

# Classroom Goes Future: Promoting Essential Skills of Teacher Training Students

Laura Greulich , Sarah Bischof 

Centre for Teacher Education and School Research, Leipzig University, Germany.

How to cite: Greulich, L.; Bischof, S. 2024. Classroom Goes Future: Promoting Essential Skills of Teacher Training Students. In: 10th International Conference on Higher Education Advances (HEAd'24). Valencia, 18-21 June 2024. <https://doi.org/10.4995/HEAd24.2024.17265>

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## Abstract

*Some of the current challenges, such as preserving democracies and managing the risks of advancing digitalisation, are expected to persist in the future. To prepare pupils for these challenges, qualified teachers are needed to implement both civic and media education. Enabling prospective teachers in these areas is an important task of universities. A special seminar was developed to specifically prepare future teachers by promoting their competencies related to digitalisation, democracy, and future orientation. Its effectiveness was evaluated in an initial round through triangulation of recurring online surveys, a group discussion, and external evaluation. These methods were used to obtain findings with an empirical basis on the suitability of the seminar for promoting skills and at the same time to identify opportunities for improvement. The objective of the seminar in the university phase of teacher training is to ensure optimal training and to prepare future generations for an increasingly complex world.*

**Keywords:** *innovative experiences, technologies, competency orientation, exploratory learning*

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## 1. Challenges and potential solutions

### 1.1. Challenges

In Germany, the EU, and globally, current and future social and professional challenges include maintaining democratic coexistence (Boese, 2021) and addressing the risks of digitalisation (Zierer, 2019). It is essential that the next generations are adequately prepared to meet these challenges. Schools provide an ideal platform for imparting skills across the spectrum and they have a corresponding educational mission. In this context, teachers have the task of preparing next generations to deal with the named challenges through education and upbringing. But what skills do teachers need to adequately fulfil this key task? Educational science and policy papers provide valuable information on the competencies to be promoted in teacher training.

Frameworks, models and concepts offer points of reference. They emphasize the significance of digital competencies, democratic culture, and future-oriented skills for teachers as well as they suggest potential solutions. It is essential to prepare teachers specifically for these aspects, so that they are able to provide students not only with subject-specific knowledge, but also with the necessary skills for active and responsible participation in society that they could pass on to their future pupils.

## **1.2. Potential solutions**

The models and frameworks presented below demonstrate the theoretical foundation of the seminar and offer potential solutions on how to deal with the challenges pointed out in 1.1. Details on how the frameworks are transferred in teaching student teachers are displayed in section 2. In *DigCompEdu*, Punie & Redecker (2017, 8) explain “that educators need a set of digital competencies specific to their profession in order to be able to seize the potential of digital technologies for enhancing and innovating education.” This framework describes digital competencies that teachers need and organizes them in six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners and facilitating learner’s digital competence. Democratic principles have long been core values in European societies. Boese (2021, 30 f.) explains that contemporary democracy is facing a threat due to global symptoms of autocratisation such as the erosion of democratic norms, the increasing power of the executive, and declining media freedom. In times of multiple crises, continuous efforts are required to uphold democracies by active citizenship. The dynamic process of promoting competencies is never complete and requires individuals to adapt and develop new skills in response to changes in their living environment. *The Reference Framework of Competences for Democratic Culture* summarises twenty competencies for promoting and protecting democracy. These competencies are divided into values, attitudes, skills, and knowledge and critical understanding.

“The model proposes that, within the context of democratic culture and intercultural dialogue, an individual is deemed to be acting competently when he or she meets the demands, challenges and opportunities that are presented by democratic and intercultural situations appropriately and effectively by mobilising and deploying some or all of these 20 competences”,

says The Council of Europe (2018). To enhance the democratic skills of future generations during their school years, it is crucial to understand the required competencies and implement appropriate measures to empower future teachers during their studies. In the *Future Skills Triple Helix-Model*, Ehlers (2020, 40) defines future skills as competencies that individuals need to perform successfully “in highly emergent contexts”. These skills are anchored in three interlinked areas of competence: individual development-related skills, object-related skills, and organisation-related skills. As described in 1.1, future skills are crucial for next generations. When analysing frameworks and models, it becomes apparent that necessary competencies can overlap and appear in different places. For instance, digital literacy in the *Future Skills Triple*

*Helix-Model* is considered part of the subject related skills, while at the same time it has a central role in the *DigCompEdu* framework. However, in the conceptualised training course, it is not feasible to promote all the competencies of these models in their entirety due to the structural circumstances. Therefore, section 2.2 explicitly addresses the skills that are focused.

## **2. Improving skills in seminar Classroom Goes Future**

### **2.1. Classroom Goes Future as a part of the module Civic and Media Education**

In view of the challenges, the interdisciplinary compulsory module *Civic and Media Education* has been recently introduced for teacher training students of all types of school and subjects at Leipzig University. The module is completed by attending the eponymous lecture and a seminar of choice. The seminars are based on the lecture and cover topics such as digital media in schools, digital game-based learning in civic education, journalism skills for schools, civic education in dealing with disinformation and conspiracy theories, democratisation of schools and media didactic applications in schools. Furthermore, the *Centre for Teacher Education and School Research* established a *Digital Classroom* which subsequently is utilized in some of the courses mentioned. This classroom is equipped with digital media, some of which are already available in schools (e.g. interactive whiteboards, iPads in classrooms) or are expected to be used in the future (e.g. virtual reality). Various teaching and learning formats are available for users of this specific place of learning to enhance their skills in handling media, as well as in media education and in media didactics. One format offered is the seminar *Classroom Goes Future - Using the Digital Classroom at the Centre for Teacher Education and School Research* which is assigned to the above-mentioned module and is designed for goal- and competence-oriented learning.

### **2.2. Contents**

The content of the seminar is divided into a theoretical and a practical part. First of all, it has to be made clear that the students already have a wealth of prior knowledge and experience, which must be taken into account when wanting to promote skills. The theoretical part aims to bring the students up to the same level in terms of the necessary didactic and pedagogical knowledge. As already mentioned, they come from different teacher training programmes and study different subjects in different semesters. It is therefore a very heterogeneous group of learners that can be considered a major challenge. Accordingly, the course covers general didactic content related to competency-oriented teaching, including articulating teaching and learning objectives, lesson phasing, detailed planning, and key characteristics of effective teaching. The theoretical part of the course also includes content on civic education and media education. In addition to the civic education principles discussed in the lecture, such as the principle of controversy and the prohibition of overwhelming, the seminar teaches political didactic

principles such as problem orientation and exemplarity. The content on media education is approached in a similar manner. Finally, in the practical part of the seminar, the students experiment with digital media. Working on application-oriented tasks that encourage the use of digital media and methods of democratic cooperation enables students to plan their own subject-specific teaching projects that fulfil important characteristics of civic and media education. The results of the work are reflected and discussed. The first competency that is improved in the seminar is digital literacy (Ehlers, 2020; Punie & Redecker, 2017) because it is essential to use digital devices for communication and collaboration, as well as to select, create, modify, manage, protect and share digital resources. Digital devices and resources have to be used in an objective-oriented manner. This already indicates that communication and collaboration are the next two essential skills (Ehlers, 2020; Punie & Redecker, 2017; The Council of Europe, 2018). These skills are essential for effective communication and collaboration, particularly in relation to educators' professional and pedagogical competencies. In addition to organisational arrangements with fellow teachers, school administration, parents and other partners, this also includes teaching, guidance, support for collaborative and self-regulated learning, and empowering learners. Thus, prospective teachers must possess the ability to communicate and collaborate while respecting democratic values and attitudes. When pupils cooperate, e.g. in group work or in the context of discussions, attention should be paid to the implementation of these values and attitudes. They also have to be proficient in using digital devices to facilitate this process. Reflective competence, also referred to as reflective practice or critical thinking skills, is another crucial dimension of competence (Ehlers, 2020; Punie & Redecker, 2017; The Council of Europe, 2018) that prospective teachers need to promote. Pupils need to be empowered to critically examine their own attitudes and actions and those of their fellow human beings (e.g. those posted on social media). The following section describes the seminar concept and how it strengthens competencies of prospective teachers to enable their future pupils' competencies.

### **2.3 Concept**

The course content is too complex to be covered in 90-minute weekly seminars. Instead, it is organized as a block seminar, which means that it takes place on four separate days during the semester, each consisting of four 90-minute units. Based on the work of Helmke & Schrader (2009), the key features of the approach aimed at increasing the likelihood of taking up learning opportunities and thereby increasing the chances of promoting skills are: clear and logical structure, technical correctness, and comprehensibility. A conducive teaching environment is achieved through friendliness, respect, and a positive error culture. Encouraging cooperation and cognitive activation of learners achieve diverse motivation and activation. To ensure learner orientation and accommodate heterogeneous learning requirements, learners are involved in decision-making, receive individualized feedback on their progress, and have access to learning opportunities that are adapted to their changing needs. Another important feature of the seminar

is the students' self-determination. As part of the examination, students have to give a presentation on a key topic that they choose from various proposals. Prior to the first course block, students are asked to complete an online survey in which they select their preferred digital devices. The central design element of the seminar is the concept of exploratory learning with minor guidance due to approaches that combine traditional and constructivist methods often result in better learning outcomes (Newman & DeCaro, 2019). According to Waever et al. (2018), students benefit from support during their exploration only when requested and limited thereafter. This concept is encouraging because it supports cognitive load and helps students recognize the deeper structure of the problem, promoting their understanding of the concept (Newman & DeCaro, 2019). If required, learners receive guidance from the lecturer who behaves empathetically, patiently and helpfully (Helmke & Schrader, 2009). If desired during exploration, learners can also benefit from direct peer support due to each student being expert in a particular field of interest. This can take place thanks to the presentations, as each learner has different expertise. The portfolio, which is used to examine the outcome of the seminar, combines features of both a process-centered and product-centered approach. The product-centered approach facilitates practical implementation by creating a comprehensive portfolio, which includes not only a collection of ideas but also a detailed lesson plan for the student's own subject lessons. In order to self-assess their competency development, teachers use the process-oriented component.

### **3. Empirical investigation of the seminar**

An exploratory study analysed how suitable the seminar for imparting skills to prospective teachers in the field of civic education and media education is. Self and external assessment are considered.

#### **3.1. Self-evaluation**

##### *3.1.1. Recurring online survey*

After each block seminar, the thirteen students were surveyed four times in total about their knowledge, skills, and values. The topics covered previous experience in planning and performing lessons, as well as using digital media as both students and teachers. The discussions that took place following the exploratory phases also covered attitudes towards the use of digital media in the classroom. The results show: While most students were already familiar with digital media from their school days and internships, and used them for communication, cooperation, media production and presentation, they reported having poor average skills in operating digital devices. The standard deviation (0.90) was rather high. The final survey shows that, on average, skills in using digital media were rated highly. In comparison to the initial survey, the standard deviation significantly decreased (0.78), indicating that previously diverse skills have been

standardised. All students are now more proficient in using digital media for communication, collaboration, media production, and presentation. The students considered their lecturer to be highly competent in dealing with digital resources and designing learning processes. They have acknowledged that technologies are an essential part of modern teaching and developed an awareness of the opportunities and challenges of using them in a classroom setting. Similarly, they report being able to reflect on their personal use of digital media and their future use with pupils. The students are prepared to work with pupils on equal terms when using digital media in lessons.

### *3.1.2. Group discussion*

During the group discussion, attended by eight out of thirteen seminar participants, impressions, attitudes, and opinions on skill development in the digital classroom were recorded. The successful implementation of the concept of explorative learning was highly rated by the students. One student commented, “it was great that we were able to try out everything right from the beginning and that the lecturer gave us enough time without interfering too much.” It also became evident that the space *Digital Classroom* is significant in university education, as “there is no time during internships or seminars to familiarise yourself with digital devices extensively,” said another student. In addition to the general opportunity of trying things and the low level of intervention, the students also appreciated the positive error culture. Another student commented: “I think it was very important that we always had the approach to stick to the idea that it’s not a bad thing to fail. I really enjoyed trying things out, making mistakes, and learning how to deal with them.” The students also appreciated implementing pupil-orientation and dealing with heterogeneous learning requirements. One student said: “The mixed group offered a wide range of opportunities. We were able to benefit from each other a lot and gained interesting insights in how we might see things in advanced semesters or what we could implement at other types of schools.” This oral survey makes it clear that the students have collected interesting ideas for the design of their future lessons with cooperative forms of learning to promote democratic education and with digital media for media education. One student described how she would like to have her students create explanatory videos in groups in the future in order to implement the principle of learning by teaching.

## **3.2. External evaluation**

External evaluation by the lecturer was used in addition to self-assessment to evaluate competency development.

### *3.2.1. Observation*

During the initial phase of exploratory learning, the participants were hesitant. However, this shyness quickly dissipated, and they got more unreserved in seeking support from their peers.

They adapted various social forms to overcome challenges together and were willing to share their expert knowledge. The need for advice from the lecturer varied among the participants, with few seeking advice while others felt confident in their independence. Despite these differences, the group consistently and positively participated in the assigned tasks. The exchange was characterised by intense discussions. The common learning journey was enriched by a variety of perspectives and experiences from both lecturer's and students' sides.

### *3.2.2. Results of the examination*

Earlier, it became clear that interesting ideas were developed for the use of digital devices in specialised lessons to intensify civic and media education. The lesson plans developed are characterised by stringent planning that takes into account the didactic principles of political and media education. This allows the focused development of democratic and digital skills in future teachers. For instance, virtual reality applications can be used in history lessons, while iPads can be used to analyse and enhance movement sequences in physical education classes. Both approaches involve methods and tasks that encourage cooperation, communication, and the teaching of democratic values. These innovative uses of digital media promote various aspects of media literacy. Based on the written drafts can be inferred that the students have improved their competencies in line with *DigCompEdu*. The examination results are supported by reflections on the learning process, which demonstrate that the students have enhanced their skills in digital and democratic education, as well as future skills.

### **3.3. Summary of the results**

The overall balance between self-evaluation and external evaluation is positive all in all. The group discussion and reflection on the learning process, which are integral parts of the examination, provide valuable insights into the suitability of the concept. These aspects also offer clear indications of areas for improvement. The decision in favour of exploratory learning proves to be successful, as the exploratory phase appears to be extremely valuable. The chance to interact with digital devices and experiment with them in a secure environment is highly beneficial. Unlike in a school setting, the fear of failure is diminished, resulting in an effective learning environment. However, the design and the lack of tasks to measure competencies make it impossible to draw reliable conclusions about the actual development of competencies. This emphasizes the importance of further research in this area.

## **4. Discussion and outlook**

The seminar is well received by students who examine this learning programme valuable for developing their competencies. It became noticeably clear that all challenges (e.g. heterogeneity, problems with digital media) in the course of the seminar must be seen as learning opportunities, which is transferable to learning at school. The seminar is suitable for students wanting to

improve their competencies by exploring technologies. It provides an opportunity to practice skills, which is often not available in other seminars or during internships at school. Skill development occurs almost automatically and is supported by the conceptual framework of the learning programme. In order to increase flexibility, it is desirable to make the structural boundaries of the university more permeable when organising this seminar. Real added value can be gained by implementing the lesson plan with a school class and reflecting on it afterwards. Due to time constraints of the seminar, it is only possible to make suggestions for strengthening the necessary skills. Additional courses should be considered to promote the competencies mentioned and establish them as part of teacher training, reaching a larger number of student teachers. To obtain more precise findings about the suitability or even the impact of the seminar, there is a need to look at a larger group of student teachers. Combining self-assessment and external assessment with competency measurement is also worth considering. Additionally, interesting insights could be provided by extending the study period beyond the seminar to further course of studies or even to the start of a career through the preparatory service to explore the long-term impacts on the participants teaching methods.

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