

SchriFT I Summary

Introduction

This book is intended to be an interdisciplinary compilation of articles exploring the various relations between the ability of using academic language in the context of specific writing tasks and subject-based skills as well as specialized writing skills. The main research interest is based on the assumption that writing texts within the framework of genre-based writing learning scaffolds students' linguistic and cognitive resources in an epistemic way. Well-defined genres and fundamental knowledge about relevant speech actions relieve the working memory and enable students to focus on content aspects of subject-specific tasks. This also means that the specific terminology and conceptual knowledge of a subject can be conveyed best if it is contextually embedded in the relevant subject.

Authors of this anthology are researchers from the fields history didactics, didactic of physics, didactic of politics and didactic of technology. In addition, the Institutes for Turkish Studies and German as a Second and Foreign language completed the research team. The interdisciplinary project was funded by the Federal Ministry of Education and Research of Germany (BMBF) for the period of 2014–2017, the follow-up project is funded by BMBF for the period of 2017–2020.

Research Goal

The aim of the interdisciplinary project SchriFT (Writing skills in lower secondary school and the involvement of Turkish – An empirical study on the effects of promoting writing skills in subject lessons and in the heritage language Turkish) is to determine the relationship between the skills in *basic language* and *academic language writing* as well as *subject-specific skills* and *subject-specific language writing* in the framework of genre-based approach in writing learning. Along with these core aspects, the following control variables were examined:

- general cognitive abilities
- socioeconomic status and
- age of onset (German and Turkish)

Students with multilingual biographies who have acquired Turkish as L1 or are Turkish-German bilinguals present a subsample of the study. As speakers of

Turkish as a heritage language their proficiency ranges from literate speakers to speakers with mainly oral language use with family and friends. Against the backdrop of the multilingual approach, this target group shows a pool of cross-language skills in the sense of a dynamic multilingualism. Academic language writing skills in Turkish were collected as well in order to examine the literate proficiency in Turkish.

A leading question was whether students having a higher level of language skills also show higher levels of subject knowledge. It was also discussed whether students' overall literacy skills are actually related to their subject-specific writing skills.

Data

The study analyses main academic speech actions such as describing or explaining and the functionally appropriate linguistic means of expression in text genres produced by students in class: the experimental protocol in physics, technical analyses in technology, historical reasoning in history, and diagram description in politics. For the investigation, the data of 1,718 students from 26 schools in the Ruhr area and its immediate surroundings were collected. 360 of the subjects participated in 14 learning groups in Turkish language teaching (heritage language instruction or Turkish as an elective subject). The sample is composed of 49,84% female and 50,16% male subjects. The learners are between 11 and 16 years old, the average age is 13,20 years ($SD = 0.87$). 63,5% of the subjects have a migration background. Thus, the amount is significantly higher than the average of 43,6% for North Rhine-Westphalia and the average value of 44,1% for comprehensive schools for lower secondary education in North Rhine-Westphalia (Ministerium für Schule und Bildung des Landes NRW, 2019). At 35%, the largest group comprises the so-called second generation, which was born in Germany, but both parents had been born abroad. A total of 55 different family languages are mentioned.

Analytical Method

In order to measure all the different learners' abilities, various instruments were used. To record the general writing skills special writing tasks were used. As part of these writing tasks, learners should demonstrate that they can realize the academic speech actions of naming, describing, and explaining within the context of the corresponding genre. These writing tasks were used by all learners in German. For Turkish-speaking students, writing tasks of this kind were also

used in Turkish. Furthermore, the learners' general language skills were assessed by means of a C-test (in German and in Turkish).

The subject-specific learners' writing skills were tested in the context of subject-specific writing tasks. Additional tests were used to measure knowledge and other relevant subject-specific skills. Finally, all learners used a questionnaire to collect the control variables which were already described.

Essential Outcome

High, positive correlations between academic and linguistic achievements in the texts produced by the participating students could be revealed in all subjects. The more students deploy the necessary linguistic means for subject-specific genres, the higher the subject-specific correctness of those texts. Besides, medium to high correlations are also achieved for subject knowledge as well as interdisciplinary textual competence in German. Evidence of connections between subject knowledge, subject-oriented language and academic language skills can be provided.

The findings suggest that the intervention study proposed in the follow-up application should include the appropriation and mediation of genre-specific writing skills within the context of subject-specific teaching. Results also show that there are transfer effects at the level of language use between specialist language skills and interdisciplinary, academic language abilities of the students studying the subjects German and Turkish. Establishing such transfer effects actually can serve as the basis for coordinated language support programs in all subjects and should be empirically tested in the second phase of the project.

Furthermore, it can be assumed that, at the level of the basic forms of speech actions like describing or explaining, a stronger networking between German and subject teaching on the one hand and between German lessons and Turkish as heritage language instruction on the other hand should be initiated.

Individual Contributions^{1,2}

Within the introductory chapter interdisciplinary access to linguistic and didactic baseline assumptions is explained. Besides, *Heike Roll et al.* suggest the research design, the sample, central test instruments as well as interdisciplinary

1 Both parts of the project (SchriFT I: 2014–2017 & SchriFT II: 2017–2020) were granted by the Federal Ministry of Education and Research of Germany (BMBF).

2 All papers have been reviewed in an in-house and external review process.

findings from the first project phase SchriFT I. Finally, an overview of the research design and the design of the intervention study of the follow-up project SchriFT II is given. The subsequent contributions present the findings of the individual disciplines and provide a multi-perspective view of data collected in the project.

Işıl Uluçam-Wegmann et al. analyse students' German and Turkish repertoire in reference to the sub-sample of students who attend Turkish lessons as a supplemental offering: either as heritage language instruction (Herkunftssprachenunterricht) or as an elective subject (Türkisch als Wahlpflichtfach). The focus of the survey is on the writing task "Bauanleitung eines Smartphone-Lautsprechers" (*Construction manual of a speaker for smartphones*) which is used to collect written language skills in context of an instructional genre. For the quantitative and qualitative analysis, the characteristics of interdisciplinary textual competence and the related subcomponents "orientation towards the addressee(s)" (Adressatenorientierung) and "management of coherence" (Kohärenzherstellung) are operationalized as text quality indicators. The results suggest that the skills to allow these features can be transferred interlingually and can serve as an approach to coordinated language instruction.

Mareike-Cathrine Wickner deals with the question of the connections between academic language and subject-specific skills plus subject-related students' abilities in the context of historical learning. The results indicate that the initiation of historical narration as a superior historical competence and mental operation must be realized in a much more comprehensive way in the future. For this purpose, professional and explicitly subject-specific language learning programmes are equally required. It proves expedient to establish academic discourse practices that are relevant for historical narration (for example *describe* or *explain*) in the context of technically significant genres (for example factorial explanation).

Sabine Manzel and *Farina Nagel* developed a multi-part writing task on the topic "Das politische System in Deutschland" (*The political system in Germany*). Overall, the students were required to analyse a diagram as a discontinuous and typical genre within political learning processes. Descriptive evaluations show that especially the cognitive challenging academic discourse practice *explaining* presupposes conceptual expertise and is mastered by only a few students. Added together, a moderate correlation between subject-specific language skills and further discipline-specific dimensions was determined. A relevant analysis' finding in relation to different influencing factors on the writing performance is that the migration background is no longer significant as a negative explanatory

factor for expertise in the regression model. This suggests that the teaching of conceptual subject-specific language skills can minimize linguistic differences.

Christine Enzenbach, Heiko Krabbe and Hans Fischer demonstrate the correlation between subject-specific skills and language skills in writing lab protocols within the scope of physics instructions. To investigate the nexus, three test instruments were used: Two writing tasks were employed in order to collect students' ability to accomplish different genres typically utilized in German lessons and physics instructions. A test to measure the understanding of science practices was used to examine methodological aspects in the observation and implementation of an experiment on conductivity of different materials. The results suggest that students are not successful in transferring academic discourse practices from German lessons to physics instructions without prior explicit instruction.

In his article, *Martin Lang* points out that language has been less important in technology education so far, although subject-specific linguistic patterns are used distinctly and highly standardized. When using this register, a strict functional orientation gives direction to using this register. Nevertheless, production of own texts hardly ever takes place. The "technical analysis" as a teaching procedure aims to capture the structure of a technical overall system as well as the working principles of individual elements. A writing task was used, which refers to the technical system of a bicycle. The high significant correlation between students' professional and subject-specific language skills proves the relevance of linking language and subject-specific knowledge in the field of technology education.

In his contribution, *Wilhelm Griefhaber*³ comments on the analytical language assessment grid used in SchriFT, which distinguishes subject-specific and linguistic categories. He uses five texts from physics students about conductivity within an electric circuit to conduct a generic analysis. Griefhaber can show that a holistic assessment procedure, which rests upon only a few key characteristics of the text, is a useful addition to the quantitative analysis in that the true genres realized by the students can be reconstructed.

3 Wilhelm Griefhaber has supported the SchriFT project with valuable suggestions right from the beginning as a "critical friend".