts, among them two foreign experts, three Austrian experts with background in university teaching and management, and one expert responsible for education initiatives of the chamber of commerce. The remaining six seats in the body of fifteen persons were filled by individuals elected in the opening event of the initiative. The election yielded one highly visible expert from each, a university and a *Fachhochschule* as well as – perhaps surprisingly – four university vice-rectors responsible for teaching affairs.

The electoral body were the authorities invited by the ministerial letter and representatives nominated by the deans of study and vice-rectors for education or comparable leading authorities from *FHs*. In several cases, due to the perceived significance of the programme or due to lack of visible experts for e-learning, these authorities nominated themselves. Over time, this assembly evolved into the current delegate's assembly of *fnm-austria*.

While the steering committee could have degenerated to a body of representatives for institutional interests, both, its leadership and its members deserve honourable mention for not digressing in this direction. They rather structured the initiative, defined the rules for the selection process of funded projects and made other structural decisions. Eventually they took the responsibility of weighing externally solicited reports about the projects and to propose the final decisions to be taken (and accepted) by the minister.

Amongst of the initial decisions was to award one particular institution the so called *server:project*. This was seen as a support structure instrumental for community building and thus establishing an e-learning scene. One of the duties of this *server:project* was to organise the semi-annual Business Meetings. These were initially seen as a meeting of delegates from the individual educational institutions, i.e. the continuation of the *Forum* that initially served as electoral body for the six elected members of the steering committee. Soon, it turned out that further e-teaching activists got interested in these events. Hence, they were opened and developed eventually into e-learning workshops or conferences. On the other hand, the delegation principle needed to be reconsidered. Hence, after a survey of the *server:project*, the initiative choose to define clear rules as to how many delegates an institution could nominate into a (closed) delegates assembly of the Business Meeting. Their role was explicitly defined to serve as link between the initiative and the educators of their organisational sub-unit. The rest of the workshop-like Business Meetings became open for anyone interested in the reports and project presentations offered. Later on, specifically the funded projects had to present their results in these workshops. However, their programme benefited also from a lot of contributions from projects conducted outside of the initiative.

The "community" is to be seen broader than the attendants of Business Meetings though. It is the union of those interested in e-learning on the tertiary level. This group of educators was and still is the main target of the *server:project*. These colleagues are provided with news-lists, e-mails, and web-pages.

The six elected members of the steering committee had a special role in maintaining the information flow between the committee and the community represented in Business Meetings. But also some nominated members as well as the ministerial officers were present at these events.

3.2 The call for proposals

Considering the fact that the Austrian e-learning scene was still in its infancy, the steering committee decided to split the available funds and prepare two different calls for proposals.

The first one was published in fall 2000. It was planned to award roughly 60 % of the funds. The second one, intended to give also those just entering the field a chance, was to be published a year later.

A background aim of the initiative was to obtain long-lasting institutional effects. Hence, individuals were barred from applying. As individual proposer, only complete universities or faculties, or a complete *Fachhochschule* were eligible. If entities of lower granularity such as university institutes or individual degree programmes of *FHs* wanted to apply they could do so in consortia comprising at least three of such entities. This was in so far a novelty in the Austrian scene as research funding is strictly person-bound. Further, the requirement of co-operation for entities below faculty level was also new. Funding of co-operation was rare or non-existent so far. The fact that this requirement for co-operation came at a time when institutions just realised that they are competing on the educational market can be considered as a special spice of the initiative.

The criteria for project assessment were already prepared by the Green Book. It stated as aims:

- Process based improvement of teaching quality; i.e., multi-medial and interactive features were to be used to improve teaching quality. Mere digitalisation of content would not be funded. Hence, the assumption was that with the results of funded projects also the educational process had to be changed.
- Improving cooperation and exchange between educators, even across disciplinary boundaries. A special cfp requesting bids for a *server:project* can be traced back to this aim. The *server:project* had to play a special role for networking, community building, and information exchange.
- Improvement of accessibility of higher education, aimed notably for those groups for whom time- and location-bound instruction constitutes a barrier. Continuous education and updating of the knowledge of graduates was specifically mentioned.
- Sustainability was also a key aspect. Besides the fact that only institutions or their organisational sub-units could apply, applicants had also to demonstrate that resulting e-learning products would be integrated in the respective curricula and weighed with ECTS credits.

It might be noted that this list did not contain aspects of cost saving or aspects of mass education. Projects investing just in technology were also banned. On the contrary, it was promised (and effectuated!) that investments in infrastructure necessary to bring the products developed into operation will be granted during the succeeding budgeting period.

The steering committee refined on these high level goals. The criteria listed in the call were

- Practicability of the approach and chances for sustainability;

- Degree of innovativeness, international competitiveness; possibilities for cost reduction (here it comes, but relatively low key) resp. reduction of the actual duration of degree programmes[4];
- Characterisation of user population (number of users, potential to improve their course of studies). It was made clear that the target group consists of students, graduates, teachers in tertiary organisations, and persons interested in continuous education.
- Didactical approach;
- Usability for both, students and teachers;
- Potential to foster self-control and self evaluation;
- Improvement of administrative processes that might improve the quality of the overall course of studies. Thus, not only content based projects were aimed at. Projects defining a new basis for the organisation of study programmes were also eligible.
- Methods and processes for quality assurance.

Projects had to have a maximal development time of two years and the results were to be platform independent and freely available for Austrian educational institutions. A maintenance period of three years was also called for.

Handling of the process was fully electronic. On the regularly updated *nml*-website, frequently asked questions were clarified. Examples of such clarifications are that a project had to provide more than transfer of content from conventional resources to CDs or to the web or the fact that applicants had to state how their project was integrated into existing or future curricula. Further, procedural or financial clarifications were given.

The call foresaw a two-staged proposal and evaluation process. First, abridged versions of the proposal had to be turned in. These were to be screened first by a sub-panel and in case of diverging opinions by the full steering committee. Successful proposers were invited to submit full proposals. These were sent to external (mainly foreign) reviewers. On the basis of these reviews the steering committee, again structured in sub-panels and eventually meeting in plenum, finally decided on which projects should be contracted.

The harvest of the first round hit the steering committee by surprise. By the deadline, 24th of Nov. 2000, 92 applications were turned in and the call was financially over-subscribed by orders of magnitude. Short before Christmas 2000, 26 projects

4 To obtain their degree, Austrian students on the average need more semesters than prescribed in the official curricula.

were invited for submitting a completely developed proposal. Out of these, 13 projects were funded with a total volume of 4'143.169,35 (Auth et al., 2003, p. 40). The final recommendations of the steering committee were taken in April '01.

Evaluating the results of the first round, the steering committee noticed that the distribution of scientific fields represented in the set of proposals changed during the process. While the distribution of the short proposals was wide spread, technical and cross-science methodology projects became more prominent in the second round. Finally, technical sciences dominated. To compensate for this, the second call specifically invited representatives from the humanities, from social sciences, as well as from the universities of the arts to submit proposals. It also stressed the importance of proper interlinking of consortia. Nevertheless, still all fields were still eligible.

For some projects of the first round, discussion became necessary during the contracting period. Since the funding contract had been developed in parallel to the selection process not all conditions were anticipated by the proposers. Thus, while sustainability was called for in the call, the concrete form of the three year maintenance period, free provision of products within the tertiary sector etc. might not have been entirely clear at the outset. Hence, different projects reacted in a different manner to these requests. But finally, all contracts got signed, be it with moderate changes in the proposing consortia.

In the second call, criteria and process remained unchanged and conditions were clear right from the beginning. Proposers saw that only strong consortia with projects carefully planned and prepared have a chance. Hence, only 64 proposals were turned in. But since only the smaller part of the allocated funds was left for the second call, this amounted again to a financial overbooking by a factor of four. 22 proposers were invited for refining their offer to full fledged proposals. Twelve projects were eventually funded amounting to a total investment of € 3'904.290,– (Auth et al., 2003, p. 41). Thus, considering also the money set aside for overhead of the initiative, one realizes that the success of the first round motivated the ministerial decision makers to raise the overall budget. The planned quota of 60 + 40 percent was raised by an increase in budget to an actual quota of finally 63 + 60 percent.

Summarizing the results of both calls, two projects proposed by a particular faculty were funded. In three projects, only pairs of proposers were cooperating. The remaining projects were proposed by consortia consisting either of scientific institutes of the same domain or of consortia consisting of various content providers cooperating with one or several technology providers. The bulk of projects (13) consisted of consortia with three to five members, the remaining seven had more than five consortia members. To the latter category belong also two projects aiming at the education of educators.

While the second round specifically invited proposers from the humanities or from the arts, the project selection stayed clear from a disciplinary bias. Nevertheless, in spite of a dominance of projects from technical fields (6) and natural sciences (6) the goal of a wide representation of disciplines was somehow reached as can be seen from the project presentations in the brochure reporting in detail on the initiative (Auth et al., 2003). The *server:project* provides at http://serverprojekt.fh-joanneum.at/ an electronic account of these and other e-learning projects. In the light of the rather strenuous relationship between universities and *Fachhochschulen*, it is noteworthy that 13 projects consist of consortia where university and *FH* employees cooperate.

Projects had to accept a multi-stage evaluation process. For each project was a member of the steering committee nominated as contact person. This person prepared and moderated the mid-term and final evaluation. These, as well as an intermediate written evaluation made necessary to maintain the projects financially liquid, were done by a sub-panel of the steering committee. The openness of the approach was demonstrated by organizing mid-term and final evaluation mainly in a workshop-like style were all projects of the respective round were present.

No final word can be said about the maintenance phase that goes for the projects of the first round till fall 2006, for those of the second round till fall 2007. However, at an intermediate presentation last December, all 25 projects were still alive. At the end of the maintenance phase, a post-evaluation is foreseen. Projects are advised to stay in contact with the reviewer who assumed godparent-hood for the respective project throughout development.

The strategy individual projects are following during the maintenance period are varied. A few seemingly are taking a rather defensive approach. Most, however, it appears, found ways of further growth, be it by using students and/or permanent staff to add to what was available at the end of the funded period or be it by involving further partners. Some of them found their partners on the European level in EU funded projects. Thus, while aspects of sharing were initially seen rather sceptical by some proposers, in hindsight, most saw the advantages of the co-operations.

4 *fnm-austria*: A Network of e-teaching Activists

Sustainability was one of the central keywords of the *nml*-initiative. Thus, not only the individual projects should persist. They should also serve as nuclei for the further development of an e-learning scene at the tertiary level. However, even if, due to the requirement for co-operation, basically all major institutions were in one way or another involved in the initiative, one must not expect that 25 projects suffice to achieve this goal. Structures were needed to let the community grow and to make sure that the trend for independence and autonomy stipulated by the university law 2002 will not prohibit further cooperation. The idea was to establish a kind of network over the institutions active in e-learning and to make sure that the mechanisms of information provision and information exchange, so far mainly established by the *server:project* (Pauschenwein, 2003) persist.

Establishing a friendly society seemed to be the closest legal framework to an open network of co-operating activists. The constitution for what became the *Forum Neue Medien in der Lehre Austria* (Forum new media in (tertiary) education – Austria), for short *fnm-austria,* was drafted by a subgroup of the delegate's assembly. *fnm-austria's* mission is to support the use of new media in tertiary education, considering didactical, organisational, experimental and artistic, as well as technical aspects. To support a vivid network linking the members of the *fnm*-community, providing information and documentation and supporting quality improvement of media supported teaching are facets of this mission.

Regular members of this society could be Austrian universities and *Fachhochschulen*. Other institutions subscribing to *fnm-austria's* mission could become extraordinary members. To account for the balance between big schools such as the University of Vienna and one or the other relatively small *FH*, members are represented by delegates such that the number of delegates each institution can nominate is to be proportional to the number of students. However, to smoothen out extremes, the number of delegates has to be within the range of 1 (less than 1000 students) to 4 (over 5000 students). The membership fee also varies with the number of students. It is in the range of € 500,– for small to € 2.000,– for big institutions. The rationale behind these numbers is that the benefits from services provided by *fnm-austria* increases with the number of students. Another argument for this rule is effectiveness of information transfer. Bigger institutions need more persons to spread the word. About one person per faculty as delegate was used as vague rule of thumb.

Having institutions as members of this society allowed to maintain the structure to distinguish between delegates, who as members of the general assembly had a voice in forming the society's opinion and those colleagues who were active in one or the other form of e-teaching, but had no interest in managerial activity. Thus, the distinction in a delegate's assembly and the community at large that emerged during the funding period could be maintained.

To steer *fnm-austria*, an executive committee consisting of six persons was established. To account for the delicate relationship between *Fachhochschulen* and universities, the constitution foresees that each role is filled by a pair of representatives, one from a *Fachhochschule* and one from a university. Hence, there are two presidents, two vice presidents and the rules of procedure foresee that chairing sessions and taking minutes is done in strict alteration between representatives of different types of institution. Needless to say that once operations started to be successful, such security precautions lost their importance and I do not recall a conflict in this committee that run across the university/*FH*-boundary.

fnm-austria assumed the responsibility to maintain the structure and services built up by the *server:project.* For assuming this responsibility, it obtains some basic funding from the ministry of education, science, and culture. This basic funding was first of all seed money to start operation and to solicit members. Now, it is still a most important source of financial resources, since membership fees, the second financial leg of *fnm-austria* have to be kept moderate to avoid that institutions switch from membership status to free-riding. So far, this seems to work out, since all but one Austrian universities as well as the large majority (all major) *Fachhochschulen* became members of *fnm-austria*.

The services provided by the *server:project/new* can be perused at the web page http://serverprojekt.fh-joanneum.at/sp/index.php. The spectrum of activities consists of maintaining and servicing mailing and discussion lists, editing of a monthly newsletter, and maintenance of a content pool, providing information on publicly funded projects. The *server:project* is also still chartered with organizing the semi-annual Business Meetings in linear succession of the Business Meetings established during the *nml*-initiative. So far, due to the ministerial seed money, private sponsoring and sponsoring by the hosting institution, participation on these meetings is for free. *fnm-austria* takes care that *FHs* and universities alternate as hosts. It is a sign of high esteem that institutions line up for hosting business meetings.

It took about a year to establish and consolidate *fnm-austria*. This time span might be justified by the fact that its officers, quite active in their main job in teaching and research, work on a honorary basis. But also the change in university leadership necessary by the new university law made it difficult to identify the right persons. With changing roles and new persons in the rectors' chairs, priorities might have shifted and even if this was not the case, the substantial inner-organisational changes stipulated or even enforced by the law required full managerial attention. The more we are happy to have basically full coverage with universities. *Fachhochschulen* had not such turbulent times. But their different funding structure might account for some remaining free-riders.

After this initial year, the board set out for new challenges. The emerging strategic initiative discussed in the next section provided one.

5 From Projects to Strategy

As an e-learning lobby, *fnm-austria* strived to convince the Austrian ministry about the need for a further round of funding. The 25 projects of the *nml*-initiative, as decent as they were, could not bring an “e-learning summer”. However, the open mind and positive mood created by the initiative should be used to further propagate the merits of high quality media supported teaching. After all, the effect of the two calls was much more positive than could be reported by official figures. Many of the proposers who were not selected still benefited from the co-operations they established and quite a number of them found ways to realise their project, probably on a reduced level, with other funds. Hence, at the end of the *nml*-funding period there was a very positive climate and those observing the scene feared that this momentum might get lost if it is not backed by a new impulse.

In a farewell reception for the steering committee of the *nml*-initiative, minister Gehrer expressed her gratitude and encouraged her officers to continue with their activities. Hence, preparations for a new call started in spring 2004. Based on recommendations of the outgoing steering committee, this call was to support strategic developments rather than individual projects. The rationale behind this recommendation was to support intra-organisational synergies and co-operation and, last not least, to institutionalise e-learning at the curricular level rather than on the level of individual courses.

It was to be learned that in times of scarce money even highest level encouragement does not suffice to launch a new initiative. To publicly announce the transition from the *nml*-initiative to something new, the ministry organised in co-operation with *fnm-austria* and linked to the 9th Business Meeting a broadly announced presentation *Vom Projekt zur Strategie* (From project to strategy) in December ’04. This event was targeted specifically to decision makers and gate keepers in educational matters as well to those holding new leadership positions in the reformed universities. The condensed demonstration of results of the initiative, discussions in workshops, and the possibility to enter detailed discussions with the representatives of the projects might have convinced some sceptics. At least, it showed that e-learning is not the cheap way of bringing the assembly line or teaching automation into the classroom. The breadth and depth of solutions presented was proof that the initiative focussed indeed on teaching quality as overall goal.

It turned out that the call for a new initiative focussing on the implementation of e-learning strategies was just published in time, three weeks before this event. Organisations had time till mid March to sharpen their strategy and get 60 % of the cost required to implement this strategy funded from this initiative. As before, the full process was handled electronically.

Details of this call termed *Entwicklung und Umsetzung von e-learning/ e-Teaching-Strategien an Universitäten und Fachhochschulen* (development of e-learning and e-teaching strategies for universities and *Fachhochschulen*) can be perused at http://strategie.nml.at/strategie/

This strategy-initiative was directed to universities and to organisations running and financing *Fachhochschulen*, i.e. the respective highest authorities of the respective institutions. To compensate for the comparatively moderate number of students per *Fachhochschule*, *FHs* were encouraged to enter co-operations. Other, e.g., regional co-operation was also encouraged.

fnm-austria welcomed this call for proposal as challenge to enter the race on its own, co-operating explicitly with a subset of its member institutions by proposing to take care of some of those aspects that should figure in the strategy of each institution but require for good reason co-operation and agreement if not standardisation on an intra-institutional level. This proposal addressed the following issues:

- Quality assurance
- Legal aspects of e-learning: open source, intellectual property rights, e-citation rules, etc.
- Career aspects and remuneration: consideration of teaching and development load, relationship of electronic products with respect to printed products with respect to their relevancy for academic careers.
- Content: conditions and framework for exchange of content, meta-data, granularity, etc.
- Support for strategy development.

As with this initiative all Austrian experts would have been formally timid, the selection was made by a committee consisting of e-learning experts from Swiss or German institutions only. They recommended out of the 22 proposals turned in 9 from individual institutions, the one from a cluster of co-operating *FHs* as well as the one from *fnm-austria*.

The current status (July 2005) of these projects is that the contract with the ministry has been formulated and the individual proposers take benefit of the summer vacations to set initial steps.

6 Past the Horizon

Given this situation, one arrives at the question: What's next?

The *nml*-initiative created visibility and, at least with a sizable number of lecturers and educational decision makers, a positive attitude towards media supported teaching activities. Prejudgements that e-learning is just the cheap version for the masses or the crutch for those who could not come to class have been reconsidered. Their believers diminish with each new project that reports positive effects.

At several institutions, e-learning circles have been formed. Some are rather of the stile of self-support groups based on mutuality; others are attached to the computation centre or to an organisational unit specifically dedicated to the improvement of teaching. The strategy-initiative supports the establishment of such support or facilitation centres. Larger institutions also offer in-house educational programmes to update their personnel with respect to e-learning, e-didactics or related issues.

Thus the plot that the ministerial initiatives create a kind of snowball effect worked. It worked least to the extent that its indirect effect largely exceeded the direct effect to be measured in the number of projects funded or the amount of money invested. But I see a number of boys and girls that want to partake in this snowballing game but lack either resources or partners to have a good game started up in their immediate neighbourhood. The consequence might be sub-optimal developments.

To refer those colleagues to EU funds will not help a lot, since most of them are not yet sufficiently established in the e-learning scene to be internationally visible. Of course, no government should fund second rated activity, but that is not the issue in this case. Here, excellent content and excellent methodology could be made available if resources and expertise are brought together for transferring it into a didactically adequate form for media supported instruction.

The other source for e-teaching development funds are the forthcoming financial agreements between the ministry and the individual universities. These *Leistungsvereinbarungen* (output driven service level agreements between each university and the ministry) which will constitute the basis of public university funding in the years to come, could list special development projects, hence also e-learning development projects, as auxiliary service provided for the public. As long as the individual projects can be fully realised within a given institution, this seems sufficient. But the experience from the *nml*-initiative has shown that cross-institutional consortia are not only effective during development, they serve also as assurance of the sustainability of projects.

The strategy to require at least institutes but not individual professors or lecturers as applicant is insufficient to ensure that indeed the organisational unit and not just the person is behind the project. Academic activity rests on the verve and creativity of individuals. Just hiding the person behind the name of an institution helps little and if there are fluctuations in the organisational unit's personnel, projects might be dropped or forgotten all too easily. However, if there are partners, possibly even partners that depend on particular services of this organisational unit, they will make sure that academic fluctuation does not endanger co-operative projects. From the perspective of sustainability it is of secondary importance

whether those who remain or succeed have to resume inherited work, or whether the project moves with the person.

While these considerations apply for both types of institutions, one has to mention that the new university law, becoming effective during the fall semester 2003/04 brought new persons in leading positions. It also defined the new role of a rector for studying (*Studienrektor*). The relationship between this rector for studying and the vice-rector for teaching affairs is specified in the charter of the individual university. In some cases, overlapping competences are resolved by having the same person nominated resp. elected in both functions. In principle, these new constructions should foster the focus on high quality and highly effective education. In reality, it depends on the specific person and her or his interpretation of what the educational topics of highest priority in this institution are.

Last not least, I should mention the Austrian Computer Society, *OCG*. They set forth to venture into an e-learning strategy project with the aim of defining a national strategy across all educational institutions, ranging from the (secondary) school system via the tertiary educational system to vocational training and on-demand learning on the job. As the group discussing these issues consists of people with very different background and interest, it is not clear, whether such an Austrian strategy will ever result. Nor is it clear whether the definition of such a strategy would indeed be beneficial for the country. It is beneficial, though, that this group does meet occasionally as this creates at least a progressive understanding that representatives coming from different corners face different challenges and that these challenges are all real and legitimate, given the respective context. If something less than a strategy, say a framework with some interface specification between different sectors of the educational system would result; the group will have achieved already a laudable goal. Venturing on a demonstration-project spanning the various educational sectors might be an avenue towards this goal.

7 Summary

With its *nml*-initiative the Austrian ministry for education, science and culture set an impulse that was strong enough to trigger an avalanche of attention and more than a snow slab of activity. This activity materialised in several e-learning projects developed on a funded and co-operative basis. But it motivated also others to experiment and to realise solutions in the small, largely on a self-funded basis.

The e-learning activists that brought these projects to life find a basis for communication and exchange in the *Forum Neue Medien in der Lehre Austria, fnm-austria,* a society consisting mainly of institutions providing tertiary education, i.e. universities and *Fachhochschulen*. This community is supported by the *server: project*, the operational unit of this society.

Further developments will take place in a more realistic assessment of e-learning and e-teaching. Both hype and fear seems gone. With the strategy-initiative, institutions are encouraged to build support structures and raise e-teaching activities from the level of individual activists to the level of building blocks fitting in a general educational strategy. Thus many parameters for further developments are properly set. Internal funding depends on the leadership of the respective institution (and its possibility to set free some resources). But it should be clear that in a given climate of competition between educational institutions, projects such as those of the *nml*-initiative will re-emerge only when a guiding hand requires co-operation in order to get funds. Though those with experience know the advantages of cooperation, this knowledge will help little if others are still believing in a gold rush philosophy or don't see that development of e-learning solution is a team effort.

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Additional electronic information

http://www.nml.at/ reports on the *nml-initiative* 2000–2003 of the bm:bwk. The projects listed there are still in the maintenance and post-factum evaluation phase.

http://strategie.nml.at/ reports on the strategy-initiative 2005 of the bm:bwk. The projects granted are in their upstart phase.

http://serverprojekt.fh-joanneum.at/sp/index.php home page of the server:project of *fnm-austria.*

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E-Learning in Switzerland

1 Introduction

Similarly to other European countries, first initiatives to introduce information and communication technologies (ICT) in higher education emerged in the 1980s in combination with hopes associated with computer-based training (CBT) and later on – due to the propagation of the Internet – with web-based training (Wessner, 2003; Charlier et al., 2004). In the beginning, there was no top-down component in matters of education policy in Switzerland, neither on a national nor on a university level. The first initiatives were evolved by single pioneers for technical or pedagogical research purposes. Overall, the introduction of e-learning into higher education evolved in two parallel, interacting threads: on the one hand, at the different universities themselves (bottom-up) and, on the other hand, due to national programmes (top-down) (Euler & Seufert, 2005).

Following an overview of the political structure and federalist education system in Switzerland, we shall present the development from the point of view of universities. Then we shall present and discuss the Swiss Federal Virtual Campus Funding Programme (SVC) and, finally, introduce the current e-learning scenarios in Switzerland.

2 The Political Structure and Federalist Education System in Switzerland

Switzerland is a nation shaped by the resolve of its citizens: it is not an ethnic, linguistic, or religious entity and has four official languages. It has been a federal state since 1848. The cantons – often referred to as the "states" – are the original states, which joined to form the Federation to which they transferred part of their sovereignty in 1848. There are German-speaking and French-speaking cantons, one Italian-speaking canton and cantons in which both German and French are spoken. In one canton (Grisons), German, Italian, and Rhaeto-Romanic (Rumantsch) are spoken. In table 1 additional facts about Switzerland are listed.

Table 1: General facts about Switzerland

Government type	Federal Republic
Cantons	26
Area	41,285 km2
Official languages	German, French, Italian, Rhaeto-Romanic (Rumantsch)
Border countries	Austria, France, Italy, Liechtenstein, Germany
Population	7,4 Million
Universities	21
Students[1]	142,245
Student rate 2004[2]	21.2% of high school graduates

In the spirit of "co-operative federalism",[3] the Confederation, the cantons, and the communes share responsibility for education. The Swiss constitution accords the main responsibility to the 26 cantons, which enjoy considerable autonomy in this field. But as can be seen in Figure 1, the Swiss higher education system is built on a complex interplay between the Confederation and the cantons in such matters as regulations, development, supervision, and financing. There are a total of 21 universities in Switzerland, which can be differentiated by three types:

- Two Federal Institutes of Technology (ETH)
- Eleven Cantonal Universities, one of which is a Distance University
- Eight Universities of Applied Sciences (UAS), one of which is a Distance UAS

The Confederation has regulatory control over advanced professional training and, therefore, is responsible both for advanced vocational training and for the universities of applied sciences. In addition, it has jurisdiction over the two Federal Institutes of Technology and the promotion of research. For their part, the 10 so-called university cantons are responsible for their respective cantonal university. These schools receive financial support from the Confederation and those cantons that do not have their own university.

1 For the amount per university see table 2.
2 For further information see http://www.bfs.admin.ch/bfs/portal/de/index/themen/systemes_d_indicateurs/indicateurs_des_hautes/hochschulindikatoren.approach.101.html [status 06-09-2005]
3 http://www.sbf.admin.ch/htm/bildung/bildung-e.html [status 04-15-2005].

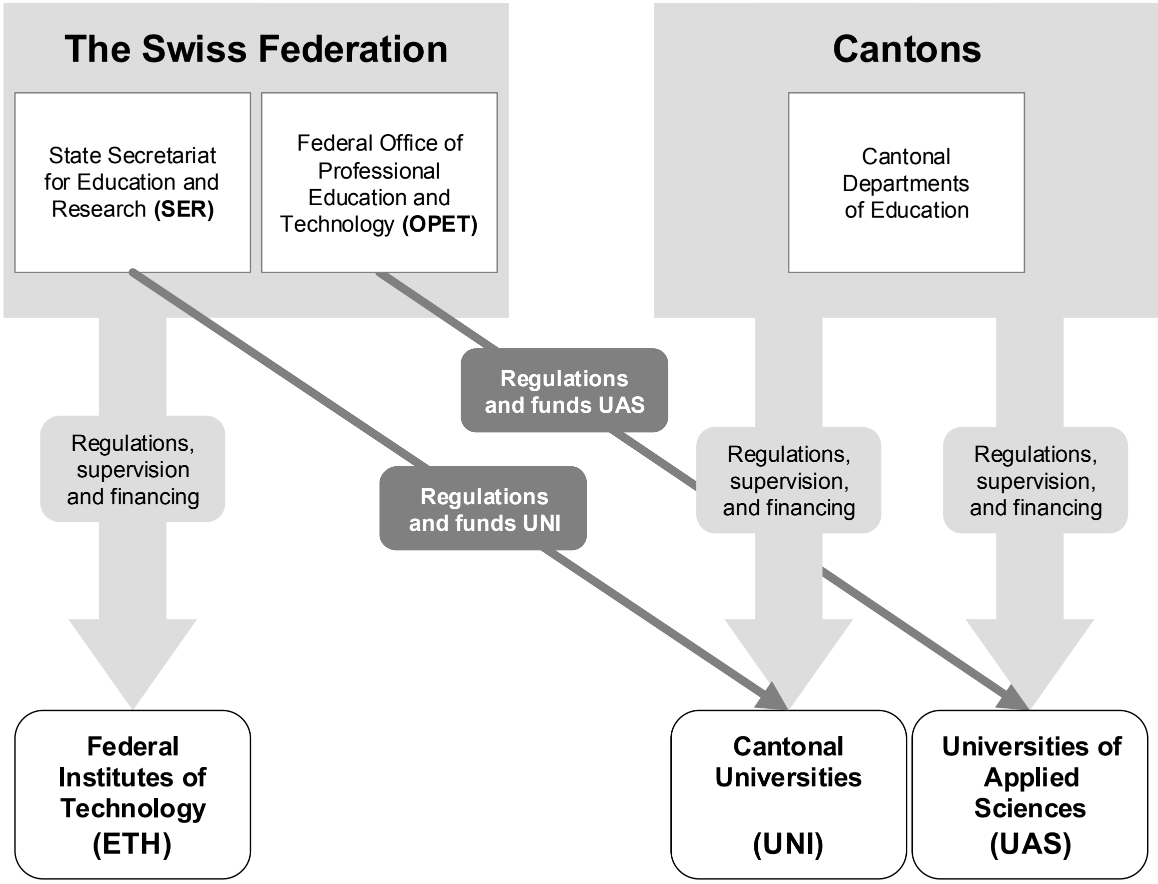

Figure 1: Distribution of responsibilities in higher education

3 The Evolution of e-learning Initiatives and Centres at Universities

With respect to the interaction between the initiatives originating at universities (bottom-up) and those launched by the Swiss Confederation (top-down), we can differentiate between 4 phases of e-learning evolution in Switzerland:

- Phase I: first e-learning initiatives and centres at universities without impact from the Swiss Confederation;
- Phase II: establishment of e-learning centres parallel but independent to the launch of the SVC Impulse Programme;
- Phase III: establishment of e-learning centres influenced or pushed by the Swiss Virtual Campus Programme;
- Phase IV: establishment of e-learning centres as a condition for universities to take part in the SVC Consolidation Programme.

Figure 2 provides an overview of the different phases with which e-learning is introduced into higher education: the establishment of competence centres at universities and the Federal initiatives.

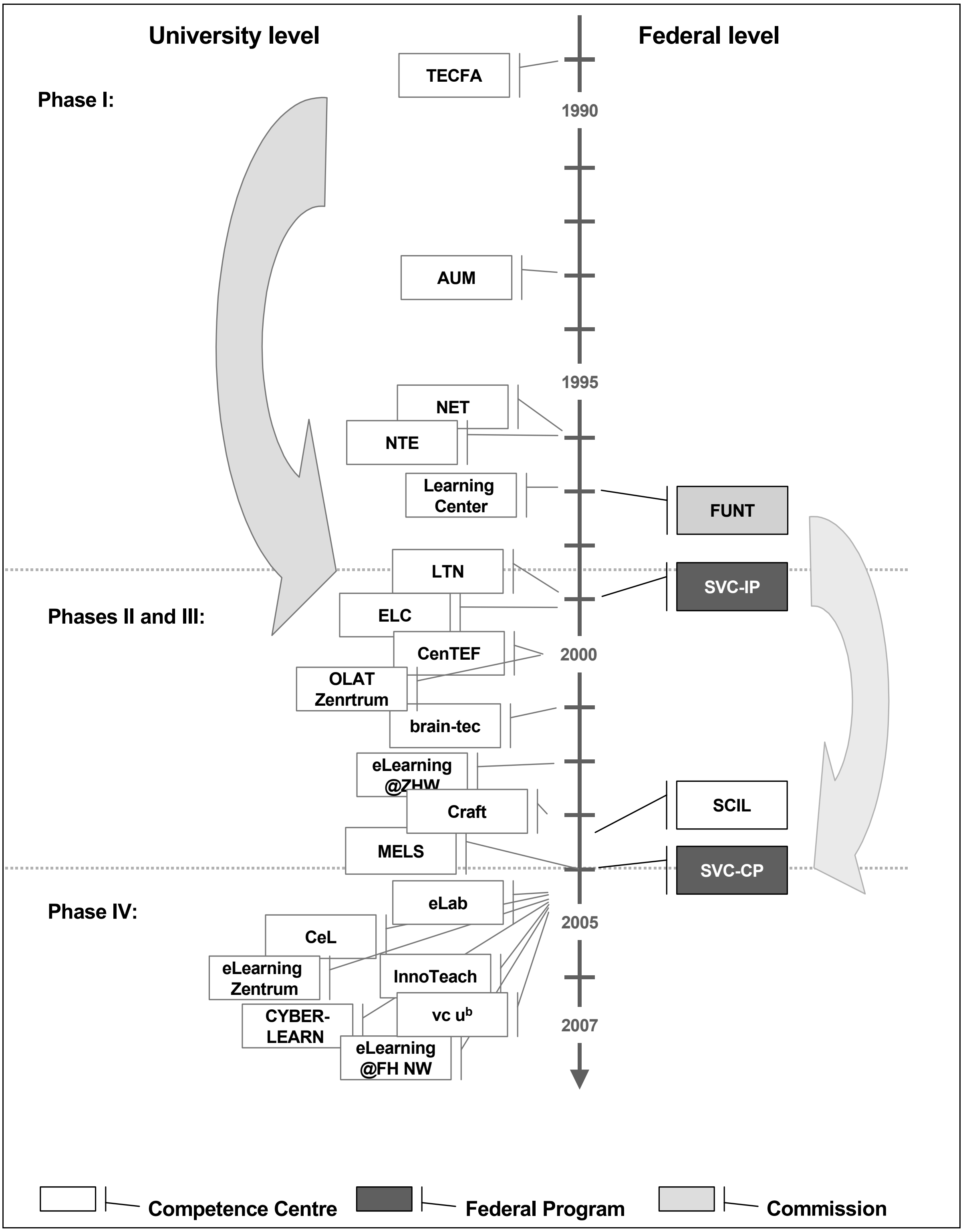

Figure 2: Development of eLearning on a timeline

Abbreviations: AUM: Abteilung für Unterrichts-Medien, UNI Bern; CeL: Centre de soutien au eLearning, UNI Geneva; CENTEF: Center Technologies pour l'Enseignement et la Formation, UNI Lausanne, CRAFT: Centre de recherche et d'appui pour la formation et ses technologies, ETH Lausanne; CYBERLEARN, UAS Western Switzerland, eLab: eLearning Laboratory, UNI Lugano and UAS Italian-speaking part of Switzerland, ELC: E-Learning Centre, UNI Zurich, eLearning@FH NW, UAS North-western Switzerland, InnoTeach, UAS Bern, Learning Center: UNI St. Gallen, LTN: LearnTechNet, UNI Basel; MELS: Multimedia and eLearning Services, UNI Zürich; NET: Network for Educational Technology , ETH Zürich; NTE: Centre Nouvelles Technologies et Enseignement, UNI Fribourg; OLAT: Online Learning and Training Platform, UNI Zürich, SCIL: Swiss Centre for Innovations in Learning, UNI St. Gallen; TECFA: Technologies de Formation et Apprentissage; Virtual Campus, UNI Bern; Virtueller Campus Luzern, UNI Lucerne; Wissenspool E-Learning, UAS of Zurich.

3.1 Phase I

The initial phase has two prominent but independent features. One type of competence centre resulted in the context of professional interest at the faculties, either for educational purposes, as is the case for AUM (Abteilung für Unterrichtsmedien) at the Institute of Medical Education of the University of Bern, or for research purposes as is the case for TECFA (Technologies de Formation et Apprentissage) at the School of Psychology and Education of the University of Geneva. The research field of TECFA includes cognitive issues in computer-assisted learning focussing on co-operative learning. Another initiative in the field of research was the Learning Centre at the Institute of Computer Science in Economics of the University of St Gall focussing on corporate e-learning.

The other type of centres was more technology-driven. Due to the rapid development of information and communication technologies (ICT), the possibilities of applying technical solutions for teaching and learning increased, and first visions for a virtualization of instruction emerged. In this context, the two service centres NTE (Centre Nouvelles Technologies et Enseignement, University of Fribourg) and NET (Network of Educational Technology, ETH Zurich) were originally established as projects and, in the meantime, have been positioned as central infrastructure divisions which also focus on the production of educational materials and didactics (see also table 2).

Motivated by these various initiatives, a study group on University Education and New Technologies (FUNT) headed by Prof Bernard Levrat was set up by the Swiss University Conference.[4] After an evaluation of the Swiss situation based on the requirements of universities, the group proposed to launch a Swiss Virtual

4 http://www.cus.ch/SHK/default.html [status 04-15-2005].

Campus Programme to the Federal government in 1997. The launch and development of the Swiss Virtual Campus is described in chapter 4.

3.2 Phases II & III

Parallel to but independent from the launch of the SVC impulse programme, universities first recognized the strategic potential of e-learning for educational development. Hence, the universities of Basel and Zurich established staff units at the vice chancellor's office in order to elaborate an e-learning strategy, establish the necessary support structures and offer the services required. The resulting centres are the LearnTechNet (LTN[5]) in Basel and the e-learning Centre (ELC[6]) in Zurich.

The LTN was established 1999 as a competence network. Existing e-learning competence has been expanded, linked, and integrated into already existing structures, thus effectively contributing to organizational development aimed at using and strengthening well-functioning resources, and at linking them with new structures and processes. With the creation of the LTN, the University of Basel is implementing its strategy for the integration of e-learning into the on-campus university as a measure designed to modernize teaching in higher education (Bachmann & Dittler 2005, Dittler & Bachmann 2003).

The ELC at the University of Zurich was founded in 1999. It supports projects that aim to integrate ICT into university teaching. Its coordination and support programme also includes those university projects realized within the framework of the Swiss Virtual Campus and channels all e-learning activities into Zurich's Online University.[7]

The early establishment of e-learning competence on the university management level led to a competitive advantage for these two universities within the Impulse Programme of the Swiss Virtual Campus. Already influenced or even pushed by the support needs of projects funded by the SVC, quite a number of further e-learning competences with a different main focus and affiliation was established (cf. figure 2 and table 2).

Independently of the federal funding programme, the Gebert Rüf Foundation launched its eTeaching programme in the spring of 2001.[8] The goal was to initialize a new centre for the sustainable, effective, and economic application of new technology in education and support it for five years with Sfr 6 million. The centre

5 http://ltn.unibas.ch [status 04-15-2005].
6 http://www.elc.unizh.ch/ [status 04-15-2005].
7 http://www.onlineuni.unizh.ch/ [status 04-15-2005].
8 http://www.grstiftung.ch [status 04-15-2005].

was to be affiliated with a Swiss institution of higher education and bring together experts in the fields of pedagogy, design and usability, change management, and software engineering. In the summer of 2002, the Gebert Rüf Foundation decided to establish the centre at the University of St Gall. Called SCIL (Swiss Centre for Innovations in Learning), the new centre was established in March 2003 and is affiliated with the Institute of Business Education and Educational Management of the University of St Gall (Seufert 2003). The mission of SCIL is to promote a competent and meaningful use of new technologies in university and corporate education and to provide consulting, coaching, research, and supervision to accelerate progress towards enhanced quality in education.[9]

3.3 Phase IV

With the launch of the SVC Consolidation Programme in 2004 the situation changed completely. One goal of the programme is to establish e-learning competence centres at all Swiss universities (cf. item 4.2). As a result, almost all universities that did not yet have a centre established one in 2005 (cf. figure 2). The affiliation and main focus of the different centres (cf. table 2) indicate the kind and significance of the e-learning strategy at these universities.

Table 2 (cf. appendix) lists all competence centres at Swiss universities[10] and classifies them according to their structure and organizational affiliation as well as their services and main focus.

3.4 Change of Trends

The development of e-learning in higher education in Switzerland has clarified an interesting interaction between the initiatives at university level and those on a national level. Four interesting developments can be observed:

- An evolution of competence centres names. In the beginning centres mostly had the term technology[11] in their names. Afterwards the term learning[12] was used. Some of the centres even changed their name. Meanwhile, the term teaching[13] increasingly became part of the centres' names.

9 http://www.scil.ch/ [status 04-15-2005].
10 Status up to April 2005.
11 NET: Network for Educational Technology , ETH Zürich; NTE: Centre Nouvelles Technologies et Enseignement, LearntechNet, etc.
12 eLab: e-learning Laboratory, UNI Lugano and UAS Italian-speaking part of Switzerland, ELC: E-learning Centre, etc.
13 InnoTeach, UAS Bern, eTeaching programme of the Gebert Rüf Foundation.

- An evolution of the affiliation of competence centres within universities. First initiatives originated in faculties. The next generation of competence centres was established as central infrastructure divisions. Recently, most centres have been affiliated on the management level of universities as staff positions.
- An evolution of the focus of competence centres from technological support to content production, didactic design, and educational development.
- The interaction between bottom-up and top-down initiatives changed. In phase I the bottom-up initiatives at universities initiated the task group of the Swiss University Conference and, therefore, promoted the idea of a Federal Swiss Virtual Campus. In Phases II and III, there was interdependent interaction between initiatives of the universities and Federal incentives. Last but not least, the fourth phase is characterized by the top-down strategy of the Swiss Confederation to implement e-learning competence centres at all universities.

4 The Swiss Federal Virtual Campus Programme

Even though e-learning in higher education has been primarily promoted by individual academic initiatives since the 1980s (cf. figure 2), the most important boost came from a federal programme, the Swiss Virtual Campus (SVC)[14], in both a quantitative and qualitative manner: the funding of more than 100 e-learning courses within an period of seven years and the embedding of e-learning into the modernization process of teaching and learning (in particular the Bologna process) in higher education institutions.

The Swiss Virtual Campus Programme, launched in 1998 by the Swiss Federal Government,[15] began operations in 1999 and is part of a process aimed at promoting the "information society" in Switzerland as well as enabling education – in particular higher education – to take advantage of the opportunities available via information and communication technologies (Lepori & Succi, 2003, Lepori et al., 2004). Therefore, the principal aim of the Swiss Virtual Campus Programme is to develop web-based teaching and learning modules that will be used in several regular study programmes of Swiss universities. In fact, the Swiss Virtual Campus Programme is more than a support programme for the development of single

14 http://www.virtualcampus.ch/

15 The Swiss Parliament approved the implementation of the Swiss Virtual Campus Programme as part of its project-linked contributions within the terms of the federal law on aid to universities, on the basis of the Federal Council's message of 25 November 1998, regarding the promotion of education, research, and technology for the 2000–2003 period [15]. The programme is principally based on a proposal made by the University Education and New Technology Study Group of the Swiss University Conference (SUC).

e-learning projects; it is one part of a broader initiative to modernize the Swiss university system.

Within the framework of the Swiss Virtual Campus, two partial programmes were initiated: the SVC-Impulse Programme (2000–2003) and the SVC-Consolidation Programme (2004–2007), both with a somewhat different emphasis and objectives.

4.1 The SVC Impulse Programme (2000–2003)

The main objective of the Impulse Programme was to promote and establish elementary expertise in the development and use of web-based interactive e-learning units at higher-education institutions in Switzerland. In this respect, the Confederation budgeted Sfr 30 million for the Cantonal Universities, Sfr 9 million for the Universities of Applied Sciences and approximately Sfr 2 million for the two Federal Institutes of Technology for the Swiss Virtual Campus Programme. Government funding and contributions from the higher education institutions themselves were available to support 50 projects developed from 2000 to 2003. The SVC Impulse Programme was divided into an initial phase comprising 27 projects and a second phase with 23 projects. The following concrete aims and contents can be identified:

- To develop accessible web-based teaching and learning modules, in particular for subjects that attract large numbers of students, by broadening university teaching into a range of available courses for both on-campus and corresponding students. Each project should create an e-learning course or modules that include teaching materials, exercises, seminars, or practical work as well as online or direct aids and assessments (self-assessment and examinations). The students should be encouraged to use all the information and resources available on the Internet as part of their real studies.
- To improve the quality of students' learning processes and strengthen interactive teaching by creating high quality teaching materials by state-of-the-art methods. This high level of contents, didactics, and ergonomics should also guarantee a demand for these courses outside of Switzerland.
- To strengthen cooperation between universities. Several institutions should be involved in each project. The e-learning units developed should be part of a curriculum of participating universities, and a system of credit points should be set up to support the virtual mobility offered by the Swiss Virtual Campus as well as life-long learning over the long term.

The two target groups and undisputed ‘protagonists’ of the SVC Impulse Programme were, on the one hand, the project teams and, on the other hand, the mandates, which were to ensure optimum conditions for a successful Swiss Virtual Campus Programme. In this respect, the generous funding of projects (the average cost per project was approximately Sfr 1 million) was to guarantee that each project leader (professor) could build his or her own interdisciplinary team of specialists in teaching/education, new technology/ multimedia and integrate people with specific knowledge of the IT tools necessary for implementing the course. In order to ensure that the Swiss Virtual Campus itself would be able to prosper within an optimum environment, the programme also supports a number of ‘horizontal projects‘, so-called mandates, which include more general studies or studies that address the infrastructure necessary to support the programme as a whole. These were to deal with legal topics (copyright, data protection, etc.), didactic and ergonomic topics, economics (cost effectiveness, product marketing, etc.), or technical questions and projects connected with the necessary credit system and certification of qualifications.

All in all, the SVC Impulse Programme can be considered a success for e-learning in Switzerland, because it has given a strong impulse to e-learning in the Swiss Higher Education System. After a pioneering phase of three years (2000–2003), fifty e-learning courses had been developed and students’ perception as well as knowledge about the creation and implementation of e-learning had increased enormously. In fact, the main objective of the Impulse Programme, to establish elementary expertise in the development and to implement the use of web-based interactive e-learning units at higher-education institutions, was achieved. There were nonetheless some difficulties and disappointments. The results of an evaluation of the Impulse Programme may be summarized as follows:

- the SVC Impulse Programme has been well received within academic circles;
- the developed e-learning courses and modules cover all major academic disciplines (i.e. physics and mathematics, arts and humanities, medicine, environmental and life sciences, economics, finance, business administration, law, engineering and information technology, and educational sciences);
- teachers and students are more aware of the potential of e-learning;
- communication between project partners was much better than expected;
- various institutions of higher education were willing to work together;
- occasionally, there were some difficulties in reaching agreement on contents and content structure;
- the quality of the developed e-learning courses and modules was quite varied;
- the professionalism of some ad hoc development teams could be improved;

- recruitment of qualified personnel was a serious problem;
- implementation costs seemed rather high.

Regrettably, the strategy of the SVC to initially foster project teams and mandates (whereas in this phase the competence centres of the universities had often been neglected), revealed the biggest problems. The recruitment of professional staff (didactics, multimedia, IT), different quality of e-learning courses and modules, integration of the partner universities into regular curricula, cost efficiency, and missing maintenance measures were identified as the most critical aspects of the Impulse Programme.

These observations and evaluation results as well as the substantial financing of e-learning projects within the Impulse Programme led to a second SVC programme, the SVC Consolidation Programme.

4.2 SVC Consolidation Programme (2004–2007)

The 'Consolidation Programme to Upgrade Teaching and Learning' (2004–2007) is also financed by project-linked contributions in accordance with the Law on Promoting Universities (UFG). The Swiss Federal Institutes of Technology as well as the Universities of Applied Sciences are again contributing to the programme with their own funds.[16]

Basically, the SVC Consolidation Programme reaffirms the aims of the Impulse Programme. But a certain number of adjustments have been made in order to take account of the experience gained so far within the framework of the Impulse Programme and to better position the programme within the context of ongoing trends in higher education. In this context, the SVC Consolidation Programme explicitly demands a long-term e-learning policy for higher education institutions in Switzerland that covers the following aspects:

- the expansion of e-learning courses and modules in higher education as well as in additional diploma and post-diploma courses, whereby the latest findings of research and development in e-learning have to be applied to the implementation of educational design methods and state-of-the-art interactive and cooperative scenarios;
- the implementation of e-learning courses in several university curricula (transfer of modules between the different Swiss institutions of higher education),

16 At its meeting of 16 October 2003, the Swiss University Conference (SUC) approved the "2004–2007 Implementation Plan", which lays down the organizational and financial framework of the Consolidation Programme for the new financial period.

their use as a partial or total substitution for “ex-cathedra” offerings and their integration into the Bologna Process;

- to foster strategies of institutions that aim to operate e-learning software and cultivating eContent in the long run in order to extensively use the material and services developed plus the use of recognized authorware and platforms to boost the production of e-learning resources and the efficiency with which they are produced and used;
- a long-term maintenance and support of e-learning courses and modules on university and national levels.

To reach these goals, the SVC Consolidation Programme is founded on four pillars:

1) *Two further calls for new Swiss Virtual Campus projects:* the SVC Consolidation Programme started in autumn 2004 with 29 new e-learning projects. The courses and modules have to be developed within two years and the average funding per project is approximately Sfr 300,000 (in comparison with the Impulse Programme, where average costs were Sfr 1 million). In the spring of 2005, the last call to submit new projects was published. The sum paid to support these new projects within the scope of the last call amounted to Sfr 150,000 per project. Moreover, these projects have to be completed after two years. As already demanded in the Impulse Programme, all projects of the Consolidation Programme must receive financial support from the institutions involved (matching funds of 50% and more).

2) *Competence Centres at each higher education institution:* as another new aspect of the Consolidation Programme, the competence centres of the universities are explicitly involved in the development of e-learning projects. The competence centres get financial funding from the Swiss Virtual Campus for every project which has to be supported (approximately one third of the total sum). Independently of these ‘project funds’, the competence centres get more funding from the SVC. This annual financial support is composed of a fixed sum of Sfr 100,000 and a variable fund which depends on the number of students and lecturers of a university.

3) *Maintenance and user support for qualified projects of the Impulse Programme:* within the scope of the Consolidation Programme, 40 qualified projects of the Impulse Programme are funded for two more years. Funds range from between Sfr 60,000 to Sfr 70,000 annually. The competence centres of the institutions involved are responsible for a long-term integration of e-learning courses into the curricula of the universities and the Bologna process as well as for the technical support.

4) *Services for universities and co-ordination:* finally, networking and on-line education require changes on an institutional level. Rules, mission statements, and objectives have to be adapted and updated, and national accreditation and certification policies are needed. Training of teachers, advanced technical support, technological monitoring, web visibility, legal, teaching, and educational support, international liaising, etc. are also required. In many cases, these issues are so broad that they require the involvement of larger entities, such as government agencies, professional associations, or coordinating bodies. The success of online education depends as much on a solution to these problems as it does on the development of course material. It is also important to prepare the transition from the Impulse Programme to a sustainable structure. This is why mandates and coordination structures are also funded within the scope of the consolidation programme.

The Swiss Federal Virtual Campus Programme will end in December 2007. To date, there are no new plans for a long-term e-learning strategy on a national level, but the Swiss Virtual Campus has, thanks to its financial support within the scope of the SVC Consolidation Programme, established the foundations that allowed competence centres to be established at each university (cf. item 3.3) and e-learning strategies to be developed.

The e-learning strategy of the Swiss Virtual Campus and some of the universities were modified in accordance with the experience acquired within the scope of the SVC Impulse Programme (cf. Item 4.1); thus, it was assumed, upon starting the Swiss Virtual Campus Programme in 1999, that the focus was to be on a development of purely virtual courses. When tendering the SVC Consolidation Programme, the development of the so-called ‘blended-learning offers’ were given priority. The following chapter will show which different e-learning scenarios exist at Swiss universities.

5 E-Learning Scenarios at Swiss Universities

The term e-learning is used for various forms of teaching and learning as well as for those lectures which are supported by information and communication technologies (ICT). This means that e-learning at higher education institutions in Switzerland is not exclusively “virtual” teaching and learning, but comprises a variety of teaching and organizational forms that use ICT as part of and supplementary to face-to-face teaching.

A classification designed for different e-learning scenarios has been drawn up at the University of Basel in order to facilitate the introduction of e-learning to university teaching. This classification is based on a range of teaching and learning scenarios (Dittler & Bachmann 2003, Bachmann & Dittler 2005, Arnold 2001, Jechle 2002; Schulmeister 2001). The classification distinguishes between three different concepts for the implementation of e-learning:

5.1 The Concept of Enrichment as an Option

Face-to-face lectures will be part of this concept. They will be supplemented with multimedia elements in order to support students' access to information or to promote their retention of information. In face-to-face lectures, for instance, teaching staff could make use of graphics, databases, animations, simulations, etc. for the purpose of visualization. Moreover, to accompany the teaching sessions, learning and practice materials such as electronic scripts, interactive tasks, and exercises can be created and made available to the students on web sites.

At the Swiss universities, this concept is introduced into 50–90% of the courses, depending on the academic disciplines and infrastructure of the institution.

5.2 Integrative Concept: e-learning is a Mandatory Part of Learning und Instruction

This concept comprises forms of teaching sessions where the proportions of on- and off-campus studies fulfil specific coordinated tasks. Face-to-face lectures and computer-based self-study sessions represent equal and interlocking methods of learning and, together, they are directed at achieving optimum learning results. This could, for instance, mean that interactive tasks and exercises or Web-Based-Training (WBT) are made available and have to be worked on in self-study sessions, or that teaching and learning activities with communication and cooperation tools are made possible beyond face-to-face lectures as well. The integrative concept always includes tutorials for the students during self-study sessions and phases; in addition, on-campus periods are shortened and focus on specific topics and methods (e.g. a discussion of selected aspects).

Most of the SVC projects are implemented in the curricula in this integrative way, because the most important impact on teaching and learning is expected via this integrative concept.

5.3 The Virtual Teaching and Learning Concept

This means predominantly virtual sessions along with a small number of on-campus periods (as a rule at the beginning and the end of a course). The virtual teaching concept is not often used in on-campus universities at Switzerland, or only if some obvious problems like a large number of students requires its use.

To date, virtual scenarios are either implemented at the distance-learning universities of Switzerland (Fernstudien Schweiz[17] and Fernfachhochschule Schweiz[18]) or for advanced training programmes.

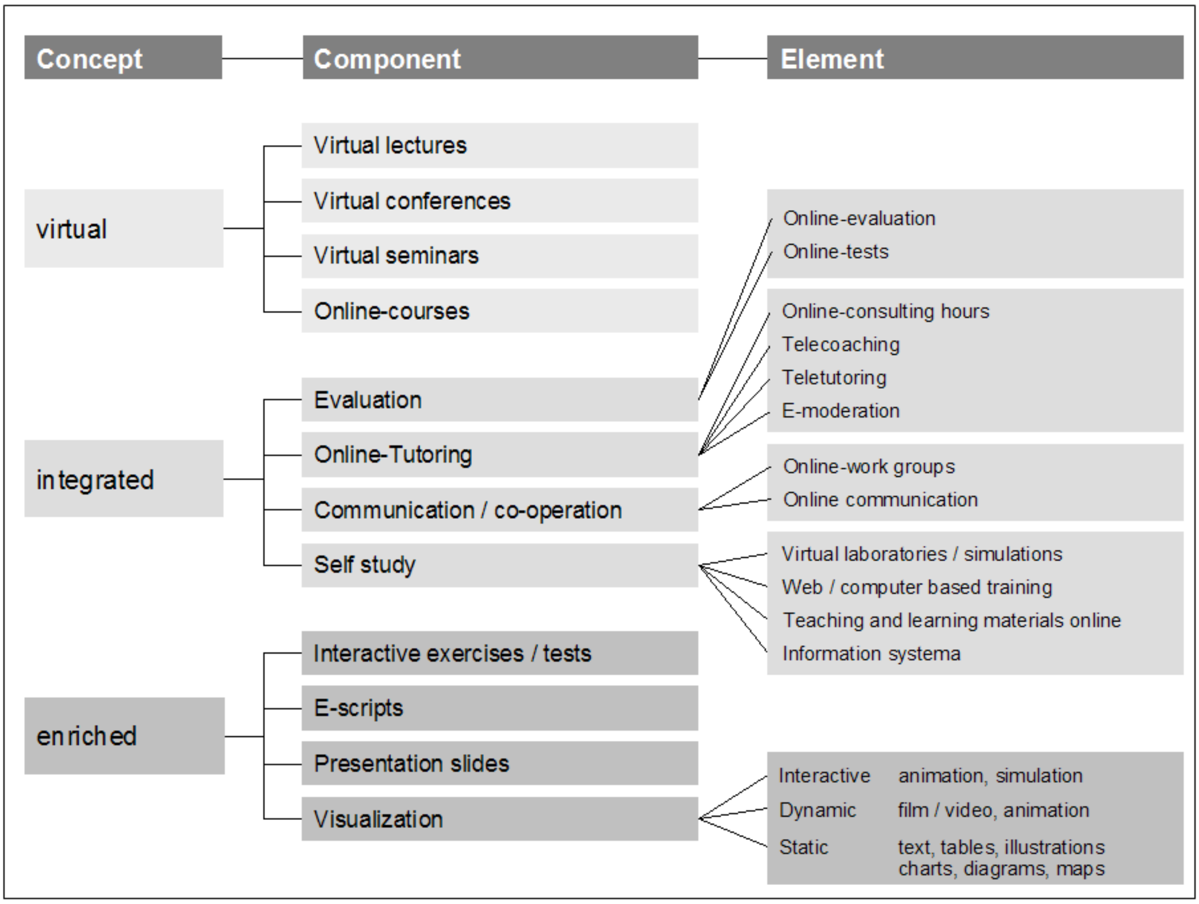

Figure 3: Basel E-learning-Scenarios

6 Swiss e-learning products within European competition

An indicator of the quality of Swiss e-learning products are the various awards which have been won in European Software, Multimedia and Media-didactic competitions (see Table 3). Prominent awards in central Europe are the MEDIDA-PRIX,[19] the EASA[20] and the Multimedia-Transfer.[21]

17 http://www.fernuni.ch [status 04-15-2005].
18 http://www.fernfachhochschule.ch [status 04-15-2005].
19 See http://www.medidaprix.org/ [status 06-10-2005].
20 See http://www.easa-award.net/ [status 06-10-2005].
21 See http://www.rz.uni-karlsruhe.de/mmt/ [status 06-10-2005].

The most important prize in the German-speaking part of Europe is the MEDIDA-PRIX which is funded by the ministries of three countries: the Austrian Federal Ministry for Education, Science and Culture, the German Federal Ministry of Education and Research and the Swiss State Secretariat for Education and Research (SER). The MEDIDA-PRIX is an award for outstanding innovations in e-learning and eTeaching, media-didactic plans and developments, which is initiated, applied for, established and supported by the Society for Media in Science (GMW). The award of 100,000 euros is the highest European endowed award for innovations in e-learning. Since 2000, the MEDIDA-PRIX has received widespread recognition and acclaim, and sets trends and directions. In relation to the size of the country, Swiss e-learning projects are very well represented among the finalists (see table 2) and the winners (see table 3).

Table 2: Statistic of participants and finalists of the MEDIDA-PRIX 2000-2004

Year	Number of Participants / Finalists total	Number of Participants / Finalists Austria	Number of Participants / Finalists Germany	Number of Participants / Finalists Switzerland
2000	131 / 10	30 / 2	91 / 6	10 / 2
2001	158 / 9	18 / 0	129 / 8	11 / 1
2002	167 / 8	25 / 1	114 / 5	28 / 2
2003	192 / 8	18 / 0	142 / 4	32 / 4
2004	186 / 7	43 / 1	122 / 4	21 / 2

Table 3: List of winning Swissprojects at the MEDIDA-PRIX, the EASA and the Multimedia-Transfer

MEDIDA-PRIX		
2000	Winner and public award	OLAT – Online Learning And Testing MELS, University of Zurich http://www.olat.org/ [status 06-10-2005] Software-type: open source learning management system
	Finalist	Health Resources Allocation Model (HRAM) Swiss Tropical Institute University of Basel http://ltsnpsy.york.ac.uk/ltsnpsych/easa/easa98/HRAMinfo.htm [status 06-10-2005] e-learning-Scenario[22]: enriched – self-study – simulation

22 According to the Basel e-learning Scenarios, see Figure 3

2001	Finalist	Intermediärstoffwechsel interaktiv, Institut of Veterinary Biochemistry, University of Zurich http://www.unizh.ch/vetbio/site/teaching/multimedia.html [status 06-10-2005] e-learning-Scenario: enriched – self-study – computer based training
2002	Winner	Ad fontes: Introduction into archives, Historisches Seminar, University of Zurich http://www.adfontes.unizh.ch/1000.php [status 06-10-2005] e-learning-Scenario: integrated – self-study – web based training
	Finalist	CALICE – Computer Aided Learning In Civil Engineering Institute for Geotechnical Engineering, ETH Zurich http://www.igt.ethz.ch/dynDBpages/PublicationDisplay622.htm [status 06-10-2005] e-learning-Scenario: integrated – self-study – web based training
2003	Winner and public award	pharma2 – the blended learning concept in pharmaceutical sciences Institute of Molecular Pharmacy, University of Basel http://www.pharmasquare.org/ [status 06-10-2005] e-learning-Scenario: integrated – self-study – web based training
	Finalists	Artcampus http://www.artcampus.ch/html/de/index.htm [status 06-10-2005] Institute of Art History, University of Bern e-learning-Scenario: integrated – self-study – web based training
		Exorciser – Automatic generation and interactive grading of structured excercises in the theory of computation Department of Computer Science, ETH Zurich http://e-collection.ethbib.ethz.ch/cgi-bin/show.pl?type=diss&nr=15654 [status 06-10-2005] e-learning-Scenario: enriched – interactive exercises
		Macroeconomics Interactive Institute of Economics, University of St. Gallen http://www.fgn.unisg.ch/eurmacro/ [status 06-10-2005] e-learning-Scenario: enriched – interactive exercises
2004	Winner	PathoBasiliensis Institute for Pathology, University of Basel http://www.unibas.ch/patho/ [status 06-10-2005] e-learning-Scenario: integrated – self-study – web-based training and information system
	Promotion Award	Virtual Excursion (VirtEx) Geobotanical Institute, ETH Zurich http://www.virtualexcursion.ethz.ch/ [status 06-10-2005] e-learning-Scenario: integrated – self-study

EASA		
1998	Winner	Neurology Interactive AUM, University of Berne http://ltsnpsy.york.ac.uk/ltsnpsych/easa/easa98/NeuroInteractiveinfo.htm [status 06-10-2005] [status 06-10-2005] e-learning-Scenario: enriched – self-study – computer-based training
	Student prize	ChemVISU Marco Ziegler, University of Fribourg http://ltsnpsy.york.ac.uk/ltsnpsych/easa/easa98/ChemVisuinfo.htm [status 06-10-2005] e-learning-Scenario: enriched – visualization
	Finalist	Cinderella's Café Department of Mathematics, ETH Zurich http://ltsnpsy.york.ac.uk/ltsnpsych/easa/easa98/Cinderellainfo.htm [status 06-10-2005] e-learning-Scenario: enriched – self-study – simulation Health Resources Allocation Model (HRAM) Swiss Tropical Institute University of Basel http://ltsnpsy.york.ac.uk/ltsnpsych/easa/easa98/HRAMinfo.htm [status 06-10-2005] e-learning-Scenario: enriched – self-study – simulation
2000	Winner	Headache interactive AUM, University of Bern http://www2000.easa-award.net/comp/winners2000/headache.html [status 06-10-2005] e-learning-Scenario: enriched – self-study – computer-based training
2002	Winner	KaraToJava Department of Computer Science, ETH Zurich http://www.educeth.ch/informatik/karatojava/ [status 06-10-2005] e-learning-Scenario: enriched – self-study – simulation
2004	Winner	Finite Element Transfer (FET) Department of Education Science, UAS of Northwestern Switzerland http://www.virtualcampus.ch/demos/fe-transfer/ [status 06-10-2005] e-learning-Scenario: enriched – self-study – simulation

Multimedia Transfer: Women's Special 2005 (LearnTec)		
2005	Winner	ViLab, a video-based, interactive learning system Institute of Molekular Pharmacy, University of Basel http://www.pharmasquare.org/Brain/SDS/SDS_PAGE/index.htm [status 06-10-2005] e-learning-Scenario: integrated – self-study – web-based training

7 Conclusion

The development of e-learning in higher education in Switzerland has clarified an interesting interaction between the initiatives on the university level and those on a national level and altered the interaction between bottom-up and top-down initiatives. This is why the experience of the universities was, on the one hand, able to affect national decisions within the scope of the Swiss Virtual Campus Programme while, on the other hand, the Swiss Virtual Campus has provided a highly important impulse for e-learning at Swiss universities. All universities established expertise in the development and integration of e-learning over the past five years: Teachers' knowledge about the creation and implementation of e-learning and students'perception of the use of web-based interactive e-learning units has increased enormously. At all Swiss universities the implementation of e-learning also had an impact on the development of higher education – particularly with regard to the Bologna reform.

The e-learning strategy of the Swiss Virtual Campus and some of the universities was modified within the scope of the SVC Programme such that the so-called 'blended-learning offers' were given priority. E-learning experts as well as teachers expect the biggest 'added value' for teaching and learning from a mixture of face-to-face teaching in traditional classrooms with online learning. By combining e-learning with face-to-face lectures, new scenarios for teaching and learning could be realized, which would never have been possible in traditional classroom teaching. With the current means of implementing e-learning within curricula, in particular the 'shift from teaching to learning' (which is one of the most important ideas postulated within the Bologna process), can be promoted. This means fostering self-directed learning and key qualifications as well as the acquisition of credit points according to students' workload.

The introduction of e-learning in higher education also fostered international and interdisciplinary reflections and discussions about teaching and learning in higher education institutions. These are some examples why e-learning promoted didactic innovations within higher education. Virtual mobility, however, another important aspect of the Bologna reform, could not be realized by means of e-learning, because joint study programmes (i.e. EUCOR[23]) have been rare in Switzerland and in Europe until today. In the future, however, we believe in the European Higher Education Area (EHEA) and 'e-Bologna'.

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23 See http://eucor-uni.u-strasbg.fr/pages/ [status 06-07-2005].

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Table 2: list of competence centres at Swiss on-campus universities

University[1]	Stud.[2]	Competence centre	Since	Structure[3]	Affiliation	Services	Focus[5]	URL
ETH Lausanne	6240	CRAFT Centre de recherche et d'appui pour la formation et ses technologies	2003	Centre & academic unit	Staff unit and Institute at the School of Computer and Communication Sciences	Research, consulting, training, and infrastructure	Educational development, didactics	http://craft.epfl.ch/
ETH Zürich	12626	NET Network for Educational Technology	1996	Section	Learning Centre, central infrastructure division	Consulting, training, development and infrastructure	Technology, content, didactics	http://www.net.ethz.ch
UNI Basel	9 977	LTN LearnTechNet	1999	Network	Staff units at the Vice Chancellor's office and central infrastructure divisions	Consulting, training, development, infrastructure, and applied research	Educational development, didactics, content, technology	http://ltn.unibas.ch
UNI Bern	12570	Virtual Campus	2004	Staff position	Staff unit at the Vice Chancellor's office	Administration and networking	Educational development	http://www.virtualcampus.unibe.ch
		AUM Abteilung für Unterrichts-Medien	1993	Section	Institute for Medical Education IML, Faculty of Medicine	Development	Content didactics	http://www.aum.iawf.unibe.ch
UNI Fribourg	9000	NTE Centre Nouvelles Technologies et Enseignement	1996	Centre	Central infrastructure division	Consulting and development	Technology, content, didactics	http://nte.unifr.ch
UNI Geneva	14887	CeL Centre de soutien au eLearning	2004	Network	Staff unit at the Vice Chancellor's office and central infrastructure division	Consulting and infrastructure	Educational development	http://www.unige.ch/dinf/ntic/cel/
		TECFA Technologies de Formation et Apprentissage	1989	Academic unit	School of Psychology and Education	Education and research	Didactics	http://tecfa.unige.ch/
UNI Lausanne	10166	CENTEF Center Technologies pour l'Enseignement et la Formation	2000-2004	Centre	Central infrastructure division	Development and infrastructure	Content	No more on-line after closure

University[1]	Stud.[2]	Competence centre	Since	Structure[3]	Affiliation	Services	Focus[5]	URL
UNI Lucerne	1144	Virtueller Campus Luzern	2004	Section	Center of Competence in New Media, Institute for Communication and Culture, Faculty of Humanities	Consulting, training and development	Content	http://www.unilu.ch/unilu/12910.htm
University of Lugano	1757	eLab eLearning Laboratory	2004	Network	Central infrastructure divisions, co-operation between UNI and UAS of the Swiss Italian-speaking region	Consulting, training, infrastructure	Educational development	http://www.elearninglab.org/
UNI Neuchâtel	3261	none	-	-	-	-	-	-
UNI St.Gallen	4839	SCIL Swiss Centre for Innovations in Learning	2003	Center	Institute of Business Education and Educational Management	Consulting and research	Educational development	http://www.scil.ch/
		Learning Center	1997	Section	Institute of Information Management	Consulting of external partners	Knowledge management	http://www.learningcenter.unisg.ch/homepage.htm
UNI Zurich	23421	ELC E-Learning Centre	1999	Centre	Staff unit at the Vice Chancellor's office	Consulting, training, and administration	Educational development didactics	http://www.elc.unizh.ch/
		MELS Multimedia and eLearning Services	2004	Centre	Central infrastructure division	Development	Content	http://www.id.unizh.ch/mels/
		OLAT Online Learning and Training Platform	2000	Section	Section of MELS, Central infrastructure division	Infrastructure	Technology	http://www.olat.org/
UAS Bern	3866	InnoTeach	2004	staff position	Central infrastructure divisions at two locations	Consulting, training and infrastructure	Didactics, technology	http://innoteach.bfh.ch/
UAS Western Switzerland	8817	CYBERLEARN	2004	Project	Depends to the Higher Education Commission of the UAS	Networking	Educational development	http://www.cyberlearn.ch/site/home.html
UAS Northwestern Switzerland	4750	eLearning @FH NW	2004	Staff position				http://www.fhnw.ch/e-learning/index.html

University[1]	Stud.[2]	Competence centre	Since	Structure[3]	Affiliation	Services	Focus[5]	URL
UAS Central Switzerland	2584	none	-	-	-	-	-	-
UAS Italian speaking part of Switzerland	1090	eLab eLearning Laboratory	2004	Network	Central infrastructure divisions, cooperation between UNI and UAS of the Swiss Italian speaking region	Consulting, training, infrastructure	Educational development	http://www.elearninglab.org/
UAS of Eastern Switzerland	2650	none	-	-	-	-	-	-
UAS of Zurich	8600	Wissenspool E-Learning	2002	Staff position	Staff unit at the Vice Chancellor's office	Networking and consulting	Didactics, technology	http://elearning.zhwin.ch
Distance UNI (Fernstudien Schweiz)		brain-tec GmbH	2000	Corporation	Spin Off, founded by Fernstudien Schweiz und Fernfachhochschule	Consulting, development, and infrastructure	Didactics, content, technology	http://www.fernuni.ch/ http://www.brain-tec.ch/
Distance UAS (Fernfachhochschule)		brain-tec GmbH	2000	Corporation	Spin Off, founded by Fernstudien Schweiz und Fernfachhochschule	Consulting, development, and infrastructure	Didactics, content, technology	http://www.fernfachhochschule.ch http://www.brain-tec.ch/

Notes: 1: UNI: Cantonal University, UAS: University of Applied Sciences, ETH: Federal Institute of Technology. 2: Number of students.
3: Organizational level:
Centre: institution.
Section: eLearning competence is a part of an institute.
Network: co-operation of different partner institutions.
Staff position: one person or a small team responsible for the implementation of eLearning

Focus:
Educational development: focus on the teaching and learning strategy of the whole institution
Didactics: focus on the didactical design on course level
Contents: focus on the production of educational materials
Technology: focus on the technical support and maintenance of eLearning platforms
Knowledge management: focus on knowledge management for organizations and companies

Tapio Varis

Global E-Learning from a Finnish Higher Education Perspective

The globalisation of society and the rise of a knowledge-based economy have drastically raised expectations for higher education institutions and related services to society over the past decades. Governments and corporations look to universities for innovative uses of new information technologies in teaching and administration, while also expecting that universities will make their students sufficiently technology-literate to participate in a global economy. This vision of the new university emphasizes more than ever before the role of market forces in shaping the institution, the need to respond to users' needs, and the need to deliver knowledge continuously through distance learning and lifelong learning. However, the vast majority of universities as well as the public and private organizations the governments and corporations work with are rather unprepared to reorganize themselves to address these new demands.

The development of communication and information technologies makes it possible for distance teaching institutions to strengthen their position in the educational landscape. They also pave the way for lifelong education for all and, at the same time, are expanding the traditional universities, a growing number of which use distance teaching methods in their activities, and thereby make the distinction between the two types of institution virtually meaningless. There is an increasing number of university networks of this kind all over the world, and the use of computers in the learning process, access to the Internet by students as a vehicle for self-directed learning, educational broadcasting and video-conferencing are all being stepped up.

The philosophy of e-learning focuses on the individual learner, although it recognizes that most learning is social. In the past, training has been organized largely for the convenience and needs of instructors, institutions, and bureaucracies. Now e-learning is the convergence of learning and networks, the Internet. New university systems are being adapted to new global needs (Utsumi, Varis, Knight, Method & Pelton, 2001). The experience and critical function of traditional universities is central in the efforts to create new e-learning environments.

1 General needs for E-Learning: transnational education and quality assessment

Telematics, knowledge content, and multimedia-based tools are widely considered to be central ingredients for evolving new ways to provide learning and training. European projects seek to build, express, and voice consensual views on relevant issues that may be presented for consideration. In particular, it deals with the following issues:

- Optimal strategies for multicultural, multilingual learning solutions,
- New instructional and training approaches and new learning environments,
- Affordable solutions and platforms based on open standards and best practices,
- Publicly accessible and interoperable knowledge repositories.

The consensus-building actions will seek to bridge the gap between research and the actual use of learning technologies, content, and services.

There is now a need for common European virtual education and a common European degree system. The content of a European virtual university gateway service would be a portal to net-based or net-supported courses and programmes, information search, collaboration and exchange, common denominators, ownership and endorsement label. The quality issues include transparency, benchmarking, metadata structure, user and peer reviews, sharing of models and best practice, sharing system and tool descriptions, and user experiences (Aslaksen, 2001).

Virtual education in Europe has mainly taken place on the national level so far, and there is not yet much transnational collaboration. National consortia with centres of expertise have been formed in many countries (France, the Netherlands, Finland, etc) while some single e-universities and project-based national initiatives also exist. Public-private partnerships are also developing and there are new providers of content from corporate and media linked sources.

The introduction of e-learning requires also new competencies. A competency is an area of knowledge or skill that is critical for producing key outputs. The competencies can be grouped into generic categories such as general, management, distribution method, and a presentation method which helps to illustrate the relationship between certain competencies.

Transnational education is not necessarily international in the sense that this term has been used before in the context of international education. Courses and learning materials and environment are simply offered beyond national borders. However, a university is more than a library of courses. It is still the college and the professional faculty who can give the quality guarantee to credits and credentials, degrees and diplomas. Governments will have responsibility in quality assurance, especially in courses delivered from non-accredited institutions from abroad.

The issues of quality assurance and accreditation as well as international strategic alliances are being widely discussed. The quality assurance for virtual education can follow external and internal models. The external models include multi-lateral agreements, accreditation, licensing, kite-marks, and consortia arrangements. The internal models include codes of practice and quality, and management systems. The assessment of online universities is often accompanied by three principles. First, the institution must demonstrate how it will achieve its goals, particularly student learning goals, and maintain high standards of quality in doing so. Goals must be stated which are specific and assessable. Second, the assessment should provide assurance that standards of quality are successfully maintained at an appropriate level regardless of the medium of the course or the methods of instruction adopted. This is a concern that students can be reasonably assured that the course offerings they believe they are taking, based on public descriptions, are accurate regardless of where or under what format the course is offered. Third, the responsibility for the conduct of assessment should be appropriately delegated and shared.

The European e-learning summit emphasized the importance of assuring quality and certification in e-learning. Cooperation in the production and selection of best practices is needed between the private sector and teachers, instructors, ministries and pedagogical experts. Forums for peer reviews could create a useful, informal way of evaluating eContent. Existing e-learning portals could also be enlisted to function as quality filters (European e-learning Summit, May 2001, Workshop Papers).

2 E-Learning assessment in Finland

In 1998, an extensive technology assessment project, Information and Communication Technologies (ICT) in Teaching and Learning, was completed in Finland. Initiated by the Finnish Parliament and carried out by the Finnish National Fund for Research and Development, the project assessed all formal education from kindergarten to universities. In addition, it examined some aspects of informal learning taking place in homes, libraries, and at adult education establishments. The study focused on the growing challenges presented by the information society both on individuals and on Finnish society in general, especially when viewed from the perspective of life-long learning.

According to the Director General, the assessment verified that in Finnish society ICT has enjoyed a high priority. Implementing ICT in our education system so that it reaches the vast majority, however, requires yet much work and resources. According to the assessment, there was still a shortage of high-quality digital learning materials, and pedagogical and technical support is still insufficient and teacher training needs to be increased and more clearly focused.

When opening the Emerging Global Electronic Distance Learning 1999 conference at the University of Tampere, Finland, Mr. Markku Linna, Director General of the Finnish Ministry of Education, explained the role of science and technology in the Finnish knowledge society. He said that in the next millennium, knowledge and know-how will, even more than today, be the basis for economic competitiveness and well-being of the entire society. Information society is both a demanding challenge and a new possibility for citizens, companies, universities and other research and educational establishments, and also for public administration. A genuine information society must be within reach of all citizens (Linna, 1999).

It was widely felt in Finland that we need to improve the dissemination of promising practices and, furthermore, we need to deal with the paramount and constantly growing issue of equality. The Ministry of Education has responded to these challenges by implementing two information society strategies: the first one for 1995–1999 and the second one for 2000–2004. Almost FIM 1 billion (about 170 million euros) of earmarked budget funds were used to implement the first strategy. In addition, the aims of the Information Society Programme were promoted via basic funding from different departments, additional research funding, and different programmes of the European Union.

The new National Strategy for Education, Training and Research in the Information Society for the first years of the new millennium can be summarized in the following vision: By the year 2004, Finland was to become one of the leading knowledge and information societies. Success is based on citizens' equal opportunities to study and develop their own knowledge and extensively utilise information resources and educational services. A high-quality, ethically and economically sustainable mode of operation in network-based teaching and research was established.

The Ministry of Education has established an action programme to implement the aims of the strategy. In order to achieve the objectives of lifelong learning and an information society based on civic equality, an extensive programme has been launched to familiarise citizens with new aspects of the information society, and to improve media literacy, and information and communication technology skills of citizens.

During the strategy period, at least half of the teachers will reach the pedagogical and technical level required by the information society. This objective can be reached by diverse methods of continuing education. Presently only one fifth of teachers feel that they have adequate skills.

Due to the expansion of the information industry and new media, the need for professionals in these fields will increase and the shortage of educators will become even more acute. The Ministry of Education will carry on the programme for increasing education in the field of information industry launched in 1998. New developments in the electronics and content industry will be monitored and taken into account when implementing the programme. In order to achieve the desired state, the development of strategic thinking in educational establishments and municipalities is needed along with the systematic recognition of new information and communication technologies in curricula and the strategies of educational establishments, libraries and administering bodies.

Finland has had regional e-learning clusters where regional universities have played a central role. The Tampere e-learning Cluster, for example, has included Tampere University of Technology and the University of Tampere as well as two polytechnics. The cluster has promoted and coordinated activities in four fields:

- multidisciplinary e-learning research and development
- multidisciplinary postgraduate studies in e-learning
- collaboration in the design of online teaching and teacher training
- public-private partnership.

There is an urgent need to focus on the digital content services of different disciplines and fields of applications in order to avoid biased e-library services. Learning technology standards are critical because they will help us to answer a number of open issues. Whether it is the creation of content libraries, or learning management systems, accredited standards will reduce the risk of making large investments in learning technologies because systems will be able to work together like never before. Accredited standards assure that the investment in time and intellectual capital can move from one system to the next.

Higher education has to aim for quality, and internal and external evaluation methods should be more generally applied, thereby enabling it to be accountable to society. Higher education institutions are expected to train citizens to be capable of thinking clearly and critically, analysing problems, making choices and shouldering their responsibilities. Higher education can, however, no longer be conceived of in purely national or regional terms. Future graduates have to be in a position to take up the complex challenges of globalisation and rise to the opportunities of the international labour market. The equitable transfer of knowledge and the mobility of students, teachers and researchers, and also the mobility of learning environments with the e-learning applications are crucial to the future of world peace.

As pointed out by Dr. Ritva-Sini Merilampi of the Ministry of Education, the strong Finnish faith in learning and cultivation is a heritage of the 19th century proponents of Finnish culture and civilisation. It is widely understood that literacy is not inherited, but that each generation must build its own literacy. Both young and old Finns, boys and girls alike are highly literate in the traditional and also in the new media environment.

3 National strategies for telecommunication for higher learning

Mr. Mauri K. Elovainio, Secretary General of Sonera Ltd, analysed in his keynote speech to our conference EGEDL 1999 the outstanding role of telecommunication in the Finnish Information Society in creating a bridge between telecommunications and learning. Elovainio asked how the information society is going to strengthen cultural creativity, and whether it will give each citizen easy access to multiple cultures while preserving his own identity?

Decentralized decision-making highlights the need for management by strategies. ICT creates new opportunities for producing and distributing public services, but at the same time it entails the renewal of processes in cooperation with the private and voluntary sectors.

- Information society development and changes in the operational environment must be constantly monitored to provide support for strategic management. The action models and cost-effective utilization of technology must be developed and promoted in the administration in order to ensure compatibility and the sufficient control of information management. Efficient procedures and funding practices, which provide incentive for good performance, must be developed and instituted, in particular for cross-sectoral R&D projects. All this entails substantial annual funding.
- With a view to transparent decision-making and the empowerment of citizens, users must be able to access the information produced by the public sector in an electronic form.
- The public sector must take responsibility for data security in society and, together with enterprises, ensure that all critical systems function under all circumstances. The administration must develop norms and regulations governing exceptional circumstances and assure the dissemination of information.

Shared responsibility and competitiveness must be developed in tandem, and due consideration must be given to ecological factors. The individual requires new skills as a citizen, consumer and employee in order to manage, critically analyze and make full use of the information flow.

According to Elovainio's analysis, knowledge management requires good feedback channels, indicators and incentives, as well as constant alertness to changing needs. The prerequisites of knowledge management can be improved with the introduction of renewed procedures. Educational institutions, business enterprises and other work communities can engage in closer cooperation with a view to knowledge transfer and the utilization of information reserves.

- Strategic management of knowledge and processes which support it must be developed in order to maintain know-how at a high standard on a wide front and a sufficient part of it at the top level. The national priorities in education and research and their financing must be regularly reconsidered by means of the combined cooperation of both the public and private sectors to ensure a flexible response to changes. Methods for anticipating changes in working life and in industrial structures must be developed to help business enterprises and educational institutions to respond better to the challenges arising from these changes. Enterprises in growth fields could make the know-how qualifications in their key professions available to job seekers and educational institutions on the information network.
- Measures must be taken to develop such methods for measuring human capital which encourage organizations to appreciate and increase their own human capital and which also serve to develop funding for the growth of enterprises. The accounting of organizations must indicate the investment made in know-how. Taxation practices must provide incentives for the development of know-how.
- Wide-scale cooperation must be continued, and further expanded, to offer the necessary basic skills in the use of information society tools and electronic services to all citizens, and especially to those who have not had instruction in the new skills during their education or in their line of work. All levels of education must increase the teaching of skills needed to acquire, critically evaluate, transmit and present information and to interact in the modern, international communications environment. Teachers' initial and continuing education must be essentially improved to enable teachers to utilize the possibilities of the information society and to pass on relevant knowledge to their pupils.

The fundamental features of the information society are global interconnection and interoperability between multiple professional educational or entertainment services. A unique opportunity is thus offered for the distribution of a very large range of products and creations, which reflect the most diverse cultural and linguistic identities.

The information strategy of the Ministry of Education (Education, Training and Research in the Information Society 1995–1999 and 2000–2004) has highlighted media competence since 1995. As pointed out by Markku Markkula in 2004, a variety of steps have been carried out by the Ministry of Education to promote e-learning development, especially in education and training (Markkula, 2004).

The polytechnics and the Ministry of Education support the production of suitable web-based materials by field-specific production chains for use by all polytechnics. The web-based teaching materials and services are combined and made available to undergraduate polytechnic students and their teachers via the www.virtuaaliamk.fi portal.

The universities and the Ministry of Education provide support to discipline-specific, regional and network-specific virtual projects. The services are combined and made available through the www.virtuaaliyliopisto.fi portal. The member universities play a central, independent role in the various teaching projects and teaching development projects. The rights to study are granted to undergraduate university students.

Open universities and polytechnics offer teaching in the form of contact and multiform teaching. In addition, they enable citizens interested in university studies to take up independent Internet-based studies. The teaching provision and web-based courses are described in the www.avloinyliopisto.fi portal.

We understand e-learning, or e-learning, to be the best practice for learning in the new economy, implying but not requiring the benefits of networking and computers such as anywhere/anytime delivery, learning objects, and personalization. It often includes instructor led training.

History shows that revolutionary changes do not take place without the widespread adoption of common standards. For electricity, this was the standardization of voltage and plugs; for railways, the standard gauge of the tracks; and for the Internet, the common standards of TCP/IP, HTTP, and HTML. Common standards for metadata, learning objects, and learning architecture are mandatory if a similar success of the knowledge economy is to be achieved. The work to create such standards for learning objects and related standards has been going on around the world for the past few years (http://www.learnativity.com/standards/html, 10 July 2001).

Learning technology standards are critical because they will help us to answer the following issue clusters:

- How will we mix and match content from multiple sources?
- How do we develop interchangeable content that can be reused, assembled, and disassembled quickly and easily?
- How do we ensure that we are not trapped by a vendor´s proprietary learning technology?
- How do we ensure that our learning technology investments are wise and risk adverse effects?

Whether created by content libraries or learning management systems, accredited standards will reduce the risk of making large investments in learning technologies because systems will be able to work together like never before. Accredited standards assure that the investment in time and intellectual capital can move from one system to the next.

4 The Global University System (GUS)

The GUS at the University of Tampere, Finland is the headquarters Chair of the GUS/UNESCO/UNITWIN Networking Programme. The Global University System (GUS) is adopting philosophies and principles that emphasize transcultural and moral values rather than ideologies. Priority is placed on academic freedom and quality in education (Utsumi et al., 2001). The Global University System (GUS) is a network of networks formed in particular by higher education institutions, but also by other organizations which share the same objectives of developing cooperation based on solidarity and partnership and aim to improve the global learning and wellness environment for people in the global knowledge society, where global responsibility is shared by all. The project which should help to establish CampusNet and Community Development Networks in the Amazon region with funding from the Japanese government is the forerunner of this approach of GUS.

When broadband Internet is available and interconnects member universities of our GUS/UNESCO/UNITWIN Networking Programme, we can expect the following:

- Coalition member universities will be able to build a network of facilitators who support e-learners,
- Learners may take one course from a university of a different country, in Japan, Canada, Brazil, Finland, etc., to get his/her degree from the GUS, and thus be free from being confined to one philosophy of a university,

- Broadband Internet will enable Web-based teaching with more interaction among/between learners and instructors, compared with less interaction in replicating classroom teaching via satellite – and thus stimulate global dialogues among them to attain world peace,
- Learners and faculties at member universities can promote the exchange of ideas, information, knowledge as well as joint research and the development of Web-based teaching materials, community development, and many other things locally, regionally and even on a global scale,
- Researchers in developing countries can perform joint collaborative Hi-Tech research and development on various subjects, e.g. Globally Collaborative Environmental Peace Gaming, micro-biology, meteorology, chemical molecular study, DNA analysis, three-dimensional human anatomy, the design of space shuttles (a NASA project for training high school students around the world), etc.

In a sense, our GUS/UNESCO/UNITWIN Networking Chair programme is to construct a global scale knowledge forum with advanced ICT, for example, with the use of massive parallel processors of globally distributed and yet interconnected mini-supercomputers around the world through Global Broadband Internet (GBI) of the global neural computer network.

5 New issues on e-libraries, media, and citizens' organizations

The evaluation work of a digital library is an attempt to define its performance in this process and help it determine the long-term strategy and vision in the rapidly changing eWorld. The work of the evaluation team usually follows the normal procedure of studying the written self-evaluation reports, interviewing all relevant parties, discussing and debating issues, and finalising a joint report. The problem is not only how best to serve traditional university and polytechnic libraries and research institutions but also how to deal with the whole new learning culture.

In Finland, the high performance in learning outcomes and general literacy is largely due to the advanced network of public libraries. Not only institutions but also the citizens are main users of information and knowledge.

However, the successful implementation of these new learning possibilities requires new literacies and e-learning competencies which are central challenges both worldwide and regionally. In Europe the goal of achieving an e-Europe and social justice and of avoiding the digital divide requires us to rise to the challenge by working to ensure that all sectors of European society are able to benefit from the employment, educational and development opportunities offered by information and communication technologies.

Definitions of literacy relate, at their core, to an individual's ability to understand printed text and to communicate through print. Most contemporary definitions portray literacy in relative rather than absolute terms. They assume that there is no single level of skill or knowledge that qualifies someone as literate, but rather that there are multiple levels and kinds of literacy. In order to have bearing on real-life situations, definitions of literacy must be sensitive to skills needed in out-of-school contexts, as well as to school-based competency requirements. Media literacy is multidimensional while digital literacy may refer to the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers. Digital literacy can simply be a new way of thinking.

In general, institutional and organizational changes always face resistance and the existing library structures may not be an exception. But in the strategy of a national and global knowledge society, traditional university and polytechnic libraries should see their role not as working alone but more as part of a larger consortium, in which the digital library plays a special role. This is an essential part of the process of creating a new kind of National Virtual University and larger global university structures. The new learning culture implies innovative applications of e-learning and e-services, virtual arrangements and cooperation across institutions and disciplines. At the same time, specific needs of different disciplines and problem areas should be effectively met.

There is an urgent need to focus on the digital content services of different disciplines and fields of applications in order to avoid biased e-library services. Learning technology standards are critical because they will help us to answer a number of open issues. Whether it is a question of creating content libraries or learning management systems, accredited standards will reduce the risk of making large investments in learning technologies because systems will be able to work together like never before. Accredited standards assure that the investment in time and intellectual capital can move from one system to the next.

There is now a need for common European virtual education and a common European degree system. The content of a European virtual university gateway service would be a portal to net-based or net-supported courses and programmes, information search, collaboration and exchange, common denominators, ownership and an endorsement label. The quality issues include transparency, benchmarking, metadata structure, user and peer reviews, sharing of models and best practices, sharing system and tool descriptions, and user experiences.

Virtual education in Europe has so far mainly taken place at national level and there is not yet much transnational collaboration. National consortia with centres of expertise have been formed in many countries, as in Finland, while some single e-universities and project-based national initiatives also exist. Public-private partnerships are also evolving, and there are new providers of content from corporate and media linked sources. The issues of quality assurance and accreditation as well as international strategic alliances are being widely discussed.

The role of the eLibrary is central to this process. It can be seen as part of a worldwide initiative to create a telecommunications infrastructure providing access to educational resources across national and cultural boundaries. Learners, students and their professors from participating institutions will form a global forum in which to exchange ideas and information and to conduct collaborative research and development.

6 The Finnish electronic library (FinELib)

Our experience in Finland with the national electronic library FinELib project as well as the European projects show that there are considerable variations between the use of digital programmes and services in different countries, different types of universities and polytechnics, and different disciplines. European e-learning materials are available in the e-learning portal at http://www.elearningeuropa.info/. The first Forum on this elearningeuropa information portal has inspired participation from experts around Europe. Many interesting opinions have been posted, highlighting the problems faced by educational institutions.

From the comments posted, there appears to be unanimous agreement on the need to change education and that e-learning happens to be in the right place and in the right time. There seems to be a coincidence between e-learning as a tool and the necessity to modify the traditional model of education. In my view the use of digital libraries is directly connected to the new e-learning competences, especially to information literacy. The Finnish electronic library FinELib was evaluated in 2003. FinELib was started as a project, and therefore it has had only a short time to establish its work. Regarding the developmental phase of FinELib, the evaluation took place at a critical moment, although in a positive sense. The structures of the organisation are still flexible, and the working of FinELib is still open to discussion.

The Head of FinELib was involved in planning the self-evaluation questions, which might have affected the relevance of the questions. From the perspective of the consortia libraries, the self-evaluation questions consisted in a lot of questions concerning their own working, and only a few questions concerning the working of FinELib. The self-evaluations, however, produced information necessary to the Evaluation Team. It is desirable that it has also helped the consortia libraries to develop their own work according to their own strategy and also to become conscious of a national strategy towards the knowledge society.

In addition to the self-evaluations of FinELib and stakeholders, the findings in the interviews conducted by the Evaluation Team indicated that FinELib achieved very high quality in its services. In general, FinELib was regarded as an institution and an organisation with a key position. Although the work of FinELib was considered to be very successful, there are, however, some aspects where further development is still needed.

The main part of the evaluation is the recommendation for the Ministry of Education, FinELib, other libraries, and their home institutions. The main areas in the recommendations are strategy, funding of the actions, roles of the stakeholders, the need for a portal, the size of packages, usefulness of statistics, cooperation between FinELib and stakeholders, customer service, and some aspects of a broader Finnish Knowledge Society process.

Technology has brought about the revolution in distance education and new learning solutions that have important implications for the accreditation of educational institutions and the assurance of quality in such circumstances. New technology has also brought about the effective information and data services of institutions like FinELib in the fields of technology and medicine with reasonable financial expenses. In some other fields, including the humanities and theology, the situation is different. It seems obvious that effective service in some fields may seem irrelevant in other fields, and the provision of services for the general public with public service libraries may also cater for the specific needs of advanced scientific users.

FinELib was launched to support higher education, learning and research in Finland as part of the Information Society Programme. In the 21st century, the challenge is global knowledge society. In this new century, information and knowledge matter more than ever, and the ability to use them effectively depends on a set of abilities that extend beyond the traditional foundation of reading, writing and maths. Teachers, students, employees and citizens must now incorporate the new components to enhance their knowledge and critical thinking skills. These include technology literacy, the ability to use new media such as the Internet to access and communicate information effectively and information literacy, which means the ability to gather, organize and evaluate information, and to form valid opinions based on the results.

A true revolution in e-learning requires high-speed access to the World Wide Web, and the flexibility to offer a variety of media. The new services are profoundly changing professional research and educational work at a time when it is possible to retrieve and save articles and other materials, search all kinds of information from images and animation to texts, and receive e-mail alerts and have access to sources that were previously not conceivable.

The recent evaluation work of FinElib was an attempt to define the performance of the Finnish National Electronic Library in this process and help it to determine a long-term strategy and vision in the rapidly changing eWorld. The problem is not only to study how best to serve traditional university and polytechnic libraries and research institutions, but also how to deal with the whole new learning culture. In Finland the high performance in school achievements and general literacy is largely due to the advanced network of public libraries. Not only institutions but also citizens are main users of information and knowledge.

The different recommendations to the Ministry of Education, FinELib, and different kinds of libraries are brief but clear. The Ministry of Education could broaden its role to become the Ministry of Knowledge too. In the UK, the ministry is called the Department of Education and Skills. In South Korea the name is Ministry of Education and Human Resources Development. The challenge of new literacies should be elaborated in a National Media Education Programme to also promote information literacy supported by electronic library services.

In general, institutional and organizational changes always face resistance, and the existing library structures may not be an exception. But in the strategy of a national and global knowledge society, traditional university and polytechnic libraries should see their role not working alone, but rather as part of a larger consortium where FinELib plays a special role. This is an essential part in the process of creating a new kind of National Virtual University and larger global university structures. The new learning culture implies innovative applications of e-learning and e-services, virtual arrangements and cooperation across institutions and disciplines. At the same time, specific needs of different disciplines and problem areas should be effectively met.

7 Removing barriers to access and connect E-Learning

Virtual education in Europe has until now mainly taken place within national contexts, and there is not yet much transnational collaboration. National consortia with centres of expertise have been formed in many countries, as in Finland, while some single e-universities and project-based national initiatives also exist. Public-private partnerships are also developing, and there are new providers of content from corporate and media linked sources. The issues of quality assurance and accreditation as well as international strategic alliances are being widely discussed.

Finland also has many associations, organizations, centres, and libraries active in the field of media education. There is also a national electronic library, FinELib, although it primarily serves research institutes and universities rather than public libraries. FinELib is an ambitious project; it was created to serve the broad aims of the FinELib programme – transforming Finland into an information and a knowledge society, improving the availability of information in electronic form, broadening and facilitating access to scientific information for researchers and, in so doing, improving the output of Finnish research and the economic strength of Finland. FinELib has provided new tools for better competitiveness in research and learning.

We are facing a third major educational invention in technology. The first was the phonetic alphabet, the second printing, and now the third is telematics, which means computers connected to networks. These changes formed the basis on which the ten recommendations of the European e-learning Summit were formulated in 2001. The idea is to remove barriers to access and connectivity, support professional development, accelerate e-learning innovation and content development, address the ICT skills shortage, promote digital literacy and lifelong learning, and explore sustainable public private partnership.

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James Cornford and Neil Pollock

Putting the University Online

1 The University in Crisis: Collapsing Boundaries

The university, as an institution, is in crisis. The demand for higher education, from both governments and citizens, appears to be set for a near endless expansion. One might therefore think that universities, as the prime if not the only suppliers of that service, might be in robust health, confidently facing a rosy future. What is more the much heralded arrival of a knowledge-based economy might be thought to play directly into the hands of institutions which are centrally concerned with, among other things, the creation, maintenance and diffusion of knowledge. Surely, the university's time has come. Yet the one clear message, perhaps the only clear message, that can be gleaned from a perusal of the contemporary literature on the university its role, goals and future is that the university is in crisis. The university is variously described as: a 'ruined institution' (Readings, 1996), reduced to pursuit of a hollow and illusory 'excellence'; it is an 'attenuated' institution struggling to deal with an 'age of supercomplexity' (Barnett, 2000); it is perhaps even a 'dinosaur' (Noam, 1995) in a new networked environment which favours other, more recently evolved and more agile creatures. In all such accounts of the contemporary university and its future trajectories, one feature is common. Virtually all are agreed that information and communication technologies, and above all the internet, are a significant element of the current condition.

This apparent consensus about the significance of the digital technologies for the university masks a much wider set of arguments about why they are so important. The new technologies appear variously as the principal threat to the future of the university, as its potential saviour and, increasingly frequently as both as the same time. If the university is to survive in a wired world and networked world, then it too must 'get with the program' and move online. First, then we briefly explore the principal threats which the online world is understood as presenting to the university.

2 The Online Threat

How then are information and communication technologies being seen as threatening to the institution of the university? At the most general level, information and communications technologies, and actors, practices and processes which they support appear to destabilise almost all of the established certainties around which the university has been formed. Here we will focus on these claims of new uncertainties in just two arenas: the realm of knowledge and the realm of geography.

Knowledge, its production through research, its refinement through scholarship and it diffusion through teaching and learning, is perhaps the notion above all others around which the self image, if not always the reality of universities circulates. Yet it is here, perhaps, that the online world is seen as most threatening. When knowledge is available to anyone with a computer and network connection (still a fairly restricted group of individuals at a world scale), so the argument goes, the university's position as *the* gatekeeper to the world of knowledge is undermined. New sites of knowledge have sprung up, nowhere more thickly than around the new technologies. Universities now have to compete with corporate laboratories and global consultancies, among other actors, in the knowledge claims that they put forward, competitors who can claim a greater performative value for their kind of knowledge. Further, the academy's claim to a unique disinterestedness in the development of knowledge is no longer so widely accepted. The university's structure of faculties and disciplines appears to get in the way of, rather than sustain, 'the new production of knowledge'. While universities might cling to their role in accreditation of learning, even here the market value of a Microsoft or Cisco Certificate can be greater than that of a university degree. As Ronald Barnett puts it:

> The problem of knowledge for the modern university is *not* that knowledge has come to an end. Rather, is its that there are now many knowledges vying for a place within the university. It is not that the clerks have lost their monopoly over the production of high status knowledge; … it is that they have lost their monopoly over the definition as to what is to count as knowledge (2000, p. 35).

In short, the modern university is confronted with a postmodern environment (Smith & Webster, 1997).

The online world is also seen as threatening another key point of reference for the university – its practical and conceptual geography. Here the boundaries that are seen as being de-stabilised are those of the campus, the region and nation. Abeles is, again, a typical voice:

> with the rapidly increasing sophistication, and decreasing cost, of virtual courses, the hegemony provided by geography has disappeared. With increas-

> ing numbers of ‘on-campus’ students enrolling in their institution’s virtual courses on the Internet, the move towards courses offered by other institutions is only a `mouse click’ away. This is true whether the `other’ institution is located in Djibouti or is part of a multi-campus system such as in California or New York. (Abeles, 1999, p. 10)

Globalisation, to use the word of the moment, is seen as having undermining the intimate relationship which the university has developed, in the latter half of the 20th Century with the nation state. Here too there is a huge literature (e.g. Scott, 1998). What, for us, is significant is the wanting of the unique relationship between the university and the (nation) state. For Bill Readings (1996), for example, the ‘university of excellence’ (in everything, equally, from particle physics to car parking) is constructed on the ruins of the ‘university of culture’. And that culture was, of course, a national culture. Writing with the United States in mind, Readings argues that the state-funded expansion of the university after the Second World War was driven, in the science by the defence budget (the protection of national culture from threats from overseas), in the social sciences by the needs of the expanding welfare system (the extension of citizenship to all citizens), and in the humanities by the need to define a cannon of national culture. With the collapse of the Soviet Union, the checking of the expansion of the welfare state and the demise of the cannon, this three-legged stool has been kicked away from beneath the university. In these conditions, the nation-state, everywhere the major paymaster of the university, has taken a much less indulgent attitude towards the university.

Yet if information technologies, through the processes of globalisation and post-modernisation, are seen as part of the ‘problem space’ within which the university is grappling, they also figure in most maps of the ‘solution space’.

3 The Online Imperative

If these technologies destabilise boundaries, then they can also be used to shore them up. If they threaten to pull the university apart, then they can also bind it together. In this respect the online or virtual university has emerged as a potent vision for the future of higher education, utilising new Information and Communication Technologies (ICTs) to radically restructure higher educational provision and to re-equip the university for its new environment. What is generally envisaged in this scenario is a ‘university without walls’. Freed from the confines of the campus and its region, the university becomes a ‘virtual’ institution consisting of little more than global connections of potential students (recruitment), learners and teachers (students and staff), employers (the careers function) and alumni, in terms of teaching and learning, and researchers, research funders and research users, in terms of the institution's research mission, all held together by ICT applications. The vision is one of flexible ever changing organisations for knowledge creation and distribution. The university, as an institution appears to dissolve.

This agenda has implications for the whole university. In terms of teaching and learning, it envisions the separation or unbundling of development of course materials (packaging), the assembly of students (recruitment), the provision of learning and the assessment of competencies. With this unbundling, the university ceases to be an end-to-end supplier of the higher education process and may undertake one or more these roles, with other organisations undertaking complementary functions. The university, then, becomes far more externally oriented, an intermediary on the global stage, acting as collaborator, client, contractor and broker of higher education services. Of course, the extent of unbundling varies for different sub-markets, being greater in postgraduate, vocational and life-long learning than in the undergraduate 'rite of passage' market.

In terms of research, the vision is one in which research teams cross disciplinary, institutional and national boundaries. In part this arises from the growth of big science with its huge research teams and massive resource requirements, but it also builds on disciplinary traditions in all subject areas. More significantly, research increasingly involves working much more closely with users in what has been called 'the new production of knowledge' (Gibbons et al., 1994).

The administration of the university, too, is transformed in the visions of the virtual or online university. At the heart is this change is the provision of comprehensive information systems to support teaching and research networks. More significantly there is shift from an administrative culture to professionally supported academic self-management.

This vision certainly has a widespread appeal to a range of stakeholders in higher education. As Gladieux and Swail put it,

> today's expanding, interactive computer networks possess a power, promise, and allure that institutions, governments, corporations, the nonprofit sector and students are responding to in unprecedented ways (1999, p. 8)

What we want to do in this chapter is to explore a little more deeply some of the implications of this vision and what it might mean for the universities and those who work and study in them. We suggest that the route towards the online university is not as simple as is often presented and that, when the weary travellers arrive at their destination, the 'actually existing' online university may not bear much resemblance to the vision.

What is driving the rapid diffusion of this vision in the United Kingdom? First and most significantly, there is the shift from elite to mass higher education taking the form of increasingly large proportions of 18–20 years olds going on from secondary education to higher education. This phenomenon, observed around the globe, has not been accompanied by a proportional increase in the funding of higher education. This has led to a declining resource per student and a concomitant search by Higher Educational Institutions (HEIs) for efficiency gains. New information and communication systems hold out the promise of such gains, allowing the effort of teachers, researchers and administrators to be spread across ever larger bodies of students, allowing lucrative niche markets, for example in relation to overseas students and mature students, to be cost effectively reached and to drive internal efficiency through more streamlined work flows and administrative processes.

Further, the online university is seen as strategy for coping with the increasingly diverse student body. As higher education has expanded it has moved beyond an exclusive focus on the single, middle class 18–24 year olds, engaged in the traditional 'rite of passage', to encompass other social groups engaged in 'life-long learning' (Silver & Silver, 1997). Few of the new groups entering higher education find it affordable or easy to relocate to a traditional campus university for three or four years. Thus an increasingly heterogeneous student body requires new forms of marketing, support and monitoring. Here too, the online university holds the hope of being able to provide new forms of higher education more suited to the needs of 'non traditional' students.

The shift from an elite to a mass higher education system has also meant that learners are increasingly actively recruited rather than passively selected. Here the online university is seen as a tool for expanding the recruitment options of the university, both geographically into new and lucrative overseas markets, and in terms of new social groups in the domestic market.

What is more, students are increasingly seen not just as clients of the university but also as a resource for the institution. For example, in terms of regional engagement (e.g. student community action), and as alumni who may be persuaded to help to fund the institution and who can provide valuable contacts for research and recruitment, as well as openings for new graduates. Institutions are therefore adopting a more institutional approach to their students. The online university, from this point of view, proposes the tools required to organise and maximise this new resource.

Finally, students are increasingly seen as discerning clients with an increasingly wide experience of ICT from the world of private services and from the spread of these technologies in the home and workplace. The incorporation of ICT spend per head figures into many of the influential university rankings, for example, is seen shaping the choices of potential students. Here too the provision of on-line materials is widely seen as 'helpful' to the image and recruitment appeal of the institution.

The online university is also seen as a means of responding to a further set of pressures. Foremost among these are the external pressures, applied by national governments and funding agencies, for quality assurance and accountability for earmarked funding. Here the virtual university is seen as having the capability to readily provide statistics and support for the claims of universities in the face of demands for accountability. For example, the ill-fated UK MAC initiative, a tailored information system for universities, was substantially driven by the demands of government agencies for fuller statistical reporting of university activities (Goddard & Gaywood, 1994).

Further pressures concern the increasing demand for universities to show greater responsiveness to the needs of business and the wider community (Goddard et al., 1994). These pressures operate in each of the spheres of activity of the university, for example, in terms of more rapid curriculum development to meet the emerging demands from employers or the demand for more policy-relevant research. More significantly, however, these demands also imply the bringing together teaching, research and cultural activities as national and regional economic and social development strategies increasingly look to the university as a key player and demand a coherent institutional response. Here the promise of the online university is that, with the use of ICTs, the university can smoothly interact with the whole range of regional stakeholders. What is more, ICTs can enable the disparate activities of the university to be drawn together and enable the institution to 'speak as one' in its interaction with other agencies.

Finally, there is an increasing tension between the demands of teaching and research on the staff of the university. In this respect the application of ICT is widely seen offering the possibility for underpinning a new division of labour within the university, shifting much of the routine work of academic staff onto the technology and administrative system and thereby freeing up time for higher prestige research work and high quality interaction with students.

We would be very wary of accepting any of these claims at face value. For example, there is very little hard evidence of major cost saving associated with the provision of ICT-based higher education (Gladieux & Swail, 1999; HEFCE, 1999; CVCP, 2000). What is more, studies show that online distance education is dominated by those who already have some university education and is overwhelmingly concentrated on narrow vocationally oriented courses rather than attracting new entrants to higher education. As Robin Mason has put it, 'although the rhetoric of virtual education is that it will extend to the disadvantaged, the remote the housebound and the unemployed, those who are signing up for virtual education are the advantaged, the upwardly mobile, the "over-employed"… and the well educated' (1999, p. 77). The use of ICTs with students and alumni is un-proven and whatever the image benefits of ICTs, studies tend to show that students relationships to the technology are more complex than is often supposed by institutional managers (Crook & Barrowcliff, 2000; Crook, 2002).

To summarise, then, the virtual or online university promises to provide the capacity for universities to respond to and manage the range of pressures and tensions which characterise their current position. With the aid of ICTs, it is suggested, the university can simultaneously respond to new global markets, meet the requirement of increasingly onerous national regulation and audit, and satisfy the demand for new local engagement requirements, forces that might otherwise pull it apart. We are frankly sceptical about these claims. Along with John Seely Brown and Paul Duguid we suspect that ‘the idea of the virtual university … both underestimates how universities as institutions work and over estimates what communications technologies do’ (Brown & Duguid, 1995: no page numbers, see also Newman & Johnson, 1999). Nevertheless, these claims have underpinned an expanding programme of initiatives, programmes and projects within traditional universities as they have sought to explore the virtual university ideal.

The most celebrated (or perhaps feared) examples of progress towards the vision of the virtual or online university are new, ‘for profit’ institutions, mainly in the United States. The University of Phoenix or Jones International University, for example, are often held up as exemplars.[1] The significance of these ‘new’ institutions, however, lies not in their direct impact: they actually provide a tiny, although growing, proportion of higher education in the United States and elsewhere. Rather, their implication is primarily indirect, operating through the perceived threat to established HEIs in terms of their markets for students, and in terms of their demonstration effect. They have thus added a new impetus and urgency to the body of experimentation and innovation with the use of ICTs within existing institutions. For example a recent survey found that 41% of UK universities saw ICT as critical for future development, and a further thirty eight percent had ICT ‘high on the agenda’ (CVCP, 2000, p. 18). It is in this traditional higher education sector, that we would argue that the most quantitatively significant moves towards the online university are to be found – what we might call ‘brownfield’, rather than greenfield, sites. And it is these ‘brownfield’ sites, established universities attempting to go ‘online’, that are the most interesting.

4 The Literature on Putting the University Online

There is a huge literature on the role of technologies in higher education. What could we possibly add to this body of knowledge? What are the lacunae in this

1 Neither of these institutions, it should be noted provide the full range courses typical of more traditional of universities, nor do they undertake research.

corpus which we seek to fill? First, then we need to characterise the existing literature addressing the relationship between universities and information and communications technologies. This body of work can, we ague, be very crudely divided into two strands of literature.

First there are those works which seek to make a general argument about the relationship between information and communication technologies and the whole field of higher education, seeking the big picture. This debate is very much future-orientated (structured around questions about what the implications of the technology *will* be) and, as a result, not much concerned with the empirical material except as rhetorical ammunition or data from which trends can be extrapolated. Much of this work overlaps with the more general debate on 'the future of the university' or the 'the future of higher education', both of which generally give a large degree of influence to the capacities of the new technologies. Indeed, this strand of work often says little about any real university, one of the diverse range of concrete institutions bearing that title, as opposed to a strongly ideal-typical notion of 'the university' or more broadly higher education. It also has a much stronger focus on the teaching and learning aspects of the university than on its scholarly, research or community engagement roles. While this body of work contains much that is of interest, it is also lacking in a number of respects. First, much of this work is based on rational arguments from first principles, or more commonly from a given set of assumptions, and is lacking in detailed or systematic empirical support. Second, much of this work starts from fairly entrenched positions in which normative dimension bulks large from the start. In these accounts, information and communications technologies may figure on the side of the angels as technologies of freedom, or they may be the work of the devil, instruments of social control. Only occasionally, they may figure as both. But they are almost always presented as unified and monolithic. We seldom get much of sense of the variety of technologies associated with the online world or a picture of where these various technologies come from or how they are shaped in use.

The second strand of work which we would identify is made up of a number of much more focused and empirically grounded studies of particular applications of particular technologies in particular educational institutions. This work is typically structured around the question of whether there is a statistically 'significant difference' between the educational effects (however measured) arising from 'online', or more generally technologically mediated, education and more conventional means of teaching and learning. The scale and longevity of this debate can be measured by examining the bibliography at http://teleeducation.nb.ca/nosignificantdifference/. Related strands of more empirically informed research are concerned with 'scholarly communication' and an even smaller, but rapidly growing, body of work on the roles which information and communications technologies play in the research process. Once again, however, what is important to note in this body of work is the highly uneven focus of attention. Once again, the particular technologies are often presented as a given; there is little description of the online course or programme, as opposed to its effects. Again, the dominant concern is with the teaching and learning, and less so the scholarly functions of the university saying almost nothing about research. This strand of work generally has even less to say about the role of information and communication technologies in community or industrial engagement or, vitally for us, the management and administration of the university as a whole. Yet any university is about all of these tasks, and thus the process of putting the university online must take them in account too. Thus, where the 'big picture' literature tends to deal with the relationship between the new technologies and higher education, avoiding the actual institutional level, work focused on individual courses or the evaluation of individual projects also has little to say about the university as an institution.

To sum up, in terms that might be familiar from Science & Technology Studies, the first debate is concerned with changing paradigms and 'the big picture', generating a range of bold conjectures, while the second is much more akin to 'normal science', concerned with the structured falsification of more tightly defined particular claims. From our perspective, these two bodies of work both have their strengths and weaknesses. However, we want to focus on what we see as the important set of questions which fall, as it were, between them. What we want to highlight here are three points, each of which can be tied to one of the words in the title of this chapter.

5 *Putting* the University Online

First, then our emphasis is on the process of *putting* the university on line. This process rarely figures, or figures centrally, in either of the two bodies of work discussed above. They are both focused around contrasts, implicit or explicit, between two states, the offline and the online, the present and the future. They have little to say about the processes by which one state is converted into the other. Thus, their debates are predominantly about the impacts and outcomes of the technologies *after* they have been implemented and they pay little attention to the actual process of designing and implementing the technologies themselves. In a term which has become familiar within Science & Technology Studies, the actual technology is regarded as a 'black box'. The tendency, then, is to see impacts where the technologies have been adopted, where they have been made to work, which always leads one to tell a history from the point of view of the winners, from a position that appears secure and well established. But looked at from the point of view of those actually putting the university online, the perspective is often very different. Far from being an achieved and stable situation, the online university is a fragile achievement, at least to start with, and those involved in process often painfully aware that it could so easily have been otherwise, projects could have stalled, failed or been abandoned. Indeed, in both the literatures sketched out above, the very considerable work – of various types – required to make, say a videoconference-based multi-site seminar, an online assessment system, or an online payroll system actually work, are often obscured. We should have more research, then, not simply on online universities, but on putting the university online – we need studies of processes not outcomes.

6 Putting *the University* Online

In the second term of our title, our emphasis is on the university, understood as an institution. The notion of 'the university' is a notoriously slippery one. We have already criticised the equation, common in the literature on virtuality, of the university with higher learning, or more minimally with instruction for accreditation. For while the issues of teaching and learning bulk large within any university, they do not exhaust its scope of activity. Rather, the university, in our sense, is a multi-tasking organisation, in which teaching, scholarship, research and 'community service' are all important goals and in which the administration (or, increasingly, management) required to balance, sustain and support those roles, is also a critical component.

The traditional university is conventionally, if mythically, though of as a band of scholars coming together in pursuit and dissemination of knowledge, governed by a more or less collegiate model of organisation, based around a complex structure of committees and with a high degree of individual and departmental autonomy. In this sense 'the university' as an institution tends to lack a clear identity, primarily existing in the heads of people who constitute it and a myriad of locally negotiated practices and interactions. The central social role of the traditional university has been to provide a place-based 'rite of passage' for entry into middle class professions through its undergraduate, vocational and extramural provision, together with the provision of ideas-driven 'academic' research. In institutional terms, it has thus been described as an exemplar of a 'loosely coupled system' (Weick, 1976) characterised by a lack of clearly articulated policy and weak control over the implementation of policy (McNay, 1995). The traditional university as an institution, we might say, often appears to be only virtually present. The traditional university has, however, proven to be both highly flexible and responsive, in particular to financial incentives from government, *and* highly rigid and resistant to changes which threaten its autonomy.

This ambiguity is apparent in the extent to which, as one moves around a university, the institution of the university is always, to a greater or lesser extent, ‘over there’. Thus for the academics in their departments, labs and research centres, ‘the university’ generally refers to the senior management and, particularly, central administration. By the same token, for the senior management and the administrators, ‘the university’ which they are seeking to govern, manage and administer is very clearly ‘out there’ in the departments, labs and research centres. Meanwhile, for the students, ‘the university’ is seen as being comprised of both of these groups, but once again somewhat distanced and apart. ‘The university,’ even for those who work or study within one, is always ‘them’ and never ‘us’. In many ways, this distancing is understandable. For the academic, both status and job security are dependent less on their current university and more on the ‘invisible college’ of academics in the same or cognate disciplines at other institutions. For the institutional manager or administrator, progress depends on interaction with a body which it is impossible to fully understand (for who can understand the physicist, the economist and the literary theorist equally well). And for the student, the duration of their sojourn in the university is typically still a fairly short-lived prelude to something greater.

Our own solution to the problem of defining the university is therefore not attempt a general definition acceptable to all, but rather to accept the complex and multiple meanings of the term. For us, then, the institution of the university is a function of the everyday practices through which these loosely defined bodies are actually instituted, accepting that ambiguity and ambivalence must be part of an adequate definition, rather than being the enemies of definitional clarity. In part it is this multi-perspectival view. Our focus is on the network of everyday action that, in spite of the different conceptions of the university, is what actually sustains the concrete institutions that we have studied. It is this perspective that leads us to draw new approaches (such as actor network theory which we have applied to higher education (Cornford & Pollock, 2003).

7 Putting the University *Online*

How do we understand the third part of our title? What does it mean to put an institution online? Here we confront the question of technology, drawing on wider debates about the role of technology and its relations to the social realm.

One tradition, still dominant in policy research, has been concerned with the impact of technology, above all ICTs, on social and economic life. This tradition has an economic bias and a predominantly extensive and quantitative empirical approach. However, in spite of the great claims have been, and are still, made for the transformative capacities of new ICTs, some twenty years of research unambiguously suggests that 'ICTs rarely cause social transformations' Kling et al., 2000, p. 65; cf. Webster, 1995; Williams, 2000). Even in terms of an issue such as the economic impact of the diffusion of computers and the internet on US productivity, where some of the claims for transformation have been loudest and much data is available, this is hotly contested (Gordon, 2000; OECD, 2000). (Indeed, the most interesting outcome of this debate has been a profound rethinking of the meaning of productivity.) More theoretically, the crude technological determinism and the notion of technology as an exogenous variable in social change, which characterised earlier work in this tradition has become more and more untenable. In the face of these empirical and theoretical challenges, this tradition has increasingly focused on the context of diffusion, on the organisational and other social changes that are seen as necessary to release the potential of ICTs, leading to a concern with the development complex socio-technical systems, and moving away from crude impact metaphors to an ever more subtle and baroque modelling of the relationship between technologies and society.

The alternative major tradition, and now perhaps the dominant tradition among academic social scientists, has focused on the ways in which social and economic processes and forces shape the form and content of technologies and services – the socio-economic shaping of technology or, more emphatically, the social construction of technology. This body of work, with its predominantly qualitative and fine grained empirical approach, tells us a lot about why particular technologies and services are the way they are, how they have been developed and deployed and crucial role of meanings and understandings in that process. By stressing the way in which ICTs are shaped by powerful socio-economic forces, this tradition has helped to explain the lack of social and economic transformations noted by Kling and others. It is, however, often a highly focused and retrospective exercise which provides only hints and clues about the longer run implications of technologies for the wider society and economy and is often of limited use in helping individuals and groups to make better decisions about ICTs (McLoughlin, 1999; McLaughlin et al., 1999; McKenzie and Wajcman, 1999).

Both traditions, then, while having something to offer, appear increasingly exhausted. However, if we regard them dialectically as thesis and antithesis, then we might begin to construct some new synthesis, which can build on, but also take us beyond, them both. From the first tradition, then, we want to take seriously the concern with larger-scale, long-run transforming potential of socio-technical systems (and the limits thereof), while from the second, tradition, we take the focus on meanings and understandings as the key to grasping that potential.

ICTs, like other goods and services, come into a particular community with powerful suggested meanings, or 'scripts' attached, constructed by their developers and marketers. Yet study after study has found that these supposedly dominant meanings fail, to a greater or lesser extent, to be translated into practice. Rather, they are contested, resisted, deflected or complemented by other the meanings developed by their intended audience and others (MacKay et al., 2000). These meanings are, of course, deeply context-dependent, building on and bound to established frames of reference and forms of practice. Thus the meanings of ICT emerge and are learned in the context of specific context or situation and the network of individuals and institutions which comprise it. ICTs may, of course, have different meanings for different groups and the meaning of ICT may be contested within and between groups. It is, however, these meanings which most powerfully shape the ways in which particular institutions attempt to assimilate (adopt, adapt and use, or reject) particular ICTs.

For us, then, the process of putting the university online implies much more than a simple technical exercise in which some materials or processes are simply transferred from the off-line world to some ready made online realm. This is a complex process in which the meanings of, and boundaries between, online and offline and not pre-given but rather actively constructed.

8 Conclusion

Information and communications technologies are seen as both threatening the university as an institution, deepening its sense of crisis, but they are also seen as holding out the promise of a solution to, or at least a way of living with that crisis. The virtual or online university has emerged as a potent vision of one way of addressing the increasing demand placed on the university. While there has been much speculative writing about the impact of information and communication technologies on the university, and a parallel literature of detailed studies or evaluations of particular online activities, these literatures have three significant lacunae. First, they are mainly concerned with online universities, eliding the prior processes of *putting* the university online. Second they have a strong bias to either address higher education or to address specific aspects of teaching and learning, scholarship and, less often, research. They thus omit the question of the institutional level analysis of the putting *the university* as an institution online. Finally, much of the work has a strong (implicit) technological determinism and a narrowly technological understanding of the scope of the problem of putting the university *online*.

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Petra Fisser and Joachim Wetterling

The Use of ICT in Dutch Higher Education: Developing an E-Learning Structure

1 Introduction: the development of E-Learning in the Netherlands

In Dutch higher education, the integration of ICT has been a 'hot topic' for decades. Often this integration of ICT is called e-learning. But how is e-learning defined? Sometimes everything in education that has to do with technology is called e-learning. A recent trend, however, is to call e-learning only those ICT-related initiatives that actually change educational activities in such a way that an innovative pedagogical move is made. Thus only the automation of processes, by replacing paper tests with tests in which learners enter their answers on a computer, for instance, is not seen as e-learning. On the other hand, digital portfolio implementation is an example of e-learning, because digital portfolios are not only a replacement of big suitcases in which learners store the things they made during their school career, for the digital versions of the portfolio have actually been used in the whole concept of changing pedagogies based on ICT. But e-learning is not an isolated innovation phenomenon. The process of implementing ICT in (higher) education in the Netherlands is accompanied by organizational, technological and social changes as well as a stronger cooperation between education and the corporate sector. All these issues will be discussed in this chapter in order to offer the reader insight into how the integration of e-learning is realised in the Netherlands. The cooperation between higher education and the corporate sector is important for the quality of graduates and their career chances. E-learning integration in higher education is expected to have a positive impact on the quality of education and thus on graduates. In this respect, the corporate sector should be involved not only in curriculum development but also in discussion about how and where e-learning is implemented.

The chapter starts with the Dutch vision on e-learning in higher education, by not only looking at what happens today but also at what we have learnt in the past and how the future should look (Section 2). As economies of scale are important in a small country, cooperation initiatives are also presented, including what they contribute to e-learning initiatives (Section 3). The next Section deals with a model for the implementation of e-learning where three aspects play an important role: actors (stakeholders in e-learning implementation), factors (influencing e-learning implementation) and strategies (for e-learning implementation) (Section 4). Section 5 presents two examples of good practice in e-learning implementation in the Netherlands, and Section 6 introduces e-learning scenarios developed in the Netherlands but which are equally applicable to any other (higher) education setting in the world. The chapter concludes with a discussion of the future of Dutch higher education related to e-learning.

2 A Dutch vision of E-Learning in higher education

In this section, additional information is given about the Dutch higher education system and the vision of e-learning related to educational, organisational and technological aspects. Then expectations from history and today's realities are discussed.

2.1 The Dutch higher education system

The Dutch higher education system consists of 14 universities and around 60 institutions offering higher professional education, the so-called Hogescholen. These Hogescholen are to a considerable extent comparable to the German Fachhochschulen or the former British polytechnics. Besides the 13 traditional research universities, there are a small number of institutions that are part of the university sector: the Open University of the Netherlands, a private university for business administration and four institutes for theological education. The universities prepare students for independent scientific work in an academic or professional context. The Hogescholen prepare students to practise a profession and enable them to function in society at large on a self-regulated basis. Both the universities and Hogescholen have developed experiences in the field of e-learning.

At the moment there is no official governmental legislation in the Netherlands specifically related to e-learning, nor are there plans to prepare for such legislation. E-learning is seen as a tool for education or as a specific form of education. As such, existing legislation is also valid for the use of ICT in education (Boezerooij et al., 2002). Even though there is no official legislation, there are several governmental documents on e-learning and the use of technology in education. This is further elaborated in the next section.

2.2 Vision related to education, organisation and technology

The Dutch vision of e-learning is guided by a framework that sees e-learning as an implementation of blended learning – a mixture of online learning and contact sessions. This definition involves a continuum from 100% online learning to 100% contact sessions. Either of these extremes should be considered a hypothetical situation. This vision is also accompanied by support of a new perspective on learning where flexibility of delivery as well as the learner as an active participant in the learning process are fundamental.

According to the Dutch government, the strategic vision on e-learning aims towards:

- a transition to a knowledge society: this is to improve the innovative power of corporate organizations by delivering more knowledgeable workers and also to improve the relation between higher education and corporate organizations.
- strengthening the international position of Dutch higher education: the European Commission aims to be a world leader in knowledge economics and the Netherlands wants to be at the top in order to strengthen its competitive position in the international context.
- acheiving a stronger participation in higher education in the Netherlands by means of more life-long learners and a better flow of learners from other sectors of education: this vision requires a growing level of flexibility since the background of the learners will be wider and conditions in which learners operate more varied.

This is a political vision insofar as cooperation between educational and commercial organizations is supported to strengthen the scale on which the knowledge economy is improved. The future of the Netherlands as a leading country in the world of the knowledge economy requires the students of today (higher education) to be trained in cooperation with the setting in which they have to work tomorrow (corporate life).

2.3 History's expectations

Experiences from the past can have a strong impact on decisions made about the future. But the past and the future are in different frameworks. Expectations expressed today about a situation in 10 years are built into the context of a framework of information of today. And ten years ago people expected developments in 10 years (thus now) based on information they had at that time. This shows that expectations have more value as a PR tool to promote something than as a scientific prediction tool telling the (scientific) 'truth' about the future.

History's expectations in the past about today and, in parallel terms, today's expectations about the future, can be defined according to the categories costs, quality, innovativeness, and customers.

Costs – Historical trends show that, over time, equipment costs decreased while personnel costs increased. Expectations were once that e-learning would reduce costs of education because less staff would be necessary. Because of the large time invested in the development of e-learning products as well as the time teachers had to invest to learn to work with the e-learning products, these expectations did not correspond to reality.

Quality – Quality, defined as the degree to which something meets its requirements, is as a term subject to changes over time. Like costs, quality is strongly influenced by time-related conditions. Quality expectations about a situation in the future are therefore characterised by a high level of uncertainty. Nevertheless, quality expectations can be important insofar as they determine the criteria to be met in the future. Making predictions about quality of e-learning in ten years from now either directly or indirectly expresses criteria to be met by e-learning in the time span.

Innovativeness – Developments over time usually pretend to do something in a different way that is better or faster. Approaching a situation from a different perspective with the aim to improve its effectiveness or efficiency.

Customers – As far as customers are concerned, a renewed attention to pedagogy and the learning individual can be recognised in the Netherlands. E-learning shifts from a facilitating role in the background to the foreground, where the ICT directly supports the learning process (Pittinsky, 2003).

2.4 Today's realities

Today, almost all organisations for higher education are using ICT and e-learning in a large share of their curriculum both for didactic and supportive functions. There is a high-level infrastructure of equipment and networking available and staff training in the implementation of e-learning has a priority in the universities.

Making strategic decisions about e-learning should be seen in combination with the following questions:

- Which changes are going to happen in higher education separate from e-learning, and how do these changes impact on e-learning developments?
- What should the 'new education' look like?

- What investments should be made in higher education (the justification of investments in e-learning is an especially difficult aspect because of the high level of uncertainty).
- What should the infrastructure look like for the intended e-learning?
- And finally: is technology really the solution for problems occurring in higher education?

Many state-of-the-art investigations have been carried out to describe the current situation in the Netherlands with regard to the implementation of e-learning. Without displaying all the statistical analyses that are available, it is safe to say that each institute for higher education in the Netherlands is involved in e-learning. Of course, there are many differences between the institutions. Some of them have e-learning completely integrated in their day-to-day education, while others are somewhat reluctant to have a campus-wide implementation, but have nevertheless implemented e-learning at the faculty level. Since its mode of delivery is highly suitable for e-learning, the Open University of the Netherlands is one of the organisations in which e-learning has the highest immersion rate. As a result, and on account of the existence of a large research center connected to the Open University, this organisation also contributes a lot to e-learning expertise building in the Netherlands. In general we can say that the use of technology to support education has found its way into Dutch higher education. Some examples of this will be given in paragraphs 5 and 6.

3 Cooperation in the field of E-Learning in Dutch higher education

In most institutes of higher education throughout the world, the same issues arise: educate more students with less money, offer better quality and use modern technology at the same time. This is caused by the environment in which universities have to operate: this has changed significantly in the last few decades and is still changing. Universities have to react to these changes, which can be related, for instance, to government and policy, demographic changes, market forces, internationalisation and lifelong learning (Fisser, 2001). Universities may want to anticipate changes or adapt in advance of these changes. Information and communication technology (ICT) is seen as a major response to the changes, because ICT is perceived to create opportunities, increase the efficiency and flexibility of the learning process and of academic work (Fisser & van Geloven, 2003).

Over the last ten years, many virtual or digital universities have been created throughout the world as an answer to these issues. These innovative organisations can be a part of a ‘traditional’ university (for example Penn State World Campus), they can be a new organisation (for example the UK E-University), or a cooperation between several universities. The latter has been the case in the Netherlands, where both the SURF Foundation and the Digital University are networks of higher education institutes working together on new ways of using ICT in education.

3.1 The SURF Foundation

The mission of the SURF Foundation is to exploit and improve a common advanced ICT infrastructure that will enable higher education institutes to better realise their own ambitions and improve the quality of learning, teaching and research (Stichting SURF, 2003). All universities and other higher education organisations as well as a number of other non-commercial (research) organisations participate in SURF.[1] SURF activities are funded both by higher education institutes in the Netherlands as well as by the Dutch government. One of the programmes within the SURF Foundation is the SURF ICT and Education Platform. This platform has generated a wealth of experience and products and paved the way for further cultural changes. Building on four years of successful tenders for innovation projects, the SURF ICT and Education Platform will support innovative projects over the next few years. Each year, one or more themes will be adopted in which modernisation projects that complement and strengthen each other will be subsidised and implemented via a tender. Collaborating institutions write the project plans within this tender. The platform itself initiates various projects which promote, for example, systems integration or establish the use of standards.

3.2 The Digital University

The Digitale Universiteit (DU), which started in 2001, is a consortium of ten universities and hogescholen in the Netherlands. It focuses on the development and application of digital educational products and knowledge for higher education (Digitale Universiteit, 2002). Important issues for the Digitale Universiteit are the changing demand for education, combining working and learning, permanent education, the role of e-learning and the need for cooperation. On average, the DU fosters 30 projects each year with an annual turnover of 10 million euros. The financial resources are mainly provided by the consortium members (7.5 million euros) and the Dutch Ministry of Education (initially, in 2001, 11 million euros

1 For a list of participants in SURF see http://www.surf.nl/oversurf/index_deelnemers.php (in Dutch).

and, for the period 2004–2006, 10 million euros). The DU itself has no students or educational staff members.

The field in which the DU operates is educational innovation, including current opportunities and problems in higher education where ICT can offer a solution. Cooperation within the DU is expected to stimulate better, faster or cheaper innovations and to achieve and improve current issues more rapidly and/or at a low-cost. To achieve this, digital educational tools and electronic systems are necessary, in particular knowledge of new concepts and processes with regard to the use of these tools and systems (Fisser & van Geloven, 2003). For this reason, the consortium aims not only to develop services and products, but also to facilitate the mutual sharing of developed knowledge, particularly in the field of educational innovation with ICT: developing new didactic concepts, implementation strategies, change management, cost issues and technical choices, etc. This means that the DU is both a product community and a knowledge community. Therefore the Digitale Universiteit aims to set up a relevant knowledge network, share expertise and, last but not least, share the financial burden of innovation.

The mission of the DU is to realise qualitative and quantitative economies of scale for educational innovation, supported by information and communication technology. Economies of scale are realised with two strategies: (a) through joint projects, leading to knowledge, services and products and (b) by means of the programme 'Virtual learning environment' and the Educational Service Provider (ESP). This leads to a technological approach and effective service and hosting, support and product maintenance. The DU aims to realise both the qualitative and quantitative economies of scale in the field of education and innovation with ICT. An example of the advantage from a qualitative perspective is the building expertise in the field of the implementation of a digital portfolio in education, by cooperating with ten institutions in the form of pilot schemes. An example of an advantage from a quantitative perspective is the sharing of costs of management and the maintenance of digital educational materials with all other institutions which make use of it.

3.3 Strategic cooperation

Both the SURF Foundation and the Digitale Universiteit are strategic alliances within the higher education sector in the Netherlands. Because this sector is not that large compared to other countries, it was decided that strategic cooperation is not only needed within the two alliances, but also between the alliances. Therefore, the two alliances will work together on a plan that will be presented in the summer of 2005, in which a new organisation will be presented. This organisation will combine the strengths of both the SURF Foundation and the Digitale Universiteit.

4 E-learning: actors, factors and strategies

Even though all Dutch higher education institutes in the Netherlands are implementing e-learning, this does not mean that this is an automatic process. The use of ICT ranges from research or orientation activities to individual and group initiatives and to campus-wide implementation. Even though there are several examples of a successful transition from the pilot phase to the implementation phase, it appears that, in practice, it is quite difficult to take appropriate actions to achieve actual implementation or even integration or institutionalisation. Many factors can be identified that influence this, and a general strategy for implementation seems not to be available (Fisser, 2001; Collis & van der Wende, 2002; Fisser, 2005).

4.1 Implementation, a complex process

In general, it can be said that the implementation process usually starts with a pilot with certain results. The pilot is scaled up and implemented in a broader context via a project leader. Depending on the situation, it is possible for there to be an extra person involved in making the decision whether to proceed with implementation or not. But as can be seen in the figure, environmental factors can have an influence on the process as well. It is often assumed that, in the first part of the process, during the pilot, little influence is needed or even possible. The pilot will be carried out by (often) enthusiastic pioneers or project members who find it useful and effective, but also (and perhaps equally importantly) enjoyable to work on the pilot. Based on the results of the pilot, the implementation process will or will not continue. This depends, for instance, on the organisational environment, the person or persons responsible for the implementation and many other factors.

The process of going from pilot to implementation is a complex one. In various articles this process is seen as a change process, relating to both organisational change and educational innovation. Fisser (2001), for instance, states that there is a process of change involved in both the decision to adopt some new form of ICT in education and in the implementation of this form of ICT. It is no coincidence that, in this statement, two processes are mentioned; when a decision is reached, the larger task is not over. Decisions can be reversed or ignored and even, if not reversed or ignored, decisions still have to be implemented. Implementing change throughout higher education establishments is not simple because they are “professional organisations" (Mintzberg, 1983) and the core of the organisation occurs at the bottom.

4.2 Actors involved in implementation

In other words, implementing educational innovation is a complex process and does not only depend on the person who decides whether the innovation is needed. After this decision is made, the real work starts and many actors are involved in this process. The more actors and organisational units involved, the more complex it will be. The need for coordination and cooperation in such complex systems may be a critical criterion of success (Rahm & Reed, 1998) and as anyone with any experience in implementing ICT in education can confirm, many actors are involved. By listing the actors, their activities and their roles it may be possible to stimulate and support the process of moving from piloting to implementing and integrating. Many studies have been carried out in relation to actors who are involved in a change process (see for instance Levin, 1998; Rahm & Reed, 1998; Fisser, 2001). In the Netherlands, a study was carried out by Berenschot Osborne (2002) to determine the state of affairs in relation to the implementation of e-learning within Dutch higher education. They identified several actors who are or have been important, including the board of the university, deans, educational managers, an ICT steering group, teachers, students, a central unit for infrastructure and computing, and a central unit for pedagogical support. Each of these actors assert in the study that the use of ICT in education is high on the agenda and that there are several opportunities, but also challenges. These challenges often relate to finances, stimulation, staff development and time-related issues. Based on the literature, table 1 lists several actors who are involved in the process of implementing e-learning.

Table 1: Actors involved in the implementation process

Actors involved	
College board members	Members of staff development unit
President/rector/ principal	Members of pedagogical support unit
Vice president/vice chancellor/provost/policy advisor	Members of infrastructure and computing unit
Deans	Staff members of the library
ICT steering group	Students
Middle managers/educational managers	Ministry of education
Chair/head of department	External institutions
Faculty, instructors, teachers	

This list is probably not exhaustive, but gives a good indication of which actors should be considered during an implementation process. This does not mean, however, that all actors are always and all the time involved in the whole process.

In relation to Table 1, the following seven categories are proposed: board, higher management, middle management, faculty, students, support, and external. The categories are based upon the hierarchy and organisation within a higher education institution, considering the persons within a category and their influence on the implementation process. The categories and the actors involved in each of the categories are shown in table 2.

Table 2: Categories of actors that are involved in the implementation process

Category	Actors within the category	Role and activity of the actor-category
Board	College board members President/rector/ principal	Leadership, vision, strategy
Higher management	Vice president/vice chancellor/ provost/policy advisor Deans ICT steering group	Leadership, policy-making, strategy, budget/ and resource-allocation
Middle management	Middle managers/educational managers Chair/head of department	Leadership, policy-making, stimulating faculty
Faculty	Faculty, instructors, teachers	Education and research
Students	Students	Education
Support	Members of staff development unit Members of pedagogical support unit Members of infrastructure and computing unit Staff members of the library	Supporting the implementation process
External	External institutions Ministry of education	External stimulus to change

By combining what has been said about the implementation process and about the categories of actors, the following steps are identified that will be used in Table 3: initiation, piloting, advising, decision-making, implementing, and integrating.

From table 3, it can be seen that in each of the stages of the implementation process a) the middle management is involved and b) leadership is an important role or activity.

Table 3: Descriptive model of the implementation process

Stage in the implementation process	Initiation	Piloting	Advising	Decision-making	Implementing	Integrating
Actors involved	Board Higher management Middle management Faculty Students Support External	Middle management Faculty Students Support	Middle management	Board Higher management Middle management	Middle management Faculty Students Support	Middle management Faculty Students Support
Roles and activities	Leadership Vision Stimulus to change	Leadership Education and research Supporting the implementation process	Leadership Policy-making	Leadership Policy-making Strategy Budget/ and resource-allocation	Leadership Stimulating faculty Education and research Supporting the implementation process	Leadership Stimulating faculty Education and research Supporting the implementation process

In the initiation phase, a pioneer or an innovator with leadership qualities is needed. This person does not need to be aware of these leadership qualities, but he or she will explore the possibilities of a specific ICT application and share the experience with others. This can be an instructor who has some experience with a specific application, but also a dean who has seen something in another department, or a member of the pedagogical support unit who has noticed some new developments in the field can be the initiator. This means that all actors could be involved in the process of initiation. Students are also often mentioned as initiators of change (see for instance Fielding, 2001; Goldman & Newman, 1998). The pilots that come out of the initiation are often carried out by faculty and support units, possibly involving students. Advising and decision making about moving from pilot to implementation is mainly the activity of higher and middle management. Based on (bottom-up) experiences, decision-makers in the department, faculty or university choose to implement ICT on a broader level and produce a strategic plan. This plan, the actual implementation is usually carried out by faculty and support units, and in many cases the students are involved. The final integration is largely the task of the faculty although, without the (financial) support of especially the middle management, integration will not be achieved.

Since the middle management is involved in all stages of the implementation process and since leadership is an important role and activity in the implementation process, it is assumed that these two are connected to each other. This should be accounted for in the whole implementation process. This can be done by not only assuming that the middle manager plays a crucial role, but by involving him or her in all steps of the process (for more on this subject, see for instance Kallenberg, 2004).

4.3 Implications for the development of E-Learning in the Netherlands

The studies mentioned above are based on literature, but can also be seen in case studies carried out in the Netherlands. Much is expected of the middle manager, and also from the educational ICT advisor. A recent study in the Netherlands about the implementation of a digital portfolio show that most respondents in a national survey agree that, before a system such as a digital portfolio is implemented, a shared vision on the use of the system should be developed. The respondents see this as an activity of the educational managers. They have to develop the vision, make a strategic action plan, create commitment with every person involved, and are seen as the main project managers during the whole implementation process (Slotman, Fisser, Gulmans & Braspenning et al., 2005). On the basis of this study, a decision support model was developed that supports the educational managers when making decisions about the implementation process (see figure 2).

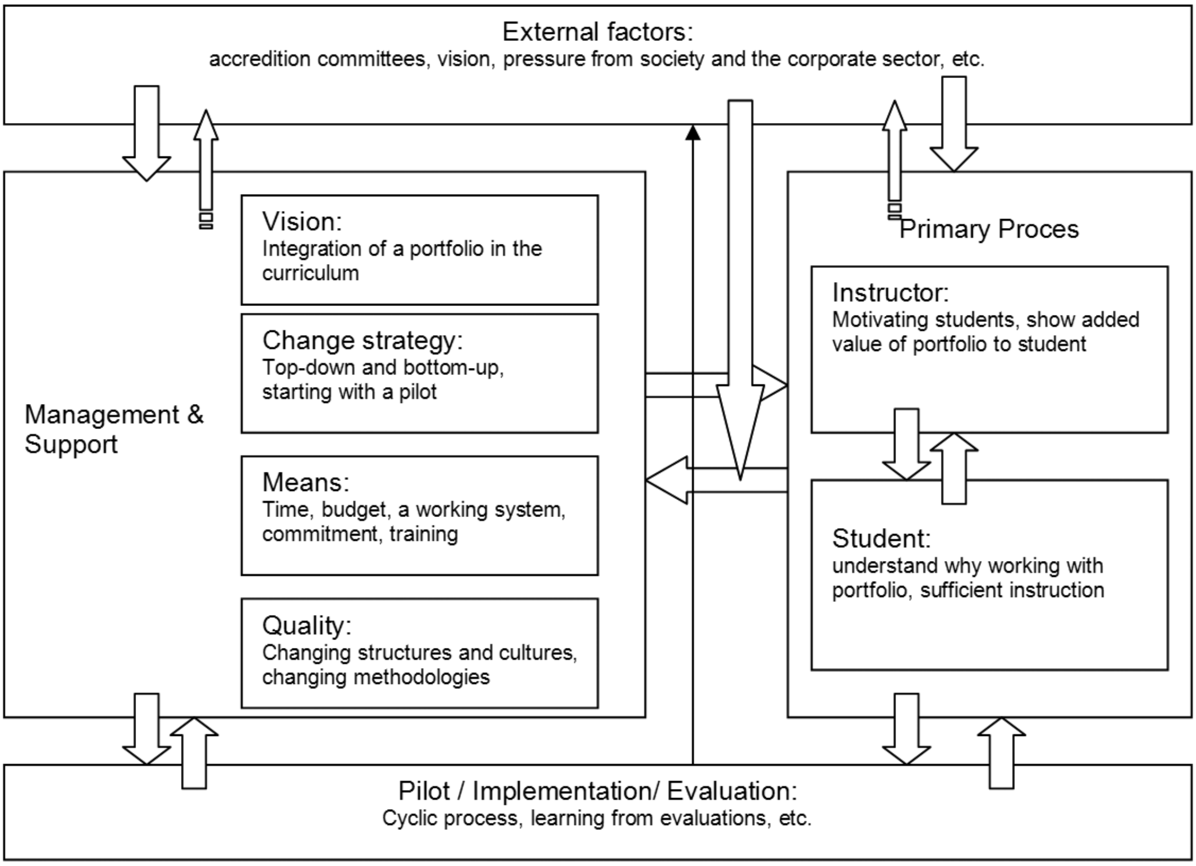

Figure 1: Decision support model for the implementation of a digital portfolio

The decision support model is not meant as a checklist. There is no "right way" of changing, all depends on many factors, actors and strategies. There are also different contexts that a manager should be aware of. This means that a real checklist is not appropriate, but the model shows the connections between the various actors, factors and strategies.

Another model that was developed in the Netherlands was the "ICT in Education Implementation Model" (Fisser & Dekker, 2003). This implementation model consists of six steps, describing the general process of an implementation. The model is used to support the educational manager. The steps are:

- Orientation
- Describing the current situation
- Determining the ambitions
- Determining the interventions and activities
- Carry out the interventions and activities
- Evaluation

The first step of orientation actually is raising the awareness within the department of what it is they want to do: implementing an electronic learning environment. The instrument used describes the 10 key factors involved: pay attention to technical and financial issues, gain commitment from both management and academic staff, organise the support and staff development, plan a strategy for the implementation process. Step two involves a quick scan in which all relevant information about the department in relation to ICT in education is collected and in which the current situation is described.

The third step is one of the most difficult steps in the implementation model: determining the aims. The goals are described and a vision is developed. Based on the vision and ambition of the faculty or the department, a set of interventions and activities is determined (step 4). This is the actual plan for the implementation of the learning environment. The interventions and activities aim to create commitment, communication about the process of the project, staff development for those involved, optimise support for the staff, increase the involvement of staff and continue development and maintenance of the vision. Step 5 involves carrying them out. The evaluation, depicted as step 6 in the model, is not only carried out at the end of the project, but is an ongoing process. In line with experience, the project planning and content could be adapted to fit the specific needs of the faculty/department or its academic staff.

The two models mentioned here are only two out of many. But most of the models and scenarios are based on studies described earlier, about actors, factors and strategies. In the next section, examples are given of how these and other models are used in Dutch higher education.

5 Results of E-Learning in Dutch higher education

Many projects have been carried out in the Netherlands to achieve the integration of ICT in education. Some projects were a big success, others had less positive results. Evaluation is an element in e-learning projects that goes beyond a test at the end to ascertain whether the product meets requirements and is good enough to be implemented in everyday practice. Evaluation also involves needs analysis to see if the project really fulfils a need, or the pilot testing of tools either with experts in areas such as user interface design, content and didactics or with future users. Evaluation of e-learning implementations is always a difficult activity because of the variety of stakeholders to deal with. There are not only students and instructors, but also management staff and technology support staff to consider. And because of the specific characteristics of each organisation, it is difficult to generalise findings from one evaluation to all other situations where the evaluated e-learning implementation is used.

Evaluations of e-learning can be defined according to three target categories: platforms, integrated implementations of e-learning solutions and dedicated applications for specific target topics or target groups. In the context of this chapter we concentrate on the first two target categories. An example of the first category is, for instance, a platform such as Blackboard or TeleTOP that is implemented in a Dutch university or polytechnic. An example of the second category is the implementation of digital portfolios as a method for the assessment of students' competences. These two examples are described in the following paragraphs.

5.1 Implementation of course management systems in Dutch higher education

Almost all institutes for higher education in the Netherlands have implemented a course management system. There are several course management systems in use in the Netherlands, of which Blackboard and TeleTOP are the most popular.

TeleTOP at the University of Twente

The University of Twente in The Netherlands has a national and international reputation in the field of telematics. Not only is there an extensive amount of research being done in the area, but the application of telematics applications to the teaching and learning process, which was called "tele-learning" (Collis, 1998), has also had a high priority since the mid-1990s. The Faculty of Educational Science and Technology was the first faculty at the University of Twente to start thinking about the use of technology in order to make learning more flexible: members of the faculty were among the first to use the world wide web as a collaborative learning environment for course assignments, in March 1994, so that experts in different places in the world could interact with the students in the course on the collaborative writing of course materials using the web as a common dissemination environment (Collis, 1996).

In the wake of this experience, the faculty decided to move from the 1,000 blooming flowers stage to a stage of managed change in its instructional practice. This decision was based on a naturally evolving interest and momentum for course redesign that took advantage of the potential of web technology for increasing interactivity and communication within courses as well as the strategic choice to offer the educational programme in a more flexible way (de Boer, 2004). In particular, it was decided in mid-1997 that, by September 1998, students entering the programme could participate as local students, or as part-time mature students if already in active employment so that they could maintain their jobs and home situations while participating in the programme.

In order to fulfill this ambition, the TeleTOP project was formed. The overall goal of the project was to systematically support the professional development of the faculty in terms of potential CMS applications in their teaching, and to carry out the redesign of approximately 30 courses within the first year so that the faculty's education would become more efficient, more enriched, and more flexible. In order to steer and manage this complex change process, an instructional development team, called the TeleTOP team, was formed (de Boer, 2004). The task of the TeleTOP team was to lead and carry out a systematic and integrated course redesign initiative. In order to do this, the team designed and developed a new CMS, the TeleTOP system. The TeleTOP team consisted of professional members, including a chair who was the Professor of Tele-learning in the faculty, the director of the faculty's computer laboratory, five educational technologists, a Webmaster, and a database specialist.

TeleTOP supports blended learning courses. First a faculty-wide and later on a university-wide implementation provided a course management system for all courses to make it possible for part-time students to participate in an active manner. The development of the TeleTOP system was based on several developments that had been deployed in earlier years (for a summary, see Collis & Moonen, 2001). The general ideas and experiences of earlier "tele-learning" or "e-learning" were used to build a database driven course management system.

From the start, the reuse of material was a key issue in development (Strijker, 2004). The use of databases made it possible to make reuse simple and useful for course developers. Course developers were mainly instructors who had the support of student assistants and the TeleTOP® support team. The support team created desired functionalities and provided help in order to move face-to-face learning to a more blended mixture of self-study and distance courses.

Instructor support was one of the main elements of the TeleTOP project. The support method emphasised extending the strengths of the instructor via technology, while not reducing his involvement or personal impact. Therefore, by developing an implementation strategy for TeleTOP, it was important to be aware of predictable problems and phases in the diffusion of an innovation in an educational setting, and in particular of factors that affect the instructor's likelihood of changing his or her instructional practice (de Boer, 2004). As a result of this rapid prototyping process, instructors were not only closely involved in the design process of the web sites used to support their courses, but also developed competency in handling those sites and the associated tools and applications. The results of the process were tailored course support environments to support enhanced flexibility and bring a systematic introduction to an entire faculty at the same time.

In the academic year 1999–2000, TeleTOP was chosen by the University of Twente as the default CMS for all courses. All faculties use a variant of the Tele-

TOP implementation model and most start with their first-year courses by extending the use. In 2000, one year after the central implementation of TeleTOP, without counting courses within the Faculty of Educational Science and Technology, 600 courses used TeleTOP within the university of Twente. At this moment (2005), all faculties of the university are using TeleTOP as their course management system and several external partners have adopted the system as a means to deliver flexible learning.

The TeleTOP system has been developed at the University of Twente following a period in which the needs for flexibility in the curriculum and its delivery as well as the opportunities of a web-based course management system became evident within the department of education. At the university level, it has been decided to pursue implementation based mainly on experiences at the faculty of education. This project also shows an example of good practice in integrating research and education, which should be one of the core qualities of innovative universities.

Blackboard at the University of Amsterdam

Implementing a university-wide electronic learning environment involves many aspects, actors and organisational issues (Fisser, 2001). Therefore, it was decided at the University of Amsterdam that, in order to assure success the process of implementation, a project-based approach was required with a focus on technology, communication and didactics. A project was initiated and organised around these three pillars (Benneker et al., 2001).

The general goal of the technology pillar within the project was to guarantee technical continuity: the maintenance and management of hardware and software, exploring the developments with regard to the integration of educational technologies, monitoring important developments in the learning technology market, sharing experiences in relation to technology and technology with other universities, and integrating the electronic learning environment with other systems of the university.

The communication pillar of the project related primarily to the creation of awareness of the possibilities of an electronic learning environment, encouraging the commitment of teachers and educational managers to start using the environment in education, and to stimulate the effective use of the learning environment. Furthermore, the communication pillar provided information for all actors involved (instructors and managers, but also technical and educational support persons) about functionalities of the system, possible changes in software versions, etc.

The primary goal of the didactics pillar was to develop staff development for academic staff and an implementation model as support for educational managers in relation to the implementation process of the learning environment in the curriculum. The part of the didactics pillar concerning staff development was aimed at teachers and had a focus on issues such as the way an electronic learning environment can be used in specific educational settings and how learning material can be made electronic and interactive. This was combined with the idea that didactic issues behind these issues are form the centre of attention, rather than the technology (Fisser, 2004).

Products that were developed in this respect were tailor-made workshops and discussions with the teachers. Most of these courses are directly related to the electronic learning environment Blackboard itself, such as the Blackboard Basics training, a hands-on training in which the teacher learns about the functionalities of the system and has the opportunity to work with the system for several hours. Next to the Basics training, a Didactics training was developed, aimed to assure the effective use of an electronic learning environment. Not the functionalities of the system, but the educational design of the teacher's course is the central focus point of this course. Based on the design of the course the academic staff learn how to use the electronic learning system as an effective tool to support education. The Blackboard Didactics training is a general training course that can be adapted for specific needs (tailor-made training).

The main product that was developed for educational managers and the ICT support persons is the "ICT in Education Implementation Model" (Fisser, & Dekker, 2003). This model can been used to support the implementation of the electronic learning environment on a department- or faculty-wide basis. The implementation model is a good example of a useful paper resource. It gave guidance about how to implement a faculty-wide ICT-project. Besides quick-scan methods, helps users to think about and develop a vision and a strategy to accomplish the implementation. But these paper resources need human resources to carry out the implementation. Part of these human resources can be found in the faculty or department itself. The ICT-coordinator, teachers, support staff, etc. can carry out parts of the implementation process. For some parts of this process it can be useful to consider hiring external consultants or learning technologists (Fisser, 2004).

In general, it can be said that the three pillar model was a success at the University of Amsterdam. One of the crucial factors of the success were the educational managers. But these persons have a busy schedule. They did not have the time to set up 'just another ICT-project'. This meant that Blackboard had to have an added value for them, and needed to be integrated into the curriculum or to serve a specific goal before the manager gave the implementation process priority. Support for the educational manager with both paper and human resources, or more importantly, making him or her aware that he or she needs these resources, was the challenge that was taken up by the university with success: more than 50% of all courses were using Blackboard after 2 years of implementation.

The two examples shown deal with two of the most commonly used course management systems in the Netherlands. That is why these examples were chosen. In general, Blackboard is the market leader in the Netherlands as far as course management systems are concerned. Course management systems, like electronic learning environments, are quite popular nowadays in higher education. However, there are indicators that the trend might go into the direction of more decentralized applications for dedicated functionalities within the e-learning spectrum in order to assure a more flexible approach to ICT-supported teaching and learning. One of these dedicated applications, the digital portfolio, is discussed in section 5.2.

5.2 Implementation of digital portfolios in Dutch higher education

The concept of a digital portfolio is not new: long before the idea that a digital portfolio could be used in educational settings, portfolios were used by artists for a number of reasons. The goal of such a portfolio was to show what the artist had made as examples of his or her repertoire. By showing this the artist could demonstrate what he or she could contribute in a next assignment for a specific employer. Based on this "showcase" model of a portfolio, educational experts started thinking about portfolios as a tool for a student to show his or her results of studying a specific programme. Even though the ideas of the educational experts are promising, in practice it seems difficult to implement them. There are several examples of a successful transition from the initiation and pilot phase to the implementation phase, but it appears that, in practice, it is quite difficult to take appropriate actions to reach the stage of actual implementation, or even integration or institutionalisation. There seems to be a tendency in higher education that there is a need for support in both the process of moving from piloting to implementing and integrating as well as support and information about pedagogical approaches that can be applied.

A digital portfolio is defined here as "an instrument that reveals the unique development of a student and/or the result of this development" (Slotman, Fisser, Gulmans & Braspenning et al., 2005) .This definition is based on van Tartwijk et al. (2003) and is a very broad definition. This has been chosen on purpose. The idea behind this is that the development of a student probably depends on the educational programme that has been followed, which in turn depends on the pedagogical approach that has been applied. Based on the pedagogical approach, a portfolio will be placed in a specific learning environment and will have a specific function. There are three main functions of a portfolio:

- the portfolio as a showcase (a showcase portfolio)
- the portfolio as an instrument to support the planning and the development of competencies (a development portfolio)
- the portfolio as an instrument to assess the student's competencies (an assessment portfolio)

The location of the portfolio in the curriculum of an educational programme determines how the portfolio is being used, if and how it is integrated in the curriculum, and how it is related to the learning environment of the student. The learning environment is the physical, social, psychological and didactic context in which the learning takes place (van Tartwijk & Driessen, 2004). This implies that the learning environment not only refers to the (physical or digital) learning environment of a student, but also to the instructor, other students, assignments, instruments that are being used to support the educational process, and the assessment. A portfolio relates to all these aspects and it has been demonstrated that, if a portfolio is not fully integrated in the learning environment and does not become an integral part of the environment, it will remain in the form of a separate instrument that will be regarded by instructors and teachers as another extra feature that takes time and effort, such that the chance for success of a portfolio will be minimal (van Tartwijk & Driessen, 2004; Veugelers, 2004; Aalderink, 2004; Campbell et al., 2001). This is not just related to a digital portfolio, but is the case in many educational innovations that are supported by ICT (see for instance Collis and Moonen, 2001 and Fisser, 2001).

Based on these notions, several projects have been carried out to develop and implement a digital portfolio. Many of these projects were not successful. Projects that initially looked promising were either not continued or continued on a smaller scale, as envisaged. The reasons for this are still unclear.

6 Dutch E-Learning scenarios

Following the experiences in the Netherlands and in the rest of the world, it can be concluded that higher education institutions are broadening their horizons to serve not only their local target groups but also new students who come from both near and afar. New types of students are emerging, and their characteristics and diversity will gradually influence educational institutions to adapt their (educational) models. A major model that is appearing in this respect can be called "Stretching the Mold" (Collis and Gommer, 2001; Collis and Moonen, 2001; de Boer, 2004).

Four main scenarios for educational delivery are distinguished around two main dimensions. One line of development in this model relates to the "local vs. global" issue. Should the university move toward strengthening itself as a home base for its learners, or move towards a future in which its students seldom or never come to the home campus? A second line of development relates to the programme and content to be offered. How should this be obtained, and offered to clients? As total programmes? As individual courses? As portions of courses which can be combined in different ways? (Collis & Moonen, 2001, p. 196). Figure 2 shows the four scenarios for educational delivery, related to these two underlying dimensions.

Scenarios of the future in which flexible learning will be part of a setting …	*Where local and face-to-face transactions are highly valued*	*Where global and network-mediated transactions are the norm*
In which the institution offers a programme and ensures its quality	**Scenario A** Quality control of a cohesive curriculum, experienced in the local setting (current situation) ***Back to the basics***	**Scenario B** Quality control of a cohesive local curriculum, available globally: ***The Global Campus***
In which the learner chooses what he wants and thus takes more responsibility for quality assurance	**Scenario C** Individualisation in the local institution: ***Stretching the Mold***	**Scenario D** Individualisation and globalisation ***The New Economy***

Figure 2: Four scenarios for educational delivery (Collis & Moonen, 2001, p. 199).

Scenario A, Back to Basics, can be seen as the dominant situation for many traditional post-secondary institutions at present. Within Scenario B, The Global Campus, these institutions are starting to focus on distance students participating in the established programmes. Scenario C, Stretching the Mold, focuses on more flexibility with or without changing the underlying pedagogical and organisational campus-based model within the institution. Scenario D, The New Economy, combines change within each of the two dimensions and also offers increased flexibility within the pedagogical programme for distance students participating in programmes.

The four typical learning settings were used in the international study about models of technology and change in higher education (Collis & van der Wende, 2002) to see where the instructors, support staff, and managers think they and their institutions are now, and where they are heading over the next five years. From the results of the study it appears that there are modest changes that managers, support staff, and instructors expect between now and 2006. Back to the Basics is still expected to be the dominant model, but each of the other scenarios is perceived to be growing in importance. The movement towards more flexibility is recognised for both dimensions, on the one hand, towards more global and network-mediated transactions, and, on the other hand, towards learner choices. However, in general, the main "load" is still in a university setting, where local and face-to-face transactions are highly valued. The main future model for traditional higher education institutes therefore seems to be within the "Stretching the Mold" scenario.

In the "Stretching the Mold" scenario, more flexibility is offered in procedures and programmes as a process of change from within as well as opening possibilities for distance students to attend. Flexibility can be provided by means of the way in which instructors organise their courses, by dealing with more heterogeneous groups of students, and offering options to these different students. The changes, however, are gradual and usually slow. Stretching the Mold is occurring without formal acknowledgement or policy. Furthermore, it seems that the current level of Stretching the Mold is more sensitive to the level of computer use than to the particular policy of an institution (Collis & van der Wende, 2002; Collis & Gommer, 2001).

7 Perspectives for the future of e-learning in Dutch higher education

It is no use gazing into a crystal ball to see what the future will bring for e-learning in Dutch higher education, but when considering expertise built in the 1990s and in the early 21st century, the situation looks promising. There are collaboration consortia such as the Digital University and the SURF Foundation, the extended implementation and use of electronic learning environments at almost all higher education organisations in the country, and the acknowledgement and support for innovative targets such as digital portfolios and IT support for communities of practice.

Earlier in this chapter a categorisation of vision towards e-learning was made in terms of educational, technological and organisational perspectives. If we apply the same perspectives to look into the future, a number of interesting developments in the area of e-learning as well as their value for higher education can be identified. In this section, two topics with potential impact in the Netherlands are discussed in relation to each of the perspectives.

Educational perspective: The first topic related to the value of e-learning for didactic perspectives of higher education is the support of the 'active teacher and learner' paradigm. Innovative pedagogies and the use of Internet and communication technologies are working in favour of learners becoming active, constructive and productive instead of passive recipients of information reproducing this information in written tests. At the same time, the wave of e-learning rolling across the Netherlands is leading to a reduction of (mass) lectures and a growing number of workshops as events for didactic activities in higher education. Moreover, an increasing number of courses in higher education rely in their assessment on assignments such as written reports instead of examinations. But there is not only a need for more active learners in future e-learning, for teachers also have to become more active, always able to adapt courses to the changing needs of learners and society, with new resources (made available incrementally by peers and students, via the availability of open source knowledge infrastructures). The electronic learning environment that has been developed and implemented at the University of Twente (which is now being powered and distributed by the TeleTOP company (http://www.teletop.nl/)) entails both e-learning support for students to become active contributors to their learning processes and for instructors to actively develop learning content and resources as well as share and reuse these among peer instructors both within the Netherlands and abroad. The second topic is related to the first. E-learning offers a rapidly growing opportunity for all stakeholders in higher education to communicate and collaborate more efficiently than has ever been possible in the past. This, together with the growing number of online resources being made available, the share and reuse of learning material among peers in academic content areas offers considerable opportunities to make higher education more effective and efficient using economies of scale and networked quality maintenance mechanisms.

Technological perspective: Since the end of the last century, large numbers of computer equipment, network infrastructures, as well as large and small scale software has entered higher education. And the end of the horizon is not yet in sight as developments go on. Two developments which are on their way, which have already indicated a potentially interesting value for higher education in the future, are wireless networks and ubiquitous computing. Wireless computer networks offer a higher flexibility for application opportunities both within workshops and for individual students learning anywhere, at any time. High speed network connections are available to facilitate collaboration over large distances but also within a classroom, using notebook computers where students can access the Internet, share knowledge with other students, ask the tutor for help or work on assignments. A successful example of a wireless campus initiative in the Netherlands is the wireless campus at the University of Twente (http://www.utwente.nl/wireless-campus/en/index.html). Another development in technology with an impact on higher education is ubiquitous computing. Ubiquitous is roughly seen as the opposite of virtual reality. In virtual reality, people and their environment are put into a computer world, whereas in ubiquitous computing the computer technology is put into the world in which human beings live. In ubiquitous computing computers are integrated into everyday objects such as equipment in our homes, offices, cars or schools. One characteristic is that these computers might not be visible to human beings using the equipment. Another characteristic is that the environment and equipment can provide coordinated support to the activities of human beings ‘interacting’ with them. These so-called ‘smart surroundings’ (http://www.smart-surroundings.nl/) can help us in daily tasks such as household, learning, entertainment or health care. One example of this is the concept of SmartOffice, where computerised environments offer support with localizing facilities, services and people (for instance to help you to find your colleague or the nearest printer), provide communication channels (for instance to select those peers for communication who are indicated as being available) and personalise the user’s environment (adapted screen monitor parameters, light and sound level, bookmarks).

Organisational perspective: Two topics to be mentioned when focusing on future e-learning potential for Dutch higher education from the organisational perspective are internationalisation and the involvement of the corporate sector in education. A growing number of Dutch universities and hogescholen offer bachelor and master programmes for which more and more students enrol who come from countries other than the Netherlands. E-learning opens borders, making information about higher education programmes in the Netherlands available to foreign students which often also can attend parts of these programmes at a distance in their own country, thus developing a strong link between what they learn in the Dutch HE programmes and their work and life. Improvement in the quality of service in broadband network connections all over the world, and quality maintenance of internationally offered programmes, should make the Netherlands a strong player in the global e-learning market in the higher education sector. But on the organisational level, international collaboration is also stimulated and supported by e-learning developments. SURF, for instance, has a strong collaboration initiative with ALT in Great Britain, which leads to joint conferences and research seminars but also to virtual academic cooperation. Finally, a large number of Dutch higher education organisations is joining international collaboration by participating in European research projects, for instance in the IST programme of the European Commission. A second topic is the collaboration between higher education and the corporate sector in the area of e-learning. Many companies rely on modern technology to be effective and efficient. In order to work with these technologies in the future, requirements will change for those graduating from higher education and entering the workforce in these companies. This is the same in the Netherlands as it is in all other countries. To synchronise needs of companies to educational programmes offered in higher education, joint initiatives are being set up between both sectors. E-learning offers opportunities for students to carry out projects in authentic corporate environments, as well as to communicate with experts for discussion and collaboration. In the future, as technological developments are maintained, the importance of efficient knowledge sharing supported by joint e-learning initiatives is expected to grow. A large number of students in higher education after graduation enter these big multinational companies with large branches in the Netherlands, for instance Philips, Heineken, Shell or Unilever. On the other hand, there are projects in which higher education contributes to corporate training programmes by supporting e-learning developments within the company. A major example of this collaboration is the University of Twente – Shell networked learning collaboration project. In this project, the pedagogical re-engineering of corporate training programmes within Shell is supported by e-learning tools and principles (http://www.gw.utwente.nl/nieuws/ AwardCollis/ index.html).

In sum, there is a good historical record of e-learning initiatives in Dutch higher education, and we have reported on a few of these in this chapter. E-learning is currently seen as an important factor in educational curricula, student facilities, national and international collaboration, marketing, and research. Some areas have been discussed which, at present, indicate high potential for e-learning in the future. Efforts are needed to realise this potential, in particular for countries such as the Netherlands, which are small in geographical size but acknowledged strong players in the international higher education market.

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Alain Jaillet

How the Introduction of New Technology into Higher Education is Revealing a Need for Change

1 Introduction

The development of new technology in higher education is a policy matter that is not translated quickly into action on the ground. However, when the first faltering steps were being taken to introduce technology into training and education programmes, higher education establishments were influenced by the widespread emergence of these issues for in-company training. In certain respects, the pioneering attempts of firms served as a basis for carrying out experiments in universities. In fact, this has not worked well and, in spite of the very considerable sums provided for these experiments, the introduction of technology is continuing to cause endless changes in universities. This could be considered as a handicap or as something that holds back development, but it can also be considered as a sign that there is potential for research. In order to exploit this potential, Strasbourg's Université Louis Pasteur (ULP) developed the idea of opening up new routes that were both educational and technological. Although the impact on national policies is still marginal, there is potential for genuinely dynamic progress. The whole point of these arrangements is to move from individual initiatives to an industrial craft activity, since it is difficult to imagine education becoming a mainstream consumer good amenable to mass production. This is true of higher education, though one wonders whether it is very different in other situations; justifications and opportunities must be found to make the technologies relevant and worthwhile. Partnerships within Europe are one possible situation in which this could occur. However, perhaps the same ideas will return in the guise of new and relevant contexts, such that higher education remains largely unaffected by new information and communication technology.

2 How E-Learning solutions have developed over the past decade

Over the past 20 years, information and communication technology has tried to establish its place in universities (Aupelf, 1985). Compared with the educational system as a whole, the attraction of such technology can be explained by the fact that universities, together with industrial organisations, were responsible for the invention of information technology and then networks, followed by the Internet. Although they did not invent everything, they at least increased the rate at which developments were disseminated. It must be acknowledged that researchers played a somewhat greater part in this than the universities themselves. Since researchers were in fact teachers and researchers at the same time, information technology was introduced into educational practice where it was not expected. While all the new technical possibilities and all the technical practices were introduced in an attempt to improve higher education, in reality everything started with individual initiatives which successive policies have never really succeeded in applying on a general basis. Indeed, how can a relevant use be distinguished from one that is not relevant or that is less so? Situations are not all equally valid. Teachers do not apply technologies in the same way. Depover and Marchand (2003) distinguish four stages in the way in which new technologies developed in learning applications: computers as teaching machines, computers as learning machines, computers as audiovisual machines and computers as communicating machines. We would like to propose a somewhat different set of distinctions.

2.1 For calculating, simulations and data processing

From the beginning of the 1970s, information technology for calculating appeared in the educational system. Numerically controlled machines and calculating computers were increasingly used in industry, and research had no choice but to use the possibilities opened up by computers, and to push the processing of information as far as possible. Not all teachers immediately arranged for their students to have access to all the machines, but practical work enabled many of them to gain hands-on experience with what was becoming indispensable as a result of information technology (Milner & Wildberger, 1977). They were most widely used for statistical applications (Sawyer, 1981), but anything that required data processing was also explored (Cole & Mather, 1979). Later, as the possibilities made available by machines were developing, simulation programmes were applied in fields as various as chemistry, physics, medicine, biology and geometry, where Cabri Geometry was one of the most successful developments integrating IT into education (Balacheff & Giry, 1993). The capacity to see visual images and animation represented a real step forward in university teaching.

2.2 For electronic publishing, training software, filmed lectures and simulations

Two clearly distinct stages are apparent. First, there was the dissemination of content via physical support media. One example of this are the telecommunication schools, which launched educational collections on Prisméo CD-ROMs so that people could learn concepts in physics (Galisson & Chopelin, 1998). Apart from issues raised by the authors at the time about some aspect of the creation of such content, nothing now remains. The CD-ROMs have disappeared, barely tested; they were abandoned by teachers who, in the end, did not find them very useful. Nor did another noteworthy initiative meet the expectations of the teachers and students who used it. This was the *Premier cycle sur Mesure* (made-to-measure first-year study) programme, which was intended to make available in digital form the whole content of the first two years' study at university, with simulations, exercises and instruction. After a number of attempts to disseminate this material in universities, a central server now hosts this collection under the generic title *Université En Ligne* (online university). The students and teachers do not use these animated textbooks. Although this approach envisaged a minimum of interactivity and animations, as a whole it represented an effort on the part of teachers to rationalise teaching. The students who consult such contents do not, in the end, see the point of having to again go over what has been done in class or during supervised study, as this is the standard model (UEL). Enormous investment and work have been put into this, but the results are more than disappointing.

2.3 Use as an administered teaching system

It is in the field of language teaching that CD-ROMs have had, and still have, most applications, but they were never merely a medium holding content. Moreover, CD-ROMs make it possible for teachers to implement programmed learning theories, encouraged by Skinner (1969), in which people consider that learning can be structured and programmed essentially in accordance with four principles. The subject matter has to be broken down into very small units, making it possible to proceed from the simplest to the most complicated. The speed at which a learner advances must be adjusted to the individual. It is therefore necessary to discover the person’s ability to overcome problems, and present situations that will enable that person to deal with the next steps. The learner needs to be stimulated by facing an onslaught of questions to which original answers must be given, or which require one answer to be chosen from a selection. The knowledge acquired needs to be monitored, so that learners subsequently draw on what they know. The language learning software essentially followed this pattern; it is easy to develop an automated reinforcement and follow-up system.

What remains from this early system? A lot of results are beneficial, such as accounts of people's experience, and even research. This is the most paradoxical thing. Whatever the studies say, very little has been reinvested in critical initiatives. This means that there is accumulation but no consolidation. Whenever a bridge has to be constructed, things seem to become too complicated. Research epistemics is constructed on the basis of various models (Rézeau, 2001; Depover, Quintin & De Lièvre, 2000) that are sometimes incompatible. Attendance at conferences confirms that initiatives do keep coming back, one after the other, without anyone really asking whether what has been done is useful, and without there being agreement on an approach to research epistemics that would finally make investigations mutually comprehensible (Eiah, 2003). In reality, it has never been possible to demonstrate the usefulness of educational software (Russel, 1999), just as, more broadly, it is difficult to demonstrate what impact the use of new technology has had in teaching. The study by Thomas Russell, of the North Carolina State University, inspired a programme to consolidate research, providing some items that demonstrate what impact, if any, new technology was having on teaching arrangements (Russell, 2003). In relation to the use of language teaching products, observations of what students do with them in the ULP's language resources rooms show that no student ever uses all aspects of a method. Their approach is characterised more by sheer perseverance with the concept of language resource centres (Bucher, 2003). In terms of consolidation, very few of the ideas or results from studies go beyond the stage of product presentations or gat to grips with real applications. They are too modest and ought instead lead people to think anew about the use that is made of technology at university, by questioning the principles underlying programmed learning. Depover and Marchand (2003) condemn this rejuvenation of old software by introducing possibilities for writing in a number of languages, with pictures, sound and text. They say that the beautiful animations have often hidden the poor educational quality.

2.4 A further step: expert systems

In comparison with Skinner's programmed learning, Crowder and Pressey (Depover, 1987), who consider that programmes should not be linear but branching, developed even more sophisticated products that try to refine the type of support and answers provided to students when they work with IT systems. One approach that is still used, as developed by the Le Mans laboratory (Delium, 2003), tries to use educational fora as a model for types of interaction, and to assist with classification, and even with the replies that a teacher might give, somewhat like what a coordinator once did in relation to messaging systems (Winograd & Flores, 1986). Each email communication could first be coded according to the supposed category of its content. At one extreme, based on predictive models, this involved creating an answer robot that had to be able to engage in dialogue with the student. An example of this is Hal in the film *2001 A Space Odyssey* (or Carl in the French version of the film). However, we have not achieved this yet. Attempts to establish such systems are still very inferior, and fail to reflect the complexity of human inconsistency. This cannot be simulated by hit-and-miss IT systems. Support systems are, at most, curiosities that users watch in operation, as the many experiments with coordinator have demonstrated. This is obviously a major field which deserves recognition by universities.

The expert-systems approach may be based on an idea borrowed from approaches used by educational software designers in the field of science. Whether they follow Astolfi's French-speaking school or the English-speaking school represented by Hewson (1981), Nussbaum and Novick (1982), the conceptual change model (Laplante, 1997) aims to establish an instructional situation in which a minor hitch will reveal the students' representations. An automatic system should be able to identify such a representation, describe it and offer remedial solutions for it. By articulating a socio-cognitive conflict as understood by Perret-Clermont (1979), the proposed expert system should allow the student to be accommodated and thus a new representation to be reified, which is itself validated by the expert system. At that point, a number of problems arise. The diversity of representations would require an inventory to be made of all possibilities for each epistemological obstacle. This is now unthinkable. In these circumstances, only a mean level of the most common difficulties is taken into account. In terms of probabilities, these difficulties are just about as likely to occur as others, such that teachers are frequently subject to potential problems. They therefore serve as the basis for the expert system. In these circumstances, we again encounter the same problems as those posed by programmed learning, which is designed with a typical student in mind. A critical hitch as envisaged by the teacher, or an epistemological obstacle of any type – and Astolfi's educational study of the situation shows at least nine types (Astolfi & Drouin, 1988) – could very well not be that made by the teacher. In common situations, the teacher's knowledge of the subject matter and familiarity with the difficulties frequently encountered by students, will enable him or her to explore what problems are involved, by following a succession of small steps. The expert system is unable to do this, and has to run through a complete algorithm. This is tedious for the student, who has to answer all the programme's confirmatory questions before presenting a remedial solution. This means that "educational games" software such as *The lost city* (La Cité Perdue, TLC Edusoft) – although its spirit of discovery deals with the notion of a critical hitch that must be overcome, possibly by making some change in the representation – will not be able to offer remedial solutions when a problem arises. They revert to challenging underlying principles, namely the assumption that students are capable of devising concepts on their own. This is the essential reason behind our educational proposal of distance learning, which considers that a teacher should be present at the stage which involves giving methodological advice (Meirieu, 1990).

2.5 An alternative: programming

The two options presented to us by information technology and dedicated environments are to consider them only as tools or as creative instruments. This is how Alan Kay (1996) saw things, and the same is true of Seymour Papert (1983). How should computers and IT be used in order to make people creative, curious and eager to learn? In this respect, Papert distinguishes between instructionism and constructionism (Papert & Harel, 1991). Few universities have tried to get into these programmes. Most of the experiments were carried out in the context of schools. For universities, which were even more constrained by academic content, it was very difficult to offer anything other than subject-related experiments. However, in terms of technology investment, this was probably a way of producing the highest degree of involvement. This obviously did not affect the IT routes used to train the software developers.

2.6 Documents

This is where new technology became successfully established (Jacquesson & Rivier, 1999). CD-ROMs and then the Internet initially enabled students and teachers to make considerable use of technology to find things, consult reference sources and work on the knowledge they gained.

However, such developments characteristically take place almost in complete isolation from the other IT environments available at universities. There are extremely few IT management systems for libraries that make allowance for both the libraries' own concerns and those of the teaching staff. Online thesis publishing is only now beginning to be considered.

Above all, recourse to electronic journals has become commonplace. Data from the Ministry of National Education and Research's document subdivision show that computerised arrangements have become most extensively established for electronic journals.

Table 1: Growth in purchases of monographs, and their costs, in French university libraries (internal data from the Ministry of National Education's library subdivision)

Year	2001 Number of papers Cost	2002 Number of papers Cost	2003 Number of papers Cost
Monographs French Foreign	 898,297: € 17.4 mn 162,820: € 7.7 mn	 893,948: € 19.3 mn 154,116: € 7.4 mn	 931,494: € 20.1 mn 156,588: € 7.6 mn
Periodical items French Foreign	 83,939: € 8.9 mn 61,453: € 29.2 mn	 82,553: € 9.3 mn 59,490: € 29.7 mn	 82,525: € 10.1 mn 58,033: € 30.22 mn
Electronic publications	€ 9.7 mn	€ 11.8 mn	€ 13.7 mn
TOTAL	€ 72.9 mn	€ 77.5 mn	€ 81.7 mn

Since people overwhelming tend to consult documents online, the prospects for electronic publishing are promising. One sign of this is the consistent decrease in the use of physical media in university libraries. The 2004 budget for the Université Louis Pasteur allowed libraries to spend 1.1 million euros on electronic journals and 1.0 million euros on hard copy equivalents.

Most of the expenditure relates to private English language publishers. In response to this commodification of knowledge, the alternative would resemble the Open Society Institute's Open Access Initiative (BOAI) in Budapest, facilitating free access to research, of 1-2 December 2001 (Bu-Univ, 2005). This initiative was reaffirmed in 2003 by the Berlin Declaration, made by large European research bodies, which therefore included French institutions. The potential impact of this is considerable, as it will mean that research papers are made available free via the Internet. However, their status is not uniform, and there are normally accounting procedures that comply with the Open Archives Initiative's Protocol for Metadata Harvesting (OAI-PMH), drawn up at the Santa-Fé Convention in 1999 (OAI-PMH, 2000).

Recourse to these open archives is still in a state of flux. In order for consistency to be achieved, it will be necessary to create coherent cooperation between the various university and research bodies. This is coming about slowly, though we cannot be certain that it will be attained.

One consistency within students' usage pattern is that they make much greater use of the Google search engine than they do of university libraries' information search arrangements. All students at Strasbourg's universities have at their disposal a digital working environment *UNIV-r* (UNIV-R), which gives them access to both software and the Internet. As a *quid pro quo*, all use made of the system is tracked, which makes it possible to study what the students are really doing. If we concentrate on studying the sites consulted and make a comparison with the document portal of the Strasbourg libraries, this reveals that Google has a virtual monopoly as an instrument for seeking information. A study over one month (March 2005) revealed the following average weekly usage for 4,225 students.

Table 2: Consultation of sites, and proportion of the total sites from which information was sought

Average number of connections per week	Total sites	Google	University's document service
Number of sites	34,257	16,350	1,554
Percentage	100%	47.7 %	4.5 %

Of course, not all Google consultations are used to seek information connected with the students' studies. The extent to which the search engine is used, and thus the effect it must have on the whole, is nevertheless highly informative.

2.7 Use for communication

The development of networks and of the Internet opened up a new stage, that of interactivity between human beings via the networks. This means that a network no longer simply provides access to content or to online programmed learning systems, but now allows individuals to work collaboratively. Computer Supported Cooperative Work (CSCW) has now come into its own. The French translation (as computer-assisted co-operative work) is a poor indicator of what is involved since – while it certainly involves computers – it primarily relates to computer networks. It was primarily in the United States during the 1980s that these issues emerged (Cardon, 1997). They remained confined to the US for a long time, and when they came to Europe it was mainly to the northern part of the continent and Germany. The interest was, above all, in what was going on in the business world, and educational preoccupations led to this instrument being explored very quickly. The euphoria that greeted the appearance of these new solutions for working together nevertheless hides a real failure, noted by Cardon. It was a commercial failure and a failure in terms of the use made of the arrangements (Grudin, 1988). A number of attempts on our part revealed failure rather than success (Jaillet, 2004). Nevertheless, it is obvious that communication is profoundly changing the contribution made by new technology. As Cardon quite rightly noted, it is particularly those who are most involved in the experimental aspects whom it affects. It is, for instance, very difficult to make people aware of the potential, so that the great majority take an interest in it and are really aware of what it can do. It was, however, based on this notion of communication at the heart of the teaching relationship that the distance learning programmes described below were developed.

3 Case studies

A number of cases were selected for preliminary studies that might have been capable of providing inspiration necessary in order to implement the project. At the time, it was not the very fashionable CSCW experiments in North America that stimulated thinking, but the general practices used by firms in France. These were therefore amenable to developments that soon took place in adult training for the production sector. We will look at three of them.

3.1 Independent learning

In the early 1990s, a large public works group entered into an agreement with a large organisation providing occupational training for adults. The aim was to introduce multimedia resources into the training for building workers. This brought together all the elements favouring both life-long learning and the incorporation of new technology into training. The training concept used was that of independent learning. The workers were given access to interactive terminals on the construction sites. A number of subjects were covered, from building site safety rules to building methods for shuttered concrete walls and the laying of paving stones, etc. A preliminary study had looked into the nature of public sector involvement in accordance with the ideology of Needs Analysis prevailing at that time. As the building employees were in most cases manual workers from abroad, in many cases illiterate or who had difficulty writing French, the favoured mode of communication was video films. A film crew, accompanied by an ergonomist, shot ideal situations on the construction sites to illustrate good building practice and construction techniques. This was inspired by the new thinking, which wanted to draw on real situations as examples, rather than simulating the operations in a workshop. There is perhaps an alternative viewpoint that, on the contrary, it was using the traditional approach of teaching by example and imitation. Be that as it may, it was certainly a form of expositional instruction. The means of disseminating the message was information technology, which was very expensive at the time, using touch-sensitive screens. A worker was supposed to use a finger to choose which clip he wanted to watch. The film then ran, with a spoken commentary explaining what was happening. When the workers had finished watching, they were asked to indicate their identity and take a multiple choice test to check what they had learned. At regular intervals, an assessor from the training centre came for an assessment session with a small group of the workers, and gave them certificates (though the term may have been somewhat misleading). A record was kept of the certificates, which entitled the workers to attendance bonuses.

3.2 Training via the Internet

A large European airline group is commissioning a distance learning system. The programme originated from an observation that the sales staff on the ground had little motivation to remain informed about all the arrangements invented by the airline to boost sales. Morale within the company was not good, and the corporate culture was certainly not uniform, as local staff had been recruited in most countries. The company's project accordingly involved having short computer-animation films made, to explain what the firm was offering. An assessment system in the form of a quiz was introduced, and two motivational arrangements were established. First, each sales location (agency) is rewarded for its collective score by free air tickets and, second, the workers receive recognition for their individual scores through similar rewards. Japan is the leader in training programmes wholly via the Internet, where there is never a trainer present and no training sessions. In terms of value for money, the company's arrangements faced no competition, as it managed to pay a pittance to the creator of the distance learning platform, because of the fierce competition and the strong desire to become known as the originator of the national arrangements.

3.3 Preliminary training via the Internet

A banking group's regional division in eastern France wanted to improve the performance of sales staff in its branches, while reducing its training costs. There were two aims: to avoid increasing the training sessions, and to improve the efficiency of the sessions by preparing employees for the bank's new activities. Those activities currently involve insurance for motor vehicles and retirement, life insurance, and contracts for building security. By making use of a known distance learning platform, the bank was able to offer distance learning courses that provide information about the banking and insurance arrangements that it wanted to introduce. There is an assessment system based on multiple choice questions, obviously linked to the online instruction. The system analyses the mistakes made and, based on the findings, provides further exercises. Every two months, face-to-face group meetings are arranged. Any employee called who has not studied the distance learning modules is left alone in a room to get to grips with the parts that have not been learned. The person is allowed to rejoin the group when this has been done. An incentive system has been established based on a combination of the sales staff's financial results (sales value) and the employee's assiduity in following the online modules and face-to-face sessions.

3.4 What have the effects been?

The above three situations, which exemplify what is commonly observed for e-learning, can each take several forms, which depend on various investments. In the first situation, there is a dominance of lecturing, with a particular concern for movement and actions. Personal dynamic is not absent, nor is consolidation, though this exists to a lesser extent. The arrangements stress exposition and combining it with actions. This approach to linear programmed learning takes exposition to its logical conclusion, with films and a multimedia environment allowing a minimum amount of feedback, and comes directly from Skinner (1969). It involves the same principle as in learning the Highway Code by means of multiple choice questions. Input from audiovisual sequences started with the US armed forces during World War II, when the idea was to teach an infantryman to follow a tank during an advance. The effectiveness of the *American Soldier* programme showed that the infantrymen who watched the films showing the manoeuvre as it really occurred, and who were then given multiple choice tests to consolidate their learning, experienced lower death rates than those who had not watched the film sequences. As a matter of interest, the instructional films were made by great film directors. With regard to personal interaction, there was absolutely none; none was needed for this operation, which relied above all on informed imitation.

In relation to the second situation, it is questionable whether we can really talk of learning. Reflecting many programmes that are described as e-learning, the situation was, above all, concerned with communicating information. It was certainly a form of learning, but limited to context and even more content, giving more emphasis to information than to ideas, concepts or theory. It is, nevertheless, possible to observe a dynamic, which produced personal and interpersonal involvement.

The last situation is more complex since, while introducing IT arrangements for distance learning of occupational skills, the high point are the group sessions. First of all, branched programmed learning, following the prescriptions of Crowder and Pressey (Depover, 1987), gets the learner to move through a learning scenario, and then the super-scrutineer assesses each person's performance in the course of automated sessions, and goes back over particular points that seem to have caused problems. Everything is ready for the teacher's power to be made a reality; teachers are now provided with technological tools and empowered through the machine's supposed objectivity. Knowledge and information are brought together in such a way that it is impossible to distinguish an integrating concept that "incorporates a whole array of facts and notions in a structure of comprehension" (Develay, 1994) from a piece of information (or "datum"). This observation, among other things, of the "monstrative" non-distinction of attempts at distance learning through IT completely overturns the proposition we have developed. At the time of the study, firms had not really got to grips with a conception of e-learning that was more interactive and involved more sharing, involving the concept of learning communities, for example. Since then, other structuring formulations have begun to appear and, while these do not reveal the most well-established aspects of programmed learning, they find room for aspects that are more interactive, through the concept of a learning group (Depover & Marchant, 2003).

4 An original proposal

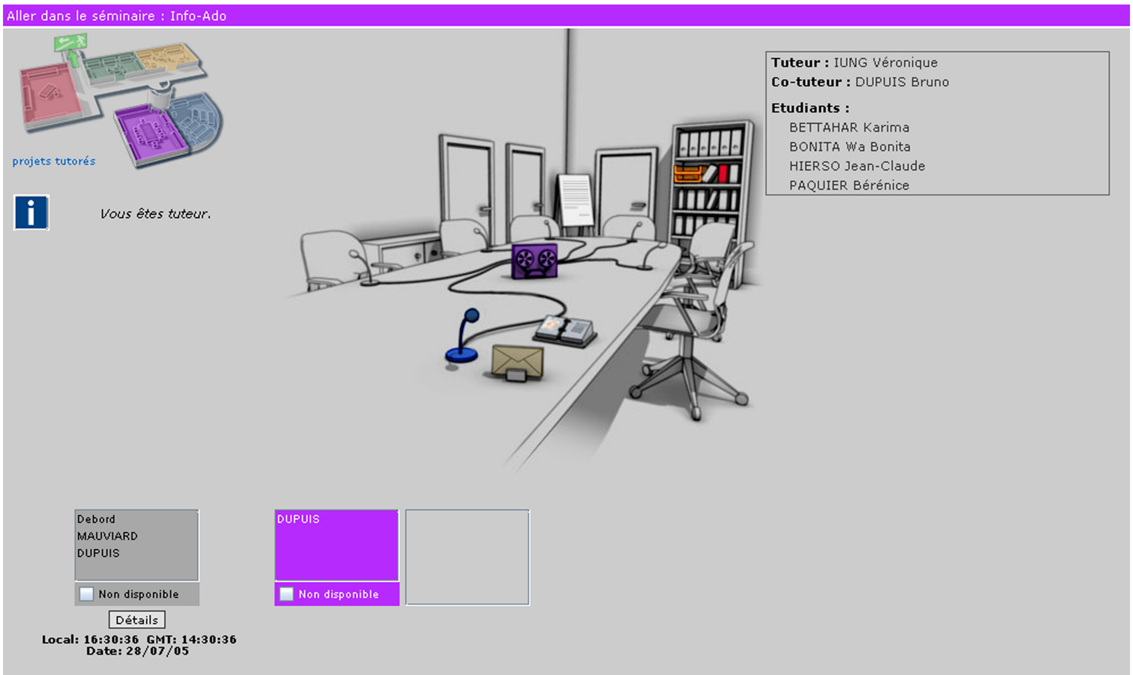
Based on observation of practices in several programmes since 1996, teachers' reactions raise some salient points relating to problems encountered with software designed for collaborative use: Hyperwave, as part of the European In-Tele research programme (Frindte, 2001), BSCW (Faerber, 1999) for the use of both teachers and university researchers, and Teamwave (Jaillet, 2001). Emerging or very complex solutions such as Merlin from the now defunct Digital or Learning space from Lotus/IBM or Web CT have been abandoned for reasons related to ergonomics or functionality. Thus, the latter, with the possible exception of web CT, are trying to recycle the possibilities of company workflow systems in education. The pregnance of the model is too great and nothing is really achieved, all the more so since, behind the predictions, the implications in businesses are weak (Grudin, 1988; Grudin, 1994).

The main problem lies in the ergonomics of these solutions. A major stumbling block – and one which, moreover, still remains – was identified, which is the understanding of *Windows* or *Mac office,* which means that the teacher-user understands on an initial level the analogy of the folder and the document, but soon becomes lost when documents and folders are shared in a ubiquitous perspective which is impossible to understand when you want to draw parallels with reality.

The major lesson from these early years of study is scathing. The teachers and, more widely, the users who have managed to work using collaborative work platforms are marginal (Jaillet, 2001). It is unrealistic to believe that adults who wish to undertake distance learning courses on any subject are going to spend a long time getting to grips with the IT environment before focusing on what really interests them.

5 A virtual campus

A first attempt (Vcampus) consisted in creating a collaborative work platform, Vcampus (Faerber, 1999), which, whilst using the possibilities of existing software, set out to offer an additional graphic layer. The objective was to offer an environment that could be reproduced from screen to screen, echoing Kearsley's studies (1988) which demonstrated the positive impact of presentation unity. Vcampus therefore attempted to help teachers and students locate and operate the various tools. Two laboratory training classes following the University Information and Communication Technology in Teaching Degree course used this platform. The results were not good. Adding an extra layer with a dual objective of offering unity of presentation and an analogy at least on an initial level with the daily experience of users will not simplify things. This early result led to the need to rethink an environment which practically removes the computer scientists' organisational methods from beginners. Perhaps it is tedious to recall the past, but we should not forget. These concerns actually date from the 1980s. It was the work of Xerox Park, Apple, MIT, and finally Microsoft with *Windows* that led to the emergence of the "office" metaphor, which was supposed to facilitate the use of computers (Myers, 1988). However, simplicity remains elusive. In order to make progress, maps, tree structures and hypertext links were supposed to improve environments still further. Once again, and as things currently stand, it is no more convincing (Stanton, Taylor & Tweedie, 1992). Moreover, studies of environments for education began above all by structuring the format of those features which make programmed teaching possible, whether it be linear or branched. Thus, what is known across the Atlantic as the "Computer-Based Training Environment" (CBTE) set out four principles: presentation of what is new for the learner; guidance offered by the computer to enable the person to progress; practice to enable the person to gain experience in applying the knowledge to work; and assessment in order to offer feedback to the learner (Alessi & Trollip, 1985). Things have hardly changed during the past 20 years. Observation of leading distance learning platforms reveals their pregnance. Research into what is known as multimedia pedagogical scripting or even the ontology of these scenarios are still highly dependent on this model (Moreau, Rouet, Demange & Metta, 2003). The Vcampus programme initiative is completely contrary to these principles that were thought of as dated. There was neglect of the four CBTE principles, in order to focus on the ergonomic aspects, to facilitate and encourage communication between pairs and the co-construction of knowledge. It was a matter of extending what had been done with the first graphic layer, by going as far as possible with the materialisation of the places and tools that can be used in this context. Work therefore began on ACOLAD (Apprentissage Collaboratif A Distance – Collaborative Distance learning) following a comparative study of existing platforms. ACOLAD attempted to do two things on the basis of an ergonomic hypothesis. The first was to offer users who were not computer specialists a work environment that they could master in one day. The design hypothesis is simple: it involves building an analogy with a real campus using one of Hall's (1984) ten primary anthropological communication systems, namely territoriality. The principle consists in using this attachment of the individual to his living space by using the cultural model internalised since beginning school. What is difficult for the non-IT specialist to understand in terms of the sharing of, and rights attached to, folders and documents is incarnated, as in reality, by the places. When I'm in my office, documents that are on my shelf are mine, and mine alone. When I'm in a meeting room, documents in the room are available for everyone to look at. The graphic work, consistent with Schneiderman's principles (1992), thus tries to be as close as possible to reality in order to be comprehensible and predictable to users who are already familiar with the environment and should be able to control it. In fact, production timetable constraints resulted in the first graphic version of ACOLAD which did not meet all the specifications. This was also to be the case for the second version. The second area of application for ACOLAD concerns its operational orientation (Faerber, 2003), which depends explicitly on the pedagogical standpoints of distance learning via the Internet as we conceive it (Jaillet, 1999).



Picture 1: Acolad: an ergonomic solution to learn

6 Theory and practice of learning

6.1 “What is learning?”

It was at a seminar similar to the one devoted to ergonomics that distance learning for adults was mooted. It was deliberately not in America, although CSCW is well advanced there, that the study was to be conducted; nor was Scandinavia chosen. But as close as possible to the French referral agents, despite the fact that they had never looked at the question of technologies. The first issue consists in not developing a discourse or an approach that depends on the technological object in itself. Cardon (1997) notes that this is usually the case when users try to find uses for technical possibilities that interest and sometimes fascinate them. The approach contrasted with that of Skinner (1969) and his successors, who steadfastly continued to support CBTE, even though they deny this. As it is a question of education and teaching more than technologies, the starting point is taken directly from the philosopher of education, Reboul: “What is learning?” (1980). Without going through all the distinctions he makes about “learning”, the focus turned towards understanding as both a process and a result. Inspiration invested in this model of distance learning clearly comes from the work of scientific didacticians and more particularly Develay and Astolfi (1990). “Learning as a result” is to have built a representation of a problem more suited to solve it than the previous one. This learning approach is that of Perret-Clermont (1979), when he states through the “centration conflict”, that a subject makes progress when experiencing an internal conflict between two representations: the new and the old. The old must be reorganised to incorporate elements introduced by the new. The contribution of Develay’s didactics is then to use the notion of epistemological obstacle following Bachelard’s example (1938). “Learning as a process” means taking into account factors that are endogenous and exogenous to the individual and that will lead him to gradually modify his representations as required whilst acquiring knowledge and skills so that the new representation, still transient, is for a time more stable and more efficient at solving the problem. A representation really does involve approaches that relate to Piaget’s assimilation and accommodation principles (1969).

6.2 Problem situations and the learning group

The function of problem situations, therefore, is to change the representations of individuals, whereas the learning group is an alternative to the closed pedagogical scenarios of programmed learning. Consequently, the cornerstone of this system is communication within the group, which, according to our standpoint, enables co-construction of knowledge. The first attempt at distance learning, in the form of a university diploma, concerned two types of learners, in separate classes, each containing 30 people. Those in the first group were in charge of new technology in academies, and those in the second were classroom assistants, a position in the education system where relatively young people are employed. As already outlined, the last two years of operation have been a relative failure from a pedagogical point of view, but have been entirely heuristic from a research point of view. There is nothing easy or natural about designing collaborative activities for a conventional teacher (Klem & Moran, 1992). Thus, some of the teachers who did not manage to construct a dynamic approach with learning groups finally opted for an approach by electronic correspondence or telephone interviews. Others constructed both group- and project-teaching approaches. Naively and without taking into account results such as those of relating to project teaching (Ricciardi-Rigault, 1993) or Chomienne, Basque and Rioux with mathematics (1997) which demonstrate that a small size is necessary, the groups were usually not divided, notably for organisational questions. The 30 people in a class were asked to work together on the platform of that time, Vcampus. It was rare for any more than five people to be present, making any attempt at group dynamics impossible. Acolad draws on this result, not permitting groups of more than twelve, nor work teams of more than four. The computer application actually makes larger numbers impossible. The resulting environment is designed for "learning group" pedagogy which is consubstantial with collaborative pedagogy issues. This relies on a dual logic. First, knowledge, reified by on-line lessons, deliberately controlled and including few miscellaneous links to prevent dispersion (another result of the first classes, in which a content that was too rich encouraged students to wander, without any real points of reference). Secondly, problem situations (Meirieu, 1990), sorts of micro-projects, which had to allow students to compare their representations in a learning design that we have defined previously. Thus, they are faced with epistemological obstacles, which encourage them to advance. In order to work, these obstacles had to fit into a pedagogical scenario that permits the investment of both the student and the group in which he is participating. The link between learning groups and the problem situation produces an effect of interdependence, as observed by Henri and Lundgren-Cayrol (2002).

7 Collaborating and cooperating; synchronous and asynchronous

As the acronym suggests, Acolad is based on a collaborative learning design. This means that when a student is faced with a problem and invests his available representations to solve the problem, he first of all does so alone. Subsequently, he is asked to interact with others to improve the new representation created in terms of quality and hence diversity and complexity. Speed is also important since he does not remain alone faced with his potential solutions or absence of solutions relative to the problem situation according to a learning algorithm (Jaillet, 1999), which means that the changes are iterative. These designs are directly inspired by the Freinet pedagogical method (1994). However, details need to be specified in terms of what collaboration is relative to cooperation. By provisionally isolating the technological role, which plays a not insignificant role in interrelations by drawing on the contributions of science didactics, it can be considered that collaborative work is the construction and deconstruction of hypotheses constituting knowledge and understanding, forming representations, and making it possible to solve a problem situation as part of a collective process (Henri & Lundgren-Cayrol, 2002).

In the first case, when a student proposes a solution to overcome a difficulty, he must defend it before the others and take into consideration the comments or other hypotheses put forward for refining or restructuring the representation, which will for a time be operational. By contrast, in cooperation students share the work. In other words, after having divided up what is to be done, it is the logic of the task that prevails, rather than the logic of learning. Those who have representations which are most apt to solve the difficulties actually do the work for everybody. Obviously, this is the inclination of any project pedagogy, where the result matters more than the process by which it is achieved. This is what Meirieu denounces as product pedagogy rather than project pedagogy (1989). In a long course such as a DESS, which lasts a year, it would be wrong to believe that a given seminar follows only a single approach. The cursor is constantly between the two, as observed by Henri and Lundgren-Cayrol (2002). Since we are dealing with adults who have practical experience of professional situations, we can consider that they know both working methods in their context. Thus, when a project has to be conducted by several people, special individual tasks are allocated to achieve a result. However, when what is involved is solving a problem that has consequences for each of the tasks, the process can be shared much more. In other words, in a professional situation, it is necessary to develop – and hence construct and deconstruct collectively – solutions with respect to the problem to be resolved. These working methods are therefore a probable practice of any adult returning to education. However, in this first part of the study, where we wanted to concentrate on the implications of the teaching proposals, we have not verified the practices of each individual. Although asynchronous possibilities exist with ACOLAD, the training provided mainly stresses synchronous exchanges in automatically recorded discussion rooms. In order to facilitate this, Acolad is designed in the form of a relational database, in which each statement can be characterised.

As part of a research programme financed by the state and the Alsace region, a number of research projects tried to establish precisely what resulted from distance learning. They looked, for example, at the content of verbal exchanges in order to establish their nature, and how they developed over time. It emerged clearly from this research that synchronous interactions at a distance were considerable during the first three months of all the training programmes, and that this form of communication remained high – at least 30% of the total – throughout the training (Jaillet, 2003). Another research project tried to observe whether it was possible to construct an analysis instrument for the teachers, using activity theories. As with all teachers, the teaching skills of those working at a distance had developed based on conventional practices, and subsequently the choice of analysis tool provided a basis, where necessary, for the service they were offering. The first of these was constructed from an activity theory derived both from Russian origins, with Vygotsky (1978) and Leontiev (1976) and the north European revival, with Engeström (Engeström & Cole, 1993) and Kuutti (1996). This involved three activities which enabled one student's activity to be placed in relation to the others according to three criteria: assiduity, availability and involvement. This first tool provided the teacher with real data on the extent to which the student was involved in the investigations that were to be carried out, and on the extent of cooperation with other students. This is far removed from the tools for monitoring programmed learning, which observe a student's progress from a standardised expected result. In contrast, it provided information allowing the tutor to interpret the situation in light of experience, just as in the normal training of students in practical work, for example. The teacher thus develops syncretic abilities for understanding situations from behavioural indicators. Although it is at a distance and without seeing the students, the three activities give back to the teacher a view based on criteria that can be interpreted in the light of experience. The main validation of this triplet is that it reveals very clear differences between one teacher and another (Jaillet, 2005).

Distance learning is becoming a veritable hive of research activity, with real data that are much more stable than those derived from face-to-face teaching.

8 The major trends in higher education

Even if the conservative governments have implicitly abandoned the target for 80% of the age group to reach the *Baccalauréat*, France does have a very high proportion of the age group attaining the *bac*, and one notable feature of the French educational system over the past 40 years has been the explosion of numbers in higher education. This opening up to the "masses" has not really been accompanied by reforms in teaching (Coulon, 1997), although the acceleration starting in the 1980s could have given such reforms a boost. Instead, the state responded in the 1990s by putting forward a major plan, called "*Université 2000*", for investment in buildings.

Table 3: Students enrolled in higher education in France since 1960 (DEP,05)

Year	1960–1961	1970–1971	1980–1981	1990–1991	2000–2001	2003–2004
Number (thousands)	309.7	850.6	1,181.1	1,717.1	2,161.1	2,254.9

Another very noticeable feature of higher education in France is its heterogeneity. One educational path is high school for two years after the *bac* in "preparatory classes" and then continuing in one of the prestigious *grandes écoles*; a second, competing, route is university. It is actually much more complicated, for nearly all the high schools offer vocational training for to two years beyond the level of the *bac* (qualifying students for a *Brevet de Technicien Supérieur*, or BTS), while the universities also offer vocational training to that level, providing students with a *Diplôme Universitaire de Technologie*, or DUT. The excellent recruitment into higher education is therefore not accounted for by the universities, but by a plethora of engineering schools, some of which are described as *grandes écoles*. These recruit their students through a national competitive examination, creaming off the best people in the age group reaching the *bac*. The students areable to choose which establishment to enter, depending on their level of attainment. The engineering schools have become a political instrument for managing decentralisation, and it is not uncommon to see such establishments being created

Table 4: Distribution of students in 2003–2004 (DEP,05)

Total	Universities	IUTs	*Grandes Ecoles*	IUFMs	BTS	Preparatory classes	Accounting	*Universités de Technologie*	Engineering schools	Business schools	Other
2,254,864	1,425,665	113,722	18,655	85,808	234,195	72,063	76,432	6,975	78,940	80,619	61,790

IUT = *Institut Universitaire de Technologie*, preparing students for the DUT. IUFM = *Institut Universitaire de Formation des Maîtres*, training teachers with education to three years beyond the *bac*. BTS = *Brevet de Technicien Supérieur*, two years beyond the *bac* in a high school. Preparatory classes = two years in a high school preparing students for a competitive examination to enter a *grande école*. Accounting = specific training to qualify as an accountant. *Université de technologie* = a university that specialises in training engineers. Business school = a college supervised by the Chambers of Commerce and Industry. Other = higher educational establishment supervised by a government department other than the ministry of national education, or that does not fall within any of the other categories.

in small towns, to further both the aims of local politicians and the town's ambition for a higher profile. There has been a veritable explosion in their number. There seems little prospect that the French system will be simplified in the immediate future, especially given that nearly every government department has supervisory responsibilities for its own higher educational establishments.

In order to provide means of operating, and in an attempt to give some overall consistency, the central government's policy makes use of a contractual framework, in three particular situations.

– The first relates to contracts under the state-region plan, and these may be concerned with higher education and, in particular, with research. All the universities in all regions of France have received considerable resources so that they can initiate programmes to develop information and communication technology in teaching. For the universities, these forms of technology have become an argument put forward to attract students. The regions are well aware of this, and even encourage the universities to invest in this area. You have to keep up with the times, which means making considerable resources available to the students and teaching staff. There is a simplistic logic leading people to believe that the use of IT necessarily implies an improved quality of teaching. There has recently been an increased emphasis on technology as a form of competition between the universities. The emergence of a web-based press agency specialising in the educational field (*Agence Education Emploi Formation* – AEF), (Thot) has really thrown a spotlight on the efforts made by universities in this area. Some of them are shouting their involvement from the rooftops, without there ever being any verifiable results.

– The second situation relates to appointments as state employees in universities. Since the early 1990s, the plan has had an Information and Communication Technology in Education section laying down what efforts the universities must make to equip their lecture halls and IT resource centres, and to develop distance learning. However, this section is becoming very quickly swamped by the university's financial arrangements as a whole. After the announcement of effects and window-dressing, real effects are only very slowly becoming apparent. The universities must keep the way they are organised up-to-date. There have been very few cases of universities' audiovisual departments and IT centres being successfully modified to integrate digital technology. "New Communication Technologies for Education" units are being established, but they are having great difficulty keeping abreast of the changes. Technological convergence is creating a need for the universities' provision to be eventually reorganised. The IT and audiovisual departments should be able to combine or be reorganised in order to accommodate needs and the way in which services are used. It is, however, very difficult to reorganise institutional arrangements. It is not uncommon to find universities with audiovisual departments that still deal with video recorders or, if very ambitious, produce two or three films per year. Sometimes, these are shown on television. This is something of a luxury that the universities allow themselves by maintaining these departments that have no effect on educational practices or even on communicating research in the university. It is even more difficult for IT departments, as issues of status and bonuses almost completely prevent change. What is most surprising is that, in spite of these problems, the universities make great efforts in this area. Nearly all have some basic intranet for the students and teaching staff, and these sites all have headings relating to information and communication technology. The will is clearly there; practical implementation is still to come.

– These shortcomings have led to introduction of the third situation. Starting in 2000, France's Ministry of National and Higher Education launched a series of programmes entitled "Campus Numériques" (digital campuses). This involved appeals to the universities to form into consortia in accordance with certain themes, so as to produce content and then distance learning packages that would lead to qualifications. During the period 2000 to 2003, 64 of these "campuses" were established. Barely 10 have survived. This resounding failure could have been foreseen, for a number of reasons. Although the appeal had been to the universities, in reality the projects depended on only a relatively small number of individuals, and the few hundred students it covered did not really count.

Another development was that in 2004 the ministry changed tack, following policy changes. The "digital campuses" concept, which chose winners on the basis of a call for tenders, was replaced by the idea of a "thematic digital university". The change was a sensitive one, as it meant that the initiative to collaborate should come more from the universities and engineering colleges. It is interesting to note that this began with the "virtual medical university". The medical schools saw this as having the specific advantage of giving them some independence from the universities on which they depended. There have been few real developments since 2003; only conferences, lectures and statements of intent. We can reckon that a forthcoming policy change will provide justification for this transient initiative. It should be pointed out that these plans saw the light of day only because people who were sympathetic presented the case to the relevant government office. So much for transparent procedures based on tendering, which were elbowed out by considerations that are certainly relevant, but which left the basis for decision-making in the dark.

In 2002, the ministry called for the development of what were then entitled "Espaces Numériques de Travail" (digital working areas). The idea was fairly simple: to unify all the university IT systems, in order to provide educational services to the users, both students and teachers. Four of the proposals from around France were selected, one of which subsequently disappeared, to be replaced by commercial solutions. Now, in 2005, only one of the projects – EPPUN (Espaces

Pédagogiques Pour l'Université Numérique, or Educational Areas for the Digital University) – is up and running in the universities (EPPUN).

The outlook is thus rather bleak. While people talk of the introduction of information and communication technology as a reality, in practice the progress has been very tentative, and we nearly always find the same people and organisations involved. While governmental policies get a lot of media attention, they do not survive for long. When a two-year programme is introduced, there is not even time for it to be properly assessed before it is replaced by another two-year programme which will similarly not be given time to succeed. To be realistic, changes in the universities can be envisaged only as part of a continuous process over a long time. With three changes of policy in six years, it is hardly surprising that the expected results are not achieved.

While Europe's higher education "area" is taking shape, we may wonder whether Europe is a possible framework. This is what is being attempted by LERU (League of European Universities), which was given responsibility for two Europe-wide projects. One is EUREA, which involves drawing on the member universities' research resources to establish an educational pool, following the example of MIT's Open Course operation in the United States. The other is the e-LERU project, which draws on virtual mobility. Each university is offering modules that will be recognised Europe-wide, for which the students will be able to study in any of the universities, via distance learning. A further intention is to exploit the excellent research carried out and allow students who want to study something not offered by their own university to study it at a distance. These projects obviously require a lot of input to be set up and kept running. The way that LERU has been set up means that it is characterised by the excellence of its research teams, and researchers are not used to concerning themselves with teaching, which one has to admit is the poor relation in a university setting. Here again, though, the European programmes in which the universities are involved cannot be seen in the national context. It is even possible to consider these initiatives as ones that introduce a form of competition between the universities without this being overt. The European programmes also have limitations, for the maximum duration of two years ultimately prevents a true continuation of policy. When a programme comes to an end, the partners have hardly got to know each other. If there is no follow-on, everything ceases, with the benefit going to other universities, which will perhaps go over the same ground without being monitored to any extent while they are doing it.

The major new feature is the gradual creation of a European Area of Higher Education as part of the Bologna process, with the restructuring of degree courses at French universities to come into line with the standard European system of first (or bachelor's) degrees (three years after the *bac*), master's degrees (five years after the *bac*) and doctorates (eight years after the *bac*). The universities' plans are attempting to use new technologies in order to improve students' mobility and also possibly to reform the course of their studies. For the moment, however, these are discussions that cannot be verified.

9 Conclusions

Discussing recent programmes that use information and communication technology and could have an impact on higher education establishments is a hazardous undertaking. Previous programmes have shown that, after the announcement effects, and even if very considerable resources are allocated, it is perfectly possible that general indifference will result in the initiative being lost without trace. Conventional practices remain. The use of video projectors is becoming general, and they are replacing overhead projectors. PowerPoint presentations are becoming ubiquitous in lecturing. Other forms of progress are much more patchy. Perhaps students' initiatives will lead to changes, but there is absolutely no certainty about this. Provision of a digital working environment for the students thus has promise, with change no longer coming from the teachers, but from the students. The whole problem about assessing the usefulness of these approaches lies in the fact that the issues are just as much policy and marketing matters for the governing bodies of universities, which want to use them to attract students and resources. Even if there have been changes in the way people act, showing just what those changes are is tricky, and we may not be able to see the effects for some years. We are running out of time available to describe calmly the reality of information and communication technology in teaching. There is not much mileage in that conclusion, but it is a fact. Can we come to terms with it?

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Albert Sangrà

E-Learning in Spain: The Consolidation of the Earliest Take-off

1 The Spanish e-learning approaches

It is still difficult to give a good definition of what e-learning is and what is not. This is because, for many reasons, there are numerous higher education institutions trying a variety of teaching methods with electronic means, and also because the corporate sector would often like to be identified with it. Nevertheless, there are various underlying approaches common to most of them.

Concepts like Virtual Campuses and Online Courses are often confusing as well; they are put in the same category although, in reality, they are quite different things. Van Dusen (1997) gives us a good definition of the term "Virtual Campus" when he says "The virtual campus is a metaphor for the teaching, learning and research environment created by the convergence of new powerful instruction and communication technologies."

On the other hand, Online Courses are in a third stage, preceded by the already mentioned other two. It directly provides courses, without aiming to establish a possessive relationship with the institution offering them.

E-learning can be defined as "the use of technologies based on the Internet that provide a wide variety of solutions that bring together the acquisition of knowledge and abilities or capabilities" (Rosenberg, 2001). This author proposes that there exist three criteria that must be met in order to apply the term correctly: a) that it takes places in a network, allows immediate updating, storage, recuperation, distribution and the possibility to share contents and information; b) that it reaches the final user via a computer using Internet technology standards; and c) that it is centred in a wider vision of learning applications that is not limited to the traditional education paradigms (Rosenberg, 2001, pp. 28–29).

Despite this, there is no agreement on a common definition of e-learning practices. Bonk and Dennen (2003) give an interesting proposal that does not seem to have been analysed by the Spanish actors on e-learning. In fact, since e-learning is an English word, there have been some troubles to define what could be considered as e-learning and what should not from a Spanish perspective. Sometimes, it derives merely from a linguistic interpretation, but other discussions are rooted in more conceptual beliefs.

In Spain, there are different routes, which lead to current e-learning initiatives. One is related to the educational technology field in which we can highlight several authors like Cabero (2000, 2002), Gisbert (1999), Martínez (2004) or Salinas (1998, 2004), who do not usually use the name e-learning but "new ICT in education" as a more generic and wide one.

However, academics who have experienced distance education for years all agree that e-learning comes from distance education, because it means teaching at a distance via the Internet (Ruiperez, 2003) or because it is a rebirth of this kind of education (Sangrà, 2002c) which could also be defined as the "planned learning in which the learners and teacher are separated by physical distance so that the normal or principal means of communication is through technology" (Moore and Kearsley, 1996, p. 200). Also Garcia Aretio (2004) considers e-learning as a kind of distance education: Internet-mediated education. He particularly says the "all e-learning activities are distance education, but not all distance education is e-learning" (Garcia Aretio, 2004, p. 254). However, there are people who do not agree with this point of view, so they consider that the use of electronic technology in a classroom is e-learning, though it is not distance education. The common point of agreement is that in which ICT has an important impact on teaching and learning at Higher Education institutions.

In 2000 Bricall, who coordinated a National Report on Spanish universities and their future trends, talk about the introduction of ICT, said "Universities have given in an unbalanced answer to this. In Spain, almost all the universities have developed such a project in this field. Currently, the most extended services in the net are the information and dissemination ones about each university (history, place, educational offer, faculty etc.) and access to some services such virtual libraries, self-registration, e-mail, etc. Some universities have started to use ICT to support teaching through discussion fora, electronic mentoring, documentary and bibliographic support, etc. Lastly, some face-to-face institutions offer distance courses or content linked to ICT – like Law and e-Commerce, Digital Publishing, etc. […] There is a lack of a clear institutional strategy which could give a scheme of development of IOCT in teaching, research and administration. However, universities have developed a lot of projects – courses, teleconferencing, multimedia service centres, institutional web-sites, virtual libraries, etc. – they usually are isolated actions that are not related to strategic institutional aims and which existence is self-justified as an end in itself." (Bricall, 2000, pp. 238–239)

Some years later, this advice seems to have been listened to and some regional governments and universities have developed a number of initiatives to put ICT and e-learning in a more strategic place in their institutions. So, research conducted in Catalonia which analyses the real impact that the Internet has had on the current configuration of relationships between universities (Sancho et al., 2004) shows how common and strategic objectives have been developed jointly, like the establishment, maintenance and improvement of physical infrastructures to be connected, the creation of an unified catalogue of library resources to be shared by all the universities and the promotion of projects with the aim of initiating or promoting the use of the Internet at the university.

2 The current state of the art: the Spanish higher education scenario

There currently exist 70 universities in Spain, 48 are public and 22 are private ones. In the term 2004–2005, a total number of 1,462,897 students were enrolled in graduated courses and 72,729 in postgraduate and doctorate ones, as table 1 shows:

Table 1: Number of universities and students in Spain (2004–2005)
(Source: Ministry of Education and Science[1])

Universities		Graduate students	Postgraduate students	Total students
Public	48	1,328,154	69,516	1,397,670
Private	22	134,743	3,213	137,956
Total	*70*	*1,462,897*	*72,729*	*1,535,626*

Talking specifically about e-learning, despite the fact at this moment there is a huge amount of initiatives, as we will see, and considering the fact that, ten years ago, no-one was talking about e-learning as a concept of practice, the kick-off moment in which it landed in Spain was when the Universitat Oberta de Catalunya (UOC) was created.

However, all these initiatives have been the product of the willingness of the Universities' Government Board or their faculty. Political initiatives did not succeed probably because most of them were not specifically education-driven. That is, most of the National Plans, like *InfoXXI*[2] or *España.es* (2003) to mention the most well known ones, were oriented to reach the information and knowledge society by means of economy and technology, but usually forgot the particular characteristics of the educational environments.

1 Statistical Data from the Ministry of Education and Science. Available at: http://www.mec.es/educa/jsp/plantilla.jsp?area=ccuniv&id=E123 [Retrieved 08/07/05].

2 See www.infoxxi.es.

From that moment, we can point out two main streams to bring e-learning into the centre of organizational, educational and economic discussion. These two main streams are, on the one hand, the initiatives carried out by those institutions which came or were born from the distance teaching and learning perspectives. On the other hand, conventional higher education institutions responded, later on, to this important challenge.

2.1 Distance education

a) Universitat Oberta de Catalunya (UOC)

The first full experience with e-learning in Spain began in 1995, when the Universitat Oberta de Catalunya (UOC)[3] was created. This university started its activities fully online with 200 enrolled students in two different official degrees. UOC developed a brand new educational model in which the concept – and the tool – of *Virtual Campus* was the main element.

Over the last few years, society has become aware of the need to base education not only on face-to-face interaction between the teacher and the student, but also on the requirement of different models. In the entire world a new paradigm is being consolidated, adapted to a new society: changeable and diversified in terms of age, activity, economic level, place of residence and personal situation.

The UOC was created to give a real response to the new situation and fulfill these new needs. This response is based on a flexible and open educational model, which takes advantage of the possibilities of information society technologies as support tools. From the very beginning, and according to the educational offer of the conventional universities in Catalonia, UOC was created as an efficient alternative of distance higher education for a target of adult students.

At this stage, UOC offers 17 fully accredited degrees in which more than 32,000 students are currently enrolled. Around 150 full-time faculty staff are in charge of coordinating 1,900 part-time professors. The educational model is based on an innovative teaching and learning system, which encourages students to feel part of the university community and to communicate with others and learn. Therefore, they acquire knowledge, not only through what it is taught to them, but also by means of the interaction and cooperative work between the members of the community.

The particular characteristics and the success of this university and its model has been the reason for developing several case studies about it (Sangrà, 2003b, 2002a, 2002b, 2001) and for being awarded with different prizes: the Bangemann Challenge for the best European Distance Education initiative (1997), WITSA

3 Open University of Catalonia: www.uoc.edu

Award for the world's best digital opportunity (2000), ICDE Prize of Excellence for the world's best online and distance university (2001), the Organization of American States' Award for Educational Quality (2004) and the EFQM Gold Standard for European Excellence (2004).

b) Universidad Nacional de Educación a Distancia (UNED)

The UNED[4] is a distance teaching public university created in 1972, with the same mission as that of other distance universities in the late 60s, like the Open University in the United Kingdom: to balance people's opportunities of access to higher education via distance education.

From the beginning, UNED had a traditional distance teaching university educational model (Garcia Aretio, 2002). This model is mainly identified by paper-based teaching materials supported by different means such as radio and TV broadcasts and video tapes, weekly face-to-face tutoring sessions in the associated centres spread out over the Spanish territory. A potent satellite-based communication system allows broadcasting even live events through the Internet. At the moment, 127,000 students are enrolled in 26 different accredited degrees and 1,200 professors and researchers take care of the quality of courses. Moreover, 5,500 part-time tutors attend the students in the associated centres.

Although, from 1995, the UNED has been introducing the use of different web-based ICT as web pages, bulletin boards, e-mail, electronic discussion boards and listservs, the important decision of the approval of the "Plan de Virtualizacion de la UNED"[5] was made in 2000. In this plan, it was foreseen to systematically introduce online teaching services for different accredited degrees.[6] The latest data[7] show that 667 courses belonging to 25 different accredited degrees have already been put online.

In order to develop the plan three important actions were implemented:

- The selection of an electronic tool to support online teaching. They started to use WebCT and later an open source platform was developed independently (aLF[8]). At the moment, both tools are working in the institution.
- The creation of a unit for faculty support,[9] to help them to transform and produce new digital materials to be used in virtual courses.

4 www.uned.es
5 Spanish words for: *UNED's Virtualization Plan.*
6 Santamaria, M. *La incorporacion de la ensenanza en linea en la Universidad Nacional de Educacion a Distancia (Espana)*. Document retrieved 25/04/05. Not yet published. I am grateful to the UNED for providing this information.
7 Data for the term 2003–2004.
8 http://www.innova.uned.es/

- The design of a programme for teacher training in online teaching. It was based not only on the technological issues but also on the methodological ones.

2.2 The response of conventional universities

Some time later, in 1997, 9 universities signed a consortium to deliver some courses online, specially the elective ones. The main aim of this group of universities, called G9[10] was, and still is, to promote collaboration between them in terms of teaching and research activities and to stimulate students' virtual mobility. To share online courses using different telematic systems and respect the characteristics of each university has been one of the most successful achievements they have had. At the moment, 55 different courses are being offered to all the students of these universities and they can enrol in them by using the computer services of their own university.

However, some of these universities have developed particular projects on their own. The Universidad de La Rioja, for instance, started in 1999 a project offering a full online degree in Music History and Sciences. Also the Universitat de les Illes Balears developed its *Campus Extens* in 1997, as a means of solving the problems arising from the fact that students live in different islands and cannot travel daily to attend the lessons delivered only in the biggest island where the university has the central services. Teleconferencing, initially, and online courses later have been strongly rooted in the activities of this university.

Another different project set up as a consortium by the public universities of the region of Madrid is ADA-Madrid. It has been developed by 6 universities: Alcalá, Autónoma de Madrid, Carlos III, Complutense de Madrid, Politécnica de Madrid and Rey Juan Carlos. This project's main aim is to promote the use of ICT in distance teaching activities at the universities of Madrid. They work basically in the same way as the previously mentioned experience of G9, so courses are mainly elective ones. Currently, there are 30 courses in the catalogue to share.

Furthermore, a set of Catalan universities, supported by the Catalan Ministry for Universities, Research and Information Society[11] also develop a collaborative project whose main aim is to exchange and share elective and non-core Internet-based

9 http://vicetec.uned.es:8090/webuso/unidades/uso

10 G9: www.uni-g9.net. G9 is set up by the following Spanish universities: Cantabria, Castilla-La Mancha, Extremadura, Illes Balears, La Rioja, Navarra, Oviedo, País Vasco and Zaragoza.

11 Departament d'Universitats, Recerca i Societat de la Informacio (DURSI): http://www.dursi.gencat.net

courses between their students. The Intercampus[12] initiative is the name of this project which started in February 2000 and has served around 4500 students all over Catalonia.

2.3 Types of offer

Although, during the late 1990s, there were undergraduate degrees at the UOC and the UNED, it is true that lately the other universities are starting to offer whole degrees via different models of e-learning delivery, even when some of them said "we will never do that".

Furthermore, apart from these particular experiences, most Spanish universities have developed and offered some course electronically which belong to a particular undergraduate accredited degree.

2.3.1 Undergraduate degrees

From the results of research conducted in all Spanish universities (Sangrà, 2004) during the term 2003–2004, we can consider that 48% (33 out of 69) of them have offered some course through electronic means. In total, this means 1,341 courses. These courses are part of undergraduate accredited degrees. Forty-two full official degrees are also offered via e-learning, distributed by universities as follows:

Table 2: Universities offering full e-learning degrees (2003–2004)
(Source: Sangrà, 2004)

University	Degrees
Mondragon Unibersitatea	1
Universidad de La Rioja	2
Universidad de Las Palmas de Gran Canaria	1
Universidad de Zaragoza	2
Universidad Nacional de Educación a Distancia (UNED)	16
Universitat Oberta de Catalunya (UOC)	18
Universitat Ramon Llull	2

12 www.catcampus.org

2.3.2 Postgraduate degrees

E-learning postgraduate courses and degrees are even more generalised. In fact, it is in this particular field where real competition between universities seems to have been developed. However, to do that universities have taken different organisational models. Most of them do it through parallel institutions which usually belong to the same university (non-profit foundations, for-profit spin-offs and companies, external divisions, corporate joint ventures).

An interesting experiment has been conducted by the universities Autónoma de Barcelona, Alicante and Carlos III de Madrid, jointly with the publishing company Santillana Formación. They built the Instituto Universitario de Formación de Posgrado (IUFP)[13], a joint venture to deliver postgraduate courses and degrees via e-learning. At the moment, they offer 8 programmes, mainly based on the business field, electronic editing and publishing and ICT and education.

Another special initiative has been the UB Virtual project. In fact, Universitat de Barcelona is one of the big universities in Spain and the largest one in Catalonia. They decided to manage e-learning outside of the university, creating a company which could manage the courses on their own. After a failed first attempt (UB Media), they succeed in reinventing the company as UB Virtual.[14] At the moment, they are offering a wide range of online courses in different disciplines as Business, Health, Education, Pharmacy, Tourism and others.

If we look at the 2001–2004 period, we can see that the increase of this teaching and learning modality is quite important in higher education, so it has become three times more fully developed during the 2001–2002 period.

Table 3: Quantitative evolution of online postgraduate courses in Spanish universities (2001–2004)(Source: Adapted from Valverde et al., 2004)[15]

Postgraduate Degrees	2001–2002	2003–2004
Master	62	133
Postgraduate Courses	84	87
Specialization Courses	92	117
Updating Courses	14	140
Continuing Education Courses	129	268
Extensión Courses	4	8
Others	0	16
Total		

13 www.iufp.es
14 www.ubvirtual.es
15 This research only considers public universities, so we added data from the private ones in order to obtain an overall view of Spanish reality.

On the other hand, the same study points out that the number of universities with a "Virtual Campus" has considerably increased. Whereas, in term 2001–2002 not even half of Spanish universities used an electronic platform (48%), last year there were 74% (Valverde et al., 2004).

Although some of them have developed their own electronic platform (UOC, Vigo, UPM), use of commercial ones (WebCT, LearningSpace, Blackboard) is quite extended. Open Source software like Moodle has also considerably grown over the very last years.

2.3.3 HE Specific disciplines

From the point of view of disciplines, most e-learning courses are developed in Social Sciences and in Technology and Applied Sciences. Economics, Pedagogy, Communication and Library Sciences are the most experienced in the first area and Computer Sciences and Engineering in the second one. We can also highlight interesting practices in Health Studies, as Medicine, Nursery and Pharmacy and in Literature and Language Studies, mainly in Modern Languages and Linguistics.

3 Rationales for introducing E-Learning in higher education

When analyzing the main reasons for introducing e-learning into higher education, even from a Spanish point of view we should agree with Bates (2001), who points out three basic issues: the need to do more with less, the changing needs of society and the impact of new technologies in teaching and learning (Bates, 2001, p. 8).

At the same time, and from Bates' initial perspective and also glancing at Hanna's work (Hanna, 2000), some possible rationales emerge for using e-learning in higher education (Sangrà, 2003a):

To widen targets for universities: given that birth taxes are going down, to match people with a lifelong learning approach is a strategic issue for university growth.

To improve university economic expectations: although no-one has checked if it is true, some universities have perceived e-learning at the beginning not only as a new income, but also a way to reduce costs. Currently, however, this perception is being changed, because the maintenance of high quality standards is not cheap.

To respond to the technological imperative: some universities have moved to ICT integration and e-learning when they have seen their neighbours doing it. This manner of performing has provoked some universities to buy an electronic platform to deliver courses online, but faculty are not interested in using it or are not trained – and not only technologically – to profit from it, or else the platform does not respond to the university needs because the choice has been made by technicians and it does not fit in with educational purposes.

To improve quality of education: some institutions really think they can improve the quality of education by introducing e-learning in their practice, in order to gain flexibility and interactivity, to have a better educational design of courses, to facilitate a wider access to information resources and to promote collaborative learning. But what is not proved is that quality really improves. One of the concerns we have is whether we are using e-learning in the same way as we use traditional education, without taking advantage of new opportunities, that is, without a real innovation in teaching (Sangrà, 2003c; Sangrà and Gonzalez-Sanmamed, 2004).

4 Major actors and cultures

In this process, two different cultures have fostered the use of e-learning in universities in Spain. On the one hand, those based on the initiatives of Computer Sciences departments. This is, obviously, a very technology-driven approach, in which aspects such as platform design and content interoperability standards are the most relevant ones when implementing the project.

On the other hand, when the initiative has had its core in departments of Education or Psychology, they are generally more educationally process-driven, so interaction between teacher and student and constructivist approaches are major concerns.

However, one of the main problems all universities have had to struggle with is the strong reluctance of faculty to introduce ICT into their educational practice. Issues from a lack of appropriate training to use them, to legal copyright aspects have been reasons to deny the integration of e-learning in the teaching processes. In fact, perhaps the most important reason has been the lack of faculty involvement in the projects and initiatives led by the Executive Boards of the universities on the one hand, and the absence of an appropriate support when the projects came from faculty.

It is true that teachers' training is a crucial issue in order to ensure successful experiences that could keep on working for years (Sangrà and Gonzalez-Sanmamed, 2004), but it is also necessary to develop an understandable plan which is assumed and shared by all the actors in the process.

5 E-Learning as a strategic tool for development and change

At the moment, there seems to be strong commitment from the Spanish university governments to develop strategic plans for ICT integration as a major tool for university development. This would allow integrating the different perspectives and approaches and taking into consideration the issues mentioned above.

Sangrà and González-Sanmamed (2004) identified three main categories of strategies: a) Institutional plans; b) Course-based projects; and c) Support resources for teaching purposes.

5.1 Institutional plans

These are a very good example of "top-down" models. The university puts a lot of efforts into them, they are well funded and it is coordinated from some institutional unit. Procedures and expected mid-term outcomes use to be well defined, despite a certain lack of evaluation at the end of the plan.

Their main objective is generally to promote the effective and rational integration of ICT into university teaching, and to use the entire university as the field in which to operate.

There are generally mechanisms which pursue institutional changes – these are especially related to students and faculty – which are generally long-term processes.

5.2 Course-based projects

They are normally promoted by faculty or departments. They do not pursue a "whole university" approach, but a narrower one, sometimes related to one specific course or subject or a cross-departmental approach.

They are usually concentrated on the elaboration of a course on the basis of some innovative parameters using ICT intensively. Normally, they consist of making some digital teaching materials (Teaching plan, study guides, specific materials …).

They do not usually respond to any institutional strategy, but to initiatives from the departments or from some faculty who are trying to join to the "mainstream".

5.3 Support resources for teaching purposes

Some institutions have started by fostering a strategy based on developing and facilitating resources to the faculty to use them in their classrooms. This means that they are expected to have a number of opportunities to improve the quality of their teaching without supplementary effort to learn to develop digital solutions.

These resources are sometimes organized as units or centres, to be easily recognised by the faculty. Some of the services they offer are:

- Multimedia materials, audiovisual equipment, digitalisation services, publications
- Digital documents supply and transformation
- Computer infrastructure services
- Virtual Learning Environments
- …

This kind of strategy aims to give the faculty more freedom with their degrees when deciding how to manage ICT in their classrooms and what to use to improve their teaching quality.

Nevertheless, strategic planning is generally a top-down mechanism based on technology and economics, in which faculty cannot really feel as though they have a share in decision-making processes, but that learning should be done in a different way which does not take into account the fact that it is an educational matter. In fact, what is underlying this idea is the need for universities to change. And e-learning is being used as one of the most important drivers.

But in reality, there have not been many changes in higher education organisational structures. Apart from UOC, which was built with a different organisation basis from the other Spanish public universities, most have only developed minor changes.

The most important ones are the creation of a Vicerectorate or Viceprecidency for Technological Issues, which encompasses all aspects related to the integration and development of ICT at the university (infrastructure, equipment, communications, e-learning solutions …) and the promotion of specialized units to support e-learning activities.

Using data from the last academic period, 48 Spanish universities (84%) have some kind of unit or team devoted to give support to the e-learning processes at the university (Sangrà, 2004). These units have very different names depending on the university in which they are but, in general, the main commitments they have are:

- To assess faculty in the process of moving from a fully face-to-face teaching model to a blended one, complemented by the use of ICT in the classroom and even outside the classroom, from both a methodological and technological perspective.
- To teach faculty in several issues (not only on e-learning)
- To manage and optimize resources and devices (technical equipment, rooms, etc.)
- To design and produce learning content or teaching materials or to help faculty to produce them

Despite this, organisation must be adapted to each particular context, as an example of how things could be done in a different way; we are going to talk about the UOC's organisational structure.

It is using what we could call a "shamrock" organisational model, as shown in figure 1, in order to achieve the flexibility necessary in its human resource allocation.

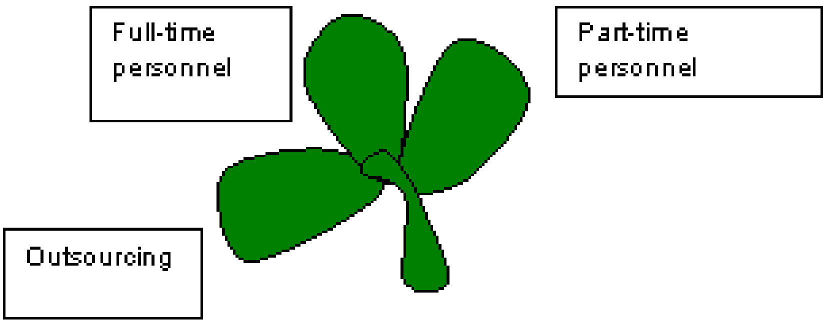

Figure 1: UOC's HR organisational model

Recognising the need to be flexible enough to respond to the demands of a rapidly changing society, the university has adopted a new management and organisational model based on a process management system (PMS) that is implemented, apart from the Government Board, by three commissions: (1) Strategic Commission, (2) Educational Programmes Commission, and (3) Operational Commission.

The main reasons for adopting this model are: (1) to increase its student-oriented philosophy; (2) to avoid barriers by adopting a horizontal communication structure; (3) to generate better staffing systems to participate in the success of the project; (4) to improve internal information and communication systems; and (5) to promote quality assurance for all processes.

This non-bureaucratic management system implies agile coordination, generates participation and empowerment among staff, ensures communication and facilitates workflow, facilitates the integration of client and marketplace voices, and encourages continuous improvement procedures. In simple terms, it is vital that the PMS model is periodically updated and that it is public and collective. In light of changing organisational requirements, it also involves revisiting the institutional mission from time to time, periodic evaluation of management to implement improvements, and continuous self-assessments to optimise quality assurance.

6 Lights and shadows of the Spanish scenario

Although there is a growing number of universities using e-learning to deliver courses or to support lessons in the classrooms by means of different models of use, and the fact that e-learning is fully recognized and courses are accredited at the same level as the conventional ones, there are still significant differences between Spanish universities.

The main reasons, among others, could possibly be the lack of institutional strategic plans to integrate ICT or e-learning at the universities, as mentioned above, the lack of infrastructure and, very importantly, the profound need for faculty training in both technological aspects and the pedagogical uses of ICT.

In the wake of the survey mentioned above (Valverde et al., 2004), we can say that Spanish universities generally prefer bi-modal models which merge face-to-face and online or virtual learning, so blended models of teaching and learning seem to be a probable model for the future, although the same author also admits that “we need an effort from the classical and traditional face-to-face structures to update the knowledge transmission systems”.

There also are other different visions of this kind of teaching and learning. From those who consider that we cannot talk about “virtual education” because it is not tangible and presumably therefore does not exist, while forgetting what Lévy (1998) said about the reality of virtuality or about presence in cyberspace and also consider that the term e-learning comes from the field of vocational training (Area, 2004, p. 201).

Effectively, there is a stream that considers e-learning as a commercial solution for companies and even for universities to earn easy money through new Internet-based courses. On the other hand, companies often state that universities cannot cope with the needs of the corporate sector, so they could not be good at developing e-learning. Beyond the struggle to reach new markets, it is clear that, like any kind of education or training, e-learning needs a solid theoretical background and clear approaches which give us high quality educational and training achievements.

On the other hand, more negative visions also exist and they consider that online learning brings considerable constraints like the lack of human contact, the difficulty of feeling that one belongs to an educational community, or the need to maintain a high level of motivation to stay on an online course (Valverde et al., 2004)

7 The E-Learning potential

E-learning has undoubtedly an enormous potential for changing and improving higher education, not just in Spain but all over the world.

I agree with those who are reluctant to accept the idea that everything someone does in education using an ICT device or communication system is e-learning. Most educational institutions and companies which affirm they are also using e-learning for education and training are just developing old training systems with a new interface.

The new educational paradigm that virtuality is shaping is not altogether new. We believe that its value lies in the possibility it offers to reinterpret, rethink education and its mechanisms. Learning theories, methodologies, didactics, communication, etc., must find a new place in the e-learning culture which is open to all kinds of creative possibilities. This is a new path to explore, which must be taken into account if success is to be had in the educational challenges of the new millennium. But real practices do not seem to be truly new. They are still being concentrated in the same theoretical and methodological frameworks. We really need a qualitative jump forward which allows us to gain maximum profit from the potential of e-learning for the ducational community.

"Much of the potential for online learning is being lost because too much of the pedagogy of online learning has been transferred unreflectively from didactic traditional teaching where the computer substitutes for the teacher and textbook as conveyor of information. A more productive approach is to regard online learning as an example of learning from experience using a new medium and access to new resources." (Alexander & Boud, 2001, p. 3)

Ferraté stated that "methodologies based on virtual concepts will progressively expand and become general due to the huge educational and social possibilities they have" (Ferraté, 1998, p. 187). Indeed, the two pillars needed for the constitution of this new paradigm are the educational model and the organisational one. Both are closely linked and condition each other. From the education model, we must consider the importance of it being centred on the student's educational needs. It may be the most obvious thing. But the most costly one, especially for higher education institutions, is the organisational model. So long as educational organisation is the same, practices no longer change.

7.1 To feed from distance education theories: a true rebirth of DE

Some faculty and institutions think e-learning is a new invention of the information and knowledge society. Most of those who think this way deeply ignore the strong roots that e-learning has in the distance education field and disciplines.

Since distance education has always been adapted to every new technology and has grown with it, e-learning represents a real rebirth of distance education. The great advantage we have at present is that e-learning is trendy. The information and knowledge society has put e-learning in a place in which is seen as a pattern of modernity.

It is very important to take advantage of our knowledge about distance education in order to appropriately obtain successful outcomes from e-learning.

However, most faculty and universities – the corporate sector is even worse – seem to want to forget this very crucial point. Those who are not familiar with distance education seem to be afraid to recognise its particular weight in e-learning.

Distance education practices make it easier for us to apply a learner-centred paradigm, focused on their needs, on their learning rhythms, and on their capabilities, where teachers focus on guiding and advising rather than transmitting. Some faculty have understood this and are trying to change their teaching methods. But university leaders are not doing their best in this particular issue.

Instead of this, it is a major concern for organisational changes to improve economic data. E-learning as an impulse for modernisation is still mainly taken into account from the economic and technological perspective. We still have to go a long way before we can really change and improve the quality of education by means of e-learning practices.

This must be the real aim of this rebirth, the real aim of introducing e-learning at the university level: to achieve higher quality education systems – regarding not only the final outcomes, but also the learning processes in which students are involved. Flexibility, personalisation, interactivity and cooperation should be put to the service of the students' needs in any e-learning system (Sangrà, 2001).

7.2 Some conclusions

In order to do this, some issues emerge as major concerns in the Spanish scenario, despite the fact that they could be taken into consideration even in the European arena.

Wider access

Universities are currently well wired and facilitate good connectivity to on-campus students. However, the rate of connectivity at home is one of the lowest rates in Europe. Although there were some governmental actions and plans to increase this, like InfoXXI or Red.es, they failed. Communications are still too expensive in Spain and this is preventing a real growth of the use of e-learning.

There is a hope, especially from the corporate sector, for the arrival of new devices such as mobile phones or PDAs through wireless connections, but the real challenge is to get people wired from home.

True personalisation

e-learning can really contribute to a more personalised educational system. It involves responding individually to each student's needs, not only from an offer perspective but from the effort the student should develop: appropriate syllabi based on prior learning issues, adaptation to their learning styles, and a special emphasis on those people with disabilities.

Increasing flexibility

Flexibility is not a Cartesian concept, so increasing flexibility grades in our educational systems is needed. Flexibility applied to the curricula, to the rhythm, to the learning style, to the assessment systems. Flexibility is to be adapted to the students' family, personal and professional reality. Sometimes flexibility is thought from the institutional point of view, but the mind must be changed to think of the student.

Reducing content dependence

To retrieve content from the Net is not a synonym of better learning. However, a number of institutions thought, in the first stage, that to give access to content by digitalising it was the best way to increase knowledge. But this is not successful e-learning.

Content management has been perceived as a business rather than as another resource to join the teaching and learning process, the true core of the students' experience. Although libraries play an important role in the knowledge society, learning does not happen only by visiting libraries and reading books.

Universities using e-learning are faced with the challenge of developing technological systems which allow us to elaborate contents with a high interactivity level. Content management should go beyond the digitalisation of materials.

Cooperating and collaborating

There are people who think that personalisation is individualisation. This is not our statement. Students are not alone in their learning process. E-learning should facilitate cooperation with other classmates, creating communities of interest, working in teams, overcoming classroom borders, the campus borders.

And all of this should be compatible with a personalized development of the process. However, some institutions do not realise that e-learning may give us this opportunity and it is still being used as a complement of an old-fashioned teaching style.

Looking for quality

An important effort should be made in order to reach quality standards in e-learning delivery to establish criteria to accredit learning developed through these means. However, it seems that universities want to be more rigorous with e-learning than with traditional teaching.

In Spain, different initiatives are currently being developed. ANECA,[16] the Spanish National Agency for Quality and Accreditation, is leading a process in which criteria and standards for quality in e-learning will be the main outcome. From the regional point of view, given the fact that regions have some political competences in education; the Catalan AQU[17] (Agency for University Quality) is also supporting a team force to establish a guide for measuring quality in e-learning.

In sum, Spain is in a good position in the European e-learning scenario, probably because it has the first full e-learning university, but there is a lot of work to be done to maintain this status in the immediate future and in years to come.

16 www.aneca.es
17 www.aqucatalunya.org

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Alberto Colorni, Manuela Pegoraro and Rita Giuseppina Mangione

E-Learning in Italy: Higher Education and surroundings

1 Abstract

In this section, the context, the history, the market and the main formats of e-learning in higher education in Italy will be examined. The data were taken from surveys conducted by the Observatory for e-learning by ANEE (the Italian Association of Multimedia Products and Services); these surveys covered all areas of e-learning and divided the market in various sectors. It also took into consideration the work done by various key players in Italian higher education: SIe-L (the Italian Association of e-learning) whose President is also one of the contributors to this study), the network of Italian universities which are active in e-learning, the CampusOne project undertaken by CRUI (the Conference of Italian University Rectors).

This section begins with a brief history of the evolution of e-learning in Italy and of the regulations underlying its governance. Then it will analyze the models of the 3 main sectors of higher education, universities, public administration and business world. The final part of the section will touch upon particular issues such as: organizational impact, professional profiles, market, 'personal vision' of the authors as well as case studies.

2 The evolution of E-Learning in Italy

The introduction of e-learning in Italian Higher Education systems did not come about suddenly, in comparison with other universities in Europe or USA: Politecnico di Milano[1] was the first to introduce an online degree in 2000 and can be considered the precursor to online education within the Italian context. The reasons for this are many: lack of technological awareness and diffusion, little interest in using ICT and other technological innovations from the 'humanities' academics side, lack of synergy between universities and corporations.

Although the present Italian academic context has changed a lot in the past five years, it is interesting to note that the slow adoption of e-learning has produced some positive advantages: firstly, Italian academic institutions adopted the 'third

1 http://www.polimi.it

generation' approach, in terms of technology and methodology; furthermore, they were aware of the risks and problems in implementing e-learning courses, especially in terms of costs; lastly, the implementation of e-learning was not connected to the pitfalls of the new economy and its subsequent crisis at the end of 2001.

Italian academic institutions adopted experimental e-learning strategies till 2000–2001 as documented by the *Osservatorio ANEE*[2], a survey which outlines the various positive pilot projects undertaken in Italy. These experiences did not try to emulate other European or American projects but were developed by keeping the national context in mind as observed by Nacamulli (2003): he emphasizes that the 'fathers' of e-learning in Italy were distance training courses and programmes which made good use of simple technologies such as television, telephone and fax communications. The most emblematic effort was '*Consorzio Nettuno*' and its projects[3], connecting universities since the early 1990s and offering a flexible didactic approach: its courses are transmitted via cable television and have recently integrated other forms of e-learning communication tools.

There are three generations of distance learning within the Italian context: the first is characterized by ordinary paper-based correspondence methods; the second integrated other channels of communication (paper-based materials, television, radio, audio and video recordings, multimedia didactic software, etc.); the third introduced the use of the internet in its programmes, not as a communication support system but as a part of the implementation of the collaborative learning approach. According to studies focusing on e-learning in Italy (Trentin, 2001), the features mentioned above are indicative of the second generation of distance learning. Trentin goes on to make an important distinction between first, second and third generation regarding the didactic strategies adopted in e-learning: while the programmes offered in the first two generations featured 'extensive' courses for large numbers of students, the third one offers more 'intensive' courses with reduced student numbers, adopting a collaborative approach which puts the focus on promoting interactivity within the learning community.

The differences in didactic approach also indicate the differences in the objectives of the institutions such as '*Consorzio Nettuno*' (the forefather and then principal promoter of the second generation distance education) and the Politecnico di Milano (the pioneer and then main protagonist of e-learning in Italy). The objective of the former concentrated on offering 'extensive' courses to students who could not attend them within the 'traditional' university system: it is clear then why they used media which was easily accessible to everyone (for example, television) and why they organised learning centres located all over Italy. The objectives of the

2 e-learning: stato dell'arte e prospettive di sviluppo. Osservatorio ANEE 2002, http://www.anee.it/ricerche/osservatorio02/e-learning02.zip ANEE is the

3 http://www.uninettuno.it/nettuno/english/istituzionali/info.html

latter (and of other universities) are not only to offer programmes and courses to students who work and cannot attend full-time, but also to propose a didactic approach which will improve and enrich their university experience by promoting interactivity between students, tutors and the university in general. In the third generation ICT has been assimilated, along with new technologies, in the university strategies in order to deal with ever-increasing student numbers and new target groups. These motivations are even more important and worth keeping in mind when we turn our attention further in the paper to universities who are interested in offering blended courses.

Another case in point is the University of Florence, Department of Education[4]. In contrast to the technological and 'integrated' approach adopted by Politecnico di Milano and its features, the promoters of e-learning in Florence prefer to invest in methodological research projects (for example, what is changing in terms of pedagogy with the introduction of innovative media tools and internet resources) and experiments with e-learning on a small scale. Initially, their principle aim was not to offer a complete online learning programme, but to develop and promote education programmes with clear experimental objectives. They aimed on educating teachers in the socio-constructivist approach, evaluate and disseminate the benefits of e-learning and the use of new technologies.

Besides Politecnico di Milano and the University of Florence, the pioneer e-learning effort of the Istituto di Tecnologie Didattiche di Genova[5] (an institution of the Italian National Research Council) is also noteworthy. Its objectives are focused on establishing connections between didactic issues and educational opportunities, on promoting the potentials of technology, on promoting the participation of diverse target groups like participants of vocational education and training programmes.

The Osservatorio ANEE 2003 (Liscia, 2003) provides an overview from the experimental phase (the late 90s to the beginning of 2000) to the present characterized by an interim period: a complex scenario of erratic development. In order to understand the reasons behind this, it is worth taking a look at some data about the Italian university context. Solidly behind the UK, there are 77 universities, the majority of which (55%) are considered 'small'[6]; 39% are located in the north of Italy; 85% of all Italian universities are public and funded by the national government.

It could be said, thus, that the Italian context is characterized by few centres who have adopted specific approaches to e-learning (projects, organizations, manage-

4 http://www3.unifi.it/fscfo/
5 http://www.itd.cnr.it/
6 Small size universities: less than 20.000 students; Medium size: between 20.000 and 40.000 students; big size: over 40.000 students

ment, etc.) of varying degrees of quality and sophistication. The statistics show that 72% of Italian higher education institutions stated that they are committed to online learning initiatives, but only 7% of them offer courses, while 64% have characterized their efforts as small scale “nebulous experiments”.

2.1 E-Learning in Italian universities (2002)

Consideration of these “nebulous” efforts should be taken as it helps to explain why these institutions have called their programmes “e-learning experimentations” and will also further illustrate the present state of development and use of e-learning in Italy. The universities which were interviewed in the Osservatorio ANEE 2003 survey stated that they were not prepared to transform completely their institutes into ‘full e-learning centres’ or discard the face to face model of teaching, but they were ready to integrate new technologies and new media tools within their programmes and introduce blended and above all, web enhanced courses in order to enrich, improve and render the courses more efficient. In short, Italian institutions prefer an extremely flexible e-learning approach which Nacamulli (2003) has defined as ‘complex learning’: instead of substituting existing forms of teaching, they seek a blend of elements with different methodologies and teaching systems “wherein new links and strategies using new forms of media, language and interaction can find their place.”

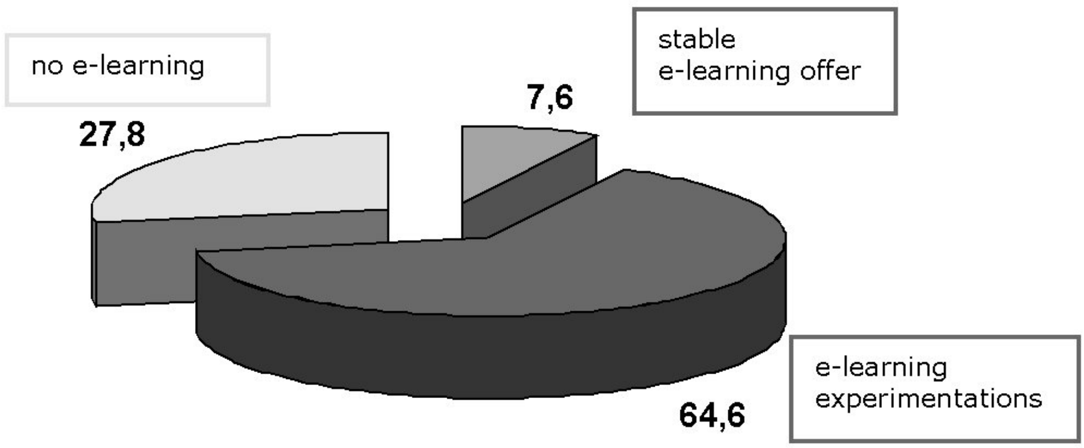

Figure 1: E-learning in Italian universities (2002)
Source: Osservatorio Anee 2003

2.2 Complex learning

The serious online or e-learning efforts should not be underestimated or put aside. The majority of online projects at the moment are within training and post-graduate programmes. The statistics confirm that Italian universities do not want to be transformed into e-universities or take advantage of the 2003 Ministry of Education's programme '*Università Telematiche*'[7] which opens formal acknowledgment to new e-universities offering online courses. Nowadays, e-learning is undergoing a process of innovation and restructuring within the Italian university context. It is being promoted by upper level university management, faculty, didactic and student needs (flexibility), market forces which require Italian students to learn new competencies and thus, rendering the Italian economy more competitive.

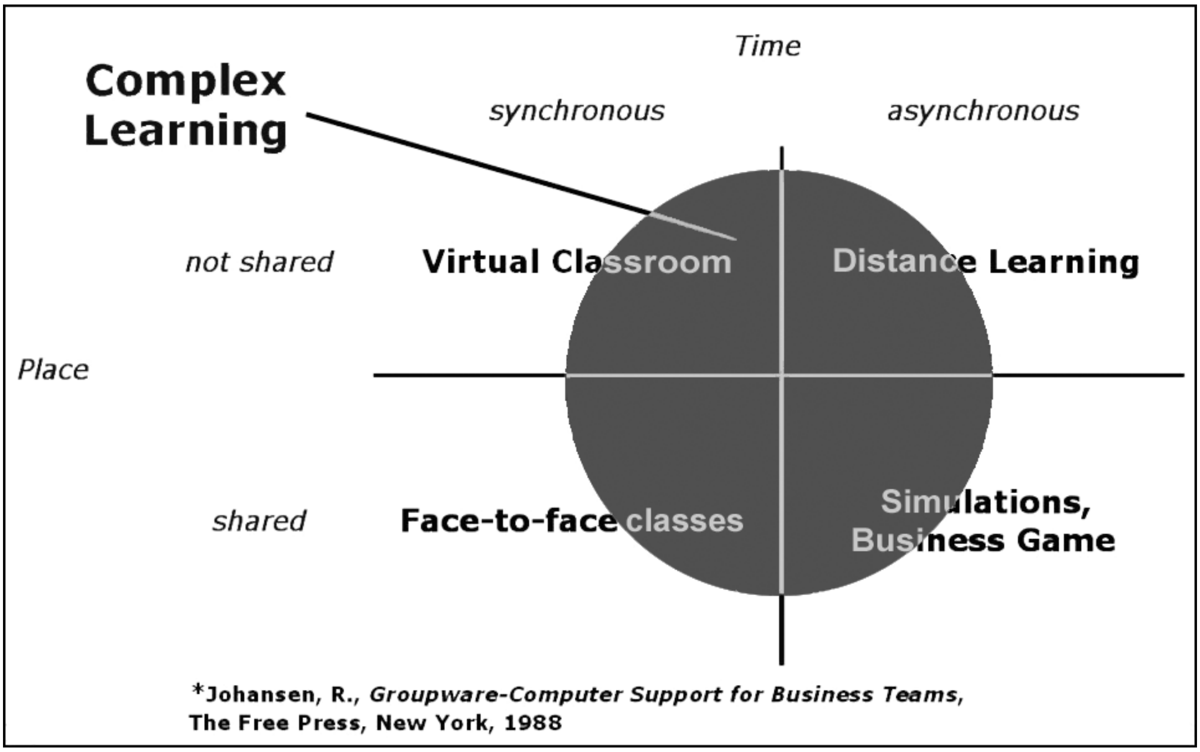

Figure 2: Complex learning
Source: adaptation from Johansen R., Groupware-Computer for Business Team, The Free Press, New York, 1988, in Nacamulli, 2003, p. 26

So in this context, e-learning is considered an important element for overall renewal and must be carefully evaluated. After an initial period of activity which

7 http://www.innovazione.gov.it/ita/intervento/normativa/allegati/Decreto17_04_03.pdf

sought to diffuse new approaches to teaching, there is much more interest in evaluating models, systems and solutions, in measuring costs, efficiency and ROI, as demonstrated by the numerous initiatives for developing quality standards for online education.

Besides the economic, strategic and management approach being adopted by diverse Italian universities, we would also like to mention two initiatives to which we have made reference, by CRUI and ANEE-Assinform. The Observatory on e-learning in Italian Universities, promoted by CRUI, is currently focusing its efforts on a questionnaire regarding e-learning policy and strategies in Italian universities, and seeks to analyse the organization of policy, teaching and financial initiatives for the promotion of e-learning.

The e-learning Observatory of ANEE-Assinform dedicates its efforts on the general e-learning market in Italy, conducting a questionnaire that is similar to CRUI's (economic aspects of e-learning, motivational issues, obstacles, etc.) but it concentrates more on structural factors in online teaching activities; for example, synchronous and asynchronous activities, adoption of collaborative and self-access learning, types of platforms and computer languages amount of services necessary for university accreditation of online learning.

In summary, this is a synthesis of the evolution of e-learning within the Italian context.

- e-learning, as we know it today, was introduced in Italy in 2000, but it is now mature and aware of the methodological and cost issues (third generation of e-learning);
- From 2000–2005, the statistics show that there are many projects experimenting with e-learning in the university context along with consistent and onerous investments and the desire to open e-learning to diverse target groups (for example, entire degree courses). However, these efforts still constitute a small percentage of the overall university educational market.
- E-universities are still quite marginal entities and are not taken into serious consideration by 'traditional' universities, that view them as potential centres of 'inferior degrees', lowering the quality of higher education on the whole.
- The Italian academic world has yet to develop an acceptable shared standard model for e-learning and it is likely that this trend will continue in the foreseeable future; therefore, each university is autonomously developing and using its own approaches and strategies for online and web-enhanced courses. There are, however, some common factors: e-learning in universities distinguishes itself from online business courses, research is focused on seeking benefits and efficiency in teaching instead of finding ways of reducing costs, thus plac-

ing emphasis on methodology and teaching (tutorship, collaborative learning etc.), the quality of course contents is not questioned, there are efforts to establish criteria for quality standards.

- There are some authorities today who are discussing the issue of the quality of e-learning (perhaps in the future, certification) and are trying to garner the support of all universities involved in e-learning; for example, CRUI (the Conference of Italian University Rectors)[8], Sle-L (the Italian Society for e-learning)[9] and AICA (the Italian Computer Association)[10] to discuss the issue of quality assurance.
- Development and delivery costs for e-learning are still points of contention in the academic world, especially when considering experimental projects integrating e-learning in existing programme courses. Institutional support is still lacking, and students are not ready to share the costs of such efforts. There is still a need for government intervention in order to invert the current trend of cutting funds to higher educational institutions and to create incentives for didactic innovations.

3 National Regulations and Norms on E-Learning

The role of the central government in regards to e-learning is defined by establishing the norms and regulations of the sector and initiatives in each institutional body (universities, schools, public administration, professional training courses, health services); it also seeks to provide incentives for the adoption of instruments and approaches necessary for online teaching. Its objective is to rejuvenate the training sector by promoting experimentation and enlarging the offer of e-learning services and products in terms of quantity and quality.

The following table illustrates norms and standards set thus far in the five sectors mentioned above.

University	Schools
1990: Bill 19.11.1990, n. 341 allows distance education for universities[a]	1985: National Plan for the introduction of computer programming and planning
1995: Decree DPR 30.12.1995 authorizes the development of universities consortia for distance education	1996–1997: Multilab, the first systematic plan for teacher training on multimedia communication

8 http://www.crui.it
9 http://www.sie-l.it
10 http://www.aica.it

2001: EU e-learning Action Plan[b] (28.03.2001) encourages Member States to experiment „new teaching methods and approaches and promotes virtual projects and virtual transnational campus projects" 2003: Decree 17.04.2003 on Telematic Universities[c] (jointly established by Ministry of Education, Universities, and Research and the Ministry for Innovation and Technologies) set accreditation criteria and procedures for distance education courses at universities and private institutions	1997–2000: Plan for the Development of Didactic Technological Tools; its objective is to provide technological tools in schools and to increase teacher computer literacy. 2002: New Training Programme for Technologies, blended learning approach is used 2004: Teacher training programme for primary school teachers (ForTIC model) 2004: Teacher training programme in hospitals using e-learning (specific issues regarding didactic technological tools)[d]

Public Administration	Professional Training	Health
2002: Government Guidelines for the development of Information Society approved by the Council of Ministers on 31.05.2002 (the aim is to provide 1/3 of all teaching via e-learning) 2002: Protocol of Intent signed by the Public Administration for the "diffusion, use and quality of distance and e-learning training programmes" 2004: Directive 06.06.2004 based on the Guidelines for e-learning Teaching Programmes in the Public Administration 2004: Explanatory vademecum: operative tool which offers an orientation into e-learning programmes and projects[e]	1999: Memo 08.06.1999 n°43 of the Labour Ministry illustrates the characteristics which e-learning must have in terms of operative conditions, monitoring and evaluation results[f] 2003: Decree 10.09.2003, n.276[g] takes into consideration that new training contracts may be undertaken at a distance in order to finish professional training[h] 2004: ASFOR (Association for Managers Training) begins discussion on the definition of the Accreditation Process for Executive Master in e-learning[i]	1989: Commission Recommendation 08.11.1989[j] on the development of distance education programmes 1999: Norm for the Rationalization of the National Public Health Service allows for the participation in continuing education programmes as an indispensable prerequisite for professional service and work[k] 2002: the Minister of Health publishes ECM (Continuing Education in Medicine) a proposal from the National Commission for Continuing Education the in order to gather proposals from public and private entities[l]

a) http://www.handylex.org/stato/l191190.shtml
b) http://europa.eu.int/comm/education/index_en.html
c) http://www.innovazione.gov.it/ita/intervento/normativa/allegati/Decreto17_04_03.pdf
d) http://scuolainospedale.istruzione.it. Other target groups for MIUR are: youth in reformatories for young offenders and disabled students who are not included in programmes using new technologies
e) The vademecum is an operating tool which permits users to orient themselves in the myriad of e-learning programmes and teaching materials by focusing on three principle issues: the impact of

e-learning projects on organization, didactic planning for e-learning courses and its impact on delivery; e-learning programmes cost analysis.

f) http://www.infoleges.it/service1/scheda.aspx?id=12794&service=1&ordinal=0. A useful website: http://www.welfare.gov.it/EuropaLavoro/default.htm
g) http://www.welfare.gov.it/EaChannel/MenuIstituzionale/normative/2003/D.+Lgs+10+settembre+2003+n.+276.htm
h) Even the FaDol initiative (Ministry of Labour) regarding distance education teachers and professionals, http://www.fadol.it
i) Presently there are 5 Masters organized by Associated ASFOR which are collaborating in the experimental stages.
j) http://ecm.sanita.it/normativa/documenti/89-601-CEE.doc
k) http://ecm.sanita.it/normativa/229-16.htm
l) http://ecm.sanita.it/Documenti/Linee_guida_e_criteri.pdf.

The myriad of interesting initiatives is quite impressive, starting with the Ministry of Education which is responsible for schools and universities. If we consider school context, the overall picture remains fragmented and not homogeneous as the responsibilities and the roles are not clearly defined for the Ministry of Education, the Regional Educational Offices and the schools.

If we consider the higher education context, there is a willingness to provide precise indications on uniformity of developing and managing e-learning (for example, the central government's decree regulating the Online Universities) but this has caused much debate especially after the first accreditations granted to the Commission responsible for online universities. Presently, no 'traditional' university is interested in the decree's message and has not asked for accreditation. This initiative has, however, the merit of bringing the issues surrounding e-learning to public attention and fostering public debate.

The Observatory of CRUI on e-learning can be considered the fruit of the debate at hand (see chapter 2). The investigation which is conducted by Italian academics could produce guidelines and alternatives to the ones offered by the Ministry of Education, Universities and Research regarding Online Universities formats.

4 The Models

e-learning in Italy is in a phase of consolidation. In order for it to reach maturity and to be diffused, the community of e-learning must provide articulate and in-depth information about pedagogical and educational principles: interaction between learning goals and the potential of technology must be considered. Which e-learning models are appropriate for the needs of university, business, public administration?

We consider here two main models (Mantovani, 2000): the first is the transfer model where the learning activities are viewed as information transfer, the second is the shared meaning model where the participants actively negotiate meaning which leads to knowledge construction. Since e-learning has become so diffused, it is imperative that e-learning solutions/projects must conform to the learning context of target groups and institutions.

Internet tends to change didactic strategies: the traditional teacher lecture is enhanced by guided lesson plans, problem solving, drill and practice, simulations, case studies, role playing and collaborative learning. In general, an online course driven by an expert instructor can take advantage of the new teaching methods and make the most of learning theories (like problem solving and collaborative learning strategies), which cannot be explored in a face to face teaching context. Both the choice of teaching method and e-learning model must compliment each other and, at the same time, be appropriate for the learning style of the model (Haughey & Anderson, 1998).

But what are the main models in the Italian framework?

FaD ('Formazione a Distanza' – distance learning) is a combination of online self-study materials and guides regarding course work with the assistance of an online instructor. There may or may not be interactions between student and teacher, while the platform does not feature a virtual classroom. This approach to e-learning also includes tools such as t-learning, videoconferencing, video streaming, web TV, which are all passive tools: the student listens and follows a traditional lecture which is broadcast from a remote location and could be live or recorded. The focus, thus, is on content materials as there is no interaction amongst the students. This approach is part of the evolution of distance education. This specific model of organizing content has been called Content & Support model (Calvani & Rotta, 2001) and is distinguished by the separate roles played by content and tutorship, guided online materials, self-evaluation mechanisms: the focus is on course and content design. In Italy this is the most popular forms of online courses mostly provided in the training sectors: the student can learn autonomously, without the constraints of time and place.

Web enhanced teaching is quite common within the Italian university context. In this case, the student must be present in the classroom and the lessons are then enriched with innovative multimedia and technological tools from the internet. The teacher uses new technologies to increase the efficiency and quality of the didactic approach but the teaching remains connected to the classroom. Even if many institutions are now moving their classes online, web enhanced teaching is very popular in universities who have only started offering training courses online in last few years.

e-learning is based on socio-constructivist teaching models and collaborative technologies: this approach is based on a community of learning which works on sharing and constructing knowledge. In order to do this there must be a group or community, that naturally evolves into a Community of Practice (CoP), where members test out each other's points of view, negotiate ideas, actively construct knowledge and establish norms and best practices.

Blended learning is increasingly more popular in universities, businesses and public administration. According on the data collected by the Osservatorio ANEE, blended e-learning would be a better denomination for this approach. It is a balanced mix of flexible tools and teaching styles, where online and face to face are both enhanced. Blended learning contributes to the development of an integrated system of knowledge management.

Along with these approaches, there are other forms characterized by contents which are not as structured, discussion forums, tutor-student communication, and seminars. They focus on selecting resources, use a learner-centred approach, feature a teaching style which is fluid and dynamic with collaborative activities, knowledge construction and research projects.

Thus far, it should be evident that an e-learning model implies the choice of certain organizational strategies to manage all the elements of the 'life cycle' of the course (planning, creation, delivery). In conclusion, it could be said that even before selecting the technology to be used, it is crucial to define a strategy that takes into consideration the nature and the exigencies of the organization or institute in order to create a quality e-learning experience.

E-learning should be a mix of contents, technology and services which include tutoring and the traditional face to face classroom experience. Universities are teetering between the 'specialty store' and the 'boutique': the first model is concerned with a market which is ready to invest in a quality product and utilizes economies of scale with a large pool of potential clients. The second (appropriate for small scale universities) offers personalized services to a relatively small market in terms of potential clients and geographic area. Many Italian universities are adopting this second type of teaching strategy, offering intensive courses for a limited number of students (for example, Master courses). A 'superstore' type of product has only recently made its debut especially in the corporate sector: for example, consortiums (university and business) who offer training courses on a global level and thus need clearly defined standards.

In the following sections e-learning in specific contexts will be analysed, along with its limitations, obstacles, target groups and forms.

4.1 Universities

The Italian university context offers various didactic forms, but two main ones are prevalent: face to face and distance courses. The last try to take advantage of the potential of the internet enhancing infrastructure and methodologies (self-study, collaborative work, project methodologies, knowledge and community construction). Furthermore, in the past few years, there has also been the introduction of virtual mode courses, entirely online. When considering the issue of e-learning, too much emphasis is placed on the 'e' without paying enough attention to the fact that teaching is enhanced by the process of technological innovation and not dominated by it.

The class is the centre for social interaction among various players in the process of education: teachers, tutors, managers, experts, etc. The student-centered approach emphasizes mutual aid and collaborative learning. The diffusion of complex e-learning gave impetus to various activities within the universities, in particular demand for a specialized centre which can create experimental teaching initiatives based on collaborative learning models and the possibilities offered by multimedia tools. Many universities have opened centers which are dedicated to this very need. What follows is a list of the principle centers.

LOCATION	CENTRE
Ancona	CESMI → http://www.cesmi.unian.it
Bologna	CITAM → http://www.citam.unibo.it
Calabria	CSDIM → http://www.csdim.unical.it CRTI → http://crt.unical.it
Ferrara	CARID → http://carid.unife.it
Firenze	CSIAF → http://www.csiaf.unifi.it
MilanoStatale	CTU → http://www.ctu.unimi.it/home.asp
MilanoBocconi	ASIT → http://www.uni-bocconi.it/
MilanoCattolica	CEPAD → http://cepad.unicatt.it/home/home.htm
MilanoPolitecnico	METID → http://www.metid.polimi.it
Napoli	CDS → http://www.cds.unina.it/index_800.html
Roma1	CATTID → http://www.cattid.uniroma1.it
ROMA3	CARFID → http://w3.uniroma1.it/carfid
TorinoPolitecnico	CETEM → http://www.polito.it/ateneo/centri/cetem
Venezia	CIRED → http://helios.unive.it/~cired

Within this particular context, there is also the law[11] set out by the Ministers Moratti (Education, University and Research) and Stanca (Innovation and Technologies) which defines accreditation criteria and procedures for the distance education programmes of universities and other educational entities that offer online degrees or diplomas. The technical appendix of the document is quite significant: it specifies how courses are to be offered and brought to fruition, the methods of evaluation, along with the needs of diverse technological tools, with emphasis on the platform characteristics, content management, features of communication activities.

The EU research *Virtual Models of European Universities*[12] was conducted in 2003 on over about 200 (out of 550) European universities. The results divide the institutions in four categories:

- front runner universities (18%) which demonstrated high standards in all areas of activity;
- co-operating universities (33%) which offer limited e-learning courses and digital services;
- self-sufficient universities (36%) which integrate e-learning in their programmes, but whose academic staff is not involved e-learning;
- skeptical universities (15%) which are behind in terms of e-learning on all fronts.

In which category do Italian universities fall?

The Osservatorio ANEE 2004 deeply surveyed 37 universities (45% of the total number in Italy). Keeping this in mind, we now turn our attention to the e-learning courses and programmes. The survey tried to estimate the actual percentage of e-learning activity (according to the definition proposed by the Osservatorio itself) in comparison to the total technology based teaching which includes both first generation distance teaching and web enhanced courses. The statistics show that the majority of universities (25 out of 35) said that their e-learning offer constituted a minority of overall didactic activity, while web enhanced courses were the most popular. Almost half of those surveyed said that web enhanced courses offered the 60% of the all didactic activity and 25% stated that their web enhanced courses constituted 50-60% of the total didactic activity. On the whole, the statistics show that there was a change from 2003 (when tele-teaching was most popular) to 2004, which show that academics prefer using e-learning and web enhanced strategies in the classroom.

11 http://www.innovazione.gov.it/ita/intervento/normativa/allegati/Decreto17_04_03.pdf

12 http://www.e-learningeuropa.info/index.php?page=doc&doc_id=5082&doclng=1

The results of the CRUI (The Conference of Italian University Rectors) survey bring to light organizational models and data about e-learning within universities which in turn, indicate the existence two distinct scenarios.

Scenario 1: the presence of a blended form of e-learning as a way to renew university courses and increase quality. Teaching staff have the benefit of online services and materials which enhance student participation and reduce the workload of the teachers themselves.

Scenario 2: e-learning efforts are flexible and not necessarily linked to a degree programme, and are mostly directed towards periodic or permanent training programmes for adults (a natural development from scenario 1).

Complete online programmes, catering to specific needs, will remain small part of the overall e-learning scenario: they could be developed in the future as more blended e-learning courses and programmes are introduced in universities in Italy.

The results of the various surveys show that the universities are seriously debating issues of quality assurance which they consider to be one of the problems in managing e-learning courses. The pilot projects indicate instruments and tools used in e-learning and considered to be the key to quality assurance:

- coordination between the various steps of the (blended) path;
- easy access to didactic tools and contents;
- interaction between teachers, tutors and students;
- access to FAQs giving information about course content and organization;
- interaction with self-study materials and self-evaluation tools;
- experimenting with virtual labs;
- collaborative work involving students and tutors with course projects;
- use of computer tools for problem solving.

Future projects for quality assurance in e-learning should consider the following points.

Services: e-learning courses require precise tools and methodologies in order to manage the tasks, to share the knowledge, to assist at all times, to manage feedback and evaluation mechanisms.

Interaction: e-learning provides the opportunity to establish an active rapport with knowledge and people who mediate its diffusion and assimilation; knowledge construction happens through the interaction with the teacher, the tutor and the group.

Motivation: peer support is fundamental to online and face to face student participation; the role of the tutor is to encourage interaction and student motivation.

Course management: in order to manage a course it is fundamental to have: (a) special resources, (b) appropriate software, (c) user-friendly access and solutions to help students.

Since these objectives are difficult to realize on an individual basis, Italian universities should try to establish a collaborative online network in order to face these goals. The tasks and organization of the courses require great financial resources and planning: the role of network could be fundamental to reduce the costs that the teacher sustains for the use of innovative tools for his/her courses.

4.2 Public Administration

One of the debating arguments regarding changes in Public Administration (PA) is centered on training and certification of public servants in order to face efficiently the process of innovation. The challenge is to increase their competencies and keep them up-to-date. PA executives are looking toward e-learning as a possible solution as it could provide flexible tools capable of staying abreast to changes in this sector. E-learning in PA must take into consideration the potentials of mass communication technologies, in particular the internet because it provides a medium where participants can share their experiences: it serves as a reservoir of knowledge and experience.

As an efficient tool for training, e-learning has been recognized officially by the two Ministries of for the Public Administration, and for Innovation and Technologies. The Ministerial programme (2004) promotes the use of new technologies in distance learning, providing general methodological ‘Guidelines for e-learning Training Courses for Public Administration’, elaborated by the National Centre for Informatics in Public Administration (CNIPA).

The survey conducted in 2004 by the Osservatorio ANEE examined Italian market trends for e-learning and found that PA had already started using e-learning in their training programmes, both asynchronous and synchronous communication tools. There is an increase in blended courses offered on the market which foster a sense of community and keeps motivation at high levels. The trend is to provide e-learning courses with support services (tutoring, discussion forums, monitoring, portfolios, live chats with experts) which permit the participants to communicate and collaborate; it is easy to monitor how many hours each participant spends in e-learning; the main form of evaluation is in the classroom. Certification is based on the amount of hours the participant spends on the course and is regulated via ministerial directives: the teacher calculates the average amount of time that it would take the participant to finish the course work (forum contributions, projects, homework, etc.). Evaluations and minute monitoring are necessary elements and are kept in order to negotiate with the Trade Unions.

There are many projects currently underway and there is room for further expansion of e-learning in PA based on the following facts:

- a legal framework, both European and Italian, which promotes e-learning, with specific funds to finance its development;
- a solid infrastructure and communication network, especially in the central offices of the PA;
- demand for training courses and institutional support for the development of human resources;
- the nature of the PA demand for training courses in terms of numbers and learning needs;
- support from PA directors at a local and national level.

The new staff roles and positions in PA are fertile ground for the development of CoPs (Communities of Practice). The factors for their development can be found in the following:

- PAs new tasks specializing roles;
- recruitment of staff with diverse educational and experience backgrounds;
- increase in training opportunities for PAs, especially as support staff to directors;
- regulations which transfer to public sector tasks of the private one.

The majority of CoPs, as survey by "CantieriPA"[13] in 2004, has revealed a problem concerning the legitimacy of PA: it is necessary to reflect upon the links with the various PA infrastructures which are often considered hierarchical in nature. Could PAs encourage and stimulate a proliferation of CoPs without transforming its spontaneous character?

4.3 Corporate Universities

The main economic advantage of e-learning is that it is possible to deliver courses to a large number of clients and this in turn, is also an advantage for companies. One of the main trends in Italy today is that large groups, universities and technological firms are investing in training courses for internal purposes and they are also selling these products to external clients as well. Corporate Universities

13 http://www.cantieripa.it/allegati/RELAZIONE_CdP.doc

(CUs) are not new to the sector: in the United States, already in the 50s, there were tentative steps taken in training large groups of staffers. Today, thanks to technological tools, CUs have become larger and more significant; they are not limited anymore to the organization wherein they reside, but they try to attract a diverse number of players, thus becoming the strategic umbrella and educating employees, customers and suppliers in order to meet an organization's business strategy (Meister, 1998).

With the increased need for staff training courses, some large Italian companies have begun to develop their own training courses by opening their own training firms. The continuous development of e-learning in the past few years has stimulated these same companies to offer their expertise to third party clients.

The principle trends in Italy will be discussed by making reference to research and the results obtained through benchmarking.

- CUs are gradually transforming their organizations into "for profit" entities. They are adopting the "pay for service" attitude whereby they are able to finance their endeavours thanks to the sale of their services to various entities along the production chain. The training supply is extended beyond the confines of the firm to suppliers, clients and to educational institutes that are the potential reservoirs for their own future personnel.
- Alliances between CUs and centres of education, universities, business schools, consultancy agencies of specialized knowledge are on the increase.
- e-learning is still an integral part of initiatives, innovations and strategic organizational directives for knowledge management and learning organization. The majority of CUs are adopting a blended approach to e-learning, with hours dedicated to face to face lessons and time allotted for online distance education.

As we have already stated, Italy is still behind in comparison with other nations in terms of training. The particular Italian context must be taken into consideration to find the reasons behind the lag: essentially, the main reasons can be attributed to the not complete internet coverage throughout the national territory, fragmented market, and the presence of SMEs who are still extremely reluctant in adopting e-learning solutions.

There is a considerable amount of literature dedicated to the typologies and description of CUs. On the basis on the framework provided by Deiser (1998), Aubrey (1999), Fresina (1997), we consider the following e-learning strategies for the main CU models.

Model 1: Training Department	Target group: all employees, internally focused Strategic goal: reinforce and perpetuate (evolution) Business logic: incentives for professional education, certificates for the employees, Curriculum focus: technology development, service development	e-learning aspect: learning anytime and anywhere, just-in-time, innovative learning methods.
Model 2: Top Management Lessons	Target group: top management Strategic goal: manage change (revolution) Business Logic: incentives for the top management, cooperation with top business schools Curriculum focus: people development, customized executive seminars at top Business schools	e-learning aspect: interactive discussion forums, face-to-face seminars, virtual cooperation partners and networks.
Model 3: Standardization Engine	Target group: all employees, customers, suppliers, Strategic goal: reinforce and perpetuate (evolution) Business logic: Economies of scale, costs are reduced as more people are involved in the corporate university Curriculum focus: technology development, service development, work practices	e-learning aspect: development of mass products, interactive learning systems for a broad target group, standardized programs.
Model 4: Profit Center	Target group: all employees, customers, suppliers, other companies, consumers Strategic goal: reinforce and perpetuate (evolution) Business Logic: profit, revenues (e. g. corporate fees, fees for online courses) Curriculum focus: technology development, service development, enterprise specific knowledge	e-learning aspect: killer application on the internet, mix of educational products, interactive and innovative learning forms, learning anytime and anywhere, just-in-time, marketing of e-learning products (e.g. education portals).
Model 5: Strategic Change Engine	Target group: all employees, customers, suppliers, Strategic goal: drive and shape (vision) Business logic: sustained competitive advantage on the basis of a learning culture, strong relationship to knowledge management Curriculum focus: not extremely focused, technology, service, people development, certificates are not relevant	e-learning aspect: work-out programs as knowledge exchange and creation places, direct communication, interactive learning processes, learning labs.

Italian CUs do not fall completely within the criteria and parameters as discussed above and in our view, they are really a combination of more than one description. The first objective of CUs has always been to guarantee to a considerable number of staffers and top management a high level of training and professional development courses, signally thus models 1 and 2. But the development of the market and business needs have favoured model 4 which is keeps issues of profit at the centre of its strategies. Very few CUs can be described as model 5 which provides stimuli for research and innovation in order to foster a competitive spirit and the search for new knowledge.

In 1978, Fiat was the first Italian industrial entity to understand the need to create a training firm for its staff. Fiat's Corporate University – Isvor – after 25 years of experience is fast becoming its own entity that has developed a sales network and business structure in Torino for third party public and private clients. Sfera, Enel's training firm, has recently been constituted and it has also set its sights for external client targets: it has established strong ties with other institutions such as SDA Bocconi, NetG, Istud, Politecnico di Milano, Englishtown, the University of California at Los Angeles. IBM's Corporate University (Global Campus) boasts 315,000 students amongst its staff in 170 nations around the world; it is also involved in recent training courses for 4,000 top management personnel around the world and in December 2004, hired 400 salesmen in Italy; the delivery method for the training courses are blended: in class lessons and workshops at the workplace for staffers and the benefits of e-learning tools and strategies – indeed, roughly 50% of all the training activities are conducted at a distance. Eni Corporate University is mainly focused on providing external training courses to top managers (30% of the total courses offered), to lower management and other staffers (70%); the traditional activities are integrated with self-access lessons and blended learning activities through e-learning tools. The last company on the market for online training is IntesaBci Education which was created in 2001 for the banks belonging to the group; the initial investments in technology were a worthwhile support for online training programmes as they permitted the firm to reach their staffers collocated in branches all over Italy.

In terms of quality control of e-learning projects, ASFOR (the Italian Association for MBA Courses)[14] model offers three conditions that each project must meet.

- *Organization*. The main indicators are taken from the top-down approach model: the active participation of the top executives in the management of the process, an adequate budget, indicators to calculate the ROI, a communication plan (for the dissemination to internal staff about the project and how to thwart initial resistance to it).

14 http://www.asfor.it

- *Technology*. The main indicators suggest not using technologies indiscriminately: platforms should be planned, integrated, and personalized, use LMS or LCMS and verify if they can be integrated in the existing system; check feasibility of the technology and discuss compatibility.
- *Operating conditions*. The main indicators deal with establishing a work group who will manage the entire process: instructional designers, project managers and change managers; they also deal with identifying specific roles of the group and selecting reliable experienced staff.

5 Management and business model

It has been observed that there is a considerable impact on organization and processes when implementing e-learning in higher education. Institutions need infrastructures, trained personnel, teachers who are ready to change their ways of teaching. Many Italian universities have considered these issues and have developed *ad* hoc organizational strategies in order to deal with its management in an efficient and effective way. Even if these organizational models are heterogeneous, we believe that the trend will continue and increase as observed by the surveys conducted by the ANEE Observatory for e-learning (Liscia, 2003; Liscia, 2004).

In the 2003 survey regarding the internal organization of the Italian universities, there were three principle trends: 60% did not have an adequate organizational structure, 10% had a centre for technological services and 16% had their own centre for e-learning.

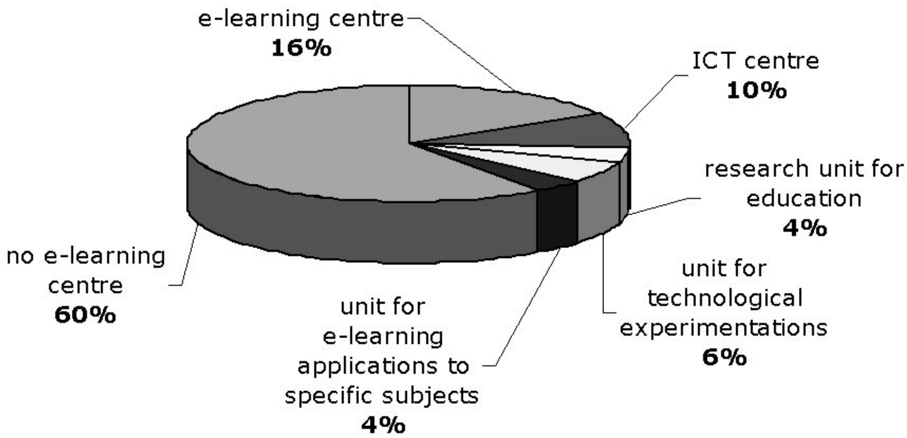

Figure 3: 3. Organizational Structure and Management Approach of the University (Academic Year 2002/03) Source: Osservatorio Anee 2003

The percentage of the infrastructures dedicated to e-learning was still very low, but many interviews conducted by ANEE in 2003 reveal that universities were moving towards creating a centralized management system for online learning. Therefore, universities believe that its resources concerning e-learning, can become more efficient and effective through a centralized system, as opposed to the current trend wherein each department or faculty manages its own e-learning projects.

When considering e-learning project planning and content management, two main models were revealed: (i) teacher support regarding the content; (ii) centres completely dedicated to e-learning.

In the following Academic Year 2003/2004, ANEE revealed that there were significant steps taken towards more organized management. The percentage of e-learning centres increased from 16% to 30%, ICT centres for technical assistance increased from 10% to 27%. There is still a high percentage of faculties and departments which run e-learning services (24%), only 5% lacked initiatives (as opposed to 60% in 2003).

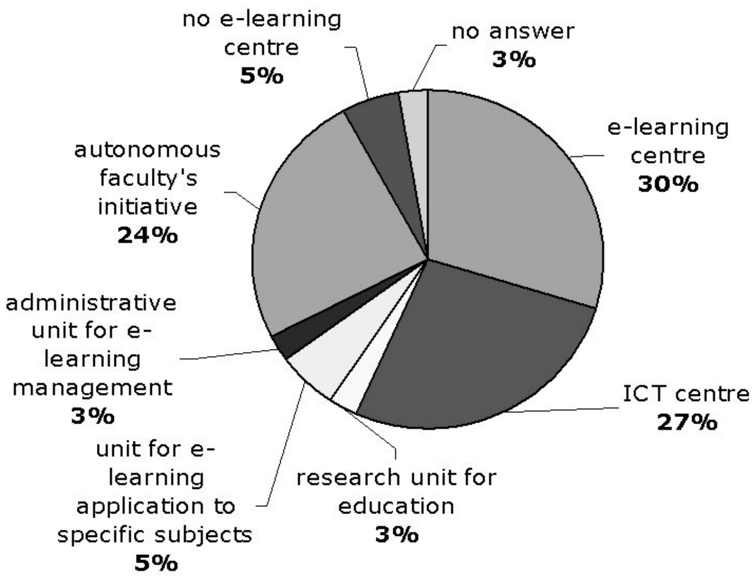

Figure 4: Organizational Structure and Management Approach of the University (2003/2004) Source: Osservatorio Anee/Assinform 2004

Even the universities which were able to establish its 'organizational machine' in good time, development and management costs were still an issue. Although it is possible to find the initial funding for e-learning projects (for example, through programmes offered by the European Community), it is much more difficult to find funding to continue and sustain all the projects and initiatives, which is the only way to integrate e-learning in the academic world.

We would also like to mention a particular trend in Italy (as opposed to the American context) which will help to explain the financial difficulties facing Italian universities. The customers of e-learning services at Italian universities (i.e. students and others) are not accustomed to pay for the high cost of a university education program, and thus may not be willing to pay extra for the web enhanced or e-learning courses. Indeed, students are beginning to demand these services and feel they should be within their 'rights' as students of modern universities. In addition, Italian universities have a maximum fee for enrolment based on their annual budgets: thus, universities can not count on extra funds coming from students to implement e-learning structures or courses.

Although many universities have found alternative sources of financing: for example, funds from the CampusOne project (spearheaded by CRUI for the development of innovative teaching and technological services for universities[15]), or from the business world. A mutually beneficial partnership could be established to develop of large scale blended or e-learning projects (for example, online degrees), for graduate and post-graduate degrees or Master programmes. In this case, the alliance between business and university can be beneficial: the business partner may not only be called to sponsor the project or propose its own platform, but it also participates in sharing the responsibility for planning, production and delivery of teaching. In addition and in many cases, faculty members also work in the business world. The business partner may also benefit in short and long terms: in the short term, from having a proactive, positive image, in the long term, from producing research projects and innovative products.

Level	University	School	Enterprise	Public Administration
1. Political	Ministry of Education (MIUR)	Ministry of Education (MIUR)	==	Ministry of Innovation & Technology
2. Strategical	Rector	Regional Departements for Education	Responsibles for internal training	Central and local Public Administration
3. Educational	Faculty	Local units for educational research	Corporate Universities or outsourcing	outsourcing
4. Technological	ICT or e-learning centre	outsourcing	Internal units or orutsourcing	National Centre for ICT in Public Administration (CNIPA)

15 Cfr. http://www.campusone.it

Decision-taking roles and responsibilities in the Italian context for e-learning developing in University and other sectors (School, Enterprises, Public Administration) are synthesised in the preceding table.

In the table four different levels are proposed (not all are always present within the different organizations) which are linked to different roles and almost precise responsibilities.

In summary:

- the approach to e-learning in the Italian context is characterized by diverse management and organizational models as well as various decision-making bodies; for universities there are: a policy level (MIUR), a strategic level (Rectors and management), a didactic level (departments and faculties), a technological level (Centres responsible for ICT and e-learning)
- e-learning activities are partial and not regular because of the complex organizational and management system and funding difficulties that arise;
- there are steps being taken to establish ties with the business world, which will bring both participants benefits in the future.

6 Profiles and roles

The world of e-learning has created new professional profiles and roles which are being defined by organizations and institutes of the Ministry of Labour, although it must be said that these definitions may change in the future once norms and regulations are definitively established.

Interest in e-learning has increased so much in Italy, in spite of crisis in other sectors of the technologies, that 2004 was nominated the "Year of e-learning". Various consulting and production agencies have begun discussion on the professional roles emerging in the sector and how they can define these roles. According to Forman's analysis (1), there are professional roles from 4 'traditional' sectors: teachers and experts, software and media technicians, human resource experts, 'executives' from software firms or technology services. We can find the same trend in Italy, although Jobtel, the portal for job placement of the Ministry of Labour[16] does not list any new profiles directly linked to e-learning and makes a clear distinction between the professional roles tied to teaching and those connected to technologies, management and human resources.

ANEE 2003 analysis reveals some clear indications on the definitions of roles and jobs which can be collocated in the teaching sector, and new professional figures

16 http://www.jobtel.it/

whose roles are not easily defined in the current traditional market. There are some figures whose training and job placement still leaves much to be desired: instructional designers, content managers, infobrokers, online tutors. The critical issue which is hotly debated in the sector is how to define their roles and estimate their functions in view of providing for their training. The ANEE Observatory provides its own estimates on the numbers needed for these professional figures for 2004 to 2006. In order to estimate the availability of these professional roles, the Observatory calculated how many courses would be delivered in the period from 2003 to 2006: this calculation provided a picture of the possible numbers of professionals in the sector that would be available in the job market for e-learning and platform development.

This said, public institutions and the university in particular have a very important role to play: on the one hand they could seriously impact on the communications infrastructure and the policy of sustaining businesses, on the other they could provide new professional and educational profiles and models.

In response to the call for positions linked to online teaching, the universities are offering training and educational courses for the development of professional profiles. In the following reference table, ‘D’ marks university degree courses, ‘M’ stands for master courses and ‘P’ are post-graduation courses.

Università di Ferrara	Corso di Laurea per Tecnologo della comunicazione audiovisiva e multimediale Corso di Formazione Professionale in Tecnico della formazione televisiva e multimediale http://carid.unife.it/	D P
Università di Firenze	Progettista e gestore di formazione in rete Corso di Laurea di Primo Livello in Formatore Multimediale http://www.netform.unifi.it/index.htm	M D
Università di Macerata	Master in Formatore Multimediale Master in Open Distance Learning Corsi di formazione a distanza in Didattica e Multimedialità http://www.unimc.it	M M M
Università di Milano	Metodologie per l’ideazione, la creazione e la gestione di ambienti e-learning http:/studenti.unimi.it/master	M
Università di Padova	Master in Educazione audiovisiva e multimediale Corso di specializzazione in “e-learning e formazione integrata” http://www.formazione.unipd.it Corso di perfezionamento in e-learning e formazione integrata http://www.unipd.it/corsi_perfezionamento/scheda/523.htm	M P

Università di Parma	Management della formazione nella società della conoscenza http://www.unipr.it/www.php?info=Studenti&tipo=corso&ID=218	M
Università di Roma Tre	Master a distanza online di II livello “Multimedialità per l’e-learning” http://www.roma3.it	M
Università di Venezia and SSIS	Metodologie della formazione in rete: tutor online http://www.unive.it “Tecnologie e Metodologie della formazione in rete” http://helios.unive.it/	M P
Università la Sapienza	Master in Progettazione e gestione di contenuti multimediali e per l’e-learning http://www.discuniroma1.it/mict	M
Università di Udine	Master in Open distance learning http:/web.uniud.it/odl	M
Università di Ancona e Università di Urbino	Master in e-learning/E-Government Management http://www.unian.it	
Università di Tornino	Indirizzo per “Esperti nella formazione a distanza” del Corso di Laurea triennale in Scienze dell'Educazione di Torino http://www.far.unito.it/formdist	D
Università di Genova	Master in “e-learning per la Scuola l’Università e l’Impresa” http://mastere-learning.unige.it	M
Università di Bologna	Corso di formazione e-learning Master in Business Administration & Distance Learning http://www.unibo.it	P M

Other institutes who support such efforts are the Italian Society for e-learning (www.sie-l.it) and the professional community of e-learning (www.e-learning-touch.it). The first dedicates its efforts to undertaking research of the scientific quality, the second promotes discussion and brings best practices as a channel of communication between policy professionals and activities of the SLe-L.

7 Forecasts and conclusions

This section will provide a summary of the main issues presented; outline future forecasts as postulated by the authors and (iii) make general concluding remarks.

The main features of the Italian context

- The evolution of e-learning in Italy is a recent phenomenon: the first online degree program was established in 2000, the regulations for e-learning in higher education were established by Ministerial Decree in 2003, the Guidelines for e-learning in Public Administration were published in 2004.
- Before these events, e-learning was mainly developed in the business community, with the first experiments being perfected by the Corporate Universities.
- The market is still dominated by the business community, but both universities and public administrations are investing considerable financial resources in e-learning projects. From 2003 to 2004, the percentage of universities integrating e-learning into their courses and degree programmes (in some cases, e-learning centres were opened) increased from 72% to 83%.
- There will be a need for new professional roles in e-learning, from project designers and developers to teaching staff, especially for tutors. Universities are providing training courses for online personnel through masters and professional development programmes.

Forecasts and personal vision

- The dynamics of the job market will produce an increasing need for education and training, so e-learning is becoming a strategic option for lifelong learning. Moreover, the distinction between learning and e-learning will disappear: the educational system will use all the instruments, methods and technologies at its disposal (as it has always done).
- The demand for e-learning is due to a reduction of costs (related to physical or functional difficulty of access) and pursuit of benefits (related to better qualitative and quantitative contents). A survey of who supports costs and who enjoys benefits is not within the scope of this paper, but we want to point out that this asymmetric distribution of costs and benefits (whoever enjoys e-learning advantages is not always ready to pay for them) sometimes requires the presence of an “activator” (usually an e-learning government programme).
- The e-learning market will be based more on content than on technology: technology is becoming cheaper and easier to use. As a matter of fact, the TV sector shows that profits are not connected to free TV channels, but to the contents which are the driving force behind financing (or else are directly paid for by the users themselves).
- e-learning needs to integrate well organized contents and customized services. The possibility of transferring content, without changing it, into a context dif-

ferent from that for which it was originally created is rare: there is very often the need to adapt the contents taken from other contexts for a specific project.

- More problems remain to be solved: recognition of the work carried in e-learning, certification, definition of clear social objectives. These issues should serve as a catalyst towards the formation of a portfolio for all those concerned, given the strong connection between personal objectives of the single and professional requirements of the community.

Concluding Remarks

- The search for new formats (the “contools” = contents + tools) could produce sites in which there are specific contents as well as tools which are capable of adapting themselves to specific contexts: the “contools” highlight the importance of creating a good didactic format and also of communicating it properly.
- Materials are useful, but services are even more useful still: that means reliable channels of teacher-student communication, collective dimension and collaborative learning, valorisation of roles (for the teacher but also for the tutor, who is the real “bonding agent” between students, teachers and fellow participants in the virtual class).
- The good ingredients for a monitoring process, which must be tested and changed in the course of its development, are attention to learning styles, an agenda monitoring the use of time, a system of indicators which allows one to keep the whole process under control.
- A poster for blended research: *contamination* should be the force at the basis of e-learning in all the cited conditions. Not only modalities of use, but also research should be blended, by mixing pedagogical models, technology, organization, information and design tools.

8 Case studies

8.1 The Politecnico of Milano

Politecnico di Milano is a university offering degree programmes in science and technology and has always sought excellence when it comes to innovative teaching methods and innovation in research. Over the past ten years, it has invested considerable funds and resources into the development of online education and is proud of its accomplishments at the national and international level. In 1996, the university opened ‘Centro METID’ (Innovative Methodologies and Technology for Teaching). In 2004, the Centre was listed within the top eight centres of excellence in online education according to a European Community survey[17]. The Centre has designed and offered long and short-term courses covering a variety of study areas, from basic courses to complex programmes for universities, business and (just recently) the public administration. The following survey will provide an outline of the Centre's accomplishments and activities.

Online Degree in Computer Engineering

Politecnico di Milano was the first university to offer online degrees. It was established through the joint efforts of Politecnico and Somedia (a company of the editorial group Espresso). In July 2003 the first students of the programme graduated. Politecnico considered the online degree as an opportunity to test the efficacy and efficiency of its didactical and technological know how in e-learning: it was specially interested in seeing how students and teachers could adapt to an environment that is not limited by time and space constraints and requires the building of a learning community. Medium and design of the online courses proved to be quite successful in fostering student motivation: they needed (and they were able) to study autonomously and participated in interactive activities; furthermore, the online degree created a learning community marked by strong peer support and spirit which was fostered by an informal atmosphere online.

Online Courses System

This is the free platform that teachers and students used as a support for the online courses at the Politecnico. It was created in order to provide flexible resource tools for the creation of courses responding to the needs of each docent. Today there are over 35,000 students registered in the Politecnico's online courses.

MathOnLine

These online paths were created for secondary school students with a view to enrolling in the Politecnico's degree courses (in the field of technology and science). They are also designed to offer professional courses for math teachers who would like to integrate e-learning materials and services into their courses.

17 http://www.e-learningeuropa.info/index.php?page=doc&doc_id=5082&doclng=1

Master NetBA

METID has collaborated with Sfera, a company of Enel group, for the development of Master NetBA (Net Business Administration). The path defines five macro-areas of study covering issues such as Net economy, Multimedia tools, etc. It uses the concept of Learning Objects as the basis for the creation of course materials.

Home School Hospital

This project was undertaken in collaboration with the Ministry of Education, in order to provide a support tool for educational programs held in the hospital environment. It consists of nine didactic units on a platform which is user and teacher-friendly.

E-Design

This program was established in collaboration with the Faculty of Industrial Design of Politecnico, creating a series of online modules dedicated to the issues surrounding product design. Furthermore, the project material would also seeks to foster debate on the use of new technologies and education.

International projects

Politecnico is also involved in many e-learning international programs. Elene-TT (e-learning network of excellence – Teacher Training) is a project connecting the "8 best practices in virtual university"[18] and concerns methods and practice in higher education teacher training. Sig-Dlae (Special interest group – Distance learning accreditation in Europe) is a comparison between some accreditation procedures in four European countries. IAOL (Interior Architecture On Line) is an experiment seeking to foster ties between universities with online programs and experience: the objective is to promote training and research collaboration with the University of Tianjin. The course also provides an internship for the Chinese students who have completed the workshop.

18 See previous footnote

8.2 ICON – Italian Culture On the Net[19]

This case study introduces the online Degree Course in Italian Language and Culture issued by ICoN Italian Culture on the Net www.italicon.it, a Consortium of 23 Italian universities created in 1999 and aimed at promoting through electronic communication the Italian language and culture all over the world. The Degree Course is divided into 6 semesters, offers 4 curricula (language and teaching methods, history and culture, literature, arts-music and the performing arts) and provides tutoring services upon request. The teaching activities are carried out by teachers of the 23 Italian Universities. The course corresponds to 180 training credits and is divided in teaching modules, each equal to 1 credit. To obtain recognition of the training credits and the relevant evaluation, students have to pass online tests at the end of each teaching module and certified evaluation tests at the end of each semester. The latter, as well as the final examination, are carried out at arranged boards abroad such as Italian Representations, University Departments, Dante Alighieri Society Committees, Italian Schools.

The distance-learning system adopted by ICoN focuses on the teaching materials, designed to spread contents and clarify objectives and structure of the teaching activity to a large number of students, making them aware of the objectives they are proposed on the way and of the progress of knowledge. Multimedia lessons are gathered into groups of *nuclei tematici.* They represent a subject of study and form groups of teaching modules. Each module is designed according to strict rules: 7 teaching units with presentation, index, guide and bibliography. According to the subject of study, modules are complete with images, audio files, paraphrases, critical essays, glossaries and synoptic tables.

The Degree Course is open to citizens residing abroad that may be non Italian-speaking (*italofoni*), may not have studied at high school and may not study full-time. ICoN students come from different cultural backgrounds and have experienced several teaching methods. They only share their interest in Italian language and culture. Levels of knowledge of Italian also differ. For this reason, clearness was the rule for course planning, presentation of contents and use of language.

Following two pilot semesters carried out in 2001, the President of the Italian Republic expressed his esteem for ICoN by awarding the Degree Course his High Patronage upon its inauguration in 2002.

On 14 October 2004 the first final ICoN degree examination has been held for 5 students. The Board of Examiners has met in Pisa, the ICoN administrative headquarters. One student from Jerusalem and one from Brussels have held their final

19 By Enzo Artemio Baldini (University of Torino, Faculty of Political Science / vice President IcoN) and Laura De Renzis (Responsible for IcoN External relations)

examination in the Head Office of the University of Pisa. The others have been examined by video conferences from the Italian Institutes of Culture in Zagreb and Mexico City and from the Ludwig-Maximilians Universität in München. On 18–19 April 2005 3 students from Germany and Switzerland have held their final degree examination. 20

8.3 University of Rome Tor Vergata - Faculty of Engineering[21]

From the Academic Year 2002-03, the Faculty of Engineering of the "Tor Vergata" University has developed some e-learning degree courses, called "Ingegneria On-Line" (http://www.ingegneria-online.it). In particular, at the moment this consists of two courses: Computational and Industrial Engineering.

The Ingegneria On-Line courses are directed principally to the disabled, the workers and the students with any difficulties of access to the traditional educational system. In order to satisfy the needs of the principal categories of users, the courses are carried completely via Internet, without the utilization of other multimedia channels, such as CD-Rom and VHS. Besides, because of the fact that the majority of the users has a low Internet connection bandwidth (56 Kb/s), the didactic contents consist principally of textual files, which are downloadable and printable. The use of the didactic contents is supported by the presence of a tutor, generally the same professor that prepared the didactic contents, that assists the students through an asynchronous forum. So, in this model, the same professor is responsible both for the production and the time scheduling of the didactic contents, and for the management of the direct interaction with the students.

The success of this didactic model is demonstrated by the increasing number of students (at the moment, almost 500) and by their didactic results, which are comparable with the traditional students' ones.

The presence of a great number of students older than the traditional ones (the average age of the e-learning students is 29) highlights the fact that the e-learning courses may increase the didactic products of the Universities, without cannibalize the traditional education. Moreover, they may favour the process of permanent education and the recovery of students that tried, without success, to have a degree through the traditional courses.

The success of this experience is been realised thanks to a strategy of gradual implementation of the e-learning courses in the Faculty of Engineering. This process culminates in the development, in the Academic Year 2001–2002, of the "Master

20 Details at: http://www.italicon.it

21 By Agostino La Bella (University of Rome 'or Vergata', Faculty of Engineering)

Ingegneria dell'Impresa on Line" (http://www.masterimpresa.it) that represents the on-line version of the traditional MBA that the Faculty of Engineering has proposed since 1998. This Master, which is one of the first in Italy to experiment the e-learning channels, has obtained a constant growth, in term of number of students and of their satisfaction.

The Faculty of Engineering has to maintain the success and the level of service of its e-learning courses, answering to the challenges due to the diffusion of high Internet connection bandwidth, with permits to produce and transmit didactic contents with a high level of effectiveness and variety.

8.4 University of Florence[22]

Since the end of the nineties the Faculty of Educational Sciences of the University of Florence has been running e-learning courses characterized by a constructivist approach to on line education. This approach has been applied to the training of trainers and teachers, with different approaches depending on the contexts (A. Calvani, M. Rotta, Fare formazione in Internet, Manuale di didattica online, Erickson, Trento, 2000).

Since 1996 a post-graduate degree course is active (http://www.scform.unifi.it/lte); it is geared towards educators so as to develop on line collaborative learning abilities. The methodology of the course goes from individual learning to the practice of on line collaboration in small groups, oriented towards project-work. Project activities frequently become a reality in the form of projects which result from participant's development of project ideas during the training experience.

Since 2000 the degree course *Multimedia Educator* (http://www3.unifi.it/clfmed//) and the Master in *Designing and Managing online education* (http://www.netform.unifi.it/eNGLISHVERSION.htm) are run in collaboration with the Faculty of Engineering. Both courses are delivered in a blended mode. The Master in particular aims to prepare e-learning professionals with competences in Instructional Design, Content and Learning Management, Knowledge Management, Information Brokering and e-tutoring.

Technologies supporting the various initiatives come from CSCL/BSCW world. Platforms such as Synergheia (http://lte.scform.unifi.it/bscl/) are used, in which new tools for monitoring and interaction evaluation are implemented (see A. Calvani et al., Monitoring interactions in collaborative learning environments (CSCL): a tool kit for Synergeia, Je-LKs, n. 1, in press; on the web: http://ww.je-

22 By Maria Ranieri (University of Florence)

lks.it) and Moodle, in which the empowerment of collaborative tools (http://www3.unifi.it/fscfo/classivirtuali/) is developed.

8.5 University of Venice 'Ca' Foscari' / SSIS Veneto (Post graduation School for teaching in schools)[23]

SSIS is a post-graduate school for secondary teachers, founded by the Ministry of University, Research and Education in 1998, according to the European plan for the educational harmonization. The university school "SSIS del Veneto" operates at regional level and is supported by a consortium of Universities of Veneto Region located in Venice, Padova and Verona. The main objective of SSIS is the initial training for teachers of secondary school. The School lasts two years and leads to a formal qualification.

Teacher training seems to be one of the most important arenas for addressing the use of ICT in education. We present here a research project, called SSIS ONLINE, whose aim is to deliver pre-service courses using ICT and distance education.

The main objective of the SSIS ONLINE is to enhance good educational practices through the implementation of online interactive courses and the starting up of communities of practice for teachers. The competences of a good teacher acting in the knowledge society are the focus of the course and entail three main areas:

1) Pedagogical area. This area includes: the knowledge of how ICT potentially influences subject teaching and learning; the awareness of the e-learning implications in different subject areas; the ability to design, plan and organize teaching methods in open learning environments.

2) Technical area. This area includes: The ability to manage communication technologies for professional development in the educational activities; the ability to choose the most suitable e-learning resources to carry out specific classroom activities.

3) Collaborative learning area. This area includes: evaluating the potentiality of collaboration; participating in a learning community; creating learning nets for the teacher professional development.

At the moment SSIS ONLINE has delivered more than 300 online courses (for 15.000 students and 400 tutor online) and has started up about 50 SSIS communities for senior and aspirant teachers. SSIS ONLINE has created an operating staff for the planning and the organization and logistics of the courses for all the actors of the training process: it carries out the strategic function of management and service online.

23 By Monica Banzato (SSIS Veneto)

The online courses of the SSIS are organized in mixed modality: a part delivered in presence and a part delivered online. The choice of this “blended” modality is due in part to the requirements of face-to-face encounters. Every online course has a personal virtual space reserved in the web site of the School, where SSIS students can find the following sections: calendar, modules (material of the teachers), didactic activities, bibliography, the virtual class (minimal 25 students, maximum 50), forum of discussion (for every virtual class is previewed a forum).[24]

8.6 Falco- Formez-Sudgest-Nomedia/Rome-Project[25]

The Falco Project was initiated by a protocol of intent between the Ministry of ‘Funzione Publica’ and the MIPAF (the Ministry of Agriculture and Forestry) for a variety of reasons: to introduce innovations in the Public Administration, to retrain its staff members, and to strengthen the spirit of internal cohesion through the participation of government entities in modular and integrated courses. Formez, with the aid of Nomedia which manages its e-learning activities, designed and managed the planning and the monitoring of the project which followed the guidelines set out by the Public Administration (PA) through Directive 6/8/2004 which governs continuing educational programmes. From an administrative point of view, a needs analysis was conducted and from the point of view of the participating government entities cost analyses, return on investment analysis, partnership opportunities were conducted and content materials were created. The Vademecum of the PA and the guidelines for continuing education were the two principle guiding manuals used for the planning and delivery of the project as well as for a needs analysis for resources and costs the project would incur. The monitoring and certification system was based on the concept of equivalent hours-the conventional measurement system specifically indicated in the ministerial directive- so as to ensure certification through the e-learning environment used. The Falco Project was created to offer the MIPAF staff the opportunity of training and professional development centred on issues regarding innovations in administration, accounting systems and management skills necessary to conduct their work as well as to guarantee accreditation for career advancement. Unfortunately, the training project did not provide a computer literacy course although there was an orientation tutorial conducted in the presence of a tutor and docent. The ratio of student per docent was based decided with the concepts of balance and quality in mind. The project did not offer incentive plans for the docents (docents were given more classrooms; the tutors had the same amount of classrooms but the number of docents for assistance were increased). Scheduling services, orientation, assistance for the

24 http://www.univirtual.it/ssis/default.htm

25 By Giuseppina Rita Mangione (University of Florence/Nomedia)

disabled, advising and counseling were all provided for by the government body but were not consistently offered or particularly well-organized. The tutor was not an expert in the materials to be covered and functioned as a facilitator and assistant to the docent. An e-learning management system was used and specifically designed and analysed so as to maximize user-friendliness throughout the programme, and set out the minimum units the students were to complete. Interactive activities were programmed and the personal diary and discussion forum proved to be invaluable. The content was set out in units but presented problems in that it was limited by time constraints (based on the needs of the target group) and presented in a format that conformed to LO standards (there was attention to personalization) but were not published through the authorship system and so did not really comply with standards. Contents were created on the basis of the delivery medium and on the consideration of appropriate didactic strategies (blended learning utilizing e-tivities per class and edition) coherent with the computer services available and the classroom environment at hand. Privacy and copyrights were respected. A qualitative system of monitoring and measurement was put in place to ascertain the level of preparation of the students at the beginning, during and at the end of the learning cycle (the Abc approach).

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Margerita Zagmajster and Lea Bregar

E-Learning in Slovene Higher Education

1 Brief historical background

Slovenia became an independent country at the beginning of the 1990s and is thus a young country with a short history as a sovereign state. The social and economic performance of Slovenia during the fifteen-year period of its independence are characterised by the transition process that transformed the former socialist system into a market oriented economy. Slovenia, which became a member of the European Union in 2004, is a small country with a surface area of about 20,000 km^2 and a population of about 2 million.

The substantial social and economic changes which occurred during the transition period and which could be partly ascribed to external factors (e.g. integration processes within the EU, globalisation trends) have also influenced the education system. The most important changes within the higher education sector (HE) during this period have been: institutional changes within the universities; changes in their study programmes (including the introduction of new three-year-long professional programmes); the emergence of new free-standing HE institutions; a new legislation framework (a new law on HE was adopted in 2004).

As a consequence of the overarching transformation of society, the demand for further education and HE considerably increased in the 1990s. Research on modern concepts of distance education (DE) and its implementation started in Slovenia in the period 1991–1993 at the University Research and Development Centre and at the Faculty of Economics of the University of Ljubljana. At the beginning of the decade, the development of modern DE started within a traditional HE institution. Previously, some forms of DE programmes were available based mainly on correspondence education.

In 1994, The European Commission approved the Phare Multi-country Programme for Distance Education (Phare Programme) in order to advance education in the countries in transition. The main aim of the Phare Programme was to stimulate further development of HE and adult education in Central and Eastern European countries and to promote multi-country cooperation in the field of DE. The objectives of the Phare Programme were to establish DE institutional infrastructure and a DE network, develop DE programmes and human resource development in the DE field, and support the development of long-term strategy in the DE field in

Phare countries. Slovenia was involved in the Phare Programme as one of 11 Central and Eastern European countries from 1995 until the end of 1999.

Within the Phare Programme in Slovenia, an accredited DE programme Business School was developed at the Faculty of Economics at the University of Ljubljana (with some elements of e-learning), about 200 people were trained in the field of DE and e-learning, and four DE courses were developed within international consortia (two of which were online courses).

In the late 1990s, the interest in DE and e-learning in Slovenia was stimulated by the very rapid diffusion of information and communication technology (ICT) and also by raising awareness and training activities implemented within the Phare programme.

The interest for e-learning has been constantly growing within HE institutions in Slovenia. Currently, some HE institutions implement various projects in the field of e-learning, some are developing online courses as a way of enriching traditional forms of education and others are experimenting with the use of up-to-date ICT in educational process. But could we claim that all these processes of introducing technology into education are genuine e-learning development? In the following section, a short survey of the comprehension of e-learning concept in Slovenia will be given.

2 The meaning of the term E-Learning

There is no single, generally accepted definition of e-learning within the Slovene HE sector. Some experts understand it in the broadest sense – as education in which the use of modern ICT plays an important role, and which serves primarily to enhance traditional education. Some other experts understand e-learning in the narrow sense, limiting its application to DE and regarding e-learning as a modern version of DE.

On the home page (http://dl.ltfe.org/e-izobrazevanjeeng.asp?id=4) of the Laboratory for Telecommunications, in the Faculty of Electrical Engineering (LTFE), which is one of the leading players in the field of e-learning within the University of Ljubljana, the following explanation is given to the question what is e-learning?:

- "e-learning is the third generation of distance learning. Learners and tutors are located at different premises; therefore e-learning requires distinguished techniques of learning content design, teaching and communication methods, all of them supported by ICT;

- e-learning system is today an important, if not compulsory part of any information system within the corporate or public environment."

We share the view that e-learning is defined by the following characteristics:

- separation of the teacher and the participant in education, which distinguishes e-learning from traditional face-to-face education;
- active role of educational organisations in the education process, which distinguishes e-learning from self-directed learning;
- use of electronic media to present or mediate educational content;
- provision of two-way communication over electronic networks (participants in the educational process communicate among themselves, with the teacher and with other staff of the educational organisation).[1]

In our opinion, e-learning defined in the broadest sense is too vague and should be avoided. Using Internet/web within traditional education, for example in cases where a teacher puts the time schedule of the lectures and some study materials onto the web page, could not be considered to be e-learning.

One must not overlook the fact that the development of e-learning is an extremely complex activity and requires team work integrating experts with knowledge of pedagogy, information science, economics, law, sociology, psychology etc. In addition to the availability of relevant knowledge and professional expertise of those developing e-learning, suitable technological and institutional infrastructure must also be provided, and personnel, organisational and financial conditions must be suitably adjusted, both within the educational organisation and within the education system as a whole.

3 Current state of Distance Education and E-Learning in Slovene Higher Education

One of the distinguishing phenomena of the transition period in Slovenia is the considerable increase in the number of students.

As shown in Table 1, the total number of students enrolled in undergraduate HE programmes more than doubled at the end of the period in question. The number of full-time students increased by about 80%, but it is noteworthy that the number of part-time students in the period from 1990/1991 to 2001/2002 almost quadrupled, then dropped slightly in the following two years before increasing again in the study year 2004/2005. The expansion of part-time study in Slovenia in the 1990s resulted from the increase in demand for education in the field of social sci-

1 See NKI Fjernundervisning (http://www.nki.no).

ences (business studies, law, administration), which emerged from the substantial social, economic and political changes in this period.

Table 1: Students in Slovene HE in study years 1990/1991–2004/2005

Academic year	Full-time students	Part-time students	Total*	Increase in % (1990/1991 = 100)
1990/1991	27,774	5,791	33,565	
1995/1996	35,598	9,953	45,551	35,7
1999/2000	44,837	21,361	66,198	97,2
2000/2001	46,022	22,405	68,427	103,2
2001/2002	49,400	22,920	72,320	115,5
2002/2003	49,818	22,526	72,344	115,5
2003/2004	50,462	20,312	70,774	110,8
2004/2005	51,936	21,405	73,341	118,5

*Candidates for graduation are not included. The candidates for graduation have the formal status of students. They have a certain period of time to complete their study obligations and to prepare their thesis.

Source: Statistical Yearbook 2004, Statistical office of the Republic of Slovenia and Rapid Reports. Education. No. 121. Statistical office of the Republic of Slovenia.

In the year 2005 the HE institutions in Slovenia are the following:

- the University of Ljubljana with 22 faculties, 3 art academies and one professional college;
- the University of Maribor with 13 faculties and one professional college;
- the University of Primorska with 3 faculties and 2 professional colleges and;
- 10 free-standing HE institutions.

In table 2, the number and structure of the students enrolled in HE programmes in the study year 2004/2005 is shown by the programme types.

Table 2: Students in Slovene HE by programme type in the study year 2004/2005

HE programme	Number of students
Undergraduate programmes	73,341
Masters and specialist programmes	7,414
Doctoral programmes	964
TOTAL	81,719

Source: Rapid Reports. Education. No. 121. Statistical office of the Republic of Slovenia, 2005

In the table below, the participation rate of the population in undergraduate programmes in Slovenian HE is shown. The rate is constantly growing and more than doubled in last fifteen years.

Table 3: Participation rate of the population aged 19–23 in undergraduate HE in Slovenia, 1990–2004

Share	1990	1995	1997	1998	1999	2000	2001	2002	2003	2004
in %	18,1	21,5	30,7	34,0	35,9	37,7	40,9	42,0	42,8	44,6

Remark: For year 2004 – population as of 30 June 2004 is taken into account.

Source: Rapid Reports. Education. No. 121. Statistical office of the Republic of Slovenia. 2005

The *Faculty of Economics*, the largest faculty of the University of Ljubljana, is the only HE institution in Slovenia that delivers a whole degree/accredited DE programme (Business School programme). The number of DE students is constantly increasing and, in the academic year 2003/2004, there are more than 1,600 students enrolled in nine study centres at different locations in Slovenia. The DE programme at the FE is based on different types of study materials (print materials, with some elements of online delivery) and various student support services which are available to the DE students (also by video-conferencing) and led by professors and tutors. The DE methodology provided can be described as guided self-study.

It is interesting to note that the communication services for DE students considerably improved after the introduction of a faculty web portal[2] in 2001, but the portal potential to improve the quality of education in general and DE in particular, has not been exploited. Namely, the portal was primarily developed to cover

2 See University of Ljubljana. Faculty of Economics. http://www.ef.uni-lj.si/en/.

information needs of the institution as a whole. The specific needs and requirements of DE students were not taken into account and the revision of teaching methods according to the new technological possibilities did not take place.

Currently, the portal consists of three interrelated parts, intended for various target users (general public, staff and students).

Staff and student portals are highly personalized. The students' portal offers an entry point to access content and tools they need in their studies. They can thus find information, news, notices, documents, study materials and a discussion forum in one place, they can perform administrative procedures (register for exams, have access to their own records), access research data and communicate with teachers. In a similar way, the portal for the staff is characterised by a considerable level of personalisation. Teachers can manage individual courses – for instance, publish course news, announcements and study materials and lecture notes, run course forums (Popovič et al., 2004).

At the University of Maribor the web portal[3] was developed in order to offer professional support for the delivery of educational programmes to the HE institutions – members of the University of Maribor. The portal was developed by the Department for Information and Technological Development of the University. The department provides technological and technical support, consultancy on didactics, on organizational matters and on the transformation of study materials in multimedia materials and training in the field of e-learning.

The portal offers a wide range of services to the students, and to academic and administrative staff of the University of Maribor. The following services are available to students: information about courses, time schedules and teachers; access to e-study materials; the opportunity to add bookmarks and comments; a way of receiving exercises, home work, essays and sending them to the teachers; information about the time schedule of exams and about marks. The portal enables synchronous and asynchronous communication among students and teachers and among students themselves within chat and forum on the level of individual courses. It is compatible with the university information system, where it obtains information on courses, programmes, teachers and students.

The e-learning portal was developed in the period from 2002 to 2004 as a part of the project Distance Learning in Slovenia, coordinated by the LTFE. The main aim of this project was to elaborate national strategy in the field of technology based education (i.e. e-learning) in Slovenia. The strategy consists of recommendations for the further development of e-learning covering different aspects of its

3 The web address of the portal is http://eizobrazevanje.uni-mb.si/.

performance (organizational, didactic, economic, technological, legal etc.). All these aspects could be considered as a basis for the introduction of e-learning in Slovenia at different levels of education – elementary schools, secondary schools, HE institutions, adult education and the private sector.

There were about 15 partners[4] working on different aspects of e-learning included in the project. Most of them are educational institutions (HE institutions) or national institutes.

The expected benefits of the project as a whole were increased possibilities for ICT supported learning, the introduction of new flexible forms of access to up-to-date expertise and knowledge for professionals and non-professionals, setting up a new efficient channel for the promotion of e-learning and fostering innovations in education.

There were three partners responsible for development of the web portal on e-learning[5] – the Faculty of Economics and the Slovenian Institute for Adult Education (for its content and its functionalities) and LTFE (for its technical implementation).

The aim of the portal is to serve the information needs of various target groups – institutions and individuals interested in e-learning (students and potential students, teachers, experts, decision makers, management of educational institutions etc.). The portal is in the Slovene language.

The portal is based on a networking concept with a significant resource component. According to this orientation, priority has been given to the development of content services. The portal aims to offer access to a wide range of information. Some of them were purposely created for the needs of the portal, while others were collected from different international and national sources on e-learning. The information available within the portal is structured in several groups:

- links to the *educational institutions* offering e-learning courses or programmes (in Slovenia and in other countries),
- links to the *international associations* in the field of e-learning,
- links to the *resources* on e-learning available on the Internet (web-portals, electronic discussion groups),
- information on relevant *professional literature* in the field of e-learning (list of recommended literature, links to the literature available on-line, electronic newsletters, electronic magazines and journals, separate scientific and professional papers),

4 More information about project partners is available at www.ltfe.org/crp/.

5 The homepage of the portal is at http://www.e-studij.net.

- information on relevant *conferences*,
- section with information related to the *development* of e-learning (links to the specialized contents available within on-line sources, links to relevant projects, demo versions about online courses and information about training opportunities for staff interested or active in the field of e-learning).

Contrary to the content component, the communication component of the portal is rather modest. Only basic communication services are available to the users of the portal to ensure efficient use of portal. The visitors can contact partners responsible for the development of portal, obtain relevant news, take part in a discussion forum and information search. The portal was designed with the intention of regularly up-dating and filling it with additional information. At the moment it contains over 580 information “units” (mostly links to relevant web pages). The development of the portal was financially supported by small government grant. The project expired in 2004 and at the moment the possibilities for the continuation of further development and regular maintenance of the portal are not yet clear.

The LTFE developed the learning management system for e-learning E-CHO, which provides various services in the field of e-learning for learners, tutors, course developers and e-learning managers. For example the platform can provide the following services to the learners – access to learning content, communication via e-mail, discussion groups, videoconferences, the use of various study tools (dictionaries, library, links, calculator …), personalization of learning process (creating user notes, favourites, study paths, language …), tracking progress, knowledge assessment.[6]

At the Faculty of Management, University of Primorska,[7] 200 undergraduate and postgraduate students are studying online. The platform used for the delivery of the courses is Moodle. The development and delivery of online courses is led by the faculty Center for e-learning.

4 Some external factors of E-Learning development

In general, the recent trends in the development of ICT have had a positive impact on the development and modernization of traditional education and DE worldwide, as exhibited by very rapid growth of online courses available on the Inter-

6 More information is available on the E-CHO Internet based e-learning platform, http://dl.ltfe.org/opisechoeng.asp?id=1.

7 More information is available at http://www.fm.upr.si/.

net. However, country-specific factors which inhibit or stimulate pedagogic innovations must not be overlooked.

What are the specific conditions for the further development and modernization of e-learning in Slovene HE? We tried to draw some conclusions by examining the following points:

- the institutional background,
- the availability and use of ICT in Slovenia,
- the availability of ICT and its use within tertiary education.

4.1 Institutional background

The Ministry for Information Society (MIS) was established in January 2001 on the basis of the parliamentary decree adopted in December 2000. The decision to establish the MIS was based on the recognition of the importance of the information society (IS) for future development in Slovenia.

The transition of Slovenia to IS and to the knowledge society is defined as one of the main challenges and priorities in the official Strategy for the Economic Development of Slovenia 2001–2006. IS is also the key orientation in the State Development Programme of the Republic of Slovenia 2001–2006, which is regarded as a horizontal priority development task. In the Single Programming Document 2004–2006 (a basis for obtaining support from European Structural Funds), IS is also considered to be one of the development priorities.

Slovenia joined the EU initiatives in the field of IS with by adopting the Action Plan e-Europe +2003. In 2001, MIS started preparing the Strategy of Republic Slovenia in IS. The Strategy was adopted by parliament in 2003. The main aim of the Strategy is to foster the process of informatization of society as a whole, and is connected with the European context in the field of ICT (and through the Programme e-Europe+, Lisbon Strategy etc.).

In November 2004, the new government abolished the MIS. Its previous responsibilities were transferred to two directorates – the Directorate for IS (under the newly established Ministry for Higher Education, Science and Technology) and the Directorate for Electronic Communications (within the Ministry of the Economy). The Directorate for IS is collaborating on the preparation of some key national development documents which also concern IS, such as the State Development Programme 2007–2013, Strategy 2007–2013, and monitors the implementation of other strategic development documents.

4.2 The availability and use of ICT in Slovenia

Slovenia is lagging behind in certain fields of IS in comparison with other EU (15) countries, while in certain fields its progress is comparable. For example, Slovenia is lagging behind with respect to the availability of public accessible points, the number of servers per inhabitants and the technical infrastructure of educational institutions. Slovenia is still not giving a satisfactory part of its financial resources for ICT, where investment is still in favour of infrastructure and not of stimulating the use of IS services (Strategy …, 2003).

The SIBIS+[8] report discerns some interesting facts concerning IS development in Slovenia:

in the mid-1990s, Slovenia was above EU average regarding PC and Internet usage, which slowed down by the end of the 1990s. Data reveals a general lag in Internet penetration for Slovenia which was, in 2003, 1–2 years behind the EU average. The gap in Internet penetration is 10 percentage points (55% in EU-15 vs. 45% in Slovenia);

- usage of e-learning is also among the lowest of the 25 EU countries, for only 7% of the labour force uses it (EU-15 14% and NAS[9]-10 5,5%);
- despite some specific lags, Slovenia is still the leading NAS country in IS developments and, in some segments, is still ahead of some EU countries (France, Italy, Portugal, Greece);
- Slovenia is among the leading countries with respect to mobile phone penetration. 76% of the population uses mobile phones – in EU-15 69%;
- in Slovenia, the percentage of people who stopped using Internet is relatively high – 1,3% of the 15+population (0,7% EU);
- the interest in IS services in Slovenia is traditionally high, ranking Slovenia at the top of all 25 EU countries;
- the gap between the potentials/interests for IST services and the actual supply/usage is the largest in Slovenia among all the 25 included countries. It seems that the main barrier is the lack of e-content and e-services;
- very strong digital divide due to education and age (the non-educated segments show a particularly low interest in PC and Internet usage).

Slovene universities have access to international educational and research resources via public Internet provider ARNES. All HE institutions are connected to

8 SIBIS – Statistical Indicators Benchmarking the Information Society. Country Report No. 10. – Slovenia.

9 NAS – Newly Associated States.

the Internet. In most cases the network does not have the capacity to adopt new services or collaborate in projects which demand video, audio transmission or the transfer of high quantities of data. At many HE institutions, students have limited access to use computers and access to Internet at HE institutions. Fast access to internet should be installed, including Intranet (Strategy …, 2003).

4.3 The availability of ICT and its use within tertiary education

The survey on Internet within tertiary education[10] in 2003 is based on data reported by the persons responsible for the information technology. The survey aimed to cover almost all tertiary institutions in Slovenia. Some results of the survey:

- the estimated number of all PCs at institutions is 10,000, which means that there are 5 PCs per 100 full-time students (only 3,6 PCs per 100 students if we also consider part-time and post-graduate students);
- all institutions have access to the Internet, almost 60% of them have their own e-mail server, but only half of them allocate e-mail addresses to their students with domain of their institution;
- there are considerable differences among educational institutions: private institutions and institutions in the field of technology are better equipped;
- all institutions have at least one place with PCs accessible to students, at 90% of the institutions, this place is accessible to students for 10 hours per day on working days;
- online registration for exams and checking of the list with persons who passed the exam is available at more than half of the institutions, and students are informed about exam results via e-mail at a quarter of institutions, while exam registration is done via Internet at only 10% of all institutions;
- 17% of the institutions provide e-learning for individual courses, some institutions prepare e-learning and only 22% of institutions do not prepare it. When analysing these data, one has to take into account the fact that the survey does not clearly explain the term e-learning. In addition, vocational colleges were included in the survey, where e-learning is more widespread than in HE institutions. E-learning is mostly available in private institutions, at the University of Maribor and in the field of economics and at least in the field of medicine, health, social sciences and education.

10 Tertiary education includes HE institutions and vocational colleges.

The basic law regulating HE is the HE Act, which came into force in 2004. It regulates the formal status of HE institutions, specifies formal requirements for the implementation of their HE activities, defines public service in HE and regulates their financing (HE ACT, article1).

DE and e-learning are not mentioned at all within the HE Act. The article (Article 37) is relevant for their regulation and implementation, and states that the academic year for undergraduate study must include at least 20 and at the most 30 hours of lectures, seminars and exercises per week over 30 weeks per year. It also states that, if the nature of the study permits the organization and schedule of the lectures, seminars and exercises should be adapted to the needs of students (part-time study). This article allows HE institutions to be more flexible when delivering study programmes, since less than 20 hours are an acceptable number when providing in the face-to-face mode.

5 Future perspectives and open challenges

The survey of adoption and practice of e-learning in Slovenia pointed out that e-learning is present in Slovenia, but to a lesser extent than one could expect on the basis ICT indicators. The analysis of ICT availability, interest and the use of ICT in Slovenia thus shows that, in general, the level of ICT development is close to the EU average.[11] Slovenia is also characterised by the openness of its inhabitants towards IS. The general climate in Slovenia is favourable to further progress towards IS. But in spite of these favourable conditions, the content of Slovene Internet is rather modest. Considering e-learning in the narrow sense, the number of e-learning programmes currently provided in Slovenia is negligible despite the considerable interest and the favourable technological infrastructure.

What factors inhibit the implementation of e-learning on a larger scale in Slovenia, considering that Slovenia has professional expertise in e-learning at its disposal?

In our view, the key reason for the relatively modest presence of e-learning in Slovenia is that, in general, the majority of e-learning projects were initiated by some enthusiastic individuals and run bottom-up. Senior academics, and most faculty management did not actively support these efforts to change the educational landscape and missed the opportunity to bring about a more innovative institutional strategy.

11 The SIBIS+ report also mentions a rather widespread public opinion that the problems in the field of IS development in Slovenia in general are connected with the lack of proactive policy of the Slovenian government in the past – such that the opportunity to keep the country among the top IS adopters was perhaps missed.

The failure to attract academics to the e-learning movement could also be ascribed to the biased criteria for academic reward in Slovenia, which are very much in favour of scientific and research work and mainly neglect innovation in pedagogy as a valuable element of academic progress. From the perspective of university management, an element of uncertainty was also introduced as a result of the absence of deliberate, stable and firm governmental educational policy in the field of e-learning. Although governmental documents support e-learning on a formal level, these statements are not supported by appropriate government measures. In general, a passive relation to e-learning in HE sector mirrors the fact that the level of competition and openness of HE is still relatively low.

What should be done in order to foster the development of e-learning in Slovenia? First of all, the national policy with clear priorities and strategies should be established and accompanied with supporting actions at all levels. Unfortunately, the current practice of producing official documents at state level is not enough.

Some changes will have to occur regarding the recognition of innovation in the pedagogical process as a respectable element of academic promotion at HE institutions, as well as new criteria for funding education which is also applicable to e-learning. In order to overcome the prejudices against and misunderstandings of e-learning, and ensure its further development, systematic training and awareness activities for HE teachers should be reinforced.

At a time when human resources development and, therefore, lifelong learning are becoming increasingly important for the continuing development of modern societies, the demand for education, training and updating knowledge is increasing. We argue that more concern should be given to the systematic development of e-learning at all relevant decision-making levels, since we believe that Slovenia will not be able to satisfy the demand with traditional forms of education.

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E-Learning at Romanian Universities: Dealing with Essential Changes of Society and Culture

1 The aim of this chapter

When approached from the perspective of theories of educational psychology, of didactic principles and methods, and of technology, e-learning is the same in Romania as in the rest of the world. So what does this chapter have to offer? Among the European countries dealt with in this volume, Romania seems to be undergoing a particularly drastic change, which puts special emphasis on the challenge of implementing an information and knowledge society and culture, to which e-learning belongs. This contribution is equally concerned with the progress of e-learning research, development and implementation at Romanian universities, and with the social and cultural context of this process.

This chapter has seven sections: (1) a short presentation of Romania, beginning with a few basic statistics and focusing on aspects relevant to the introduction of the knowledge society and e-learning; (2) a short history of the internet in Romania; (3) a few aspects of academic research on e-learning in Romania; (4) several examples of e-learning projects in higher education and academic research; (5) a discussion of students' and faculty's approach to e-learning; (6) several aspects of the political context in which e-learning has developed in higher education; (7) conclusions and future perspectives.

Concerning our research approach is concerned, the initial intention was to display a complete and detailed portrait of the way in which e-learning is spreading in the academic environment. This chapter was therefore meant to depict the present situation and perspectives for the near future. However, this project seemed to require so much time that a report of this kind and quality would never have been published in time. This is why we soon had to abandon the criterion of comprehensiveness. Instead, we have tried to offer a representative image of e-learning in Romanian academia by combining the individual perspectives and experiences of the three authors, who have very different qualifications, positions and research interests (see authors' presentation). Consequently, each of us has different professional contacts, experiences and collaborates in very different spheres of the e-learning phenomenon and of Romanian universities. By combining these perspectives, we hope to offer readers an image that is, if not complete, then at least representative of the present state-of-the-art.

2 Brief information about Romania

The first author of this contribution habitually travels twice a year to Romania to give courses at two large Romanian universities. It is not uncommon for German colleagues to say: Oh great, so you're flying to Budapest? In order to avoid such confusions and, at the same time, to satisfy some curiosity that we anticipate while writing this contribution, here are a few geographical and historical items.

Romania lies in south eastern Europe, between Hungary, Yugoslavia, Bulgaria, Ukraine, the Republic of Moldova and the Black Sea. Romanian is a Roman language, closely related to Italian, Portuguese and Spanish. In terms of history, culture and tradition, the region to the west of the arch of the Carpathian Mountains (including mainly Transylvania and the Banat) shows the influence of Hungary and Austria, whilst the regions to the south and east of the Carpathians can be seen as part of the Balkans. In the last decade, as well as in the first half of the 20^{th} century, there was an obvious European (i.e. mainly French and German) affiliation and influence. Romania has a surface of 237,500 km^2 and 22.6 million inhabitants. Its capital is Bucharest, with a population of 2.2 million. Other large cities are Brasov, Cluj-Napoca, Constanta, Craiova, Galati, Iasi, and Timisoara, each of them with a population between 300 and 350,000 inhabitants. The cultural and educational facilities of all these cities include at least a state and a private university. The largest universities are the Babes-Bolyai University of Cluj (with 35,000 students, the biggest university of south eastern Europe), the University of Bucharest, the Technical University or "Politehnica" of Bucharest, the Western University of Timisoara, the Alexandru-Ioan Cuza University of Iasi, and the Lucian Blaga University of Sibiu, some of them centenary, and each with over 30,000 students. At the beginning of the year 2005, Romania had a total of 57 state universities, 20 private universities accredited by the Ministry of Education and over 30 with provisory accreditations. At the same time, the total number of students at state universities was approximately 500,000; for the academic year 2005–2006, the Romanian state universities plan approx. 56,000 tax-free study places. After a first examination, the best study candidates are admitted to study with a tax-free place, while the others may have to pay for a study place.

Although having initially enjoyed a democratic tradition for over 70 years (1866–1947), after the Second World War Romania was confronted for about 50 years with a communist dictatorship (1947–1989). Thus, the last 15 years (1990 to present) have been characterized by the return to values of western democracy, correlated with a radical cultural change. Direct implications of this process can be found in all the components of the e-learning phenomenon, beginning with the technological level, and including all aspects of searching for and implementing adequate technological and didactic solutions, up to the level of students' and faculty's attitudes towards e-learning.

3 Internet in Romania: A historical quiz

We may define the moment at which the development of the technological infrastructure began in Romania by considering the fact that, before the political changes at the end of 1989, nobody could speak about the internet. Information and communication technology had a prohibitive price; furthermore, it was absolutely inimical to the control and surveillance of the communist administration. Telecommunication equipment was insufficient and antiquated; for example, at that time most telephone networks were still operating with electro-mechanical relays. The universities had less than a minimum of computer equipment, most of it concentrated in faculties specializing in IT and in computer centers. Data networks were not conceivable under such circumstances.

The fall of the communist government at the end of 1989, after more than 40 years of dictatorship and severe isolation, led Romania to become more open to the world and especially to democratic countries. This opening stretched to bibliographical information, as well as to equipment containing information and communication technology that matched west European and North American standards. In the beginning, public institutions (including universities) were equipped on the basis of economic help and donations from abroad. It nevertheless took three years to set up an official connection to the internet, until autumn 1992, when a leased telephone line at 9600 bps between the National Research and Development Institute for Informatics (ICI) Bucharest and the Technical University of Vienna was established, providing e-mail, telnet, ftp and gopher services. At the same time, “Politehnica” Bucharest became similarly connected to the Technical University of Darmstadt, Germany. A third connection was provided for non-governmental organizations, including universities, by SFOS (The Soros Foundation for an Open Society). In February 1993, the domain .ro was registered and ICI was entitled to administrate all Romanian subdomains. ICI opened the National Research Network (RNC) for academic use.

Between 1991 and 1993, a governmental commission for informatics acquired several tens of thousands of personal computers for the universities. The new computers were interconnected to local networks (mainly within laboratories, and with 5 to 20 workplaces), at that time without the intention or the possibility of connecting them further to a LAN or WAN. Between 1992 and 1996, the voluntary programme “Free Unix for Romania”, initiated by the Romanian community in the USA and Canada, introduced the open source culture in Romania, first of all in universities and research institutes. In 1993, the network and subdomain pub.ro were built at the chair for Computer Science of the “Politehnica” Bucharest – and later taken over by the Ministry of Education under the name RoEduNet. In 1995, new nodes of this network were opened at the technical universities of Cluj, Timisoara, Iasi and Craiova, and RoEduNet was extended to the majority of the Romanian universities.

From the government's point of view, the academic internet is considered to have developed mainly between 2001 and 2003. Multimedia campus networks will be established and integrated in the European virtual campus during the period from 2002 to 2007. At present, the majority of Romanian universities display web presence[1]. Their web pages present the faculties and their profiles, sometimes research projects or even study plans and timetables. As for e-mail services, these are (theoretically) provided for the entire personnel. The students' apartment buildings of the bigger universities are equipped with campus networks and servers. In many cases however, a significant part of the faculty and most of the students practically use web mail systems such as Yahoo!.

The limited reliability of academic networks is often caused by the condition of the infrastructure (e.g. due to obsolete buildings and installations, or to renovation work which interferes with functioning cables), as well as by insufficient organizational resources (network administration is mostly carried out by assistants and students on a voluntary basis). Finally, a significant problem impairs the security of the digital traffic, which is slowed down or even blocked by hacker attacks and viruses. In this respect, the new communication protection law is expected to bring an improvement. The permanently growing number of home computers, as well as the monthly prices for individual internet access of approx. 10 euros (which is high in relation to the average monthly income of only several hundred euros, but on the other hand very close to the prices of mobile telephones, which have literally exploded in Romania over the last five years) show that private internet connections are a technical solution to which more and more people and even students have access. In January 2005, a total of approx. 4 million Romanian internet users was counted, which is twice as many as in 2001. However, the differences in the technological infrastructure between urban and rural areas (also mentioned in government reports) are still a problem.

A study of the British Council and the Gallup Organization of Romania (2004) showed that 97% of the students used computers and 95% used the internet. The internet was used by 43% of the students in the university, and 36% at home. Besides, 70% of all the internet users (aged between 15 and 35 and located in seven major cities of Romania) used it to communicate via e-mail, 68% to learn and 48% to search for study-related information. As key-qualification necessary "to get a good job", the computer skills were ranked on the third place (mentioned by 55% of the participants of the study), after the knowledge of foreign languages (65%) and the professional qualifications (54%).

1 For example www.pub.ro, www.unibuc.ro, www.ubbcluj.ro etc.

4 Academic research on E-Learning

In the Romanian academic scene, e-learning related activities consist mainly of the development and implementation of e-learning, that is of practical applications. However, some e-learning studies also contain an element of theoretical research. One example of this is a PhD thesis written at the Babes-Bolyai University of Cluj-Napoca, a thorough study of the didactic potential of e-learning for teaching the English language. Rodica Medan (2004) presents a review of the literature covering basic pedagogical theories of computer-based teaching and learning (structuralism, cognitivism and socio-cognitivism), the specific didactic methods and instruments (e.g. linguistic corpora and the concordance technique) as well as several specific examples of e-learning applications for learning foreign languages. The theoretical section of this study is completed by an empirical study carried out within the English courses of the Cluj University, which confirms similar findings presented in the research literature. Accordingly, e-learning acts as an effective facilitator of students' linguistic progress and supports a positive attitude towards learning. The computer helps to administrate learning resources, students' linguistic output and corrective feedback. Technology has an obvious seductive effect on its users, which offers interesting opportunities to learn in a playful way. Finally, the author discusses the measures to be taken in order to extend the academic use of digital media in the teaching and learning of foreign languages.

Another important aspect of the academic research consists of conferences and workshops dedicated to the dissemination of research results and best practices. Among the first scientific conferences in Romania, in which the e-learning phenomenon was addressed, were ROSE 1993–1996, and RILW 1997–2001[2]. ROSE (Romanian Open Systems Event) was organized by GURU (The Group of Romanian Unix Users) and initially dedicated to technological aspects of open systems such as Linux. The 1996 edition included also a section dedicated to distance education[3]. RILW (Romanian Internet Learning Workshop, founded as an Erasmus/Socrates Intensive Programme with approx. 6,000 euros yearly; Jalobeanu, English & Nistor, 2003) was an international conference entirely dedicated to learning with electronic media and took place yearly between 1997 and 2001. Some of its editions were completed by a summer school within the framework of the European Socrates/Erasmus programme. RILW included sections dedicated to the theoretical foundations of e-learning as well as to practical examples of internet-based learning in universities and schools worldwide (Nistor, English, Wheeler & Jalobeanu, 2003).

2 http://rilw.emp.paed.uni-muenchen.de
3 http://www.biosfarm.ro/~dragos/guru/rose96.html

In recent years, the number of academic events dedicated to e-learning increased rapidly. These included: The National Conference on eLearning (CREDIS, December 2004); Virtual Learning 2004 (University of Bucharest, October 2004); eLiT Education Conference: "Quality Assurance in Instructional Design and e-Content" (British Council Bucharest, November 2004); International REV Simposium 2005: Remote Engineering & Virtual Instrumentation[4] ("Transilvania" University of Brasov, July 2005) etc.

5 E-Learning applications

5.1 Electronic libraries

Like any other learning process, e-learning is based on materials that provide information. The classical information resource in higher education is the library. In the process of informatization, libraries are expected to evolve in three stages: the electronic library (i.e. a library equipped with a dedicated information system); the digital library (i.e. a library with e-collections); and the virtual library (i.e. an electronic library with internet access to all e-content collections) (Banciu, 2001).

As far as electronic libraries are concerned, after 1990 the biggest Romanian university libraries changed to online catalogues. They now contain complete bibliographical databases describing their collections. From 1995, they searched for common communication interfaces for bibliographical data, and thus began to build up a national access system for online users.

Digital libraries were created step by step in numerous higher education institutions that acquired or produced electronic books. Two significant examples are the University of Bucharest and the Academy of Economic Studies, also in Bucharest. The latter offers a complete set of academic readings of its own publishing house, both as paper prints and e-books at the same time. The first entirely electronic library in Romania was opened in 2001 by the National Institute for Information and Documentation within the framework of the eEurope+ programme, which expects Romanian libraries to design their services similarly to other libraries within the European Union.

In 2004, the Ministry of Education initiated a national programme aimed at creating the model of a virtual library by interconnecting all important library databases. The central node of this network is provided by the Politehnica University of Bucharest, and the data exchange relies on RoEduNet. The further development of Romanian virtual libraries is expected to be assured by developing digital collections both within scope of the libraries' current activities (i.e. acquisition of

4 http://www.online-lab.org/rev/

e-books) and by reinforcing the production of e-learning content for university students. With this aim, and by means of the national research and the development programme "Information Society" (INFOSOC), several projects have been financed within the framework of the e-library development process as a basis for e-learning (Banciu, 2003).

The project SED-BIBVIR (Internet Based Educational System – Virtual Libraries), coordinated by the University Lower Danube of Galati, is dedicated to under- and postgraduate distance learning and provides students with access to virtual libraries and information. A remote accessible library will allow all those interested to learn about various subjects such as information technology, management, legislation, and foreign languages. SED-BIBVIR was conducted between 2001 and 2002 with an investment of approx. 62,500 euros, and the results are now in use at the participating universities.

The project BIBLIONET, coordinated by the University of Pitesti, comprises a study on the realization, implementation and impact evaluation of an interlibrary information network in educational and information/documentation activities. The aim of this project is to design, realize and evaluate an integrated information system for libraries connected to a network via the internet. It also includes a study on the social impact of the informatization of documentation activities in libraries.

"Using the virtual book in the e-learning process" is the title of another project coordinated by the Valahia University of Targoviste between December 2003 and June 2004. This project required a financial volume of approx. 87,500 euros and aimed to develop the Romanian information society by means of building a documentary information center. Several collections of electronic and paper books will be connected within this information center and the user will be able to access them via a dedicated interface.

5.2 E-Learning tools

A classic example of an electronic platform including many e-learning tools is SINTEC (Trausan-Matu, Cristea & Udrea, 2005), a collaborative, intelligent, distributed Web-based environment, developed at the National Centre for Information Technology of the Politehnica University, Bucharest, and co-funded by the INFOSOC National R&D programme for the development of the Information Society in Romania and the Romanian Academy Research Institute for Artificial Intelligence. It offers integrated distance learning, training, documentation, and consultancy services. One of its main features is personalized training using institutional knowledge repositories developed with knowledge management tools based on Web services and XML technologies. Personalization is based upon learner models, which also take account of the socio-emotional characteristics of the learners. Knowledge-based services may be used for intelligent tutoring, for the intelligent search of learning materials on the web, and for text mining (intelligent retrieval of relevant documents on the web, text categorization and knowledge extraction). The tools and modules may be used in various learning scenarios, ranging from the simple support of courses and lectures, to virtual classes and even complex intelligent tutoring processes.

The SINTEC project required a state investment of approx. 26,000 euros (which covered half of the costs, the remainder of which was contributed by the participants) and a personnel of 10 full-time jobs, some of whom were undergraduate students or young graduate students. This project was carried out between and September 2002 and December 2003. The SINTEC platform is currently being tested within the course “Algorithms and Data Structures” at the Politehnica Bucharest. There is also a plan to use it for an e-business course. It is worth mentioning that the development team includes experts, professors and researchers as well as students from the Politehnica. In spite of some inevitable problems resulting from periodical changes in the configuration of the team (due to elder students graduating and being replaced by newcomers), the integration of students into the research and development activity is most valuable from an educational perspective.

An e-learning tool of a totally different nature was developed using a didactic approach within the framework of a PhD thesis written at the Babes-Bolyai University of Cluj. Constantin Predescu (2003) explored how to optimize the didactic process of physics teacher training. He observed the training phases (students’ analysis of teaching contents, observations of lessons carried out by expert teachers, planning own lessons and evaluating the lessons taught both by expert students and by themselves) and defined an algorithm for introducing and describing physical phenomena together with the corresponding concepts. The steps contained in the algorithm were: discussing examples, choosing a prototype of a physical system, defining the system’s state, describing its interactions with the environment, discussing practical applications. The author developed a web-based cognitive tool based on an interactive database, which offers students various examples of didactic projects for physics lessons. An evaluation of this tool was carried out over a period of three years, comparing the experimental group with a reference group. The former performed significantly better both in the analysis of lessons and in practical teaching. Moreover, the students changed their attitudes with respect to training and acted more responsibly while preparing and carrying out the lessons.

5.3 Virtual laboratories

On the basis of physics engineering training at the Transilvania University of Brasov, the faculty's interest in virtual laboratories and virtual instrumentation increased during the early 1990s (Cotfas, Ursutiu & Samoila, 2001). Virtual laboratories use computer applications that stimulate physical, chemical, biological, technological or mathematical processes. Virtual instrumentation automatizes measurements of similar phenomena and provides access to these measurements via the world wide web. These procedures are already integrated in the university's courses. They offer a high quality environment for a significant part of the lab courses and for research work, without having to coordinate this with the laboratories' timetable. At the same time, the available resources of the university are used more efficiently.

Moreover, the project CoLaborator[5], initiated by Politehnica in Bucharest and the National Center for Information Technology with the support of the World Bank, comprises a virtual laboratory for high performance computing. CoLaborator is based on the academic network RoEduNet and provides an environment for students training in Parallel and Distributed Computing as well as research support in the fields of physics, chemistry and medicine etc. for the entire Romanian academic community.

Another example of virtual laboratory integrated in the educational process can also be found at the Politehnica in Bucharest, in the Microelectronics and ICT e-learning Centre (EDIT[6]), founded in 1992 using faculty's regular resources in order to carry out research and development in e-learning methodologies, to provide content in Microelectronics and ICT as well as e-learning services. As a part of the virtual course SPEMI (Electronic Process Simulation in Integrated Microstructures), the virtual lab is based on the observation that a significant part of the students' experiments use computer simulations of microelectronic phenomena. Accordingly, the lab work moves from the real into the virtual, web-based laboratory. Romanian and foreign experts from Politehnica, and from collaborating universities all over the world, supervise the students during the lab course.

5.4 Virtual courses, virtual university

Many Romanian state and private universities offer online courses especially for students enrolled in distance education programmes. As early as 2002, there were 15 academic specialties covered by open and distance learning and using

5 http://www.cs.pub.ro/res/csed_colaborator.html
6 http://www.edit.pub.ro

e-learning material. Some of these courses comprised partial, some comprehensive online study programmes as a reaction to the demand for employed students as well as students from rural areas with access to higher education and life-long learning.

SPEMI, for example (as mentioned above), is a MSc and PhD course within a traditional study programme at the Faculty for Electronics and Telecommunications of the Politehnica in Bucharest. It offers e-content via the web-based interface of a specialized platform. Besides presenting e-contents, the platform also provides assessment and examination modules as well as student activity control, including the statistics of the examination results.

The Department for Distance Learning of the University of Bucharest has opened a Center for Resources, Documentation, Information and Service[7] (CREDIS) for distance learning, which functions as an internet-based academy and includes its own network of distance learning centers and a virtual campus. While studying at CREDIS, students have the same study plan as in face-to-face study, they can specialize in the same fields, and the diploma they acquire is equivalent to all other diplomas of the University of Bucharest. There is no traditional teaching, although laboratories are both real and virtual. 70% of the students are said to belong to a virtual, and to 30% to a real community.

Entirely online master courses were offered for the first time in Romania by the Faculty of Communication and Public Relations of the National School of Political Studies and Public Administration (SNSPA) in Bucharest[8]. Three MA programmes began in October 2004: Project Management, Business Management and Communication, and Educational Management and Organizational Communication. Each of them is three semesters in duration and includes 4 to 5 virtual seminars. A download section provides the participants with the necessary information and documentation. The students can use discussion forums to discuss the materials and to interact with instructors. The courses are rounded off with face-to-face examinations; successful participation is certified by means of a state degree.

UniSMART is characterized by its broad range of research and development.[9] This project was carried out between 2002 and 2004 by the Laboratory for Information Technology in Education of the Black Sea University Foundation. The project implied an investment of approx. 37,500 euros, occupied 15 researchers and one student, and aimed to develop and implement a modular education system in Romanian higher education. As an innovative contribution to the current restructuring of the Romanian education system, the research focused on methodology for the modularization of the higher education curriculum. uniSMART allows

7 http://www.credis.ro
8 http://www.comunicareonline.ro
9 http://www.unismart.ro

the management of educational modules as well as curriculum personalization, i.e. the adaptation of the curriculum to the dynamics of individual professional objectives. As a result, uniSMART increases the flexibility and effectiveness of postgraduate education by adapting it to students' specific professional objectives. Furthermore, it increases the quality of postgraduate training, ensures a better relationship between training and professional development, whilst decreasing the quantity of redundant information transmitted during traditional education and reducing the costs of education. After the pilot project in the Romanian higher education system, the authors are currently discussing how it may be used within a European e-learning network.

A project recently initiated by the Politehnica in Bucharest with the financial support of the European Union within the framework of the Socrates/Minerva programme, is the Romanian-European eUniversity[10] (RE2U). This project entails an investment of approx. 300,000 euros (two thirds granted by the EU, one third by partners' contributions), a personnel volume of around 3,500 man-days, and will operate from October 2002 to December 2005. As a virtual higher-education institution, RE2U aims to become a major provider of services to universities as well as to lifelong learning communities. RE2U should enable the Ministry of Education and Research to integrate distance education and e-learning into the education system and thus promote the innovation process. In its relations to universities, RE2U will act as an excellence center and supply these with both e-learning material and expertise for designing, implementing and managing e-learning. A remarkable feature of this project is its openness to collaboration, which we see as an attempt to coordinate efforts on the European level and to use synergies to support innovation in the higher education area. At present, the main partners of this project are, besides the Politehnica in Bucharest, the Friedrich-Alexander University of Erlangen-Nürnberg, and the Universitat Oberta di Catalunya in Barcelona.

In the context of international collaboration, it is worth mentioning the internet-based collaboration between faculties and between researchers. Information exchange between specialists has become common practice since the beginnings of the internet. At present, the virtual participation of Romanian faculty members in courses abroad, or of foreign professors in courses at Romanian universities (e.g. in the virtual lab project SPEMI, as mentioned above, or in the online MSc course on 'Knowledge Mining from Data', organized by the technical universities of Lyon, Paris, Nantes, Laval/Québec and Bucharest[11]) is becoming common practice as well. Such collaborations are having a positive influence on the quality of higher education.

10 http://www.reu.pub.ro
11 http://dea-ecd.univ-lyon2.fr/centre.php

Another interesting aspect is the organization of some sections or services of the state universities that can generate an income or even set up independent private companies. From a legal point of view, universities offer face-to-face study, and faculty members are employed to teach in face-to-face situations. E-teaching may be regarded as an additional service, for which students may have to pay. Several departments of state universities (e.g. CREDIS) function according to this model. Moreover, it is common for faculty members to run their own companies that sell e-learning courses to interested students. For example, Timsoft Ltd.[12] offers e-learning courses mainly in informatics and computer science for students, and even e-train-the-trainer courses for faculty members.

An interesting example of private initiative is Academia Online[13], initiated without a special financial foundation, mainly thanks to the effort of Olimpius Istrate, a young scientist from the Bucharest Institute of Educational Science. Academia Online is an open platform in which everybody can offer an e-learning course, also for university students. The courses are first thoroughly examined, evaluated and validated by a team of specialists in educational science and psychology from the Association for Excellence in Career, the Institute for Educational Science and InsideMedia Ltd Bucharest. Thus, Academia Online meets the criteria launched by the Ministry of Education and Research regarding quality assurance at all levels. Its courses are elaborated in a constructivist manner and stimulate active learning designed to suit each learner's requirements. In October 2004, ten months after opening, Academia Online had over 15,000 students. Some of the courses are free, others fee-paying.

6 Students' and faculty's approach towards E-Learning

Students' and faculty's approaches towards e-learning must be regarded, as mentioned above, in the context of present-day social and political changes, which cause specific reactions and attitudes. On the other hand, some of the problems with which students and faculty are faced in this respect may be improved if not solved by e-learning. What kind of changes are taking place? The change from communism to western democracy, from a centralized to a market economy, and the expansion of information society are the fundamental aspects marking present-day society, which imply two categories of changes: changes on the political and organizational level and social changes.

If we examine the academic environment, the political and organizational changes are apparent within the reforms of the higher education system. For the faculty,

12 http://www.timsoft.ro
13 http://academiaonline.ro

they bring new tasks and responsibilities by, for example, making income depend on the degree of commitment to projects that bring money to the university, or on publications in international journals as a condition to obtain promotion within the academic hierarchy. For students, there are new study plans (e.g. required by the integration of the Romanian universities into the unitary European academic system, including structuring study in terms of BA, MA/MSc and PhD programmes, as well as offering the opportunity to be registered for several different fields of study at the same time), and changes of perspective (above all, the uncertainty whether employment can be guaranteed after graduation, and the theoretical possibility of becoming employed in a western country). It is worth mentioning here that the migration of highly qualified young specialists into western countries is still a large-scale phenomenon in Romania, which is a cause for general concern. Finally, both for faculty and for students, coping with the new social and organizational structures is made even more difficult by not knowing when reforms and restructuring will come to an end, and when the academic environment will become at last a stable environment.

The changes within the academic environment, as in any other section of social life, are closely related to the process of consolidating democracy. Democracy is a culture of dialogue – as opposed to accepting values and objectives imposed in a dictatorial way – and no dialogue can be carried out without respecting participants' specific competencies. Not being used to open dialogue implies for everybody (i.e. not only for students) the fear of making mistakes, and of admitting that one has made a mistake, which hinders personal initiative and finally entails a lack of competence to self-directed learning. This competence is necessary both on the part of students and faculty, and is fundamental to knowledge society and to the success of learning with electronic media.

Besides organizational and social changes, another factor that may not be neglected is technological progress. For everybody, the access to technology is drastically limited by the prices of equipment, software and network services. As soon as this barrier has been overcome, young people and especially university students seem to very quickly acquire the required media competence, which is especially an advantage for computer science and informatics taught in schools.

On the basis of these changes, we should first of all expect to see consequences concerning learning motivation and individual orientation within a wide range of learning goals and objectives. We may expect a proliferation of extrinsic motivation to the detriment of intrinsic motivation. Significant rewards appear more accessible (e.g. a manager position as an alternative to an average position in the field of production, or a position in a western country as an alternative to a similar one in Romania, or even any kind of employment in any country as an alternative to unemployment in Romania), which seem to preoccupy the students for most of the time and to consume much of their energy. Thus, students seem to have less time and less energy for cultivating their interests, so that the idea of profession as a way of earning a living dominates the ideal of profession as cultivation of interests and contribution to the general knowledge progress. In extreme cases, we can even expect fraud: If the deep understanding of some subject or the exercising of some skills are no longer a student's priority objectives, it is not an exception when they simply copy essays from the internet (sometimes even from specially dedicated sites) without making a personal contribution.

How can e-learning positively contribute to this problem? It is well known that e-learning provides students with considerable flexibility in terms of learning time and place, which can potentially solve the coordination problems of an overbooked study plan. Moreover, e-learning offers the opportunity to make contacts and collaborate with people from a distance and across borders, sometimes even despite differences of status. As mentioned above, there are some examples from academic practice of Romanian students being instructed, coached and supervised by experts from abroad. Students' additional experience of virtual learning is a qualification that can only give them better chances on the employment market (even abroad!). The virtual presence of experts and faculty members from renowned universities may also bring added quality to the learning process and increase the motivation of students.

The fact that e-learning can contribute to solving actual and acute problems in Romanian higher education, the successful exemplary applications of e-learning within the current activity certainly provide reasons to be optimistic. Nevertheless, one may not forget that the largescale implementation of such solutions presupposes that projects are appropriately organized and media competence ensured. With respect to the organizational frame, it is necessary (and even urgent) to integrate e-learning modules and courses into the regular study plans not only as optional modules that interested students can absolve when (and if) they have time, and from which they can only win knowledge and experience, but also as study modules that bring them credit points (as in the EDIT virtual laboratory examples mentioned above). As for the students' media competence, it is significant that young people's technology skills are progressing, the first systematic contributions in this direction having being made in the middle of the 1990s by publications and courses dedicated to introducing students of all kinds to the use of the internet (Jalobeanu, 1995). Nevertheless, we may not forget that, in addition to the manipulation of electronic equipment, media competence is also closely related to the competence of self-regulated learning (and personal initiative), of communication and collaboration (including open dialogue and conflict management), critical thinking and precise evaluation of the quality of the huge amounts of information available on the internet. Last but not least, ethically positive attitudes are essential for the constructive use of the new media. Of course, all these skills can be achieved in time – our question is which concrete educational measures are most likely to achieve this, and how efficient they may be. This is a vital question for educational research on e-learning. Once again, this analysis is based mainly on our personal experience and general theory. Empirical evidence of high ecological validity is still to be established.

7 Financial resources and state policy on E-Learning

The examples presented above raise questions regarding the organization and financial resources involved – for which there are various answers. A large number of small projects are based on researchers' own initiative and interests. These projects are innovations within the framework of current academic activities. Among the larger projects, some of them are supported by international or European grants (many of them mediated by state institutions). There are also state resources allocated to informatization and e-learning projects within action plans, strategies, and policies at a national level.

From 1990, Romania made a special effort to adopt European models and standards, especially economic and political standards (Banciu & Nica, 2005). On the basis of these changes, the promotion of the information society as a factor of economic progress was a main goal of every Romanian government over the last 15 years. One of the first measures in this respect was the government decision (HG) no. 548/1990/05/17 concerning the realization of a unitary information system for the registration of the inhabitants, followed by HG 1366/1990/12/29 on the task and responsibilities relative to the informatization of the Romanian public institutions, especially in the fields of science, education and culture. The next one was HG 490/1991/07/16 regarding the general concept of the informatization of Romanian society, which brought a methodological approach of this process.

In June 1997, the Romanian government recognized for the first time, through HG 308, that it was necessary to speed up the implementation of the information infrastructure as a priority objective for economic and social development, and for integration in the European Union and NATO. HG 58/1998 continued by defining the "National strategy for the informatization and implementation of the information society" (Ministerul Comunicatiilor si Tehnologiei Informatiei, 2004). The measures adopted as a consequence of this decision were marked by negotiations about Romania's integration in the EU, which started in February 2000. Within this framework, Romania accepted the EU principles regarding telecommunications, postal services and information technology. These discussions were completed in 2002. In the same context, Romania also joined the programme eEurope+, which began in June 2001. Moreover, since March 2003, Romania has been a member of NATO, which required even more commitment to the accelerated implementation of information and communication technologies. At present, the central promoter of these efforts is the Ministry of Communications and Information Technology, which defines strategies, action plans, the supervision and the evaluation of electronic communications, the postal services and information technology.

The national strategy for the implementation of the information society aims to prevent the "digital divide" phenomenon (Ministerul Comunicatiilor si Tehnologiei Informatiei, 2004), which might amplify the differences between rich and poor countries. In this sense, the most important factor is not connectivity in itself (a physical connection of institutions and individuals to information resources), but Romania's integration in the information society as cultural phenomenon. The use of information services should be reinforced by means of education and communication. This is why the academic community plays a crucial role in the development of a new knowledge and learning culture.

Other consequences ensuing from the national strategy include legal projects to improve the quality of education and distance education standards formulated by the Romanian National Council for Academic Assessment and Accreditation, a significant part of which is concerned with the use of educational electronic platforms. The standards state the services that have to be offered by distance education platforms: authenticated access of students and instructors, synchronous and asynchronous communication channels, support of students by faculty and experts, collecting feedback from students, as well as the development of e-content. The monitoring and evaluating of academic activities is to be carried out according to quality standards explicitly adopted by higher education institutions.

In order to encourage and support academic research, the Romanian Ministry of Education and Research set up the National University Research Council (CNCSIS) and the National Higher Education Funding Council (CNFIS) in 1994. CNCSIS acts as an interface between the academic research community, the Ministry of Education and Research, and CNFIS, and plays a crucial role in allocating funding for university research and in evaluating scientific research performance.

A direct consequence of the national strategy in the field of research and development is the INFOSOC (*Information Society*) programme, which aims to develop the information society in Romania, as a part of the National Research, Development and Innovation Plan for 2001–2005 (Banciu, 2003). The INFOSOC Programme, sponsored by the Romanian government through the agency of the Ministry of Education and Research, is open to all legal bodies that conduct research and development activities in Romania (research institutes, universities, private companies etc.). The programme leadership was assigned to ICI, which won the public tender for the management of this programme. The INFOSOC programme provides financial support for those projects that are conducive to the creation of conditions which are conducive to the development of the information society in Romania and the scientific and technological groundings required to set up organizations required to provide services related to the information society. The programme also aims to increase the utilization ratio of the new technologies in all sectors of the economy as well as at the development of services based on information technology and the assessment of their impact on citizens. The most significant INFOSOC projects (see also Chapter ‘Projects’) deal with building an internet-based education system (virtual courses, virtual instruction centers – with an investment of approx. 1.5 million euros), developing software platforms for e-learning (approx. 1.05 million euros), and the use of e-books within e-learning activities (approx. 1.5 million euros).

The Romanian government also stimulates initiatives on the basis of awards. Starting in 2001, it offers I&CT awards annually.[14] For example, Academia Online mentioned above won the Prize for the Best Educational Contents of 2004. (By contrast, the e-school prize[15] was – although founded privately – also awarded to Academia Online and other similar sites, but also to referat.ro. Initially intended as a learning resource for students of all ages, this site actually posts exam papers and thus encourages fraud!)

8 Conclusions

The examples presented in this chapter create the image of relatively intense activity in the field of e-learning carried out on various levels, often independently from each other. The scope and objectives of implementing the information society in Romania are present in each and every example – always implicitly, sometimes also explicitly, such as in the national informatization strategy, policies, and resulting programmes. The present state of the art is the result of sustained effort, which reveals how faculties have consistently shown interest in e-learning. The more clear and effective the initial stages of this process are, the more clear and imperative the next steps become.

Applications which aim to increase the efficiency of using limited resources, as in the case of the virtual laboratories, have been particularly successful. It is remarkable that, in such cases, the application has been triggered by a specific need within the academic educational process, to which the technical solution is offered as a solution. We perceive this approach as one which is opposed to projects and applications in which the finality and methods are subordinated to technology, and which can now be considered to be wrong from the educational point of view. It is

14 http://www.premii-tic.ro
15 http://www.e-scoala.ro/award/castigatori.html

in this respect that the particular value of the Romanian examples becomes apparent. Although no results of systematic evaluations have yet been made available, we suppose that e-learning applications fully integrated in study programmes have been successfully proven by academic practice.

Favorite disciplines for e-learning applications appear to be the technical ones, such as computer science, engineering and physics. Nonetheless, fields in the humanities such as foreign languages and educational science are also represented. Large-scale projects like building digital and virtual libraries are characteristically aimed at an extremely large target group, since they are practically dedicated to the entire academic population.

From the point of view of study organization, we have shown that the virtual university model, with its special flexibility, potentially offers equal access to education (including students in rural areas), and a solution to the problem of overloaded study programmes. Worldwide collaborations also enable it to facilitate additional international openness and therefore improve the quality of education.

Which further directions of development lie in store? As in many well-known cases, the technological infrastructure is in need of improvement in Romania as well. On the other hand, we may not forget that the ICT equipment of a university has to be coordinated with its practical applications in the fields of students' education and research. We have witnessed several successful applications based on the minimum technology principle. Once again, this principle seems to have been applied in Romanian universities with a remarkable success.

As for the use of virtual courses and the implementation of the virtual university concept, we can only recommend the further extension of the successful projects and – especially in this context – greater effort towards the coordination of activities of various groups of the academic community. E-learning will surely not encounter the same interest and acceptance in every field and in every institution. In order to clarify this aspect, faculties need access to more extensive information about the advantages and limitations of learning with digital media. Academic grants and awards are certainly an efficient stimulus for the innovative use of e-learning. The criteria of granting them must nevertheless be more tightly related to the most recent achievements of educational research and to principles of academic ethics.

It is also essential to enlarge the repertoire of didactic concepts adapted to the specific conditions of the Romanian academic environment. One could conceive of a situation in which virtual libraries manage to satisfy students' entire documentation requirements. What would happen then? How would this e-content be used? It is clear to everybody how a traditional book can be used, but we believe that it is far less clear how, and with which types of learning, e-contents can be used. In Romania, as in other parts of the world, educational science still needs to better understand and further develop these models. In particular, one special and very important form of learning is missing from the examples noted above: virtual co-operation and collaboration.

Every process of testing and implementing new educational concepts has to be accompanied by systematic evaluation. In Romania, the evaluation of higher education is now becoming common practice, especially in light of reforms of the educational system. However, there are not enough publications presenting the evaluation of results of e-learning applications in Romanian universities – which applies to both scientific publications and web sites presenting research grants. This is another deficit that should be counteracted as soon as possible.

Finally, media competence is an issue that requires special attention both with respect to students and faculties. Students need support so that they can develop general learning competence with emphasis on self-regulated and cooperative learning, as well as on critical thinking and ethics in the context of the information society. In order to extend e-learning applications, faculties need to be thoroughly informed about e-learning methods and instruments, with respect to both their fields of application and potential results.

All these requirements expose questions that require further research. In our opinion, special interest should be dedicated to comparative research. Most of the aspects discussed here have already been exhaustively researched in western countries. However, Romanian society and culture is at present undergoing fundamental changes, and thus provides a special context for additional research. This is how the ecological validity of available e-learning theories may be enhanced.

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Sirje Virkus

E-Learning in Estonia: Paste, Present and possible Future

1 Introduction

Estonia is a small country with a territory of 45,227 sq. km and a population of less than 1.4 million, but quite well known because of innovative thinking and attitudes favouring the use of modern technology. After regaining independence in 1991, Estonia has in a short time developed decent ICT infrastructure and e-business environments. For example, Estonia holds the 26th position after Japan in the fifth annual Economist Intelligence Unit e-readiness ranking (Economist Intelligence Unit, 2004) and many other international indexes of technological development, for example, the Global Information Technology Report, the World Competitiveness Yearbook, World Competitive Yearbook, and the Global Competitiveness Index have given Estonia credit for a solid ICT infrastructure and decent online environment (Krull, 2003). Estonia is both geographically and historically close to the major economies of Scandinavia and this has had considerable influence on the economic, political, social and cultural development as well as on the state of the art of e-learning.

However, many other factors have influenced the development of e-learning in Estonia: European and global trends, government information society and information and communication technology (ICT) policy and its impact on building up ICT infrastructure, collaboration between the government, private sector and non-governmental institutions, relations with European and other relevant programmes and the innovative people who have been able to generate new ideas, take initiatives and develop services and content.

This paper will give an overview of some of the developments in e-learning in Estonia during the last decade, with a special emphasis on the use of new media in higher education (HE). The first part is a short overview of the concepts used and discussed by Estonian actors. The second examines the developments relating to the infrastructure, training, supporting programmes and policies influencing the field of e-learning in the Estonian HE sector. The third part introduces some current developments, the Estonian e-University initiative and discusses possibilities for the future. The overview is based on a review of literature and personal observations and involvement.

2 The concept of E-Learning and other relevant terms

There are many labels used to describe the process of adopting ICT to enhance educational processes. For example, the terms open, distance, flexible, remote, online, virtual, distributed learning and e-learning are terms that are used increasingly loosely in the literature and among educational practitioners in Estonia and around the world to describe the use of ICT in education. These terms convey a wide variety of meanings to different people, many definitions exist and there has been a considerable debate in the literature what these terms actually mean (Calder, 2000). However, these concepts have expanded dramatically around the world and new terms and phrases spring up continuously, like blended learning, mobile learning and connected learning. The European Association of Distance Teaching Universities (EADTU) annual conference in Heerlen in 2004 proposed a new phrase, 'lifelong open flexible learning' (LOF), that refers to 'open' education in combination with the flexibilization of learning tracks and products in a context of lifelong learning (Heerlen Message, 2004).

The authors of the Phare Multi-country Distance Education Programme Evaluation Report (Bang et al., 2001a) note that '*e-learning* is a heuristic principle used to conceptualise and organise in a comprehensive way new developments facilitated by the new ICTs, which touch all sectors of education. The precise meaning of e-learning varies depending on the context to which it is applied' [italics in original]. They distinguish between political, economic and educational meanings of e-learning and note that the *political meaning*, e.g. following the declaration of Lisbon, covers more or less the idea of modernising the whole range of education, from kindergarten to continuing vocational training, in order to keep society and its workforce competitive, to fight unemployment and therefore also to contribute to social cohesion. The *economic meaning* defines e-learning as a sector of e-business and the *educational meaning* places e-learning in an environment of teaching and learning as a particular approach to the design of new instructional environments or new areas for research and involves the use of Internet technologies to deliver a broad array of solutions that can enhance knowledge and performance (ibid.).

However, Farrell notes (2001, p. 2) that whatever label is used to describe these current ICT strategies in education, they all have their roots in the practice of distance education (DE). Many other researchers and practitioners of DE who discuss different generations, forms, models, systems, levels, sectors and categories of DE agree that the modern ICT based forms of education have developed from the forms of teaching and learning in traditional correspondence education (Moore and Kearsley, 1996).

It should be noted that traditional correspondence education was introduced through the state initiatives in Estonia as early as the 1920s and was used quite extensively in many of the republics of the Soviet Union in general and vocational education both on secondary and post-secondary levels. A characteristic feature of the Soviet correspondence model was that learning was usually based on standard textbooks (not specially prepared for independent learning) and students had to attend in short face-to-face on-campus sessions usually two to four times a year. Many people believe that the Soviet type of DE did not have a very high reputation, although different opinions exist. It is also argued that there were several positive features within the so-called Soviet model of DE, and some educational institutions still use such kind of delivery. Some surveys have also shown that working adults from various parts of Estonia quite enjoyed attending short face-to-face on-campus sessions for some times a year in order to get away from their everyday routine and communicate with their peer students.[1]

However, e-learning in its various forms and names in Estonia dates back to the early nineties. Whilst traditional correspondence teaching (in Estonian *kaugõpe)* has been practiced for many years, the ideas of ICT-based distance DE started to spread in Estonia in 1993. The proponents of ICT-based DE used to label the new approach to DE as modern distance education (*kaugkoolitus)* in order to differentiate it from the old delivery mode practised under the Soviet regime.

In the middle of 1990s, with the involvement in several European projects and programmes the concept of open and distance learning (ODL) *(avatud õpe ja kaugkoolitus)* started to spread in Estonia. However, several other terms were used, including correspondence education *(kaugõpe)*, distance education (*kaugkoolitus),* distant education *(distantsõpe),* online education *(sidusõpe)* or web-based education *(veebipõhine koolitus).*

Together with the e-learning initiatives in Europe, the term 'e-learning' *(e-õpe)* came into use and is currently the most favoured term in Estonia. However, the Estonian term *e-õpe* is not exact translation of 'e-learning' and actually means 'e-education' which covers both teaching and learning process, not only learning. The positive image of the Estonian e-University has also supported the acceptance of the term. The Estonian e-University, has defined 'e-learning' (e-education) in the following way: 'e-learning is interactive learning where the study process is usually web-based and the majority (at least 75 %) of the studies take place on the web' (Eesti e-Ülikool, 2003). However, there is not a very established terminology in Estonia in the whole field of ICT-based education, and different terms have been used interchangeably over the years.

1 Unpublished student feedback surveys at the Department of Information Studies of Tallinn Pedagogical University (since March 2005 Tallinn University).

3 Development of E-Learning in Estonia

The ideas of modern DE came predominantly from the Nordic countries and spread mainly through different ‘training of trainers’ projects within HE sector. For example, the first staff development initiatives were a series of courses about the methodology of ICT-based DE; for example, *Course Design and Development in DE* (1993), organised by the University of Turku in Finland and the Pennsylvania State University in the United States , *The DE Methodology with Applications* (1004), organised by Linköping University, in Sweden, and *FEUCODE I* and *FEUCODE II* (*Finnish-Estonian University Level Cooperation in DE*) (1994–1996) on methods and forms of DE organised by the University of Helsinki, Turku and Jyväskylä together with teachers in Tartu University, Tallinn Technical University and Tallinn Pedagogical University (Virkus, 1999).

Thus, the group of enthusiastic lecturers in universities that were influenced by new educational concepts and ICT based forms of DE started to use e-mail for communication and simple html pages for delivery of the course content. Although some authors prefer to refer to the societal needs for modern DE in Estonia, the main driver for change in the early 1990s was rather curiosity, innovative spirit and the optimism of some enthusiastic lecturers of the possibilities of ICT to delivery education in a new way and to the new market.

Inglis et al. (2002, p. 88) note: ‘If the intention is to make the transition from face-to face delivery or more traditional modes of distance education delivery to delivery via the knowledge media, then one of the tasks involved in making that transition is to put in place the appropriate delivery infrastructure’. The establishment of the necessary infrastructure for DE started in Estonia 1994 and was largely influenced by the PHARE Multi-Country Programme in DE.

At their meeting on 29 January 1993, the Nordic Council of Ministers made a ruling to support the Action Programme for the Baltic countries and neighbouring areas. In this Action Programme, provisions were also made for educational projects in DE. On this basis, the Council accepted an application from the President of the European Distance Education Network (EDEN) on behalf of the national associations of DE in Finland, Norway, and Sweden to perform a feasibility study in the Baltic countries. The aims of the feasibility study were to assess the state of DE in the three Baltic States, as well as to identify the needs that exist for the further development of DE in the region. Feasibility studies on the development of modern DE were carried out in 1993 by groups of experts engaged by the Nordic Council of Ministers and PHARE (EU Programme for Aid to the Central and Eastern Europe) (Virkus, 1997).

Following the feasibility study, a financing proposal for the pilot project PHARE Multi-Country Cooperation in DE was approved in 1994. The pilot project aimed:

- to act as a catalyst for national policy formulation in the field of DE via measures for increased awareness, staff development, the presentation of existing models, and mechanisms of DE;
- to establish a network of national contact points in the participating countries and develop the necessary infrastructure in all countries to allow them to co-operate on an equal basis;
- to develop on an experimental basis two pilot courses (European Studies and Training of DE Trainers), and thereby test the feasibility of joint development by the participating countries of core course modules, which can then be adapted to national requirements and contexts;
- on the basis of the above items, to define areas of common interests in which regional cooperation can produce significant added value in terms of the enhanced quality of output and the speed of development and/or economies of scale (Benders, 1996).

Thus, the Estonian National Contact Point for implementation of PHARE Multi-Country Programme for DE was established on 7 November 1994 under the auspices of the Ministry of Culture and Education as a part of the Estonian TEMPUS office. Two study centres with technical equipment were established in Estonia: one in Tartu University and one in Tallinn Technical University. Regional Contact Points at Tartu University (TU), Tallinn Technical University (TTU) and Tallinn Pedagogical University (TPU) were established within the Centres of Continuing Education for information exchange. Estonian Association for Distance Education (EADE) as an umbrella organisation and national listserv (SIDE – *systematic information about distance education*) was founded. Annual seminars and workshops with invited foreign DE experts were organised by EADE to raise the awareness of educational, technological and organizational aspects of modern DE. Structural changes also started in universities: Open University departments and programmes were established in several Estonian universities and support structures were set up; for example, TU created a Multimedia Centre and TPU set up a Centre for Educational Technology to support ICT-based education (Virkus, 1999).

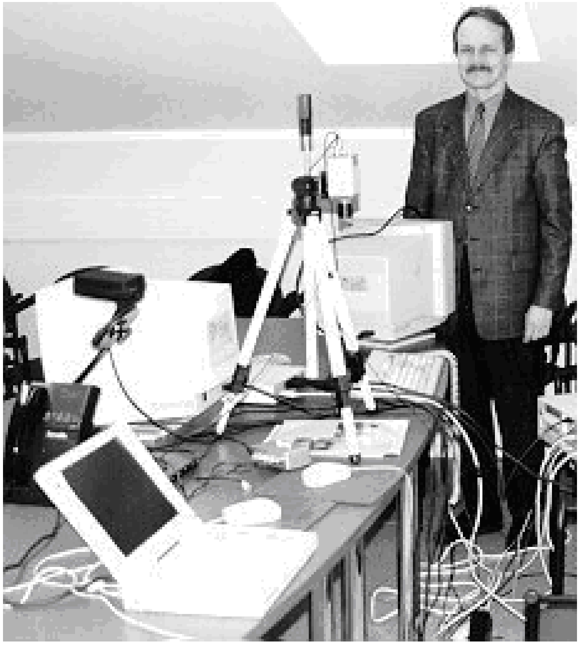
After completion of the Pilot phase, the follow-up phase of the Phare Multi-Country Programme in DE (1996–1998) started. It aimed to develop a substantial portfolio of DE courses and to support the establishment of a trans-regional DE infrastructure in the Phare countries. Within the framework of this follow-up project, Estonian universities participated in a number of projects (EUROLI, EUROLAW, MEBA, DEMAND, BROM, EFMAREM) and developed DE courses in the field of European Law, English language for adults, the design, implementation and management of a telematics based DE, Business Planning for Open Markets, etc. (Virkus, 1999).

The staff training that started as early as the 1990s, and in the pilot projects *Train the Trainer in DE* and *European Studies* within the framework of the Phare Multi-Country Cooperation in DE (1995–1996) continued; for example, twenty participants from various institutions in Estonia participated in the project *LOLA: Learning About Open Learning* (1999–2000) as a part of the Phare Multi-Country Programme for DE. The project was designed as a true state-of-the-art ODL programme which involved the use of modern distance learning techniques and methods. The programme was provided by the Scottish Development Overseas (SDO) in cooperation with the Institute of Computer Based Learning at the Heriot-Watt University in Edinburgh and was delivered to 400 participants from a wide range of involvement in training and ODL in 11 Phare countries (Virkus, 1999). Several years later, the participants of the *LOLA* project still refer to the high quality content of this programme.

The main contribution of the Phare Multi-Country DE Programme in Estonia was to raise awareness of the methodology and technology of DE, develop contacts with high quality DE and research centres in the world and develop some infrastructure for DE. However, not being fully supported by policies of adequate financing and management, and influenced by high level competition between universities, the project did not fully fulfil its potential (Bang et al., 2001a).

Many other projects also supported the implementation of ICT in education and development of ODL. For example, within the framework of the Tempus-Phare Programme, several Joint European Project Grants supported the integration of ICT into the Estonian educational system; for example, the *Creation of Master Degree Programme in Multimedia and Learning Systems*; *Information Technology in Teacher Education* and the *Development of an Open University Infrastructure in Estonia.* The funding from several regional programmes contributed to the ODL development as well. The Nordic Council of Ministers and the Norwegian Research Council sponsored several Nordic-Baltic Cooperation Projects; for example, *Open and Distance Learning in Teacher Training*, *Netbased Multimedia,* etc. Several institutions in Estonia had an influence on ODL as well; for example, the Institute of Baltic Studies, a private non-profit organisation, successfully implemented several projects and developed 52 public Internet access points throughout Estonia. The Open Estonia Foundation (OEF) supported a programme targeted at the use and implementation of advanced ICT in DE in both secondary and HE level (Virkus, 1999).

Since the mid-1990s, several university lectures experimented with new media: for example, Internet-based (Cu-CeeMe, NetMeeting) and ISDN-based videoconferencing, audioconferencing and learning management systems (LMS) (Virkus and Sponberg, 1999). Within the framework of Phare follow-up phase, several LMS were used (WebCT, FirstClass, Top Class, Web Course in a Box, Lotus Notes-based distance-learning applications, etc.) for course delivery and interaction. Some LMS were designed for project purposes (Virkus, 1999).



Picture 1: The photo shows the improvised technical infrastructure for videoconferencing built up for a course delivery between Tallinn Pedagogical University in Estonia and Gjovik College in Norway in these days of experimentation. In the background, Vello Randla, responsible for videoconferencing at TPU.

At the same time, the delivery of ODL programmes started in different subject fields in the universities. These fields included environmental sciences, library and information science, informatics, teacher training, business studies, etc.

For example, the course in environmental protection, which was divided into three modules (environmental ecology, global environmental problems and changing environment and health), was run by the Tallinn Technical University with the support of the Centre for Extension Studies at the University of Turku and in cooperation with Estonian environmental protection experts. During the course, different DE study methods were used: for example, audioconferences, Internet discussions, etc.

In order to help information professionals meet ICT challenges, the Department of Information Studies at the TPU designed a DE pilot project for school librarians. The course of four modules was delivered in May 1996 till June 1997 and aimed to enable school librarians in Estonia to become aware of the potential of network possibilities, to gain some basic skills about network information seeking and retrieval, publishing on the Internet via the World Wide Web, public relation and marketing, and user education. The project used e-mail and synchronous communication possibilities such as talk for communication, and the learning materials also appeared in the form of simple html pages with pointers to some useful information sources for school librarians on the Web. Students submitted written assignments to teaching faculty via e-mail, and assignments were returned with comments and suggestions in the same fashion (Virkus, 1997).

In 1996, the Institute of Computer Sciences of Tartu University offered ICT-based DE course for Estonian teachers. The course was very popular among teachers. Furthermore the Estonian Business School and the Concordia International University, both private HE institutions, started to offer substantial DE programmes (Virkus, 1999).

The Estonian university model was a mixed mode model in which each institution had the opportunity to offer part-time study programmes within the same areas in which they were offering programmes for full-time students. Thus, in practical teaching, DE relied on the faculties and departments and faculties were responsible for carrying out teaching. However, Continuing Education Centers were responsible for the development of DE at all the universities and, since the mid-1990s open university structures were responsible for the development of ICT-based teaching (Virkus, 2004a).

In addition to the establishment of necessary infrastructure and staff development in the field of e-learning, other important factors are supportive policy and legislative frameworks. Even if all the supporting components were not in place, a number of initiatives that supported the development of e-learning and created necessary environment took place in Estonia.

Since the early 1990s, the Estonian government has taken several major initiatives to strengthen the role of ICTs in society, including education. The first national ICT development programme The Estonian Way to Information Society was prepared in 1994 and revised in the second half of the 1990s. The Estonian Parliament (Riigikogu) approved The Principles of the Estonian Information Policy in 1998. This document serves as a basis for making public policy decisions concerning the development of the information society and also includes an action plan. The Information Policy Action Plan in its turn is the basis for all government agencies to make specific proposals to the government: proposals with schedules, sources of finances, and responsibilities for the implementation of information policy programmes every year. For example, Principles of the Estonian Information Policy for 2004–2006 also include the development of e-environments in education, support for web based education programmes and the increase in computer literacy of the population. Emphasis is placed on educating a broad section of the population in order to ensure their success in the information society and to give all members of society the opportunity to use IT solutions in their everyday life by providing access to the Internet via public Internet sites (eInvolvement) (www.vm.ee).

Many ICT target programmes and initiatives have influenced the general ICT awareness, attitudes and have had an impact on building up ICT infrastructure and getting people to use it. For example, an Internet portal, the Estonian State Web Centre, was opened in 1998 containing links to all government institutions' web-sites and everybody has access to almost all official documents there; in February 2000, the Estonian Parliament approved a proposal to guarantee Internet access to each of its citizens (eCitizen), just like any other constitutional right; in August 2000 the government of Estonia, as a world pioneer, changed its cabinet meetings to paperless sessions using a web-based document system – ministers make comments and suggestions, and vote entirely online at computer terminals; in summer 2001 the Government opened the web page Täna Otsustan Mina (I Decide Today), and ministries upload all their draft bills and amendments there, which allow people to review and make comments and proposals to the legislative process, as well as propose amendments to the existing legislation. The Public Information Act, Digital Signatures Act, Telecommunications Act, Archives Act, Databases Act, Personal Data Protection Act and Population Register Act are regulating and supporting the ICT field (www.hm.ee)

In the field of education and training the following initiatives have had a significant impact. In 1996 the Estonian Ministry of Education launched the national Tiger Leap Programme (www.tiigrihype.ee) for the computerisation of Estonian schools. The Tiger Leap programme was financed by the non-profit organisation Tiger Leap Foundation which was funded mainly by the Estonian state (98%). The main activities of the Tiger Leap programme were: supplying computers and Internet connections to schools, educating teachers on the use of IT in teaching, encouraging the use of IT in schools, devising and distributing educational software. As a result of this programme, all Estonian schools are connected to the Internet (even the three-student schoolhouse on isolated Ruhnu Island with 40 inhabitants). It is believed that this initiative started the ICT revolution in education if not in society as a whole (Krull, 2003).

At the beginning of 2002, the government launched a new programme 'Tiger University' (2002–2004) (http://www.eitsa.ee/tiigriylikool/index.asp) that aimed to promote IT education and invest in the development of IT infrastructure within universities. Tiger University is coordinated by the Estonian Information Technology Foundation (EITF) which was launched by the Estonian Government, the University of Tartu, Tallinn Technical University, AS Eesti Telekom and the Association of Estonian Computer Companies. An important step in providing higher IT education was the establishment of the Information Technology College in Tallinn in 2000 by EITF. An extension programme called 'Tiger University +' for the years 2005-2008 continues to support ICT activities within universities.

In 2001 the public-private partnership started to develop when the Government and a number of private companies announced a project "Look@World" (www.vaatamaailma.ee) that aimed to increase the percentage of Internet users in Estonia to over 90%. The private companies announced that they were initially willing to invest a sum equal to the government's yearly IT budget. In April 2002, the Look@World Foundation started an ambitious training project and one of the first activities undertaken aimed to give basic Internet education to 100,000 people (approx. 7% of the total population, mainly adults) throughout Estonia free of charge (Virkus, 2004a).

Thus, the Internet has become an essential communication medium for schools, academic and research institutions, businesses as well as citizens in Estonia. The number of Internet users has increased rapidly in the last ten years. 52% of the population of Estonia use the Internet, 30% of Estonian families have PCs at home, 75% of home PCs are connected to the Internet, 89% of the population are clients of mobile telephone companies, 68% of the population use Internet banking. In early 2004 there were more than 51,738 ADSL (Asynchronous Digital Subscriber Line) Internet connections, i.e. 3.8 lines per 100 people. Access to various information and bank services via mobile phones using Wireless Application Protocol (WAP) is popular; for example, the Hansapank alone has 31,000 WAP-clients (e-Track Survey, TNS EMOR, spring 2004). People throughout the country can access the Internet from about 700 Public Internet Access Points (PIAP). Most of the PIAPs are located in libraries (288) and other municipal buildings across the country. PIAPs should guarantee everyone's free access to electronic information and training where necessary. More than 380 public locations (city squares, hotels, pubs, airports etc.) are currently covered with high-speed wireless Internet access (www.wifi.ee).

The high level Internet use in Estonia is largely correlated to the early adoption of the Internet in the research and HE sector and the existence of a developed telecommunications network. One of the reasons for this rapid development is that Estonia adopted a proactive liberalisation and privatisation strategy where the telecommunications market has been completely liberalised since January 2001, when the special monopoly rights of the Estonian Telephone Company ended. The rapid development of the national telecommunication network (Internet, ISDN, Wireless Internet, etc.) opens the possibility for making use of the most recent ICT in the field of e-learning.

Although there is a lack of explicit state policy and strategy in the field of e-learning, it has been recognized as an important educational tool. The Law on Institutions of Higher Education makes no distinction between ODL, ICT-based education and traditional teaching formats. It should be also noted that there are a limited number of international laws and agreements at all with direct bearing on ODL or e-learning. However, with the advent of globalization and the rapid development of ICT, governments are now recognising the need for international regulations on quality assurance, foreign education providers, consumer protection, copyrights and intellectual property rights (UNESCO, 2003).

However, since the middle of 1990s, attempts have been made to agree upon the conceptual bases of the development of the educational system, and to elaborate a unified educational strategy (Ministry of Education and Research, 2004). Discussions have been based on a number of conceptual documents: Studying Estonia, a document compiled by the Academic Council of the President of Estonia; Estonian Education Strategy prepared by the Ministry of Education and Research; Estonian Educational Scenarios 2015, compiled by a third sector organisation – Educational Forum. However, the development of a coherent strategy of education is still in process. In the field of HE, the Minister of Education and Research called for an expert group in February 2004 in order to analyse the organization and issues within HE. A draft document has been compiled and discussed, and the expert group made recommendations to the Ministry of Education and Research to develop a coherent strategy for HE before the deadline in June 2005. A small group of voluntary experts within Estonian e-University analysed this draft document as well and made a number of suggestions with regard to e-learning.

Several extensive reforms have taken place, however, and have changed the HE environment significantly. Main changes during the last decade include: installing democratic principles and processes throughout the education system; establishing a new legal framework providing for institutions of HE university autonomy, a new research infrastructure, the framework for quality assurance; eliminating previous restrictions in content and pedagogy; carrying out dramatic shifts in academic programmes in response to changing student demand and the economic reality of the need to generate additional revenue from fee-paying students to offset limitations in state funding; moving from the narrow Soviet degree structure to an award structure that is not only more flexible but also consistent with Western models and increasing expectations with regard to common structures across Europe and the world; and integrating research into the universities (OECD, 2001).

4 Current developments and the Estonian e-University initiative

Estonian universities have started to realise that e-learning is very important within the strategy of the university to give adults lifelong learning opportunities, so they have started to demonstrate more and more interest in ICT and their application to teaching, learning, and administration. Changes in the educational landscape and in the labour market as well as European and global trends have influenced the development of e-learning in recent years.

The most relevant tendency is the continuous growth in the number of HE students. The number of students in HE increased from 25,064 in 1993/94 to 65,659 in 2003/04 in Estonia. However, this tendency is common in all Central and Eastern European countries. There are several reasons for this rapid growth: the emerging private sector of HE and its dynamic expansion; law regulations allowing public universities to decide how many students they enrol and, at the same time, allowing them to charge some of the students with tuition fees in order to cope with serious limitations in state funding, open new programmes and provide more interesting content and flexible educational services for adult students (Jzwiak, 2002).

There have been changes in student profile similar to other countries as well. The student body is more heterogeneous, diverse in age, demands, learning needs, motives and expectations. The number of adult students has increased and there are more students with a job. There is a tendency for new occupations to emerge and current jobs are changing rapidly. Changes in society and in the labour market imply that people have to possess broad foundation skills that must be regularly updated and complemented with specific skills through training and lifelong learning process. However, matching the output of the education system with the manpower needs of the economy is considered to be a serious problem in Estonia (Ministry of Education and Research, 2004). All this creates a need for more flexible education and alternative modes of delivery.

However, Estonian HE environment is quite fragmented and competition is very high. Higher education institutions have to be innovative, flexible and provide high quality education to attract more students. While in 1990 there were 6 public universities in Estonia, since April 2004 there are 6 public and 6 private universities, 7 public and 18 private applied HEIs, 9 public and 1 private higher vocational education institution. 47 HEIs for a state with 1,347,000 inhabitants (January 2005) is quite a large number.

Recent trends and developments in the HE sphere can be characterised by the strengthening of ties with the European HE space, and the adoption of a system which allows for an easy comparison of degrees. In June 2001, the Government approved the HE reform proposal in accordance with the Bologna process. According to the proposal, Estonia was to adopt a two-cycle HE system corresponding to the Anglo-Saxon Bachelor and Master degree system. Following the 2002 Amendment to the Law on University and other Binding Laws, students were to be admitted only to the reformed study programmes from the academic year 2002/2003 (Ministry of Education and Research, 2004).

It is generally agreed that the previous project-based and bottom-up initiatives led to the establishment of the Estonian e-University consortium in 2002. It is believed that the Phare Multi-country Programme in DE (1994–1999) and Tempus project Development of an Open University Infrastructure in Estonia (1998–2001) have had a major impact on the establishment of the Estonian e-University consortium.

The Phare Multi-Country DE Programme increased awareness of methodology and technology of DE and developed some infrastructure for DE. The Tempus project contributed to the development and implementation of an open university model and infrastructure, and aimed to establish Library and Learning Support Centres with modern ICT facilities in TU, TTU and TPU. It was the first project that supported cooperation in the field of ODL between the three largest Estonian public universities as partners and involved the know-how of many high level European DE experts. Thus, different collaboration models were analysed and discussed; some people favoured initiatives developed in Nordic countries, especially in Finland and Sweden; others favoured examples from the United Kingdom and Asia. However, the situation in Estonia during the duration of the project was highly competitive and not very supportive for fruitful cooperation (see more, Virkus, 2001).

However, a necessity for more purposeful collaboration and coordination of activities between universities has been evident for many years. There have been many fragmented and isolated projects, good practices were not always shared, and there was a lack of information about e-learning provisions within universities. In 2002 conditions were favourable for the Estonian e-University initiative. ICT-based approaches to teaching and learning started to spread more widely, the number of students in HE increased tremendously, changes in economic structures posed new demands for re-schooling and re-current education, there were significant regional differences,[2] and changes in the country's technological development and in people's IT awareness made it possible to reach out to more people via the Internet. However, one of the main driving forces behind the Estonian e-University initiative seemed to be financial: the need to share the costs required to obtain the learning management system WebCT (Virkus, 2004a).

In summer 2002, the Rectors' Council approved the general idea of an e-University consortium and the project got basic financial support from the Tiger University programme. In autumn 2002, the Minister of Education and Research called for a working group in order to define the activities and financing principles of the e-University. The Estonian e-University was officially founded in February 2003. The rectors of four public universities (Tartu University, Tallinn Technical University, Tallinn Pedagogical University, and Estonian University of Agriculture), two private higher education institutions (Estonian Business School, Estonian Information Technology College), the Minister of Education and Research, and the Chair of the Board of the Estonian Information Technology Foundation (EITF) signed the 'Protocol of Good Will'. Since the Estonian e-University is not offi-

2 Development in Estonia in the last decade has been characterized by the rapid growth of regional differences, whereas development in Tallinn and northern Estonia has been markedly faster than in the other regions.

cially a legal entity, its regulations are rather expressions of good will than official documents (Eesti e-Ülikool, 2003).

Thus, the Estonian e-University is a consortium type of cooperation body between Estonian universities designed to implement e-learning in HE. The Estonian e-University is not an independent university, and does not award degrees. It is based on the existing universities, their online courses and programmes. It currently runs as a project within the EITF. However, the aim is to establish it as an independent inter-university organization over coming years. At the moment the financing comes from the Tiger University programme and from membership fees (Eesti e-Ülikool, 2003).

The main objectives of the Estonian e-University are quite similar to other e-university initiatives in other countries, for example in Finland – to promote quality of HE and lifelong learning, to provide wider, more flexible and equal access to HE and better learning opportunities for students; to provide better access to information; to use more reasonably the limited financial and intellectual resources; to support regional development; to open the university to new target groups and to provide better chances for national and international cooperation. The strategic plan of the Estonian e-University brings out four strategic aims that should help them to achieve the vision established in the development plan for the year 2007: cooperation between universities; equal possibilities in acquiring quality HE; innovation and development of studies; and international cooperation (Eesti e-Ülikool, 2003).

The Estonian e-university focuses on both on-campus as well as off-campus students. As stated before there are 65,659 students in Estonia and approximately 40,000 of them are studying at the member universities of the e-University. However, one of the main objectives is to make high quality HE via e-learning more accessible to a wider target group and provide equal opportunities for working adults, disadvantaged people, learners in remote areas and Estonians abroad (Valk et al., 2004).

Participation in EU projects helps to realise the aims and objectives of the e-University. Current projects include "Creating network-based e-university model for the small countries in the context of e-learning in Europe" (2003–2005) in the framework of EU Socrates Minerva programme, the project "Regionally Accessible Quality Higher Education via e-learning" (2004–2008) in the framework of European Social Funds and participation in e-learning Programme coordinated by EADTU "E-xcellence – Creating a standard of excellence for e-learning"(2005–2006).

The main activities of the Estonian e-University include providing support for e-learning course development, infrastructure development, cooperation between universities, staff training and promotion activities. A number of training of trainers courses have been arranged on basic, intermediate and expert levels. Regional e-learning support centres at 7 colleges of HE institutions have been established and annual conferences and seminars are becoming a tradition to review progress and problems (www.e-uni.ee).

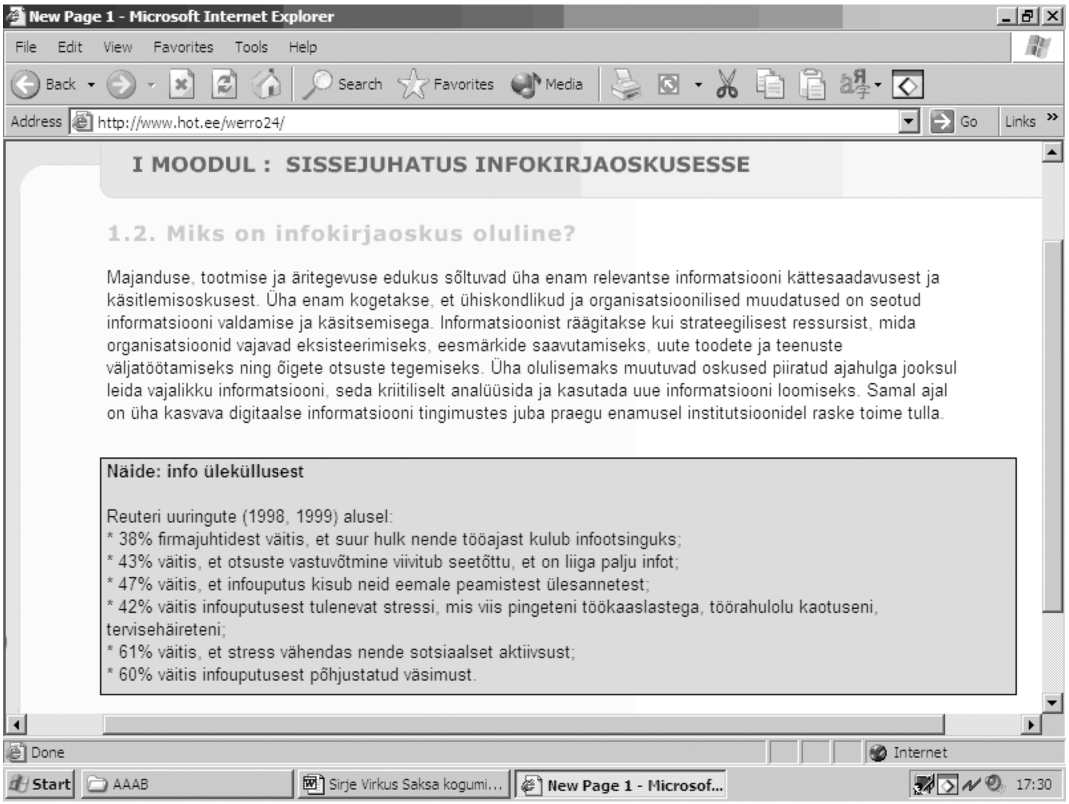
The Estonian e-University provides its member universities with an opportunity to use two learning management systems: WebCT and IVA. IVA has been developed at the Educational Technology Centre of Tallinn University. However, the working group within the Estonian e-University have tested several other LMSs like Fronter, Luvit, Edutizer and IBM Lotus LearningSpace.

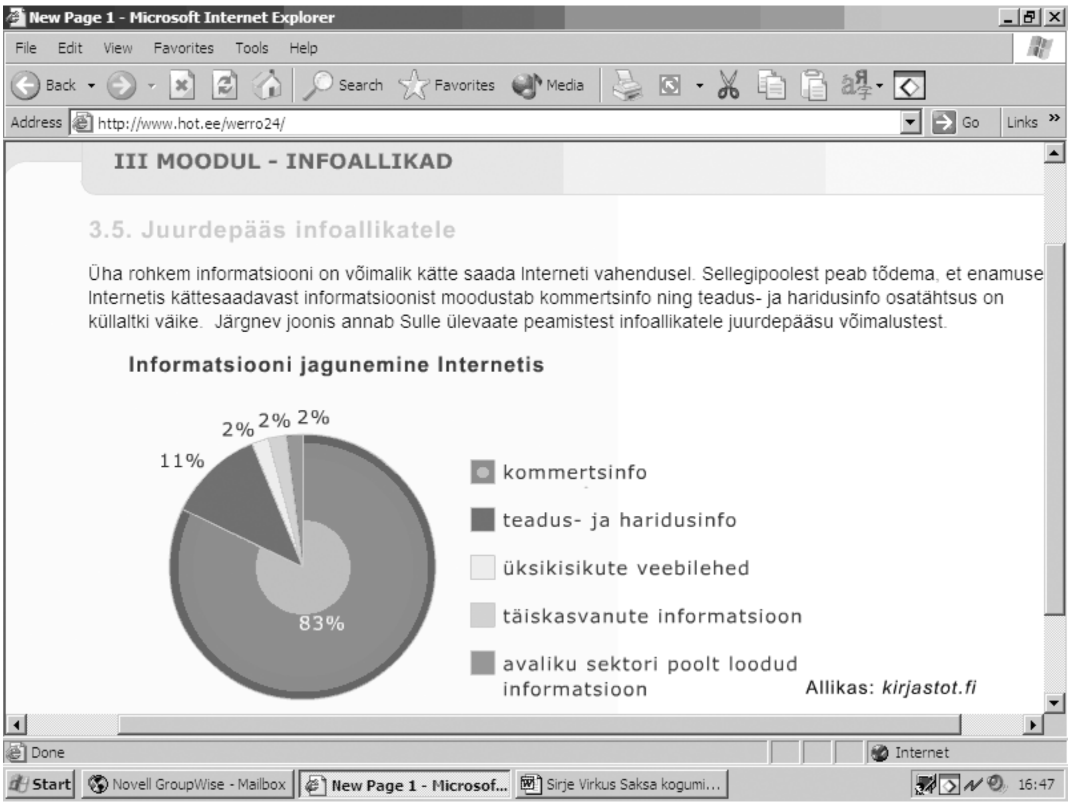
A preliminary course database automatically lists all courses of member universities that have been developed in an e-learning environment. These include both full e-courses as well as courses that use only some e-learning elements. In 2004 there were 327 e-courses on the e-University database and 9,750 people participated in different e-courses, most of whom were university students. With the exception of a few courses that are given in English, all courses are in Estonian. E-courses form approximately 5% of all the courses in Estonian HE institutions (Ruul, 2004). However, there is no exact data about all e-learning provisions.

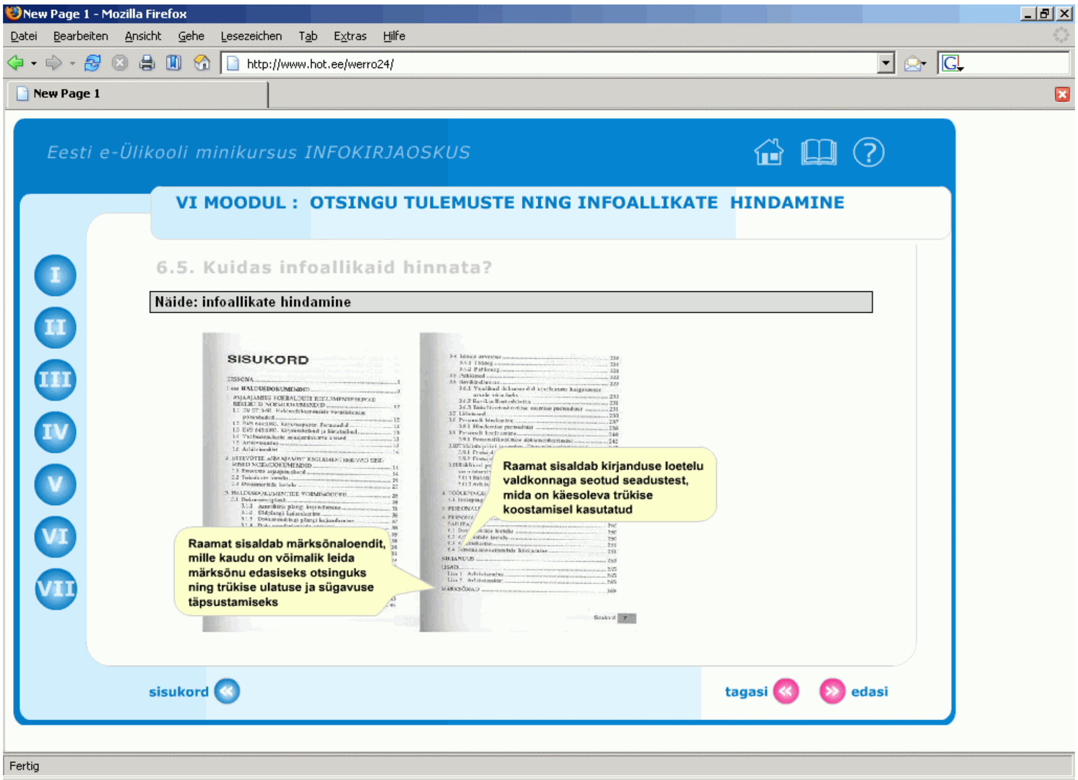
Table 1. Number of e-courses and students in higher education institutions

HEIs	E-courses in 2002	E-courses in 2004	Students in 2002	Students in 2004
IT College	30	10	200	300
Estonian University of Agriculture	2	8	20	200
Estonian Business School	48	28	700	550
Tallinn Technical University	0	38	0	400
Tallinn University	10	93	200	2500
Tartu University	150	150	2500	5800
TOTAL	**238**	**327**	**3400**	**9750**

One of the objectives of the e-University is to increase the number of online courses. For this purpose, e-course contents are held annually since 2003. For example, in October 2003 first four demo e-courses were developed and made freely available for all on the e-University homepage: Basics of philosophy (Tallinn Technical University), Usage of DE technology (Tartu University), How to avoid a danger of fire (Tartu University) and Information Literacy (Tallinn University).







Picture 2a-c: Examples of the demo course Information Literacy

However, the Estonian e-university is still in its initial stage and there is considerable need to establish its organisation, regulations, procedures, technological basis, etc. The lack of an easy-to-use, clear and systematic course database; a system for interuniversity mobility; and the lack of interest on the part of teachers to develop e-courses are currently the main problems that the e-University is facing. Limited finances, lack of interest and the tradition of interuniversity cooperation within Estonia, the lack of experience within the international HE market are also issues that e-University has to tackle in the near future. It is also expected that more attention will be turned to the development of an e-course database and a learning object database, interuniversity regulations for sharing courses and strong thematic networks (Valk et al., 2004).

It should be noted that new media have influenced the traditional model of teaching and learning in Estonian universities. The use of ICT for educational purposes has not involved only learning new IT skills, but it has also required a redefinition of the process of design of educational material and a new approach to instruction, interaction, assessment and collaboration. The application of e-learning approaches has led to new types of content development by a team with specialised expertise including a subject specialist, an educational technologist, multimedia designers, tutors, moderators, library and information professionals, etc. The model in which a single teacher was responsible for content creation, its organisation, presentation, distribution and assessment is changing. The relatively small education market in Estonia has also increased the need to develop learning materials in a modularised form, which facilitates its use for multiple purposes.

However, this transformation is still in process and the potential of e-learning is not fully used. There is still a need to develop high quality online educational content that meets the standards of educational excellence. There is a need to ensure that relevant learner support systems are in place and to ensure a cost-effective way of e-learning content delivery as well as to establish administrative and legislative frameworks to facilitate innovation and productivity. There is also a need to provide continuous and relevant training and support for educators and administrators at all levels and protect online learners and ensure their privacy. One of the many challenges facing Estonian e-learning is the question of funding, which is perhaps the most critical, because e-learning is expensive. Thus, sustainability and adequate funding are also challenges.

However, the situation in Estonian universities corresponds to the findings of the survey of Collis and Wende (2002). Mostly bottom-up experimentation with modern ICT and new pedagogical approaches is now transferring to a phase in which institution-wide use and support is beginning to be more common. In many cases the establishment of an institution-wide technological infrastructure is now in place. However, pedagogical approaches vary; some ODL courses still rely heavily on electronic text and quizzes, contain little interactivity and do not encourage reflection and discussion. It should be noted that institutions in which research in ODL is conducted are more familiar with sound and the rich pedagogical use of ODL possibilities (Sule, 2003; Virkus, 2004b).

In 2003 the project team with funding from the EC Minerva project "BOLDIC – The Baltic-Nordic Network for Exchange of Experience" (2002–2005) analysed the development of ODL in the Nordic and Baltic countries. In Estonia 12 ODL experts were interviewed. In general, all interviewed experts were rather enthusiastic about the ODL and e-learning future in Estonia. Experts believed that blended learning – a combination of e-learning and face-to-face learning – is and will be the dominant mode of education in Estonia. Regardless of whether students are on campus or online, there are many examples of ICT integration in education. Two major explanations for this have been offered. Firstly, an economical explanation: the integration of flexible online and DE elements have given some institutions an economic benefit. In this context, many institutions are also expecting more students than their facilities can accommodate and they hope to avoid their existing bricks-and-mortar capacity constraints on the incorporation of e-learning elements. Secondly, there has been a driving force from especially young students, who are used to applying the Internet as part of their learning process (Virkus, 2004a).

Experts also highlighted several problem areas concerning the successful implementation of e-learning in Estonia; for example, the main issues pointed out by experts were institutional readiness, learner readiness, faculty readiness, course readiness and policy, quality and language issues. A lack of resources for the training of trainers, for the extensive development of e-learning materials and for the improvement of ICT infrastructure including LMS as well as the lack of human resources, knowledge and skills in e-learning, adequate learner support systems and quality assurance systems were a cause for concern. The high workload and time pressure as well the lack of motivation to integrate ICT in traditional subject areas was mentioned as well. One respondent noted: 'I'm afraid that many top managers do not recognize that workload may increase with online courses and they do not really image what it means to be a 24 hours online teacher/tutor' (Virkus, 2004a).

It was also noted that Estonia has to develop an understanding about its role in the global educational market: to export its educational product or to import it. However, several experts noted that the e-learning market is not developed sufficiently in Estonia and expressed concern that cooperation in e-learning is mainly still on a personal level rather than an institutional level which is internationally oriented. Copyright and intellectual property problems, the fair use and conflict of interest in e-learning were mentioned as obstacles as well. Some respondents also mentioned issues of privacy protection and Internet security. Only a few experts pointed out that research in the field of e-learning is important and necessary (Virkus, 2004a).

Estonian e-University has compiled its vision for the year 2007. According to this vision, it is expected that the Estonian E-university will be the initiator and developer of e-learning initiatives which, in future, take into account the interests of the state, universities and students. Innovative and effective technological and pedagogical solutions will be developed and inculcated in cooperation with HE institutions in order to enhance the learning process. Estonian e-University will be a gateway for both Estonian and foreign students into Estonian e-HE and a considerable international partner for implementing e-learning initiatives in Europe. The use of pedagogically as well as technologically calculated information and communication technology will become an everyday part of scientific, teaching and learning processes. HE institutions will closely cooperate with one another in developing curricula and enhancing learning possibilities for students (Valk et al., 2004).

Let's hope that this vision will become true and that developments and trends in Europe and in the world will influence and contribute to these developments.

5 Conclusions

To sum up, it can be said that conditions for the use of new media in Estonian HE have been quite favourable on account of: government information society and ICT policy and programmes and their impact on the building up of ICT infrastructure; public and private investment in IT infrastructure; the geographical proximity to the major economies of Scandinavia and to their innovative e-learning models; the innovative people to take the initiative, develop project proposals and develop services and content.

According to the traditional evolutionary approach to DE (correspondence, industrial and telematic based DE), we may say that the correspondence education was widespread in the Soviet regime and still exists to some extent in Estonia. An industrial model was never experienced – the teamwork approach and printed materials prepared specially for large groups of remote learners were never used. The third generation, a telematic based approach labelled as modern distance education, started in the early 1990s. However, within this third generation we can also identify several stages: 1) the development of the ideas, awareness and infrastructure of modern DE since the early 1990s; 2) the development of open university infrastructure, support structures and models of collaboration and ODL since the mid-1990s; and, 3) the development of Estonian e-University and e-learning initiatives at the start of the 21st century. In the first stage, the main keywords were: staff training, infrastructure and awareness raising; in the second stage, models for cooperation and collaboration, organisational structures and technological platforms; in the third stage, widening access, regional development, interuniversity collaboration, quality assurance and internationalization.

The characteristic features to all of these stages are that developments have been widely project-based, bottom-up and led by a small group of enthusiasts, mainly lecturers within departments of HE institutions. These groups of enthusiasts have been able to establish associations (EADE) and consortiums (project consortiums, e-University consortium) to realize their goals in developing e-learning. However, high level competition between universities and sometimes also between individuals have been typical as well. Yet this has been both an obstacle and a driving force. European projects have had a particular value for a small country like Estonia and the HE sector has benefited from these programmes in various ways. Usual complaints have been that such kinds of projects have not been sustainable and results disappear as projects finish. However, it should be said that different projects have complemented each other and built on knowledge and skills obtained from previous ones and thus led to new initiatives like the establishment of the Estonian e-University consortium. The Estonian e-University is using the outcomes and expertise developed in the earlier EU projects dealing with ODL and ICT in education.

All those bottom-up and project-based developments in the field of e-learning have been supported by government information society and ICT policy and, over the last two years, with financial support via the Tiger University programme as well. Most of the major ICT projects and developing e-services have been initiated in the public sector. Since 2001, the private sector had only been a moderate supporter of information society developments. However, it seems that the public-private partnership has started to develop with the founding of Look@World Foundation.

Although there is a lack of explicit state policy and strategy in the field of e-learning, it has been recognized that it is an important educational tool. The large degree of autonomy and freedom to open new programmes, to decide on the number of privately paid students in addition to those with state support, to employ academic staff and determine their salaries have influenced the development of e-learning in HE as well.

The hopes of academics have most often been connected with the improvement of access to educational opportunities, the improvement of learning process and the enhancement of quality and productivity of teaching and learning. It should be said that pioneers in e-learning have been environmental sciences, library and information science, informatics, educational sciences and business studies. However, it seems that the developments in e-learning are influenced by innovative and enthusiastic people than rather than connected with specific disciplines. However, the main actors have been university lecturers.

In general, the plans and initiatives undertaken to implement e-learning in Estonia are comparable with the initiatives taken in other countries. The Nordic countries, especially Finland and Sweden, have had an important influence on the state of e-learning in Estonia. The Estonian e-University model is also most similar to the Finnish Virtual University, which was an initiative of the universities and the Ministry of Education. Thus, many of the problems the Estonian development is facing are also similar to the problems in other European countries: for example, the high workload and time pressure, scarce financial resources and human resources and the lack of a proper motivation system.

However, proponents of e-learning are rather enthusiastic about the future of e-learning in Estonia. They believe that blended learning will be the dominant mode of education in Estonia, and that the Estonian e-University will be an important player in supporting innovation and interuniversity cooperation in e-learning in the coming years.

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European E-Learning from Supranational Perspectives

1 Introduction

When e-learning initiatives, achievements and institutional dimensions in European countries are to some extent related to national frameworks and traditions. But teaching and learning using information and communication technologies (ICT) can, unlike any previous educational concepts and settings, be regarded outcomes of just 'national' inputs. From the beginning, most of the sources, initiatives, concepts and even the actors were 'international' and, to a large extent, also 'European'. It is therefore necessary to describe, analyse and evaluate European e-learning from national and supranational perspectives in order to obtain a 'full picture' and outline a forecast that is as reliable as possible.

This contribution partially refers to the 'Policy Paper' recently published and submitted by the ODL Liaison Committee (Open Distance Learning Liaison Committee), project reports of relevant European projects (DELOS, L-Change, HECTIC, SPOT+[1]), and recent writings by the authors.

2 European e-learning policy

When the so-called "Lisbon Strategy" was set up to make Europe the most competitive and socially inclusive knowledge economy in the world by 2010, the need to include education and training as a key component of the eEurope Agenda was immediately perceived. At the same time, it was recognised that the existing education systems with their traditional structures, patterns and procedures would not be able to cope with this need. An e-learning Initiative was therefore proposed shortly afterwards.[2] The e-learning Initiative was launched by the European Commission as a strategic effort to integrate the resources of different Directorates General and activate fresh economic resources from the European Investment

1 SPOT +: ICT in European universities: trends and perspectives; a project partially funded in the framework of the SOCRATES Programme – MINERVA Action of the Directorate General for Education and Culture of the European Commission; http://www.spotplus.odl.org/

2 A definition of e-learning is given on the e-learning Europa website www.e-learning europa.info/index.php?Ing=1

Bank and European Structural Funds in line with this new priority. It was not rare to hear Heads of Government quote e-learning as one of the top priorities in the Information Society Strategy. In reaction, practically the entire education and training world started to consider e-learning as a serious opportunity, or as a serious threat. The practice of e-learning in Europe was still marginal in most EU countries, but a strong impulse came from policy initiative, especially in those countries in which national developments had not been very substantial up to the year 2000.

More than four years later, the situation appears to be very different: in sum we could say that e-learning is up in practice and down in policy discourse. In theory this could be the best possible development. However, we think it is not. E-learning has almost completely disappeared from top-level policy speeches, both as a term which people assume has lost its impact, and – more seriously – as a significant component of educational policy. In part this is due to the fact that education has lost weight on the overall policy agenda due to the increased concerns about security and the need to concentrate resources elsewhere (a significant number of EU countries have decreased the weight of educational expenditure in their gross national product (GNP) over recent years). Many encouraging developments have also taken place thanks to EU support, but those who were resisting e-learning from inside the education and training systems had the time to build their case against it, at least partly due to a strong focus on technology, low quality and simplistic promotional messages associated with the first (and second) generations of e-learning provision.

Another ambiguity has developed: on the one hand the term blended learning is used to represent the new awareness of the need to design learning systems which are able to integrate at best different learning strategies including ICT-supported learning, and on the other hand to hide a resistance to innovation that expresses itself by introducing small elements of ICT-based learning to offer the same teaching as before. The e-learning market has developed – and is still developing – at a much slower rate than foreseen some years ago: present estimates converge around an average yearly rate – in Europe – of about 30%, with strong differentiation among market segments and countries. But this reduction of expectations should not hide the fact that 30% per year is still a very substantial growth rate, and that schools, the corporate sector, universities and training services of the public administration have progressively learnt how to use ICT in learning, to integrate it and, if not completely to build quality into e-learning, at least learnt how to recognise a lack of quality. In fact, a growth of quality awareness has probably been the most influential factor of e-learning developments in recent years.

At the level of the European Union, the ambitious but somehow undefined e-learning Initiative has almost disappeared from the scene to leave ground for the "small and beautiful" e-learning Programme that privileges higher education and school twinning but has left much of lifelong learning out in the rain for a few years. The proposal for the new "integrated" European programme for lifelong learning after 2007 sees ICT (note that e-learning as a term is no longer used) as part of a "transversal programme" crossing the sectorial lines of COMENIUS, ERASMUS, LEONARDO DA VINCI and GRUNDTVIG. This generates some hope that not only schools and universities will be encouraged to use e-learning in the future, but also other parts of the learning systems.

In our view this approach, which targets society as a whole, is important because ICT-supported learning is not an objective in itself but indispensable for bringing about the socio-economical changes in which the European Union has engaged itself. And even more: this urge is not only based on internal needs. Many countries in the world prefer to look to the European Union/EU-member states as examples for their own socio-economic development and are therefore interested in our education which reflects these values. This is a mission/opportunity we should not overlook or neglect!

There is a need to highlight, to involve, and to use in a systematic way the experience, professional pedagogical and technological methods, quality, and organisational standards that have been developed and validated in professional environments. Distance/e-learning is now certainly presenting itself as a distinct, autonomous, multidimensional professional discipline and resource of coherent experience, increasingly producing and demonstrating its values, integrating theoretical aspects and system approaches with valuable practical experience, strategy issues, implementation and management solutions. At the same time, this experience forms a valuable collection of progressive visions, which serve as the basis of educational modernisation, positioning the human factor as the focal element of innovation.

3 European E-Learning in higher education

From the beginning, higher education – and especially universities – have been in the forefront pursuing research and development in the e-learning area. A great many projects and consortia have been established to participate, to contribute, to learn, and to find out how to use these new opportunities of teaching and learning using ICT. This development was in some extend reviewed and summarized at the HECTIC Workshop (Brussels, 2002).[3] There, experts from many European countries concluded that the "trends and scenarios, and the challenges and policy requirements now at stake involving the implementation of new ICTs in the teaching

3 Coimbra Group (Ed.): Report of the project „Higher Education Consultation in Technologies of Information and Communication" (HECTIC), Brussels 2002.

and learning processes and in other sectors of universities (…) will demand intensive innovative action by the universities" (Coimbra Group, 2002, p. 23). Special attention was given "to the management agendas and roles of university leaders, especially from the point of view whether university leaders have the right instruments at their disposition to address these challenges in an effective way" (ibid.). In a pre-workshop opinion poll it was stated that far less than 50% of the universities can be qualified as advanced institutional users of ICT in learning.

What should an institutional strategic process consist of? Strategic discussion, involving key persons at all levels of the institution, should lead to a set of priorities which define the institution's preferred niche in the education arena. There is a need to take care of an adequate and sufficiently state-of-the-art technological infrastructure, which might even reach out to the students' living rooms. Staff would need an enabling environment and incentives to meet the challenge. Existing expertise on pedagogy and technology for new learning should be explored and coordinated. Media and library facilities need to be provided in a coordinated resource and support structure that is accessible to the whole university community. This leads to the necessity to provide ample opportunities for staff development and staff training on all levels. In order to foster and accelerate organizational and cultural development, staff rewards and career perspectives for those staff who temporarily engage themselves largely in e-learning implementation have to be ensured so that there may be compensation for the risk of, for example, reduced research output. Some also need money for the temporary employment of young staff to assist in the curricular reform activities. Last but not least, competent leadership is needed to steer and support e-learning in European universities.

There are some key elements and lessons to be learnt regarding institutional strategy formulation in relation to e-learning (ibid. p.23). Thus an early start can foster evolution; when postponed, the whole exercise can become very complicated. It is wise to check the concrete national and EU policy priorities that exist at the start of the process and also what is happening in other comparable institutions. It is important to involve those actors in the institution who already have shown a sense of urgency, commitment and competence related to organizational development. As development usually is based on project work, scaling up from more or less incidental innovative niches in departments to the institutional level requires straightforward, coherent concerted action, based on a strong leadership. The institutional strategies at universities have to be guided by careful analysis of the expected evolution of demand for learning resulting from different options and the institution's strengths.

There is a substantial need for strategic and systematic planning and management on the university level. And this still seems to be valid for almost all university systems in Europe. Distance and e-learning is a management and organisational challenge for universities. In institutional policy terms, e-learning is generally recognised as key element in organisational changes and modernisation. In most universities, however, the organic incorporation of e-learning in education is limited by the lack of strategic commitment, the limited resources and the lack of rewards for faculty. Distance learning and e-learning are being implemented by separate, poorly empowered units, and the issue frequently remains on the periphery of institutional strategy. In the field of continuing education, universities on the educational market compete with flexible enterprises with market experience, tapping in several cases the intellectual potential of higher education. It is therefore imperative to apply market conform structures, procedures and activities which do not normally exist in harmony alongside the traditional university operation. Open and distance learning and ICTs may help to integrate the world of *academia*, with emphasis on content, scientific background, cultural context, critical thinking, morality, autonomy and freedom of teaching – and the *business world*, with the keywords of competition, investment, division of labour, team work, profit, economy, marketing, sale, management.

A further challenge has been that new and powerful actors have appeared on the scene of education and training: the companies that provide information technology and education, seek new markets for their services. As a consequence, the “technology driven development of education and training” emerged, resulting frequently less adequate solutions both in terms of content and pedagogical approach.

The integration of the ODL and use of ICT into the core education of the university needs a certain professional competence and attitude of management of the institution. Extensive training of staff is necessary in order to ensure efficiency. A systematic division of labour is required. Although basically respecting autonomy and academic freedom, “standardisation" in terms of pedagogical approach, style, information technology solutions etc., is necessary to ensure smooth and efficient operation. Appropriate financial management is also essential. To be able to manage all these functions, a certain “critical mass” is necessary, which only larger ODL organisations (e.g. open universities) are able to offer. It is not sufficient to introduce ODL and ICT into training on a low profile. Small ODL centres within the university – with institutional or project-based support – may function as methodology centres on a limited basis, but will most likely not be able to operate efficiently in the field of corporate training. (Lajos, 1998). It is worth noting that open and distance learning, particularly e-learning at universities in traditional course delivery, is *not* a real profit generating activity. We can observe that in the Central European region, the expectation and approach to these methodologies is still a financial one – in most cases, without ensuring the necessary investments for its operation, thus resulting in questionable quality solutions and delays in the consolidation of such activities at the institutions.

4 Networking and the European Union context of educational programmes

Networking has been acknowledged as an important activity under the educational programmes of the EU, and the European Commission has been dealing with the networking dimension of open, distance and e-learning proactively in their policy formulation. In the SOCRATES ERASMUS (higher education) and COMENIUS (school education) programmes at the DG Education and Culture, "thematic networks" have been established. The second phase of the EU SOCRATES programme (2000–2006) mentions, among the transnational measures, the support of European networks and networking of research and quality assurance bodies in the observation and innovation strand. In the ODL oriented Minerva programme, the activities supported include the networking of resource centres, teacher training institutions, experts. In the 6th Framework Programme in the field of research of the EU, "networks of excellence" may be formed and intensive preparation is already in progress in this field.

One of the key measures of the e-learning Action Plan (2001)[4] aimed to reinforce the European education and training networks, and the Interim Report on the implementation of e-learning (2002)[5] acknowledges in its implementation of the programme, among other things, cooperation with the European ODL Liaison Committee.[6]

European networks are increasingly recognized by the European Commission as key sources of awareness and information. The emerging EU policy initiatives in the field admit that a source of inspiration for the proposals were the reports and analyses developed by European networks with solid experience in EU programmes. In the proposal presented by the European Commission to the European Parliament for the extension of the e-learning programme for 2004–2006, the areas of intervention include the support for strategic actions by European networks and partnerships. Activities to increase awareness and information via European networks are mentioned in further action lines, including the task for "e-learning to fight the digital divide". The main line of action for European Virtual campuses says that networking virtual campuses initiatives will support the creation of networks of such institutions and render them more dynamic (eEurope 2005)[7].

4 http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0172en01.pdf
5 http://europa.eu.int/comm/education/e-learning/sec_2002_236_en.pdf
6 The European ODL Liaison Committee was founded 1998 by the most important networks in the area of 'Open Distance Learning' and e-learning in Europe (see details in this chapter).
7 eEurope 2005: An information society for all, An Action Plan to be presented in view of the Sevilla European Council, http://europa.eu.int/information_society/eeurope/news_library/documents/eeurope2005/eeurope2005_en.pdf

Within the framework of the EU SUSTAIN project, an investigation of the networking elements of the European Union Socrates ODL projects has been carried out (SUSTAIN, 1999). The main common features identified in the study include the extensive use of information and communication technology and the emphasis on the networking of institutions from different countries. At the same time, a "holistic" approach is evidently lacking. The majority of projects did not aim to build up a new and entire education or training system embedded in the education or training work of the participating institutions. In most cases the networks established for the purpose of or in the frame of a project, aimed to develop and introduce ICT based pilot courses or parts of courses as an "add-on device" to the existing education or training scheme. The integration of newly developed courses into the curriculum is not typical. The emphasis on pilot schemes, the insufficient level of integration of the results into the everyday teaching activity has come to mean that the sustainability of the projects is questionable.

A study about networked e-learning has been carried out within the framework of the EU "NetCampus – Improving ODL in a Network" project and distinguishes discipline-based, profession-based, institution-based and service-based networks. The project has surveyed benefits and obstacles of networking and elaborated scenarios for overcoming the emerging problems.

Which networks are of some relevance and influence the e-learning higher education area in Europe? To give just a very brief overview, these are:

EADTU, the European Association of Distance Teaching Universities (http://www.eadtu.nl) is a representative organisation of the European open and distance learning universities and of the national consortia of higher education institutions active in the field of distance education and e-learning. It is referred to as having played key role in the early development of ODL policy of the European Commission.

EDEN, the European Distance and e-learning Network (http://www.eden.org) aims to foster developments in distance education through the provision of a platform for cooperation and collaboration between institutions in this field throughout all the regions and nations of Europe. EDEN adheres to the concept of openness and inclusiveness, embracing formal and non-formal education and training on different levels. Besides institutional membership, in which national organisations and universities in Europe are strongly represented, the Network of Academics and Professionals (NAP) is the individual section. Traditionally, the cooperation with those countries of Central and Eastern Europe which have already joined the EU has been strategically important in EDEN, which is increasingly developing into a 'hub organisation'.

EuroPACE (http://www.europace.be) is a trans-European network of universities and their partners in education and training, i.e. private enterprises, regional and professional organisations and public authorities. Through the use of different models, EuroPACE demonstrates and develops the potential of telematics for European universities of the future, and contributes towards the realisation of the concept of lifelong learning and the creation of a Virtual University for Europe.

EUCEN, the European Universities Continuing Education Network (http://www.eucen.org) is an organisation for universities concerned with the development of Continuing Education. EUCEN is also turning, with a number of activities, towards the use of ODL in university continuing education.

GMW, Gesellschaft für Medien in der Wissenschaft (Association for Media in Science) is a rather influential organisation in German speaking countries (http://www.gmw-online.de). Its main activities range form annual conferences, workshops and hosting the – now famous – 'MEDIDA-Prix', which is awarded jointly by Austria, Germany and Switzerland every year. GMW (together with Waxmann Verlag) is also editing a book series.

ICDE, the International Council for Open and Distance Education (http://www.icde.org) is the global membership organisation of educational institutions, national and regional associations, corporations, educational authorities and agencies in the fields of open learning, distance education, and flexible, lifelong learning. In addition to its head office in Oslo, ICDE has local offices around the world, operating with regional and language-region responsibility. ICDE also benefits much from the comprehensive and inclusive approach followed.

An interesting institution with explicit focus on e-learning is *EIfEL*– the European Institute for e-learning (http://www.eife-l.org/), an association with institutional and individual membership. Strongly based in the French professional and institutional circles which has established international links as well, EIfEL challenged the market of European associations with an ambitious and offensive marketing approach and services. The mission of EIfEL is to support the continuing professional development of actors in the e-learning value chain and intends to offer a certification of professional competence in the e-learning domain to individual practitioners and a system to validate the quality of training programmes.

In the context of European ODL networks, one should mention a couple of international higher education associations like EUA (European Universities Association – former CRE) and the Coimbra Group, which shows increasing interest in ICT supported, distance learning and e-learning by initiating projects, organising related task forces or thematic groups and also by becoming involved in international projects and networking in the field.

The representatives of nine leading European ODL organisations agreed in 1998 to establish the *European ODL Liaison Committee* (http://www.odl-liaison.org), a sort of supra-network operating as a common platform and political group, to fully benefit from the European dimension potential in their activities.

With new needs and opportunities of networking in open and distance learning in Europe, over the last decade, a scenario with changing interests, portfolios and preferences emerged. International associations had to reflect on a number of challenges in the field. Catchwords that worked well for a long time have weakened, while new ones have emerged. In the meantime, open and distance learning have moved into the mainstream of education and lifelong learning due to the development of ICTs and their penetration in the field of education. Lifelong learning was also rising towards the top of the agenda, which again had implications for the positioning of ODL. This process has certainly contributed to the enhancement of innovation in education and training systems.

How did the European networks deal with the issue of the changing scenario with the emergence of e-learning in all sectors of education? Their approach in fact seems to have hardly changed recently. Possibly following a sort of value safeguarding approach, most of them continued to use the terminology of open and distance learning, with a minor shift towards a focus on technology. In a few cases, a certain loss of power and impact of networks could be observed. Interestingly, in the meantime, no really strong rival international association has emerged that seriously challenges the positions of the existing networks, which is also possibly due to the fact that the above existing associations, with some overlap, covered the spectrum of interests and occupied most of the possible positions in terms of membership and professional activities. The profile of the existing or potential member organisations may have also changed only slowly and with care, and there have not been too many new institutional players emerging to create a new front in terms of organisational manifestation and policy power. To a certain extent, the burst of the eBusiness bubble and departure from the somewhat similar e-learning hype – particularly in the inherently somewhat conservative educational environment – could have played role in the cautious shaping of profiles.

5 Higher education and E-Learning in Central and Eastern Europe (CEE)

The change of the political and economic system in the early nineties in Central and Eastern Europe has plunged the academic sphere into a state of understandable enthusiasm and expectations concerning the opening of the societies towards the European Union. European integration and cooperation, “re-joining Europe” were the frequently used keywords. The continuous and demanding mission of developing and restructuring the economy, catching up with the better developed part of Europe, further the challenge of gaining access to the EU, with all the structural, economic and compatibility requirements, has represented a permanent challenge in the CEE countries. For the economies in transition, modernisation of the economic and social system, strengthening the competitiveness and meeting the requirements of the European Union had to be managed together with the challenge of information technology.

In the first half of the 1990s, in most countries of Central and Eastern Europe, a strategic approach was applied in order to develop distance education and e-learning. A number of national and regional ODL programmes were launched, and efforts and resources mobilised. The main challenges which the human resource development sphere in CEE confronted in the early nineties were:

- *access* – particularly in higher and post-secondary education and training,
- *flexibility and diversity* – the limited ability of systems to adapt to the needs of rapidly changing economies, the job market-oriented, professional education,
- *continuing education* – the insufficient availability or out-datedness of adult education in its various forms and at various levels,
- *transfer of new knowledge and skills* – the economic, social and political changes required the transfer of relevant knowledge and skills to the population and strengthening the European dimension of education: languages, European studies, management, business administration, political sciences, advanced technologies, etc.

The importance of awareness and conceptual clarification when the new generation of distance education and e-learning development started, was not understood well enough. The difference between correspondence education (more or less well known from earlier times) and ODL as an efficient modernisation element was not properly emphasized. Thus the new professional quality represented by distance learning and e-learning at the beginning could not be exploited well enough.

In 1994, with the support of the EU PHARE programme, the European Commission launched a pilot project in distance education in the PHARE actions for regional cooperation. It is worth noting that this was one of the very few regional PHARE programmes (which mostly were implemented in national frameworks). The key objectives included ICT infrastructure investment supporting the establishment of national contact points and study centres in the beneficiary countries, and, moreover, to act as a catalyst for national policy formulation in the field of ODL and to define areas of common interest in which regional cooperation could support national policies.

It has been widely acknowledged, however, that in Central and Eastern Europe new concepts and strategic approaches to technology supported learning did help educational policy in general to enter the first phase of policies. The main supporting elements have been the emergence and strengthening of the concept of lifelong learning and the growing performance and impact of ICTs. The introduction of e-learning created challenging new opportunities for innovative teaching and, furthermore, increased its transparency. In the meantime, a degree of doubt has arisen whether and how far e-learning can be estimated to be a consolidated phenomenon in these countries, and how it is consequently possible to rely on it in order to elaborate longer term strategies. This has created an ongoing climate of discontinuity and uncertainty.

Risk factors for e-learning in Central and Eastern Europe are the persistence of the fragmentation of European education systems, the lack of openness of academic education markets and the low level of collaboration between various actors – inside the public sector and also in public-private partnerships (L-Change, 2003). In fact, we can hardly speak of an e-learning market comprising the entire Central European region, since the national markets play the leading role. As in other regions, in CEE the market is growing slowly. The maturity of the e-learning market in the region is relatively low; the purchasing power for e-learning in the CEE countries is limited. Economic power is lagging behind the EU members considerably, but as increasing gross domestic product (GDP) figures and convergence may be witnessed, market potential is going to increase. E-learning is now becoming increasingly accepted in every sector of the economy and education.

There-learning market – as in other parts of Europe – is fragmented and formed by new enterprises along with a few conventional multinational IT companies. Cooperation with local enterprises in the e-learning market of the region is given emphasis. EU-funds earmark significant programme supports to all kinds of educational institutions. Prognoses frequently overestimate the power of the free market and the speed of developments: most market-driven responses meet only short-term needs. There are only a few prospering business-wise electronic education ventures, mainly in niche fields, or else linked to special institutional constellations. The impact of public financing is therefore decisive.

Within this context and overall picture, an increasing number of courses and study programmes offered by the corporate sector are emerging as direct competitors to the university offerings. Regarding students' interests and behaviour, surveys show that students are increasingly concerned with gaining access to the global job market and they prefer to seek efficiency in learning rather than exploring the wide pedagogical opportunities of ICT. The confidence in the impact of computers and computer networks still seems to be unbroken. Thus consolidation and quality are high on the agenda: supporting the visibility of reliable, sustainable, relevant achievements and good practice which may serve as references in terms of methodology, management and technology, through international observatories[8], benchmarking systems, in conjunction with international (EU) programmes may play an important role in the future.

6 Transnational education, virtual mobility and the 'European Virtual University'

From a supranational perspective on e-learning, the concept and opportunity of 'transnational' seems to be rather obvious. ICT is by 'nature' not limited to any kind of regional or national borders. It can facilitate the import and export of study programmes, courses, content and students in the higher education sector throughout Europe – and even beyond. The phenomenon of transnational education offered by distance and e-learning is strongly present and still growing, even if it is now less dynamic than earlier predictions assumed. It is a trend that e-learning, after its realistic repositioning, will principally be used as an essential tool to improve quality and efficiency of education, via blended learning – by supplementing rather than replacing anything, and the convergence of modes of delivery is also influencing its future consolidation. However, there is not as much transnational education as previously expected. This is partly due to limitations caused by language and culture. It is partly due to the fact that most European project consortia, having been established by several universities from different European countries – or more precisely by departments, institutes and single academic staff – have not been successful in building stable institutional entities. Transnational education could involve the enrolment of foreign students at many universities in any kind of distance learning or e-learning pattern. The number of universities and students who take advantage of these opportunities has certainly been increasing. However, the most popular kind of transnational education seems to be transnational physical mobility, even if different kinds of 'e-mobility' are becoming more and more interesting.

ICT and e-learning can be enablers for transnational mobility in the 'virtual' academic world.[9] The metaphor of the 'wandering student' was already very common in medieval universities. Curricula were common; students did not belong to a single university, but they could attend courses at all existing universities. In order to learn the lessons of the best professors, they moved from one site to another, facing arduous travels on foot or riding a horse to attend a course on law at the

8 European Observatories – http://www.education-observatories.net/lchange/index.pt, http://www.education-observatories.net/delos

9 See SPOT + project (Students' Perspectives on Technology in Teaching and Learning in European Universities).

University of Bologna or a course on theology at the University of Paris. Professors, too, travelled from one university to another.

ICT nowadays fosters mobility of ideas and also allows the 'virtual displacement' of professors and students. Distance universities provide interaction between professors and students of different universities in Europe. ICT has opened up tremendous opportunities for international cooperation between different universities. Such "virtual mobility" may profoundly enrich the educational experience for both students and the university. The international dimension of ICT-based higher education programmes may apply several dimensions. The concept of a 'Virtual Learning Environment' is very useful, since it allows for simultaneous operation at several institutions, offering the real learning environment and supporting the collaboration of students who are physically located in different places. Students may be enrolled at their 'home' university which – through mutual commitments and joint development – provides virtual access to several other universities.

Another pattern can be an enrolment at several universities and the choice of individual courses from each of them. Degrees can be granted by either one of the universities or by an independent certification institution, on the basis of the number of credits collected in a 'credit bank'. Such a case would require a common 'Learning Management System' (LMS), in order to support mutual cooperation and joint learning.

The language issue is crucial to virtual mobility, as any academic institution is well rooted in its linguistic and cultural context, and obviously, going to study in different country, either physically or virtually, requires different linguistic competencies. Another crucial issue for virtual mobility is demonstrated by the concept of 'multiculturality'. From the outset of an international distance or e-learning programme it is important to understand how the learner's and teacher's culture determines the educational process. Obviously, the manners in which knowledge is transmitted, and the way in which the educational achievement is measured and graded, are substantially different from one country to another.

'Virtual Mobility' has also been one of the key issues discussed in the HECTIC-Workshop.

A clear opinion was expressed that virtual mobility has a great potential to foster the creation of a *European* Area of higher education by extending international study experience for European students. Its complementarity to physical mobility can be articulated in two directions: preparing and following up physical mobility experiences run in ERASMUS, for that group of students who have the opportunity to access physical mobility (presently around 800,000 per year) and/or offering international study experiences in virtual learning communities to potentially all European students. A fully developed virtual mobility thus could include a transnational learner's audience, a transnational teaching team and learning resources, the joint design and delivery of courses at a transnational level, the recognition of credits by all participating teaching institutions, and the respect of cultural diversity and a clear definition of language policy. A particular opportunity to develop virtual mobility was identified in existing 'Thematic Networks' within Europe. Virtual mobility, among other things, can substantially contribute towards the development of cultural literacy among European youth – which means the ability to critically relate to other cultures – while developing communication capabilities to addressing social exclusion in the 'Knowledge Society'.

Virtual mobility seems to be closely related to a concept called 'Virtual European University'. The concept of a 'Virtual European University' can be considered more as a reference idea than as a clear policy objective. What could be good reasons for some kind of a 'Virtual European University' or a 'European Virtual University'? There is a need to build and sustain visibility of what European higher education has to offer in terms of e-learning, both towards EU students and towards a non-European audience (non-EU students, possible partner institutions from other continents, etc.). Certain academic and societal norms and values contained in European courses could be an essential element of this visibility. Another argument could be made for the need to build a mechanism to support the exchange of information about ICT applications in EU universities and to facilitate the transfer of innovative practice, evaluation and collaborative benchmarking in the higher education area. For many students (and teachers, too) there is an urgent need for extension and further development of a European credit recognition system related to e-learning programmes. Last but not least, the establishment of collaborative university networks for post-degree studies at EU level are expected to fulfil a political and practical requirement for the future of European development.

7 Achievements, ambiguities, and future challenges

From the macro-level angle, it is easy to see that new concepts and additional strategic approaches of e-learning did help educational policy in general to raise attention for a couple of years. Supporting elements in this context have been the concept of lifelong learning and the growing performance and impact of ICTs. The introduction of e-learning definitely creates challenging new opportunities for creative and innovative teaching. In terms of institutional policy, e-learning generally for universities could be recognised as a key element in organisational changes and modernisation. In the meantime, we have to acknowledge that in spite of this principal recognition, the factual support in most cases still needs to be realised. In most traditional higher education institutions, the organic incorporation of e-learning into education is strongly limited by the lack of strategic commitment, limited resources and the lack of faculty rewards. Open, distance and e-learning is being implemented by separate poorly empowered units within universities, resulting in the fact that the issue remains on the periphery of institutional strategy shaping.

The typical situation at institutions is that most of them are working on a small scale (and low risk) experimental phase, and only few have invested seriously in e-learning innovation with considerable technological and pedagogical infrastructure. Still most initiatives are situated on a pilot level, without having a thorough impact in the organization as such. Most e-learning implementation experiments with web-based platforms. ‘Value added’ often means additional support for campus based students. The history of implementation of e-learning solutions proves that the resistance of academic teachers and the opposition of institutions have been underestimated. A recurrent complaint has been the missing culture of innovation for faculty which is frequently inhibited by resistance based on conservatism and the lack of interest and personal motivation for a proactive behaviour and investment of work. It is part of the overall picture that distance and e-learning delivery is still dominant at universities in postgraduate and part-time education. This at least can be observed at European universities which place more emphasis on continuing professional education and lifelong learning, offered very often in frames of part-time adult education.

It is still worth observing that real critics of digitalisation in higher education can hardly be heard – the fascination exercised by computers is still dominant. Euphoria and business-driven development orientation are only rarely counterbalanced by sober criticism. A more balanced approach, however, seems be emerging recently. Nonetheless, it has to be admitted that the confidence in the impact of computers and computer networks basically seems to be unbroken, as is the expectation that a broad culture of autonomous self-directed learning is going to come about.

Reserved and critical approaches are frequently rooted in arguments that the lack of consistent quality assessment internationally is a major hurdle. A progressive approach has been applied in this context recently by EU initiatives within frameworks of the Commission’s e-learning programme. The intention was to bring in a new dimension by supporting the acknowledgement of systematic approaches. Consistent initiatives have been introduced on the EU level by the quality and systematic observatory and benchmarking-related strategic projects like the e-learning Quality Forum, SEEQUEL and DELOS (2003)[10].

The changing appreciation of e-learning has also been summarised in the frequently quoted ‘hype curve’ shown below:

10 Quality in e-learning: SEEQUEL – Sustainable Environment for the Evaluation of Quality in e-learning (2003). http://cedefop.communityzero.com/qel

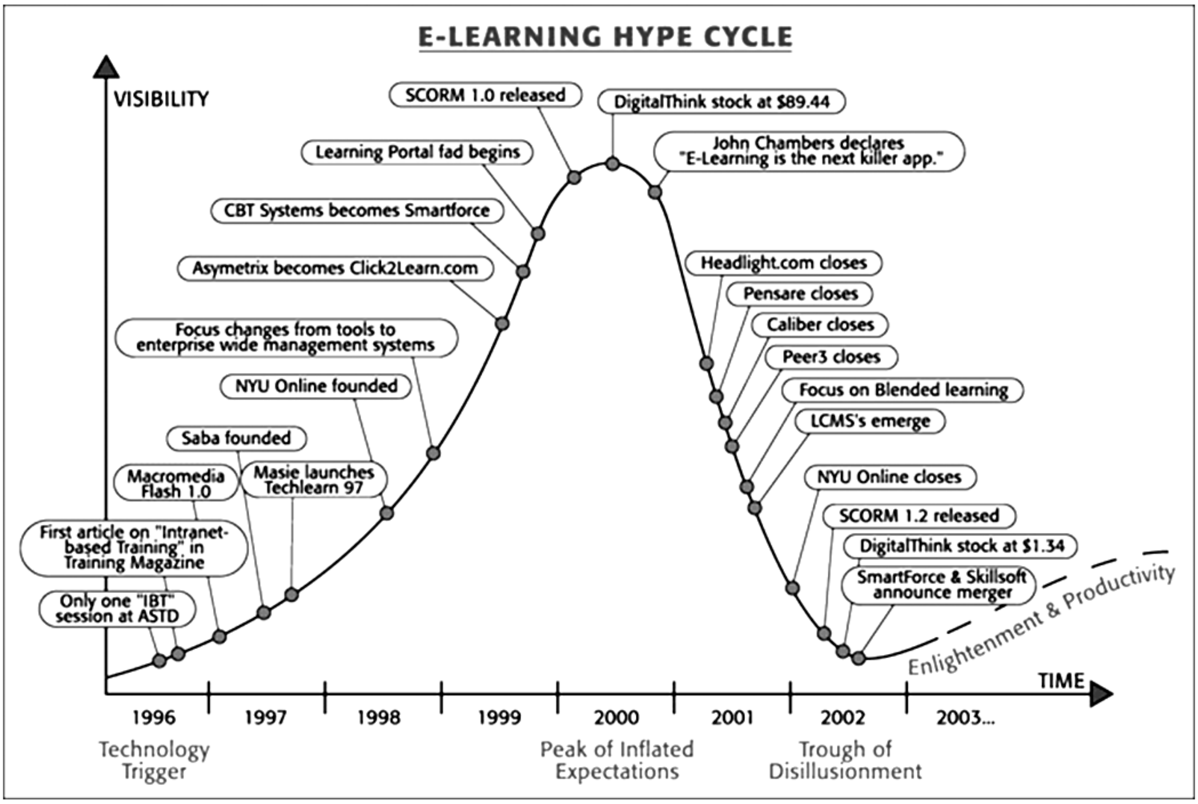

Figure 1: The e-learning hype cycle (Kruse, 2002)

The critical approach, which is not necessarily just a badly conservative one, states that e-learning has demonstrated more potential than performance. Exaggerated expectations and rhetoric have certainly been present from the beginning – sarcastic assumptions estimate that the ratio between rhetoric and achievements is 70–30%. In the meantime, while high expenditures with investments in different e-learning solutions have emerged, the convincing achievements are nevertheless limited and most experts agree that the potential has so far failed to be fulfilled – compared to the promises and expectations expressed at the beginning.

In fact, e-learning effectively works where high numbers of people are to be trained, "just-in-time", mostly in small chunks, with considerable diversity in place and time of the training, and where a certain need for control of the training process requirements emerge at the same time. Such conditions mostly can be found in large scale corporate training, where in fact most professional solutions for e-learning delivery exist. If we follow the life-cycle of e-learning that can be observed until now, it can be found that after a uniquely rapid emergence, there has been a period of quick 'professional socialisation' establishing e-learning's own terminology, tools, terms in its specific field. This was helped by intensive support and diffusion of terms and tools from the ICT sector, the intensive promotion, communication of the IT revolution, the early success story of the eBusiness, and other modernisation processes linked to the information society.

In the second phase, e-learning started to function and develop on its own, as an independent phenomenon and discipline, with increasing consolidation as a functional business and marketing category as well. The third phase may be characterised by the loosening of frameworks and the appearance of doubts and uncertainties. The mushrooming of many different interpretations and approaches has not been accompanied by real professional and academic consolidation, the decisions based on common agreement are delayed and still missing. Due to the intensive and inconsequential use of the term of e-learning – too frequently, just as a marketing catchword – the lack of reliable approaches in everyday speech is hindering professional consolidation.

One potential, which perhaps just started in the following phase, might be characterised as a sort of reconsideration for it turns towards the authentic professional environment. On the one hand, however conservative this might sound, this is probably the most open form of distance learning. This implies, together with the increasingly emphasized interpretation, which considers e-learning as an essential tool for improving efficiency and quality of learning – the understanding that e-learning is a special technology version of open and distance learning and that further development should be based on academic/research acknowledgement on basis of this environment.

The L-Change research project, entitled: "European Observatory on IST (Information Society Technologies) – Related Change in Learning Systems" was implemented in 2001–2003 with the support of the European Commission Directorate General for Information Society.[11] The research targeted 6 EU countries, the US, one further accession country and an Eastern-European country. The comprehensive investigations resulted in a series of thematic reports with relevant in-depth critical reflection of the state of the art (L-Change, 2003). Research methodology included a Delphi survey with the involvement of a relevant panel of education and IT stakeholders and experts across Europe and exhaustive interviews with representatives of the same professional circle. The key messages and findings, with particular relevance for the transnational education field, as summarised in the final report of the project, can be reviewed as follows:

Position of e-learning

e-learning survived the collapse of the 'e-bubble', and was less damaged than other 'e'-s. The short-term hope of actors is therefore on hold. Mid-term promising niche strategies are searched, facilitating the use existing elements, requiring

11 See URL in the list of references, and the report.

limited investment with no or limited risk on return-on-investment over a couple of years. Promising long term perspectives of bigger size are still in sight, but at the moment not triggering big investment.

Quality issue: consensual priority

Quality remains an utmost priority. Still strategically important and growing are consensus processes on standards, indicators, benchmarks, accreditation. In the meantime, the excessive number of uncoordinated activities develop different consensuses with convergence balanced by divergence.

European policies, market trends, professionalisation and blended learning

While progress towards a 'Eureopean area of e-learning aims' can be observed by a clear convergence of policy goals and perspectives, effective and successful policy implementation is still ahead. Differences in maturity across member states and candidate countries still exist to remarkable extent.

The explosion of the e-bubble lowered the risk-taking motivation of learning providers towards innovative solutions. 'Blending' familiar, less risky elements with innovative e-learning elements seems to be becoming a good marketing strategy. This risk-reducing strategy in the meantime opens new market opportunities for reputed traditional actors, including universities – either successfully or credibly incorporating e-learning and innovation competencies into their own offers, or for partnerships with e-learning/technology providers of good reputation.

According to a scenario elaborated on the basis of the L-Change survey findings, the reduced growth of e-learning would result in clearing out the market and may support the process of professionalisation, resulting in a switch from professionalisation of newcomers to improving and capitalising the core competencies of existing actors. Thus, a more limited number of actors remains, which increases the culture of competition and improves quality, and contributes to the consolidation of the market. The investigations also show that, according to expectations, e-learning developments will be relying on the availability of services rather than on a wide range of electronically formatted contents and on the increasing value of the human factor via increased social interaction and services – rather than minimising it.

Critical aspects

Critical aspects and risk factors for the growth of e-learning are, meanwhile, the persistence of the fragmentation of European education systems, the lack of openness of the academic education markets, and the low level of collaboration between various actors – inside the public sector and also public-private partnerships.

8 Review of the impact of EU E-Learning policies

In its recently released 'Policy Paper', the European ODL Liaison Committee recognises both strengths and weaknesses in the approach that the European institutions have adopted towards e-learning in recent years. On the positive side, there are some points to be mentioned: There was a strong mobilisation effect of national authorities, higher education, industry and several other stakeholders, which was mainly achieved when the rhetoric of e-learning was still strong. Massive networking activity at the European level was important and influential, thanks to the fact that projects containing e-learning elements were actually supported. This happened not only – of course – within the e-learning Action Plan and the neighbouring MINERVA Action of the SOCRATES Programme, but also in Leonardo da Vinci, GRUNDVIG, LINGUA, ERASMUS and IST. Even in European initiatives such as EQUAL and in the Cooperation Programmes of the European Union with other parts of the world, e-learning has gained some relevance as a result of mobilisation during the early years'. A substantial contribution was made to the evolution of the conceptualisation of e-learning away from just computers, connectivity competitiveness and cost-effectiveness, and towards contents, context, collaboration and learning communities. Thus the integration of e-learning and ICT in the processes of endogenous innovation of education and training systems was facilitated. Substantial wealth of new R&D was the result, and developments became available. This was not necessarily what politicians had been looking forward to, but it led to the formation of an increasingly professionalized community, a factor undervalued by some political commentaries. There were also signs of considerable openness of mind among the people responsible, as a recognised quality that has made new ideas and concepts acceptable and integrated within the European e-learning agenda.

Several weaknesses have to be considered, too: First there is a lack of consistency in the concept and practice of the e-learning Initiative. In fact real and effective coordination of EU intervention in this domain has been given up. This does not mean that DG Education and Culture in other programmes or other DGs are not active, but that e-learning is regarded as much less than an optimal use of resources, and replication and lack of sustainability of initiatives are becoming serious risks. The reduced amount of resources attributed to the new e-learning Programme which – also symbolically – shows the reluctance that all the decision-making bodies at the EU level have had in taking e-learning seriously. A lack of systematic consultation by decision-makers at different levels in the policy-making process of the professional environment of ODL and e-learning happened several times. As a result, the decision-makers on the European level depend too much on the institutional representations of Member Countries and top level relations with the relevant industry and academic elites. A severe constraint is the lack of real integration of the e-learning discourse into the lifelong learning agenda. The two 'movements', one originated by the eEurope strategy and the other more "endogenous" to education and training policy, were kept separate in order to avoid 'contaminations' (by the way, the same applies to the Bologna process in higher education). The unbalanced emphasis, especially during the first period, on European competitiveness rather than equity and inclusiveness, has led to some less effective and appropriate strategies. This has been corrected in a more recent phase, but produced certain reluctance in the educational community to join the promotional messages on e-learning. There was also too much focus on formal education as opposed to post-initial, non-formal and informal learning, where the use of ICT may be integrated without facing a strong institutional resistance or at least inertia. And we should not neglect a certain discontinuity of actions supported by EC funding, partially due to administrative principles that may discourage the continuity of funding to the same initiatives/actors/partnerships. This is partly based on a certain 'beauty contest' attitude in the selection of such proposals, irrespective of their relevance, that look more innovative than those which develop, consolidate or mainstream previous lines of action.

In general, a new vision of ICT for learning is needed at the level of policy-making, management and grass roots practice if a new window of opportunity is to be found for ICT to become really interesting to innovators in the learning system. This new vision should put context, community, collaboration, competencies, and motivation of learners before computer, cost-effectiveness, contents and connectivity; it should relate e-learning more closely to the lifelong learning agenda and the creation of a European Lifelong Learning Area and to the role Europe can and should play in global, especially higher, education. It should start from the assumption that, in the knowledge society, an elaborated level of ICT in learning activities cannot remain the exception, but will become normal practice. And we can probably create order in the confused "panacea concept" of "blended learning" by distinguishing between innovative and merely substitutive use of ICT in different learning contexts. It should be clear that this new vision would certainly include contents of earlier established policies that have not yet been fully implemented.

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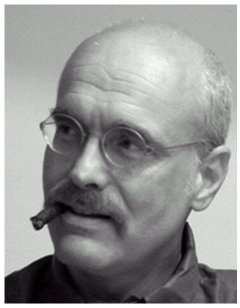

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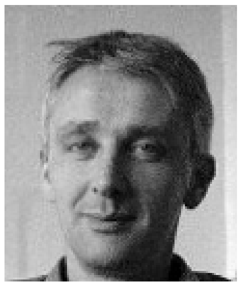

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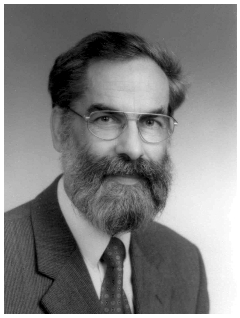

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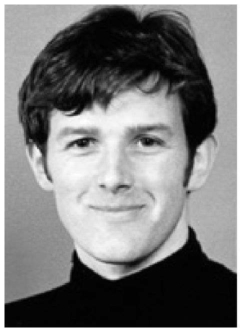

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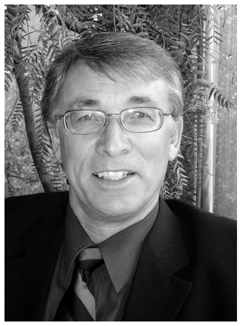

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Gesellschaft für Medien in der Wissenschaft (GMW)

Im Kontext des wissenschaftlichen Lehrens und Forschens gewinnen die so genannten Neuen Medien mehr und mehr an Bedeutung. Die GMW hat sich zur Aufgabe gemacht, diesen Prozess reflektierend, gestaltend und beratend zu begleiten. Die GMW begreift sich als Netzwerk zur interdisziplinären Kommunikation zwischen Theorie und Praxis im deutschsprachigen Raum. Anwender und Forschende aus den verschiedensten Disziplinen kommen durch die GMW miteinander in Kontakt.

Mitte der neunziger Jahre begründete die GMW zusammen mit dem Waxmann Verlag die Buchreihe „Medien in der Wissenschaft“, aus der Ihnen hier der Band 35 vorliegt. Im Fokus der Buchreihe liegen hochschulspezifische Fragestellungen zum Einsatz Neuer Medien. Für die GMW stehen dabei die gestalterischen, didaktischen und evaluativen Aspekte der Neuen Medien sowie deren strategisches Potenzial für die Hochschulentwicklung im Vordergrund des Interesses, weniger die technische Seite. Autoren und Herausgeber mit diesen Schwerpunkten sind eingeladen, die Reihe für ihre Veröffentlichungen zu nutzen. Informationen zu Aufnahmekriterien und -modalitäten sind auf der GMW-Webseite zu finden.

Jährlicher Höhepunkt der GMW-Aktivitäten ist die europäische Fachtagung im September. Im Wechsel sind deutsche, österreichische und Schweizer Veranstaltungsorte Gastgeber. Die Konferenz fördert die Entwicklung medienspezifischer Kompetenzen, unterstützt innovative Prozesse an Hochschulen und Bildungseinrichtungen, verdeutlicht das Innovationspotenzial Neuer Medien für Reformen an den Hochschulen, stellt strategische Fragen in den Blickpunkt des Interesses und bietet ein Forum, um neue Mitglieder zu gewinnen. Seit 1997 werden die Beiträge der Tagungen in der vorliegenden Buchreihe publiziert.

Eng verbunden mit der Tagung ist die jährliche Ausrichtung und Verleihung des MEDIDA-PRIX durch die GMW für herausragende mediendidaktische Konzepte und Entwicklungen. Seit dem Jahr 2000 ist es damit gelungen, unter Schirmherrschaft und mit Förderung der Bundesministerien aus Deutschland, Österreich und der Schweiz gemeinsame Kriterien für gute Praxis zu entwickeln und zu verbreiten. Der Preis hat mittlerweile in der E-Learning-Gemeinschaft große Anerkennung gefunden und setzt richtungsweisende Impulse für Projekt- und Produktentwicklungen. Die jährliche Preisverleihung lenkt die öffentliche Aufmerksamkeit auf mediendidaktische Innovationen und Entwicklungen, wie dies kaum einer anderen Auszeichnung gelingt.

Die GMW ist offen für Mitglieder aus allen Fachgruppierungen und Berufsfeldern, die Medien in der Wissenschaft erforschen, entwickeln, herstellen, nutzen und vertreiben. Für diese Zielgruppen bietet die GMW ein gemeinsames Dach, um die Interessen ihrer Mitglieder gegenüber Öffentlichkeit, Politik und Wirtschaft zu bündeln. GMW-Mitglieder profitieren von folgenden Leistungen:

- Reduzierter Beitrag bei den GMW-Tagungen
- Gratis Tagungsband unabhängig vom Besuch der Tagungen

Informieren Sie sich, fragen Sie nach und bringen Sie Ihre Anregungen und Wünsche ein. Werden Sie Mitglied in der GMW! [www.gmw-online. de]

August 2005, für den Vorstand
Prof. Dr. Ullrich Dittler