



Austrian schools in the COVID-19 pandemic era

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Abstract

Like many other school systems around the world, Austrian schools were crippled by the COVID-19 pandemic for an extended period of time. In 2020 and 2021, students in Austria spent between 40% and 60% of their school days in (partial) distance education. After explaining the main features of the Austrian school system, this paper provides a comprehensive overview of Austrian pandemic management in the school sector in 2020, 2021 and early 2022. In a further step, the most important empirical research findings on key effects of school closures and COVID-19-related changes on the learning and well-being of children and young people are compiled and summarized. Furthermore, the paper examines how teachers and parents in Austria have coped with this new situation. Finally, the main features of Austrian pandemic management in schools and a number of implications for future school practice and research are discussed.

1. Introduction

After the first corona cases on February 25, 2020, and the rapid increase in the infection numbers, the Austrian government decided to close all schools starting on March 16, 2020, to stop the virus spreading. Further school closures were to follow towards the end of 2020 and at the beginning of 2021. The school closures were accompanied by a number of additional measures (in particular, protection concepts and testing regimes at schools, gradual reopening of schools with ‘shift education’). All these measures, especially the switch to distance learning at home, brought new challenges for all actors in the school system. Depending on (financial) resources and professional as well as private situations, these challenges were easier to master for some than for others. The situation in spring 2020, which was new and challenging for all, very quickly became a field of investigation for educational researchers all over the world. For Austria, a first small-scale teacher survey appeared already at the end of

March 2020 and many more were to follow. To date, there is no large-scale assessment study that would allow drawing conclusions on educational losses and increased educational inequality due to COVID-19 in the Austrian education system. In contrast, other effects of the pandemic in the school system are well documented. In the first part, the paper starts with a detailed description of the situation of Austrian schools during the pandemic crisis. Based on this, the second part reviews various studies on the impact of the pandemic on the Austrian school system. Finally, consequences and lessons of the pandemic for the school system and for educational research are discussed.

2. Overview of the Austrian school system

Austria is a land-locked Central European country with 8.9 million inhabitants, of which about 1.7 million, or 19.8%, were born abroad (Statistik Austria, 2021a). In the school year 2019/20, 1,135,519 students were enrolled in all Austrian primary and secondary schools (including vocational secondary schools), the percentage of students whose first language was not German (i.e. the language of instruction) was 26.8%, in primary schools it was more than 31.4% (Statistik Austria, 2021b).

Compulsory education lasts nine years, usually from the age of 6 until the age of 15. Pre-school education is not considered to be part of the education system. Children start their educational career usually at the age of 6 in a 4-year primary school. The secondary school system is segmented in two streams: After four years of primary school, students are channeled according to their performance either to a 4-year 'Mittelschule' (acronym: NMS; i.e. lower 'practical' secondary school) or to an 8-year 'Allgemeinbildende Höhere Schule' (acronym: AHS; an 'academic' secondary school).

Schooling is compulsory up to the age of 15. Since the school year 2016/17, the legal guardians must ensure that their children receive further training after compulsory schooling until the age of 18. Students may attend the Upper Level of the AHS or a Medium or Upper Secondary Technical, Commercial or other Vocational School. Once students have completed nine years of compulsory education, they can also take up an apprenticeship within the dual system of vocational education combining practical training with a part-time vocational school ('Berufsschule').

There is an obligatory national *syllabus* for all schools which can be adapted to a minor degree by 'school-autonomous curricula.' Textbooks must be approved by state commissions which check for conformity with the syllabus and for educational quality. Assessment in Austrian schools is mainly teacher-led. Performance of students is continuously assessed throughout the school year by various instruments, e.g. tests, oral participation, homework, schoolwork, presentations, etc.

The grades at the end of primary school and of lower secondary school (8th year of schooling) are important for promotion to the various types of lower secondary school and of upper secondary education or vocational training respectively. Upper secondary schooling finishes after 12 or 13 years of schooling with a ‘Matura’ which is a special school leaving examination licencing for tertiary education. While these Matura examinations were set by individual schools until recently, since 2015 a new scheme is in place which includes centrally set written examinations, regionally moderated oral examinations, and a ‘research paper’ written by individual students.

For a long time, Austria was considered as a prime example of firmly state-based and bureaucratic governance of schooling (Altrichter, 2020). The central ‘federal ministry’ was responsible for overseeing and organising virtually all areas of school organisation, classroom teaching and learning as well as remuneration and retirement of educational staff. In specific matters laid down in the constitution, the federal parliament set the legal framework, while detailed legislation was implemented by provincial parliaments (Eurydice, 2018). Schools were seen as the last link in a bureaucratic chain with not much room for maneuver left for developing different educational offers or different ways of organizing their work.

This resulted in a legalistic, stable, not very dynamic system which was characterized by two main governance mechanisms (‘dual regulation’; Brüsemeister, 2004, p. 5): On the one hand, there was strong *input regulation* by the state (e.g. central legal requirements for assessment and certification, for content specification of curricula, setting of standards for teaching material and textbooks, central funding, central teacher assignment; see Fend 2001, p. 41). Input regulation was traditionally coupled with a high level of *professional self-regulation (or teacher autonomy)* in classroom teaching on the other hand (which is reflected by a strong position of teacher unions with respect to all kind of educational decisions).

The Austrian system of school governance has certainly been criticized, e.g. for its mediocre results in international student assessments, for not using the energy and ingenuity of teachers for more autonomous school development responsive to its constituency’s needs, and for its administrative inefficiency resulting from the split of responsibilities between central state and provinces etc. (e.g. Lassnigg & Vogtenhuber, 2015). Over the last 25 years, Austrian authorities – as in many European countries – have attempted to ‘modernize’ the governance of their education system (Altrichter, Brüsemeister & Heinrich, 2005). While coordination by state input regulation and by professional self-regulation of teachers was indicative of the previous state of governance, coordination by external output control, by partial autonomy of individual schools, by internal management and by competition became more important. These governance reforms culminated in the implementation of evidence-based policies after the PISA shock (Altrichter, 2020), most prominently

among them: a new system-wide approach of quality management in 2011 (Altrichter, 2021a) and a performance standard policy in 2008. The latter included: (1) the formulation of performance standards in Maths and German for 4th year students and in English, Maths and German for 8th year students. (2) Nation-wide testing of these standards which started in 2012. (3) Performance feedback of test results to actors on all levels of the school system in an aggregated form (Altrichter & Gamsjäger, 2017). In 2018, performance testing has been abolished to be replaced by an ‘improved system’ (BIFIE, 2019, p. 8) which, however, is presently in the process of being developed and implemented (IQS, 2021).

3. Stages of the pandemic and consequences for schools

3.1 Governmental school policies Austrian’s during the pandemic

On February 25, 2020, the first two COVID-19 virus infections were detected in Austria. On March 16, 2020, a nationwide lockdown was issued which was gradually alleviated after the Easter vacation. In the meantime, the country has seen two more lockdowns (November/December 2020; December 2020/January 2021). The first vaccination was given on December 27, 2020. On February 6, 2022, 72.78% of the population were fully immunized.¹ Vaccination for children of at least 12 years was approved on May 28, 2021, and for children of at least 5 years on November 25, 2021, by the European Medicines Agency (EMA) and immediately recommended by the Austrian National Vaccination Board. Vaccination opportunities were opened at different speeds in the individual federal provinces. By the beginning of February 2022, 54% of the 12- to 14-year-old students were fully immunized (BMSGPK, 2021). On-site schooling was suspended several times (see Figure 1; BMBWF GZ 2020-0.748.656²; BMBWF GZ 2020-0.834.1).

(1) From March 16 to May 3, 2020, all schools were closed and were requested to turn to distance learning: “Students are to be provided with work packages via Distance Learning³ until the time of their return to school” (BMBWF, 2020a, p. 7).

While teachers in the beginning were told to introduce no new content through distance learning but to concentrate on “repetition and consolidation of previously taught material” (BMBWF, 2020f, p. 1) because authorities had obviously envisaged the lockdown as a short intermission of ‘ordinary schooling’ – as a “bridging phase” (ibid.), new ‘guidelines for distance learning’ were issued by the ministry at the end of March 2020. Again, teaching of new content was in the focus of the circular: teachers were allowed to teach new content, if only they took care to avoid student overload. Additionally, tests and performance assessments were ruled out “until further notice. The work performed during the bridging phase will be included in the semester or annual assessment” (ibid.). The circular also included checklists for

school leaders, class teachers, teachers, and parents which drew these actors' attention to some of the critical issues experienced during the first weeks of the lockdown, e.g. upholding communication with students and parents and special attention to communication breakdown, student work overload through lack of coordination between teachers, feedback for student work, structuring the student's day at home (BMBWF, 2020f).

(2) The re-opening followed a stepwise 'activation plan for the school system' (BMBWF, 2020a): From May 4, 2020, schools were reopened for older students "who need to obtain school-leaving qualifications" (BMBWF, 2020c) in academic secondary schools ('Matura') or in vocational education. From May 18, 2020, schools opened for all primary and lower secondary students (6–14 years), while two weeks later (June 3) face-to-face teaching resumed for all other upper secondary students. The various ministry communications (BMBWF, 2020a, 2020b, 2020e) of this 'activation plan' emphasized three major ideas:

Protection and hygiene:

- Students were to be "taught in shifts to aid social distancing" (BMBWF, 2020c): To increase physical distances in classrooms a system of *shift instruction* was introduced until the end of the school year (July 3 or 10, 2020), i.e. 2–3 days of face-to-face instruction per week for half of each class, while the other half takes part in distance education: halfway through the week, the two half-groups switch roles.
- Teaching in sports and music was suspended due to infection risks (BMBWF, 2020a).
- A special 'hygiene manual' was issued by the ministry which among others included (BMBWF, 2020d) specifications for distances in classrooms and school premises, for regular ventilation, room cleaning and disinfection, exact regulations for hygiene during examinations, hygiene measures for buffet operators/caterers and school kitchens. Facemasks had to be worn by all persons in the school premises, however, not during classroom instruction. The manual also included a set of ready-made information posters to be displayed on the school premises.

Reduction/moderation of performance requirements: In a letter to parents, school leaders and teachers the Minister issued "curriculum: less is more" as a motto for the remaining learning period until summer and admonished teachers "to use discretion when assessing performance" (BMBWF, 2020c).

- All afternoon classes were cancelled. Free periods (resulting from suspended lessons in sports and music) "should be used to repeat and reinforce content in other subjects or to complete assignments" (BMBWF, 2020a, p. 7).

- No additional formal tests were to be scheduled in the classes. “Achievements made in the course of distance learning and the now following face-to-face lessons are included in the overall assessment. Students who have worked continuously should also have their participation rewarded” (BMBWF, 2020a, p. 7).
- Class repetitions in primary schools were suspended at all. Promotion in secondary schools with negative grades were made easier.

Exceptions for specific groups (BMBWF, 2020c): The circular formulated exemptions for risk groups of students and teachers. Students who felt that they were mentally not in the state of attending school were given an exemption, however, had to undergo an examination at the end of the school year.

In a letter to parents the Education Minister compared the reopening of schools with “a balancing act. It is the result of weighing the protection of health against our duty to guarantee educational and career opportunities for our children and young people in the medium and long term” (BMBWF, 2020c).

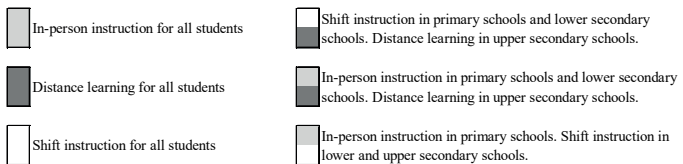
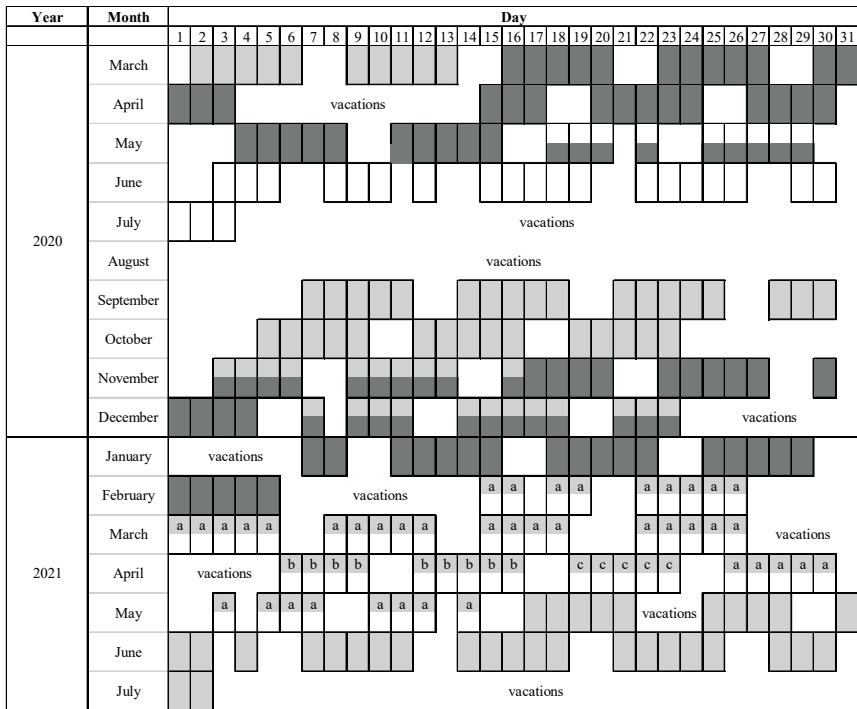
(3) A second nation-wide school closure took place from November 3 to December 4, 2020 (primary schools and lower secondary schools) and November 14 to December 4, 2020 (upper secondary schools). When schooling resumed after the closure, primary classes were still in shifts until the start of the Christmas break.

(4) Immediately after the Christmas vacations (January 7, 2021), a third period of school closure started which lasted until the semester break (February 1 or 8, 2021, depending on the region). Due to regional infection peaks, in some provinces – and in a few cases: communities – schools were closed or shifted to half-class instruction also later on, e.g. schools closed in Vienna and the east region from April 6, 2021, however with the exception of the 4th grade in primary and lower secondary schools. As of April 26, 2021, the entire country switched back to face-to-face instruction, which was maintained until the end of the semester.

On average, the school closures between March 2020 and January 2021 resulted in a loss of about 40% of regular school days in primary and lower secondary schools, and of approximately 60% on the upper secondary level (Figure 1). Primary school students spent about 12.5 weeks less in school than originally planned. During the school year, the distance learning periods ranged from 8.5 weeks (majority of provinces) to 11.5 weeks (Vienna and Lower Austria).

According to the OECD Special Survey (OECD, 2021), Austrian students missed in 2020 significantly more instruction days (52 fully closed and 37 partially closed days in primary and secondary education) than students in Germany (most typical: 25 fully closed and 65 partially closed) or Switzerland (34 fully closed). However, in the first half of 2021, the number of days schools were fully and partially closed was larger in Germany than in Austria.

Figure 1: Periods of school closure in Austria 2020 and 2021 (source: the authors)



- a all federal states
- b Distance learning in Vienna, Lower Austria, and Burgenland
- c Distance learning in Vienna and Lower Austria, shift instruction in Burgenland

(5) On August 4, 2021, a ‘4-point plan’ was published by the ministry to prepare for the school year 2021/22 including the following measures (BMBWF, 2021a):

- *An early warning system for schools and preschool institutions:* Through wastewater analyses (possible for 3,062 school sites catering for about 75% of students) the virus was to be detected seven days before the infections become detectable by other means. In the event of an increased risk situation, schools and

preschool institutions were to be warned at an early stage and can react regionally (tests, masks) before the infections spread (BMBWF, 2021a).

- *Regular PCR and antigen testing at all schools*: Testing three times a week was a compulsory requirement for school attendance during the first three school weeks. One of these tests per week had to be a PCR test.
- *Vaccination offers at school through vaccination buses*: For optional low-threshold vaccination of students from age of 12 vaccination buses were to be ready at school locations.
- *Efficient room air cleaners in schools*: Through €10 million support package the education ministry announced to help school owners to purchase air purification equipment where air exchange via windows is not possible.

On the one hand, this tight testing regime was successful as a significant number of infected cases were detected. On the other hand, the aspired smooth start of the school year was disrupted more severely than expected. To take the example of the capital city of Vienna: After one week of schooling 603 classes, i.e. about 5% of all classes, in 522 (of the 720) schools had to be closed because of infection cases and all (approximately 12,000) students of these classes were sent into quarantine.⁴ The education minister reacted by demanding to reduce the quarantine time from 14 days to 5 days and by limiting K1 quarantine to the immediate seat neighbors of the infected person.⁵

Although the term ‘school closure’ was commonly used, schools were not fully closed but had to offer optional *on-site care for students*. Ministerial regulations stipulated for all three lockdowns that students whose home supervision could not be ensured (e.g. because their families could not remain at home during lockdowns), who needed educational support or who did not have an adequate workplace or access to IT devices could opt to be supervised at school. Hence, instructional time for individual students varied not only between school types, but also *within* schools. A representative parent survey indicates that this care option was well used by parents in the third lockdown. About one-third of the 3,450 parents surveyed reported that their youngest school-age child was cared for at school for more than three hours per day (Helm & Postlbauer, 2021). In addition, one in four families used childcare options during the school closures in early 2021. However, childcare opportunities were much more limited during the first lockdown.

According to TALIS 2018 (OECD, 2019, p. 30), Austrian teachers were clearly below OECD average-31 with respect to digital skills (use of ICT in formal education or professional development, feeling well-prepared for ICT use in teaching, having students frequently using ICT). However, they also did not report a particularly high need for professional development in this field and their principals did not see an

inadequacy of the digital equipment in schools. In a school leader survey during the pandemic, Jesacher-Rößler and Klein (2020) found that professional development with respect to distance education was left often to individual teachers, while there were only few school-wide training efforts. In June 2020 an *eight-point improvement plan 'Digital School'* was launched by the education minister which promised development by 2024 in the following areas and assigned 250 million Euro for this purpose (BMBWF, 2021b, 2021e). The program was to build up and upgrade the *schools' basic IT infrastructure*, bundle all applications for learning and administration on a *uniform platform 'Digital School'*, provide professional development for teachers about blended and distance learning through a *Distance-Learning-MOOC* and issue *digital devices to students and teachers* in order “to create the pedagogical and technical conditions for IT-supported teaching and to give students equal access to digital education” (BMBWF, 2021b).

Amid the debate of educational losses of disadvantaged students, a *summer school program* was launched by the education ministry in the summer vacation time of 2020 (and repeated in 2021). Proclaimed as “a milestone in educational policy” by the ministry, the summer school aimed to fulfil “the social mandate of supporting students who need to catch up, enabling them to prepare well for the start of school and raising their level of achievement” (BMBWF, 2021c). The two-week program offered support for students in German, mathematics, and primary natural and social studies, and in particular, “the consolidation of German as a language of instruction in order to counteract impending educational disadvantages due to different family conditions during the school closures as a result of the COVID-19 pandemic and to enable good preparation for teaching in the coming school year.” (BMBWF, 2021d) Teaching took place four hours a day and was done by student teachers and teacher volunteers. Participation was voluntary, and students with a first language other than German, students with learning deficits, and students at the transition to the 5th or 9th grade were primarily targeted. The program required remarkably few central resources, as student teachers were rewarded by curriculum credits for their university studies, their training and supervision was organized by universities and universities of teacher education out of their resources, and venues were provided by the school maintaining bodies. In 2020, about 24,000 students (i.e. 57% of the target group) have participated in this measure according to the ministry (Lassnigg, 2020a, pp. 50 f.).

While summer schools were met with positive resonance in the public, researchers have pointed to the fact that there is no systematic evaluation of the program⁶ (ibid., p. 10) and that a 2-week (40 hours) support program implemented by not fully qualified teachers (Herzog-Punzenberger & Kart, 2021) may not be sufficient “for long-term learning success” in language learning (Lindner & Schwab, 2021, p. 150)

and for making up for 300 hours lost instruction by school closures and partial schooling (Lassnigg, 2020a, p. 10).

3.2 Reactions

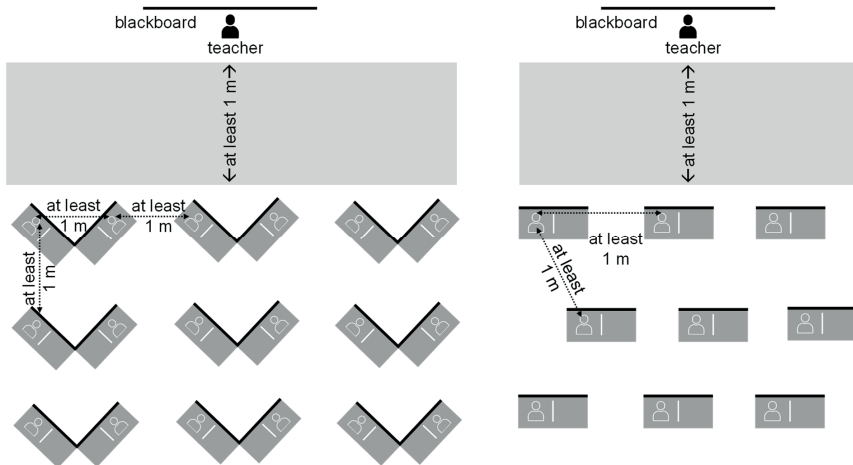
As the population accepted the first lockdowns comparatively willingly (Lassnigg, 2020a), also most school leaders (about one half to three-quarter) and teachers (about two-thirds) showed great understanding for school closures in the early surveys during the first lockdown in spring 2020 (Huber et al., 2020). A major part of the teaching force felt adequately informed by the school authorities about general aspects of school closures and distance education (for school leaders e.g. Jesacher-Rößler & Klein, 2020, p. 42), however, with respect to leaving exams, grading during distance learning and the duration of lockdowns a substantial number of school leaders and teachers complained about insufficient information (see below).

While parents of school-aged students showed ample understanding for school closures in the first lockdown (Huber et al., 2020), they did not do so after the third lockdown (Helm & Postlbauer, 2021). One third of the parents graded Austria's educational policy during the second and third lockdown as a 'fail,' and another quarter as 'just enough' in a representative survey by Helm and Postlbauer (2021). For further policy development, the following issues may be relevant:

- *Communication policy:* In a study by Schober et al. (2021), teachers said that constantly changing conditions and insufficient or short-notice information from the ministry made lesson planning challenging. In an open letter school leaders complained that rules how to handle the pandemic situation were often communicated too late for timely implementation or even communicated first to public media leaving school leaders in uncertainty about the validity of this information and about ways of implementation (VPFA, 2020; Dobler, 2021). Examples for time pressure due to dysfunctional ministerial processes were given (VPFA, 2021); no "understanding of organized time flows" of school practice was attributed to the ministry (Dobler, 2021, p. 153). "The lock-down and shift to distance education was announced on Friday and had to be implemented over the weekend. The same occurred with the openings, school and teachers had simply to comply with the directives without much info in advance" (Lassnigg, 2020a, p. 11). Additionally, some schools and regional offices seem to have reacted to the unclear situation by very restrictive interpretations of these regulations (Lassnigg, 2020b, p. 1).
- *Over-regulation:* While most school leaders were generally keen on getting reliable information, some of the recommendations seemed to be examples of impracticality and over-regulation. For example, the 'hygiene manual' explains to

school leaders how to organize breaks (obviously with a very specific layout of the school in mind): “During break: classes with odd class designations (1st grade, 3rd grade, etc.) will remain in the classroom during break, the others will leave.” (BMBWF, 2020d, p. 9) The authors of the ‘hygiene manual’ even drew graphic sketches to communicate options for one meter safety distances to school leaders (obviously with teacher-focused classrooms in mind which will be rather rare in primary schools; see Figure 2).

Figure 2: Hints for the positioning of tables (BMBWF, 2020d, p. 10)



- Dispensation from public schooling:* At the beginning of the new school year 2021/22 the number of students whose parents had asked for *dispensation from public schooling* had nearly tripled from about 2,600 in the year before to 7,515 (i.e. approx. 1% of the student population).⁷ The reasons for dispensation were not recorded,⁸ however, may include both COVID-19 deniers and parents who think that there were too few protection measures for their children (Gaigg, 2021). As a reaction the ministry announced that the regulations for dispensation will be revised: examinations for dispensation students will take place every semester (instead of every year), examination schools may no longer be freely chosen but will be allocated by the ministry, and mandatory information interviews will take place before application for dispensation.⁹

4. Research on the impact of COVID-19 on student learning and work at schools

As in many other countries, Austrian research institutions as well as market research companies (mostly commissioned by unions) reacted quickly to school closures¹⁰ with studies analyzing the new and complex situation and exploring its impact. Table 1 lists those studies which were identified by a review of 92 quantitative studies (Helm, Huber & Loisinger, 2021) and, for most recent additions, complemented by further searches in conference programs (e.g., Gesellschaft für Empirische Bildungsforschung – digiGEBF-Thementagung, DGS/ÖGS – Deutsche Gesellschaft für Soziologie/Österreichische Gesellschaft für Soziologie) and research networks (e.g., www.covid19studien.ihs.ac.at, edulead.net/schuba/cover). Selection procedures are explained in Helm, Huber and Loisinger (2021), which examined (virtually all) quantitative studies on the first lockdown in spring 2020 in Germany, Austria, and Switzerland. For the purpose of this paper, we have focused on studies on Austria, but also included research on the second and third lockdown (see Table 1).

Within the German-speaking countries the dimensions most frequently studied are ‘experience of stress,’ ‘peer- and self-assessed students’ learning success,’ ‘learning effort,’ ‘students’ motivation to learn,’ ‘students’ self-organization,’ ‘students’ self-directed learning,’ ‘technical equipment at home;’ ‘family support in distance learning,’ ‘quality aspects of distance learning,’ ‘teacher competencies,’ and ‘use of digital media in distance learning’ (Helm, Huber & Loisinger, 2021). In the following chapters we focus on a few of these dimensions that are well documented by surveys in Austrian schools.

Table 1: Research on COVID-19-related distance learning in Austria

Authors	Students	Parents	Teachers	School leaders	Total	Region	Start	End
<i>First lockdown in spring 2020</i>								
Berghammer (2020)		230			230	AUT	01.05.20	06.05.20
Bešić et al. (2020)			142		142	AUT	15.06.20	15.07.20
Feistritz et al. (2020)		316			316	Vienna	10.04.20	17.04.20
Holtgrewe et al. (2020)	343	417	88		848	AUT	01.04.20	30.06.20
Jesacher-Rößler & Klein (2020)				532	532	AUT	01.06.20	31.07.20
Schober et al. (2020a)	8,349				8,349	AUT	06.04.20	20.04.20
Schober et al. (2020c)	11,118				11,118	AUT	27.04.20	11.05.20
Schober et al. (2020b)	2,491				2,491	AUT	08.06.20	29.06.20
Schönherr & Zandonella (2020a)		2,064			2,064	AUT	07.10.20	15.10.20
Schreiner et al. (2020)	234				234	Tyrol	29.06.20	10.07.20
Schwab et al. (2020)	263	286	3,467		4,016	AUT	23.04.20	05.05.20
Seda & Ottacher (2020)			110		110	AUT	23.03.20	24.03.20
Spieß & Holzner (2020)			1,759		1,759	AUT	01.05.20	14.05.20
Steiner et al. (2020)			3,274		3,274	AUT	04.05.20	02.06.20
Tengler et al. (2020)		404	417	12	833	AUT	01.04.20	18.05.20
Trültzsch-Wijnen & Trültzsch-Wijnen (2020)	433	510			943	AUT	15.07.20	30.07.20
Vollmer et al. (2020)			2,317		2,317	Tyrol	24.04.20	08.05.20
Weber et al. (2021a, 2021b)	579	579	37		1,195	Upper Austria	01.06.20	30.06.20
<i>Second lockdown in the end of 2020</i>								
Schönherr & Zandonella (2020b)		1,662			1,662	AUT	01.12.20	10.12.20
Schwab & Lindner (2020)			1,819		1,819	AUT	15.11.20	28.11.20
S-CLEVER Konsortium (2020)				301	301	AUT	01.09.20	31.10.20
<i>Third lockdown in the beginning of 2021</i>								
Helim & Postbauer (2021)		3,450			3,450	AUT	10.02.21	28.02.21
Lenz & Helim (2021)	2,274				2,274	AUT	14.04.21	23.06.21
Schober et al. (2021)	1,382	1,353	1,027	169	3,931	AUT	06.04.21	21.05.21
Schönherr & Zandonella (2021a)		1,233			1,233	AUT	11.02.21	21.02.21
Schönherr & Zandonella (2021b)		1,035			1,035	AUT	04.05.21	17.05.21
Total	27,466	13,539	14,457	1,014	56,476			

Note: Table 1 adapts and updates information provided by Helim, Huber & Loisinger (2021). There are two further cross-country studies which included Austrian samples but did not report findings exclusively for Austria: Huber et al. (2020; 2,152 students, 2,222 parents, 1,949 teachers, 655 school leaders; start: 24.03.20, end: 06.04.20) and Scheiber et al. (2020; 3,015 parents; start: 08.06.20, end: 21.06.20).

4.1 Students' learning progress and educational inequalities

Studies based on standardized student assessments

While several studies (e.g. Depping, Lücken, Musekamp & Thonke, 2021; Schult, Mahler, Fauth & Lindner, 2021; Tomasik, Helbling & Moser, 2020) have studied learning losses and educational inequalities due to school closures using large scale student assessment data in Germany and Switzerland, only a small scale study is available for Austria so far: Using the data of 409 Austrian second graders, Weber, Helm and Kemethofer (2021a) examined whether social and ethnic disparities in the reading achievement of primary school students have widened during COVID-19-related school closures in spring 2020 and whether disparities were mediated by parental involvement in distance learning. Taking a within-subject design they first compared the effects of social and ethnic family background on reading achievement during a pre-lockdown period with the respective effects during the lockdown period of similar length. They found that low socio-economic status and non-German language use at home negatively predicted post-lockdown reading achievement even after controlling for pre-lockdown reading differences. This indicates that disparities did grow during the school closures in spring 2020. Secondly, a series of mediation models did not provide any support for the hypothesis that parental involvement explained family background effects on reading achievement during the lockdown period. While at the individual level (i.e. within classes), social inequalities do exist, no such effects were observed at the class level (i.e. between classes) (Weber, Helm & Kemethofer, 2021b). This indicates that students from socially disadvantaged families suffered more strongly from school closures than their peers from privileged families. At the same time, no additional inequality due to the composition of a school class was observed.

Studies based on ratings

Student ratings: Findings from student surveys point to a substantial group of students (about one-third to one-half) who reported negative effects of school closures on their grades and learning development (Lenz & Helm, 2021; Schreiner, Jesacher-Rößler, Roßnagl, Berger & Kraler, 2020; Trültzsch-Wijnen & Trültzsch-Wijnen, 2020). This contrasts with more optimistic findings showing that about 75% of the students surveyed experienced themselves as competent during distance learning in spring 2020 and almost 50% reported learning gains because of distance learning (Schober et al., 2020a). In addition, there is evidence that in the course of the pandemic, the proportion of students who rated their competence growth as (rather) high increased slightly to 35% during the second and third lockdown.

Parent ratings: Parents' estimation of their children's learning success during distance learning is essentially in line with the findings of student surveys. Depending on the survey, about one-third to slightly more than half of the parents were concerned that school closures would have led to learning losses for their children (Helm & Postlbauer, 2021; Huber et al., 2020; Schönherr & Zandonella, 2020a). At the same time, Schober et al. (2021) found that just over half of the parents surveyed after the third lockdown reported that their child will have no long-term disadvantages in education despite potential learning gaps.

Teacher ratings: From teachers' perspective the findings are more heterogeneous, ranging from one-quarter to two thirds of teachers who feared COVID-19-related negative effects on their students' learning success. After the first lockdown about one-third of the teachers expected that their students would not complete the year's material (Steiner, Köpping, Leitner & Pessl, 2020). After the second lockdown about two thirds of the teachers expected that students with a low socio-economic status would develop significantly worse (Schwab & Lindner, 2020). Finally, after the third lockdown half of the teachers believed that almost all students would incur many learning gaps (Schober et al., 2021).

4.2 Impact of distance learning on students' learning efforts

Student motivation to learn

One quarter to one third of the students reported enjoying working and learning during school closures (Schober et al., 2020a, 2020b, 2020c; Lenz & Helm, 2021). The results of the repeated student surveys by Schober et al. (2020a-c) during the first period of the pandemic (spring and summer 2020) yielded a quite stable minority of students who liked distance learning (about a quarter to a third). On the opposite, from parents' perspective almost half of the students (47%) did (rather) not enjoy learning at home (Helm & Postlbauer, 2021). Moreover, about 60% of secondary school students said that the only reason they learned in distance learning was because they had to (Lenz & Helm, 2021).

However, the studies by Korlat Ikanovic et al. (2021), Holzer et al. (2021), and Pelikan et al. (2021) showed that the intrinsic motivation of students strongly depended on the social context and, thus, can be increased in distance education. In line with self-determination theory, they confirmed that supporting basic psychological needs for autonomy, competence, and social inclusion also predicts students' intrinsic motivation in distance education. Another predictor of student motivation is students' socio-economic background. Helm and Postlbauer (2021) found that parents of lower-performing children reported significantly less often that their children were motivated during distance learning.

Students' learning efforts in hours

According to parents (Helm & Postlbauer, 2021), children spent an average of approximately 4 hours a day for learning at home in the early 2021 lockdown. Additionally, children spent on average, about 2.5 hours a day in school, i.e. in schools' emergency on-site care. In total, the number of hours per day Austrian school-age children spent on schooling (emergency school attendance *and* distance learning) decreased from almost 8 hours before the lockdown to 6 hours during the lockdown.

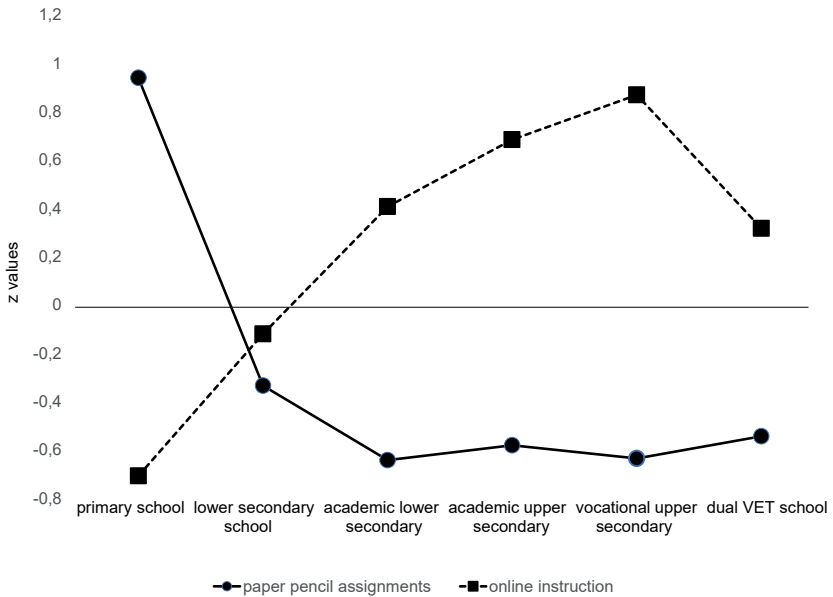
A student survey in upper secondary schools (Lenz & Helm, 2021) showed a drop of weekly hours spent for school attendance *and* learning at home from 40 hours before the pandemic to 28 hours during the first lockdown and to 34 hours during the second and third lockdown. According to Holtgrewe, Lindorfer, Siller and Vana (2020) secondary school students invested 4.5 hours daily in learning. Primary school students reported slightly less learning effort a day, i.e. 3.5 hours.

4.3 Use of digital media and tools during distance learning

According to a parent survey after the third lockdown, digital learning platforms have replaced more traditional delivery methods such as email as the most commonly used tool in the course of the pandemic. Two-thirds of parents reported that the teachers of their children used digital learning platforms to transmit learning materials, while only 4 in 10 parents had observed the use of emails (Helm & Postlbauer, 2021). In a German study on the spring 2020 lockdown (Wößmann et al., 2020), digital learning platforms still took second place behind other tools such as email or WhatsApp. However, there were large differences between school levels in Austria (Helm & Postlbauer, 2021): While in primary schools, assignments were provided mostly in paper, older students more often experienced synchronous digital teaching (see Figure 3). Nevertheless, almost one third of all students had experienced whole-class lessons (e.g. via video conference) never or less than once a week. Half of the primary school parents even stated that their child had had no lessons for the whole class.

Increasing digital media use is confirmed by an Austrian teacher survey conducted after the second lockdown (Schwab & Lindner, 2020). In contrast to the findings reported above, teachers say that the use of digital media has also increased in primary schools: About 60% of primary school students were given e-learning tasks.

Figure 3: Use of digital media in distance education (Helm & Postlbauer, 2021)



4.4 Perceived stress due to COVID-19 and distance learning

In Lenz and Helm (2021), secondary school students’ retrospective evaluations show that the perceived stress increased steadily, from one third of students rating (rather) high stress in the first lockdown to two thirds in the second and the third lockdown. In line with the findings from student surveys, parents of school-age children report high psychological stress due to COVID-19. In surveys after the third lockdown, almost every second parent perceived the closure of schools as a great psychological burden and reported being at the limit or never having time for themselves (Helm & Postlbauer, 2021; Schober et al., 2021; similar findings for Germany: Wößmann et al., 2020, 2021). Parents of older and well-performing children reported less often stress due to school closures. Parents of low-performing children more often experienced school closures as great strain (Helm & Postlbauer, 2021). Compared to students and parents, teachers seemed to feel most strongly afflicted by lockdown stress: Two thirds to three quarter of the teachers said that they had been strongly stressed by the first and second lockdown (Schwab et al., 2020; Schwab & Lindner, 2020).

4.5 Perceived challenges and gains of distance learning

4.5.1 Challenges reported by students

Various student surveys (Holtgrewe et al., 2020; Schreiner et al., 2020; Schober et al., 2020a on the first lockdown; Lenz & Helm, 2021; Schober et al., 2021 on the third lockdown) give insight into challenges perceived by secondary school students. The greatest challenge in all lockdowns was the loss of social contacts to friends and classmates (Holtgrewe et al., 2020; Lenz & Helm, 2021), e.g. across the surveys about 90% of the students said that they missed their friends. In addition, surveys point to other challenges such as too difficult assignments, distractions while learning and lack of quiet study place, self-structuring of the day, technical problems in online learning (e.g. poor internet connection), lack of parental support, etc., but these are only reported by comparatively smaller groups (about 10% to 30% across the surveys).

4.5.2 Challenges reported by parents

Irrespective of the lockdown period, parents experience lack of time and supporting their children's learning as challenges in distance learning (Feistritzer, Schreder & Schiff, 2020; Helm & Postlbauer, 2021). Motivating and guiding their children as well as explaining learning material was challenging for more than half of the parents (Helm & Postlbauer, 2021). Up to one third of parents referred to their lack of knowledge and motivation, unclear assignments, students' lack of motivation, and arguments with the child as further challenges of distance learning (ibid.). However, these challenges seemed to vary according to parents' education and their children's performance (ibid.): For example, parents without an academic degree were significantly more likely than parents with an academic degree to report that helping children completing school assignments and the lack of knowledge and motivation needed to support their children were challenging. Parents of low performing children were significantly more likely to be challenged than parents of high performing children by general assistance to their child, learning support and control, lack of time, knowledge, and motivation.

4.5.3 Challenges reported by teachers

While for many parents it was challenging to find a balance between support for their children, their own home office duties, private obligations (household, caring for parents, etc.), and free time (Schober et al., 2021), the main challenge for teachers was in handling the additional workload arising from distance learning. In the teacher surveys, more than 80% of the respondents said that increased time requirements

were a challenge (Steiner et al., 2020; Schober et al., 2021; Schwab & Lindner, 2020; Tengler, Schrammel & Brandhofer, 2020). For instance, more than half of the teachers reported that lesson planning and preparation was much more laborious than in face-to-face classes (Schwab & Lindner, 2020; Schober et al., 2021). Student support is another major challenge in distance learning. Moreover, for about two-thirds of the teachers guiding their students' learning was challenging, particularly maintaining access to and contact with students as well as understanding whether student work had been done independently (Steiner et al., 2020); this was particularly demanding with respect to students with a low socio-economic status or little knowledge of German (Schwab & Lindner, 2020; Schober et al., 2021). In addition, many teachers found it difficult to assess how much students could do at home and to provide sufficient support for students with learning difficulties and those with poorer technical skills (Spiel & Holzer, 2020). Technical capacities for web-based teaching-learning formats posed a challenge for about one-fourth of the teachers (Huber et al., 2020). Like parents, teachers faced the challenge of reconciling professional and private duties: Many teachers saw themselves under the multiple burden of increased demands of digital teaching on the one hand and looking after their own children (during lockdown home office) on the other (Schober et al., 2021).

4.5.4 Perceived gains

Schneider, Huber and Berger (2021) coded responses of 2,152 students, 2,222 parents, 1,949 teachers, and 1,242 school leaders in Germany, Austria, and Switzerland to open-ended questions for positive aspects of the first lockdown.

- (1) In line with the findings on increased use of digital media (see section 4.3), students, parents, and teachers highlight that distance learning triggered digitalization in schools. Moreover, teachers argue that the infrastructure needed for digitally based instruction was expanded during school closures. While parents think that their children's digital skills were significantly developed due to distance learning, also teachers say that they have acquired additional competencies in the use of digital media.
- (2) A large group of students say that they experience and appreciate increasing autonomy and independence in distance learning. Particularly, independent time management according to their individual learning rhythm allows them to use the day more efficiently. Hence, more time is left to pursue their own interests, acquire new skills (e.g., play an instrument, learn a language).
- (3) Moreover, many students feel that distance learning has a positive effect on their sleep, since they may get up later and have more energy for schoolwork as a consequence.

- (4) Distance learning seems to offer more opportunities for individualized learning, e.g., a number of students say that learning processes took better account of their individual learning pace. Thus, high-performing students no longer had to wait for their classmates, and low-performing students were given the opportunity to engage with the learning content more intensively and at their own learning pace (not in the usual rhythm of school hours or subjects). Moreover, distance learning allowed individual students to focus on particularly relevant subject matter (e.g., difficult material or personal interests).
- (5) Many parents mention that family cohesion and life benefited, e.g. by lunching together, and increased insight into their children's school life. Moreover, distance learning gave some parents a better insight into the child's learning status.
- (6) Parents express their increased appreciation for the work of teachers. In addition, they praise the good and increased communication with teachers.
- (7) Moreover, distance learning triggered increased teacher collaboration in some places (e.g., joint lesson planning).

4.6 School leaders' and teachers' approaches to distance learning

According to Pessl, Köpping, Leitner and Steiner (2021) in a qualitative interview study with Viennese teachers, distance learning led to a shift in teachers' role. Aspects such as personal contact and a role as learning facilitator came to the fore. While this was perceived as positive aspect of the new situation, it was also associated with personal stress and increased workload. Another strategy in the face of distance learning focused on motivating students and on supporting them in planning and structuring their independent learning at home. The interview findings suggest that teachers from 'Mittelschule' tended to react with less demanding teaching in terms of resources and parental support, while teachers in 'academic secondary schools' took better student self-motivation, and self-directed learning skills as well as better technical equipment, and more parental support for children's learning for granted.

In contrast, the majority of school leaders in a quantitative survey by Jesacher-Rößler and Klein (2020), was not prepared to reduce performance standards in distance learning. For the preparation of teachers for the new challenges of distance learning, focused in-service training opportunities were provided only in a small number of schools. In most cases, teachers were given information material and expected to process it individually. Only a small proportion of school leaders stated that they had received additional resources for distance learning from regional school authorities or school-maintaining communities.

4.7 Differences in distance learning by school level

As relevant competences, digital and self-regulation skills, develop over time, it may be assumed that there were different practices of distance education for primary and secondary school students. Surveys on school closures in spring 2020 largely confirm this assumption. The most significant difference was observed regarding the extent of digital technology/media used in distance learning. Digital devices and online learning were significantly more pronounced in higher than in lower grades (Helm, Huber & Loisinger, 2021). In primary schools, learning material was mainly provided in paper form (Helm & Postlbauer, 2021).

Unsurprisingly, findings indicate that students' self-regulation was more strongly developed in higher grades (Helm, Huber & Loisinger, 2021). For instance, Holtgrewe et al. (2020) report that primary school students needed more support in distance learning. Thus, as expected, parents committed most time (Holtgrewe et al., 2020) and found their commitment most challenging at the primary level (Berghammer, 2020). In addition, parents of primary school children were significantly more likely than parents of higher grade students to worry that their child was falling behind academically. Interestingly, at the same time, parents of primary school students said more often that distance learning worked well (Berghammer, 2020) and that their child was less likely to be overwhelmed with online tasks and tests (Feistritzer et al., 2020). Less complex subject matter and simpler organization of primary schools are possible reasons.

Despair, sadness, and loss of learning motivation were more likely to be issues among primary school children. In terms of time invested in learning, parents reported that half of the primary school students invested only 1 to 2 hours a day, compared to an average of about 3 to 4 hours for secondary school students. In contrast, parents of primary school students were significantly less likely than parents of secondary school students to report that Corona had reduced their children's learning time (Helm & Postlbauer, 2021).

Finally, teacher-student contact and teachers support of students during distance learning was more positively rated by parents of students in lower school levels (Helm, Huber & Loisinger, 2021; Holtgrewe et al., 2020; Feistritzer et al., 2020). In contrast, primary parents reported more often than parents of secondary school students that the learning environment at home was suboptimal and – probably for that reason – emergency school care was more often used (Helm & Postlbauer, 2021).

Teacher surveys in Vienna and the Tyrol by Schwab et al. (2020), Schwab and Lindner (2020), and Vollmer et al. (2020) allow for another perspective. They indicate that the majority of primary school students received more paper-pencil tasks and significantly fewer e-learning assignments than in higher grades. Teachers often had problems reaching children digitally, especially among those starting primary

school. Primary teachers (in the Tyrol) had significantly less experience with distance learning before Corona than teachers from higher school levels. In addition, primary school teachers rated their students' technical home equipment significantly lower. It is also interesting to note that the proportion of regular subject matter covered during the lockdown did not differ significantly between primary, lower secondary, and upper secondary schools (Vollmer et al., 2020).

5. Discussion

As in many other countries, the pandemic caught Austria by surprise. *Education policy* was clearly *subordinated to health policy*: when public life was locked and unlocked (which, in the beginning, was accepted by the population in high discipline), all other policy areas followed: 'home schooling', home office of staff, masks, distances, etc. were introduced accordingly. Education policy contented itself with adapting general regulations and communicating them, first of all, to media (as teachers complained), to schools, and parents (Lassnigg, 2020b, p. 1).

As a consequence, the education ministry also received its share of the general criticism of the Austrian pandemic policy, in particular about *confusing prevention policies and regulations*: too many voices (in too many press conferences) were communicating too many regulations and changes of regulations, too many projections of encouraging or discouraging futures so that more and more citizens did not really know what they were supposed to do with respect to infection prevention. The situation seems to have been – at least initially – very similar in schools, if one goes by teachers' and school leaders' complaints (Lassnigg, 2020a, p. 11; VPFA, 2020, 2021; Dobler, 2021).

The pandemic crisis may have come as a surprise, however (as a number of researchers argued, e.g. Pant, 2020; Lassnigg, 2020a, 2020b; Preußker & Schratz, 2021), it exposed basic structural problems of the school system that were existent before – and indeed visible in the major challenges of the previous years, such as inclusion and or the 'refugee crisis' (Pant, 2020) – but not adequately tackled. An important structural feature most characteristic for the Austrian school system is its *response to unequal learning conditions and results*. The question "How can the different social background conditions for learning be taken into account and how can the necessary acquisition of competencies be ensured even under disadvantageous conditions?" (Lassnigg, 2020b, p. 1) was well known and urgent before. Differences in family resources and support are well known as is their impact on student results. Under pandemic conditions these social inequalities are resonated e.g. by differences in the accessibility of students and their different access to digital devices (Lassnigg, 2020b; Helm, Huber & Postlbauer, 2021). Educational policy has answered to this

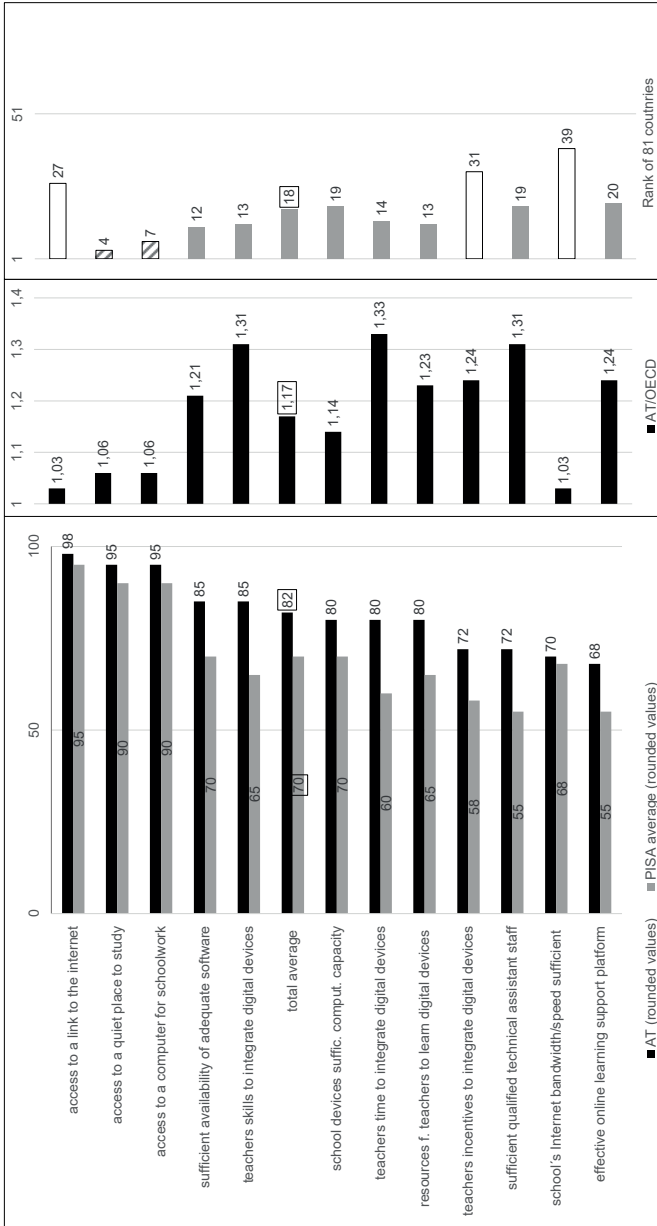
challenge by the remedial measure of summer schools, however, there are no long-term strategies in sight.

Another structural problem is *digitalization*. There have been some policy attempts to push forward with digitalization since the turn-of-the-century, in particular, in 2010 and 2017. According to OECD data, Austria is in the first quarter of OECD countries with respect to digitalization (on average rank 18 of 81 countries). The largest negative gaps (about 30 percentage points) refer to effective digital platforms, speed and bandwidth of Internet at schools, availability of technical support persons at schools, and incentives for teachers to integrate digital devices (see Figure 4). The ministry's recent eight-point program for digitalization only partly addresses these gaps, in particular, the question of technical support at schools is left open (Lassnigg, 2020b, pp. 2–4).

Many observers agree that the sheer need of the crisis has produced a remarkable digitalization push (Lassnigg, 2020b, p. 4). Based on the experiences of the Deutscher Schulpreis 2021, Preußker and Schratz (2021)¹¹ argued that digital learning has to be complemented by a range of other innovations, such as individual support, caring relationships, and self-organized learning. However, other arguments are more skeptical of the helpful push for innovation through the pandemic conditions. There is certainly a pressure to change practice, and in some places teachers, administrators and other persons find forward-looking solutions, however, the “ad hoc and chaotic” sequence of lockdowns and re-openings has left little room for maneuver for educational innovations in other places (Lassnigg, 2020b, p. 4). Much of the system is engaged with mere maintenance of the day-to-day organization of prevention regulation and teaching under changing conditions (Rotter, 2021), so that not much energy and room for maneuver for innovation is available.

Another recurrent theme are the *challenges for student well-being*. Many authors argue that classroom teaching and education at school have to take care to develop students' resilience more than before (e.g., Exenberger, Wenter, Wolf & Sevecke, 2021; Rotter, 2021) and to reflect on pandemic experiences which is also an “opportunity to incorporate mental health and opportunity for self-care more fully into the classroom” (Reiter & Spiel, 2021, p. 138).

Figure 4: Characteristics of digitalization in Austria according to PISA 20018 (Lassnigg, 2020b; using data by Reimers & Schleicher, 2020)



The themes of unequal learning conditions, digitalization, and student well-being may just point to special aspects of the inadequacy of the traditional ‘transmission oriented’ learning cultures characteristic of many classrooms in German-speaking countries. Pant (2020; see also Preußker & Schratz, 2021; Altrichter, 2021b) argues that these characteristics have been hindering innovation in schools for a long time, but seemed to have been even reinforced during the pandemic by advice from expert groups and by crisis intervention of school boards, e.g. by the insistence that learning has to take place at the school site, the special attention on testing (see e.g., administrative emergency measures directed to grading practices and maturity exams; Lassnigg, 2020a, p. 6), the primacy of isolation over cooperation (to which many skillful students resorted even when it is not part of their official learning arrangements; see Helm, Huber & Loisinger, 2021); the primacy of subject learning over generic skills that are important for successful self-regulated learning.

COVID-19-related *educational research* started very early (Seda & Ottacher, 2020) in Austria and produced a comparably large number of studies based on large scale datasets during the three lockdowns. Austrian educational research on COVID-19 has so far largely focused on the analysis of learning and teaching practices, thereby providing information in a ‘science to public’ format that satisfies the need of the public (media) and the education policy. As a consequence, the research available is mainly descriptive (in a statistical sense), while explanatory research using regression analytic designs is still almost non-existent in Austria, with a few notable exceptions (e.g., Korlat Ikanovic et al., 2021; Holzer et al., 2021; Pelikan et al., 2021; Weber et al., 2021a). Therefore, the following aspects should find more attention in future COVID-related educational research in Austria:

- Large scale student assessments that allow investigating learning losses and educational inequality.
- Studies considering domain-specific teaching and learning.
- Studies that take the multi-level structure of schooling into account.
- Further longitudinal studies that allow for investigating trends.
- Studies providing evidence about characteristics and strategies of crisis-resilient schools.

In view of the rapidly growing number of research studies on various aspects of learning during the pandemic, the need for review studies and meta-analyses will increase, not only in Austria, but internationally.

Notes

1. <https://info.gesundheitsministerium.at/impflage>
2. Ministerial decrees by the Education Ministry (BMBWF) are quoted by the reference number (GZ).
3. The English term ‘distance learning’ is used in the German text.
4. <https://wien.orf.at/stories/3121665/>
5. <https://www.diepresse.com/6033452/neue-regeln-an-schulen-nur-noch-sitznachbarn-in-quarantane>
6. <https://www.profil.at/oesterreich/was-koennen-die-oesterreichischen-sommerschulen/401473804>
7. <https://orf.at/stories/3228947/>. By mid-October one of the provinces reported that 5% of the dispensated students had returned to school again; <https://www.derstandard.at/story/2000130353623/dutzende-abgemeldete-kinder-sind-doch-wieder-in-der-schule-zurueck?ref=article>
8. Austria’s legal framework historically includes only very lenient regulations for dispensation from schooling as there is no obligation for attending schools (‘Schulpflicht’) in the constitution, but only for teaching students (‘Unterrichtspflicht’). Thus, it is possible to ask for dispensation from schooling without (nearly) any check of reasons, however, students must prove by annual examinations at a public school that they made appropriate progress through home-schooling (https://www.oesterreich.gv.at/themen/bildung_und_neue_medien/schule/Seite.110002.html). The dispensation rate in 2019/20 was less than 0.2% of all students (<https://www.vienna.at/hausunterricht-knapp-2-000-kinder-werden-zuhause-unterrichtet/6479815>).
9. <https://www.derstandard.at/story/2000129377421/ministerium-ueberlegt-wegen-vieler-schul-abmeldungen-verschaerfte-regeln>
10. The first study documented in the German-speaking countries was conducted by ‘Teach for Austria’ already on March 23, 2020 (Seda & Ottacher, 2020).
11. Some of the arguments discussed in this and the following paragraphs were originally phrased with Germany in mind, however, they are equally valid for the comparable Austrian situation.

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