

Development and Implementation of a Pedagogical Concept for Initial Teacher Education to Foster Pre-service Teachers' Media Education Competence

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ABSTRACT

In light of the rapid processes of digitalization, teachers must possess the competence to develop adolescents' media literacy. Against this backdrop, a theory- and practice-based pedagogical concept was developed to enhance pre-service teachers' media education competence. This pedagogical concept is grounded in a competence-standard model for media pedagogy in initial teacher education and employs an action- and development-oriented pedagogical approach. It includes competence-oriented tasks, a structured teaching and learning process, and learning and reflection portfolios. The pedagogical concept was implemented as a semester-long course at a German University. In an exploratory case study involving a convenience sample of 71 pre-service teachers, participants' media education lesson designs were analyzed using qualitative content analysis. Results indicate that when participants described learning prerequisites and objectives in their lesson planning, they primarily focused on adolescents' knowledge and experiences, as well as their intellectual and socio-moral development and needs related to media use. Most participants elaborated on learning and teaching activities centered on design, followed by assessment, problem-solving, and decision-making. Conclusions and implications for further research and practice underscore the importance of theory- and evidence-based approaches to enhance pre-service teachers' media education competence, which is essential for progressive initial teacher education.

KEYWORDS: Initial teacher education, pre-service teachers, media education, pedagogical concept, lesson planning

In the context of mediatization and digitalization, continuous advancements in technology, content, institutional systems, and the economy characterize the media landscape (Tulodziecki et al., 2021). Consequently, individuals' experiences within their environments have undergone fundamental changes and are expected to continue evolving (De Abreu, 2020; Tulodziecki et al., 2021). Therefore, it is increasingly important for individuals to be media literate (Hobbs, 2024). Furthermore, given that the media landscape is subject to constant change, individuals capable of acting socially responsibly are crucial for correcting and regulating social development (Hobbs, 2024; Tulodziecki et al., 2021). This requirement aligns with the goal of empowering individuals to be informed, reflective, and engaged participants in a

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democratic society (National Association for Media Literacy Education [NAMLE], 2023). The emphasis on the reflective individual is also found in the German concept of *Bildung*, which implies both an individual's reflection on their tangible and social environment and an active engagement with it through action (Klafki, 1985; Sjöström & Eiks, 2020). Thus, within a framework that emphasizes the principle of social responsibility, media education should promote adolescents' competence to critically reflect on media within contexts of action (Tulodziecki & Grafe, 2018).

To provide suitable media education in schools, it must be incorporated into teacher education programs (Redmond, 2016). Media education competence refers to the ability to manage complex situations through action (Tulodziecki, 2012). Emphasis should be placed on developing media education competence in relation to specific context conditions and based on theory- and practice-based experiences (Schaper, 2009).

However, efforts to promote media education competence within teacher education programs still appear insufficient (United Nations Educational Scientific and Cultural Organization, 2021; Organization for Economic Co-operation and Development, 2020). Only a few studies have examined media literacy inquiry among pre-service teachers (Schilder & Redmond, 2019) or critical media literacy in teacher education (Share & Mamikonyan, 2020). Therefore, further empirical research on suitable pedagogical concepts for initial teacher education is necessary (NAMLE, 2024).

Based on the methodological approach of design-based research (Bakker, 2018; Tulodziecki et al., 2018), this study aims to design a pedagogical concept that fosters pre-service teachers' media education competence. It addresses the following research questions (RQs):

- RQ1: How should a theory- and practice-based pedagogical concept be designed to foster the media education competence of pre-service teachers?
- RQ2: In what ways do pre-service teachers develop lesson designs for media education in schools?

Literature Review

Various competence models and frameworks for media-related educational competence, skills, abilities, and knowledge of educators have been developed internationally (see Wuyckens et al., 2022; Tiede, 2020). This chapter addresses theory-and-evidence-based frameworks that focus on promoting pre- and in-service teachers' competence while incorporating varied contexts of media education (Lipkin et al., 2020; Tulodziecki et al., 2021).

Mishra and Koehler's (2006) technological pedagogical content knowledge (TPACK) framework focuses on teachers' professional development in higher education. It captures essential qualities of teacher knowledge necessary for integrating technology into teaching, including technology knowledge, content knowledge, and pedagogical knowledge. Although this approach primarily emphasizes knowledge as central to teachers' use of technology for effective teaching rather than critical reflections on media within contexts of action, it underscores the relevance for developing curricula and designing pedagogical strategies.

The European Framework for the Digital Competence of Educators (DigCompEdu) serves as a reference for stakeholders involved in developing digital competence models. It includes six areas in which educators' digital competence is expressed through 22 competences (Redecker, 2017). Area six *facilitating learners' digital competence* focuses on activities where teachers support students in acquiring digital competence, including *information and media literacy* as the competence to analyze and interpret information, critically evaluate the credibility and reliability of information and its sources, and ensure *responsible use* to safeguard learners' physical, psychological, and social well-being while using digital technologies (Redecker,

2017). These competence descriptions emphasize the importance of promoting individuals to act self-determinedly and socially responsibly.

The International Society for Technology in Education (ISTE) standards serve as a framework for educators to empower students as learners (ISTE, 2017). The model includes seven standards, each emphasizing a different role of educators. One role is that of a *citizen*, wherein teachers should inspire students to promote socially responsible practices, critically evaluate online resources, protect intellectual rights, property, and privacy, and manage personal data and digital identity. These aspects align with the need to emphasize social responsibility in media education.

Tulodziecki's (2012) competence-standard model for media pedagogy has been widely cited in German research contexts (Blömeke, 2000). It encompasses three competence areas: the use of media to stimulate and support learning processes, the realization of media education tasks, and the development of media pedagogical concepts in schools (Tulodziecki, 2012). Each competence area is specified with competence aspects and competence standards that should be achieved at a certain point in initial teacher education (Tulodziecki, 2012). The *realization of media education tasks* addresses the development of media education competence considering specific contextual conditions based on theory- and practice-based experiences (Tulodziecki, 2012). The framework focuses on the academic phase of initial teacher education, aligning with the primary objective of this phase: for students to acquire academic foundations and develop a research-focused mindset (Tulodziecki, 2012). Therefore, it is particularly suitable for the development of the pedagogical concept, as it addresses media education competence as a distinct competence area in initial teacher education and sets specific standards that can serve as learning objectives.

Previous empirical studies have emphasized promoting media literacy (Erdem & Erişti, 2022; Schilder & Redmond, 2019; Share & Mamikonyan, 2020), digital competence (Haşlamam et al., 2023), or TPACK (F. Johnson et al., 2024; Köstler & Wolff, 2025). Implementing a course curriculum based on validated, theoretical, and evidence-based frameworks can effectively enhance pre-service teachers' media literacy skills and shift their perceptions of media literacy toward recognizing its importance for establishing critical autonomy and self-expression (Erdem & Erişti, 2022). Integrating critical reflections on media in a curriculum, including various forms and artifacts, can reduce pre-service teachers' non-critical questioning habits and increase attention to key media literacy concepts (Schilder & Redmond, 2019; Share & Mamikonyan, 2020). Diagnostic options to assess whether the underlying standards of a pedagogical concept have been achieved can be found in evaluations of portfolios or reflection reports (Haşlamam et al., 2023). Course concepts that link subject-specific objectives from pre-service teachers' diverse educational backgrounds with aspects of digitalization can foster positive attitudes and beliefs toward technology (Köstler & Wolff, 2025). Curricula that include content focused on various media education concepts and their evaluation for future school practices can improve participants' media pedagogy knowledge (F. Johnson et al., 2024).

While the importance of media literacy for pre-service teachers is widely acknowledged (Schilder & Redmond, 2019), enhancing pre-service teachers' media education competence requires additional pedagogical knowledge and abilities (Tulodziecki, 2012). In her intervention study, Klač (2020) addressed media pedagogical competence, which includes the realization of media education tasks as a competence area. An action-oriented pedagogical concept enabled pre-service teachers to develop lesson designs for media pedagogy, which improved in quality and became more differentiated after attending a semester-long course on media pedagogy (Klač, 2020).

In conclusion, there is a research gap regarding the development and evaluation of theory- and practice-based, action-oriented pedagogical concepts that specifically focus on fostering pre-service teachers' media education competence, rather than their media literacy or comprehensive media pedagogical competence.

Pedagogical Concept to Foster Pre-service Teachers' Media Education Competence

Pedagogical Concept

In this exploratory study, a pedagogical concept to foster pre-service teachers' media education competence was developed and implemented in initial teacher education at a German University, following the approach of a theory- and practice-based development and empirical evaluation of pedagogical concepts for higher education (Tulodziecki et al., 2018). This aligns with design-based research approaches, which place the design at the center of investigation, involving multiple iterations of development, empirical evaluation, and refinement (Bakker, 2018). The iterative development of solutions to practical and complex educational problems provides the context for empirical investigations (Bakker, 2018). Within the development process of a pedagogical concept for higher education, Tulodziecki et al. (2018) emphasize the importance of interlocking theory and practice. The pedagogical concept presented here can be considered an initial version within this iterative development process, intended to undergo empirical evaluation to validate and prepare it for further sub-studies (Tulodziecki et al., 2018).

Tulodziecki's (2012) competence-standard model focuses on the academic phase of initial teacher education. The model is applicable across various international educational contexts, particularly because it shares perspectives on teacher professional development and standards in higher education with other evidence-based competence models and frameworks such as TPACK, DigCompEdu, and ISTE. However, the competence-standard model covers three competence areas within the context of media pedagogy, one of which is media education competence, setting it apart from frameworks and models that primarily focus on teacher knowledge (Mishra & Koehler, 2006), digital competence (Redecker, 2017), or the use of technology (ISTE, 2017). Therefore, it serves as a suitable theoretical foundation for the pedagogical concept. By fostering media education competence, we focus on the competence area of the realization of media education tasks (competence area B) and on four of five competence aspects, each operationalized with two competence standards (Tulodziecki, 2012) (see Table 1):

Table 1

Competence-standard Model for Media Pedagogy: Realization of Media Education Tasks

Competence Aspects	Competence Standards
B1 Understand and assess individual or social conditions for media education activities	B1.1: Outline the significance of students' extracurricular media use for socialization and education, referring to theoretical approaches and empirical findings through examples. B1.2: Illustrate the consequences resulting from B1.1 for media education activities through examples.
B2 Describe and evaluate theoretical approaches for media education activities	B2.1: Outline approaches to media education and related empirical studies adequately. B2.2: Evaluate approaches to media education from empirical, normative, and practice-related points of view.
B3 Analyze and evaluate examples for media education activities	B3.1: Analyze media education lesson designs regarding their learning prerequisites, objectives, and learning and teaching activities (including content, social forms of learning, and media). B3.2: Evaluate media education lesson designs from empirical, normative, and practice-related points of view.
B4 Develop own theory-based examples of media education activities	B4.1: Develop media education lesson designs referring to approaches to media education and describe them regarding their learning prerequisites, objectives, and learning and teaching activities (including content, social forms of learning, and media). B4.2: Reflect on media education lesson designs from empirical, normative, and practice-related points of view.

Note. Translated from *Medienpädagogische Kompetenz und Standards in der Lehrerbildung [Media pedagogical competence and standards for teacher education]*, by G. Tulodziecki, 2012, pp. 290-293.

To comprehensively promote pre-service teachers' media education competence, it would be desirable to consider all five competence aspects along with their respective competence standards within the pedagogical concept. Due to the limitations imposed by the timeframe of the seminar intended for implementation, we focus on the eight competence standards (B1.1-B4.2) of the first four competence aspects (B1-B4).

Overall, the pedagogical concept includes a constructive alignment of competence standards, action-oriented teaching and learning activities, and portfolio tasks for learning and assessment purposes throughout the semester (Biggs, 2014). The teacher educator presents one complex task for each set of competence standards to stimulate the action-oriented learning process (Tulodziecki et al., 2017; see Table 2). Students develop and document their task solutions in a portfolio through several steps.

To emphasize practical purposes and stimulate the pre-service teachers' learning processes, they are presented with the lesson design task related to B4.1 and B4.2 at the beginning of the semester (Tulodziecki et al., 2017): "Develop and reflect on your own theory-based media education lesson design. The lesson design should be integrated into a selected teaching subject, allowing for interdisciplinary work across subjects within the respective school curriculum. It should particularly emphasize promoting adolescents to act in a socially responsible way in a world shaped by media."

The development and documentation of task solutions related to competence standards B1.1-B3.2 are designed as stages preceding the development of an original theory-based media education lesson design. This is accomplished in the task solution related to B4.1, where students are tasked with developing a lesson design using the action- and development-oriented approach as a theoretical foundation. Action- and development-oriented lesson design encompasses the description of important components of lesson planning, including adolescents' prerequisites, learning objectives, and learning and teaching activities (including content, social forms of learning, and media) based on various theories (Tulodziecki et al., 2017).

According to Tulodziecki et al. (2021), media-related knowledge and experiences, along with associated abilities, can be pre-existing from extracurricular contexts or acquired through media education. These can be described using references to theory, empirical evidence, and established educational guidelines and curricula (Tulodziecki et al., 2017). Referring to Vygotsky (1978), Schroder et al. (1975), and Piaget (1979), Tulodziecki et al. (2021) outline five stages of intellectual development, which can be used to categorize certain thinking patterns. Based on Kohlberg (1977), five stages of socio-moral judgement development are distinguished (Tulodziecki et al., 2021). Drawing from Maslow (1981) and Deci and Ryan (1993), Tulodziecki et al. (2021) identify several needs as significant concerning adolescents' media use.

Learning and teaching activities in the classroom should be structured according to the eight phases of the teaching and learning process (Tulodziecki et al., 2017). The task solution related to B4.2 requires pre-service teachers to conduct a comprehensive evaluation of their theory-based lesson designs. Additionally, at the start and end of the semester, participants are encouraged to reflect on their prerequisites and learning outcomes regarding their media education competence through reflection tasks. Portfolios serve as effective tools for monitoring and stimulating students' learning experiences, facilitating knowledge construction, and fostering competence (Akleh & Wahab, 2020). Furthermore, portfolios allow students to engage in self-assessment, review their progress, and participate in regular discussions about their work (Birgin & Baki, 2007).

Table 2

Portfolio Tasks Related to Competence Standards B1.1-B4.2

Portfolio Task 1	• Outline the significance of students' extracurricular media use for socialization and education, referring to theoretical approaches and empirical findings related to the prospective media education lesson design. (B1.1) • Illustrate the consequences for media education activities related to the prospective media education lesson design. (B1.2)
Portfolio Task 2	• Outline approaches to media education and related empirical studies adequately related to the prospective media education lesson design. (B2.1) • Evaluate approaches to media education from empirical, normative, and practice-related points of view. (B2.2)
Portfolio Task 3	• Analyze media education lesson designs with objectives comparable to the prospective media education lesson design regarding their learning prerequisites, objectives, and learning and teaching activities (including content, social forms of learning, and media). (B3.1) • Evaluate media education lesson designs from empirical, normative, and practice-related points of view. (B3.2)
Portfolio Task 4.1	• Develop a media education lesson design that refers to approaches to media education and describe it regarding its learning prerequisites, objectives, and learning and teaching activities (including content, social forms of learning, and media). (B4.1)
Portfolio Task 4.2	• Reflect on the media education lesson design from empirical, normative, and practice-related points of view. (B4.2)

The pedagogical concept is developed following Tulodziecki et al.'s (2017) action- and development-oriented pedagogical approach, which has proven effective in various empirical studies focused on higher education (e.g., Förster & Grafe, 2023). The teaching and learning process for each complex task is structured into six selected phases based on the principles of action-, development-, needs-, and situation-oriented pedagogy (Tulodziecki et al., 2017; see Table 3): (1) Introduction to a complex task and collection of spontaneous solution proposals, (2) Agreement on objectives and discussion of their significance, (3) Agreement on procedure, (4) Foundations for the solution of the complex design task, (5) Solution of the complex task, (6) Comparison and summary of solutions.

Table 3
Basic Model of the Pedagogical Concept

Unit	Competence Standards	Content (linked to the phases of an action-oriented teaching and learning process (Tulodziecki et al., 2017))	Portfolio Tasks
1		Introduction to complex task and collection of spontaneous solution proposals; Agreement on objectives and discussion of significance;	Reflection
2		Agreement on procedure	
3	B1.1	Outlining the significance of students' extracurricular media use, their experiences, and their perceptions towards contemporary advancements in the media landscape	1
4	B1.2	Illustration of consequences for media education activities	
5	B2.1	Outlining of theoretical approaches to media education and related empirical studies	2
6	B2.2	Evaluation of theoretical approaches to media education from empirical, normative, and practice-related points of view	
7	B3.1	Analysis of existing media education lesson designs that focus on contemporary advancements in the media landscape	3
8	B3.2	Evaluation of existing media education lesson designs from empirical, normative, and practice-related points of view	
9	B4.1	Development of media education lesson designs: Description of important lesson components (Tulodziecki et al., 2017)	4.1
10		Development of media education lesson designs: Forms of lesson designs (Tulodziecki et al., 2017)	
11		Development of media education lesson designs: Lesson designs emphasizing the principle of social responsibility (Tulodziecki & Grafe, 2018)	
12	B4.2	Evaluation of media education lesson designs: Principles of peer feedback and evaluation	4.2
13		Evaluation of media education lesson designs from empirical, normative, and practice-related points of view	
14		Compilation of further questions about future advancements in the media landscape; Reflection on the learning process	Reflection

Course Design

The course design was structured as a one-semester program with 14 90-minute sessions.

The chosen learning content for pre-service teachers includes references to contemporary advancements in the media landscape as well as to the principle of social responsibility to promote critical discussions about their significance for the present and future of adolescents (Tulodziecki et al., 2021).

The phases of an action-oriented teaching and learning process are implemented using flipped classroom principles, enabling participants to prepare seminar content for the task solutions at home. This facilitates thorough analyses and evaluations of the learning content, emphasizing cooperation and collaboration in class (DeLozier & Rhodes, 2017). The university's learning management system served as a tool for planning and communication throughout the semester, providing tasks and learning content for preparation at home, and including additional reading material, which was regularly updated based on new advancements in the media landscape (Tulodziecki et al., 2021). The content-sharing tool TaskCards was used to present, compare, and assess solutions developed during collaborative learning activities in class (Tulodziecki et al., 2021).

Learning activities were primarily conducted in small groups, designed to bring together pre-service teachers from school-specific programs or those who shared similar perspectives on topics related to media education.

The pedagogical design was implemented in four advanced school pedagogy courses at a German university. Duration, content, media, and social forms of learning were carried out as outlined in the course design.

Materials and Methods

Research Design

This study represents the first iteration of the design-based research process (Bakker, 2018; Tulodziecki et al., 2018). In line with RQ2, it aims to gain a deeper understanding of the ways in which pre-service teachers develop lesson designs for media education in schools.

Data Collection

Data was collected between April 2023 and August 2023. The task solutions provided by pre-service teachers for the portfolio task related to B4.1 served as qualitative data for RQ2. In this portfolio task, pre-service teachers were expected to develop a media education lesson design that refers to approaches to media education. They were tasked with describing it regarding its learning prerequisites, objectives, and learning and teaching activities (including content, social forms of learning, and media) (see Table 2). Data from the portfolio solutions was anonymized by an independent student assistant prior to data analysis. An online questionnaire was used to collect socio-demographic data and learning prerequisites of the sample.

Data Analysis Approach

To investigate the ways in which pre-service teachers described important components of lesson planning, task solutions related to B4.1 were utilized as qualitative measures. A total of 71 portfolios were analyzed using qualitative content analysis (Mayring, 2022). The textual material was analyzed based on a deductive category assignment. For this purpose, we developed a category system and a coding guideline with definitions, coding rules, and anchor examples for each category (Mayring, 2014). The coding unit, defined as the smallest component of the material that can be coded, was set to a clear phrase or word order in the text. The context unit was the respective portfolio task 4.1 (Mayring, 2022). Every text passage that referred to the description of an important component of lesson planning was categorized according to the coding guideline. Referring to the step-by-step model for a deductive category assignment (Mayring, 2022), the coding guideline underwent revisions at specific points through preliminary coding. Further adjustments were made after analyzing 20% of the material before completing the final work-through. The portfolios were initially categorized in German, and selected task solutions were translated into English later for the presentation of results.

To assess the reliability and reproducibility of the category system, a second researcher (intercoder) independently categorized a randomly selected 20% subsample of portfolio tasks, following the same approach. In the conclusive coding conference, both coders' marked text materials were compared to reach a consensus on each marked text passage and its assigned category. The intercoder agreement reached high levels for all items ($K = 0.85$; 76.0%-100.0%), indicating a high reliability of the category system as well as a high reproducibility of the categorizations (Brennan & Prediger, 1981).

Drawing on the theoretical background of action- and development-oriented lesson design, important components of lesson planning in the context of media education emerged as main categories: (i) learning prerequisites, (ii) objectives, (iii) learning activities, and (iv) teaching activities (Tulodziecki et al., 2017). Based on the action- and development-oriented pedagogical approach to media education, 27 additional subcategories were developed as part of the

category system. These subcategories address different aspects of learning prerequisites and objectives, as well as learning and teaching activities associated with different phases of the teaching and learning process (Tulodziecki et al., 2017; see Table 4).

Table 4*Deductive Category System for the Analysis of the Task Solutions Related to B4.1*

Category	Deductive Category
Learning Prerequisites	• Pre-existing Knowledge and Experiences and Associated Abilities Including Learning and Work Techniques • Level of Intellectual Development • Level of Socio-moral Development • Needs
Objectives	• Acquisition of Knowledge and Experiences and Associated Abilities Including Learning and Work Techniques • Promotion of Intellectual Development • Promotion of Socio-moral Development • Consideration of Needs
Learning Activities	• Express Spontaneous Solution Proposals (1) • Consider Objectives (2) • Consider the Significance of Learning Content (2) • Collect Questions for Procedure (3) • Propose Procedure (3) • Collect and Structure Foundations for Task Solution (4) • Develop Task Solutions (5) • Present, Compare, and Assess Solutions (6) • Summarize What Has Been Learned (6) • Apply What Has Been Learned (7) • Reflect on and Evaluate Learning Outcomes and Paths (8)
Teaching Activities	• Confront Learners with a Task That Stimulates the Learning Process (1) • Discuss Objectives and Significance of Learning Content (2) • Introduce Relevant Information for Procedure (3) • Provide Impulses and Assistance for Independent Task Solutions (4/5) • Encourage Presentations, Comparisons, and Assessment of Solutions (6) • Offer Assistance for Summarizing What Has Been Learned (6) • Introduce Application Tasks (7) • Initiate Reflections and Evaluations of Outcomes and Paths (8)

Note. The numbers following the deductive categories of *learning activities* and *teaching activities* indicate the respective phase of a teaching and learning process according to the action- and development-oriented pedagogical approach for media education (Tulodziecki et al., 2017).

Sample

The convenience sample consisted of 71 pre-service teachers from different educational backgrounds attending mandatory advanced school pedagogy courses. These courses are a compulsory part of initial teacher education at the German university, offering students the flexibility to select course topics according to their interests and scheduling constraints. Participation in the research study was voluntary, and written informed consent was obtained per GDPR regulations at the start of the semester. Fifty-three participants identified as female, while 18 participants identified as male. On average, participants were 21.9 years old ($SD = 2.34$, Min = 19 years, Max = 29 years). In terms of academic experience, students were, on average, in their 4.5th semester ($SD = 2.10$, Min = 1st semester, Max = 10th semester). Thirty-three participants were enrolled in initial teacher education programs for secondary schools (*Mittelschule*, *Realschule*, *Gymnasium*), 23 participants for special needs education (*Förderschule*), and 15 par-

ticipants for elementary school (*Grundschule*). The diverse representation of different educational backgrounds is advantageous as it provides a wide range of personal information and experiences.

Results

This chapter focuses on participants' descriptions of important lesson planning components, including learning prerequisites, objectives, and learning and teaching activities. Statistics on code frequencies and combinations will be reported first in each case, followed by descriptive summaries of findings. All participants were randomly assigned a number.

Description of Learning Prerequisites and Objectives

Regarding learning prerequisites and objectives, participants predominantly described knowledge, experiences, and associated abilities, including learning and work techniques. This was followed by references to intellectual development, socio-moral development, and needs (see Table 5; Tulodziecki et al., 2021). An analysis of code combinations revealed co-occurrences in descriptions of learning prerequisites and objectives. Most participants described more than one category of learning prerequisites (70.4%, 50 out of 71 portfolios), with a variety of them covering all categories (43.7%, 31 out of 71 portfolios). More than one category of objectives was described by over half of the participants (54.9%, 39 out of 71 portfolios), with some describing all categories (22.5%, 16 out of 71 portfolios).

Table 5

Code Frequencies: Description of Learning Prerequisites and Objectives Found in 71 Portfolios

Learning Prerequisites		
Deductive Category	Abs. Frequency	Rel. Frequency
Pre-existing Knowledge, Experiences and Associated Abilities, Including Learning and Work Techniques	70	98.6%
Level of Intellectual Development	46	64.8%
Level of Socio-moral Development	41	57.7%
Needs	35	49.3%
Objectives		
Deductive Category	Abs. Frequency	Rel. Frequency
Acquisition of Knowledge, Experiences and Associated Abilities, Including Learning and Work Techniques	69	97.2%
Promotion of Intellectual Development	30	42.3%
Promotion of Socio-moral Development	28	39.4%
Consideration of Needs	26	36.6%

Knowledge, Experiences and Associated Abilities, Including Learning and Work Techniques

Many participants drew on theoretical foundations, references to curricula, and empirical findings to justify the expected and required knowledge, experiences, and perceptions of adolescents (Tulodziecki et al., 2017). Theoretical foundations and references to curricula were particularly used to establish connections between media-related and subject-related goals and content, as well as to describe the significance of media use in terms of education and socialization. Empirical evidence was employed by participants to strengthen descriptions of adolescents' media use, including the use of digital devices and social media platforms, and specific media-related experiences, such as exposure to disinformative and frightening content

or encounters with stereotypical depictions of body images and edited social media posts. This is illustrated by the following participant's description:

Among children aged six to 13, 75% regularly consume YouTube videos (Guth et al., 2022), with a preference for funny videos and music videos (Media Education Research Association Southwest, 2021). Moreover, over 50% of students who use the internet regularly use WhatsApp every day and often have a WhatsApp group for their school class (Media Education Research Association Southwest, 2021). However, approximately 45% of children are confronted with frightening or inappropriate content on social media (Bitkom, 2022), which means that students may already have some knowledge about the dangers of social media. (P28)

Intellectual Development

Many participants outlined expected stages of intellectual development (Tulodziecki et al., 2021; Piaget, 1979; Schroder et al., 1975; Vygotsky, 1978) of their students without specifying objectives, as shown here: "Accordingly, it can be assumed that primary school-aged students are at the stage of isolated or fixed thinking and bring this level as a prerequisite for learning into the classroom" (P50). Other participants specifically referred to adolescents' thinking patterns and particularly described the need to promote levels of cognitive structure. The following participant's description illustrates these findings:

They should be encouraged to reflect on their thought processes and evaluate their arguments from different perspectives [...]. It is expected that the children will likely be at levels (2) (isolating thinking) and (3) (concrete-differentiating thinking). Therefore, they should be encouraged to systematically evaluate various problem-solving strategies and courses of action based on specific criteria (Tulodziecki et al., 2017). (P34)

Socio-Moral Development

Many participants outlined expected stages of socio-moral development (Tulodziecki et al., 2021; Kohlberg, 1977) without specifying objectives: "I would locate students in the 11th grade at stage four, 'orientation to the social system with a conscious acceptance of justified obligations'" (P7). Regarding the promotion of socio-moral development, most references addressed the consideration of others' perspectives through changes of perspective and the promotion of a common identity. One participant explained:

By showing the motives of both the perpetrator and bystanders, students are encouraged to critically question their morals. This lays the groundwork for a higher level of social interaction, in which the students no longer see their own peer group as the most important authority but recognize that certain rules should be followed for a healthy coexistence. (P4)

Needs

In describing needs related to adolescents' media use, participants particularly addressed adolescents' needs for belonging and love, respect and appreciation, and self-determination and autonomy. Fewer participants referred to the need for knowledge and competence, and for security and orientation (Tulodziecki et al., 2021; Deci & Ryan, 1993; Maslow, 1981).

Social media were often attributed special significance regarding their influences on these needs and perceptions of reality, often caused by self-presentation and role modeling by influencers, adolescents' consumption of advertisement-related posts, or hurtful communication on platforms and messengers. One participant described:

Students aged 14 to 15 follow many trends, which are most commonly pushed by influencers. These influencers advertise media for many brands, as they have a large reach and direct contact with customers. Due to their desire for recognition and belongingness, adolescents are especially tempted to buy certain products promoted by popular influencers. Adolescents are often more easily influenced than adults and do not weigh purchase decisions through cost-benefit analysis. (P42)

Some participants linked the consideration of needs with the promotion of a responsible, confident, and self-reflective use of platforms, emphasizing the importance of maintaining friendships through communication and entertainment, and promoting the ability to distinguish between realistic and unrealistic representations in media, as illustrated in the following manner:

For adolescents aged 11 and older, social media provide answers to their quest for orientation and identity. As a result, influencers are interesting figures for identification who offer potential for role models. Adolescents tend to adopt many views from social media. For this very reason, students should be empowered to distinguish between reality and fiction. (P60)

Description of Learning and Teaching Activities

The descriptions of learning and teaching activities in the lesson designs showed considerable differences regarding the respective phases of the teaching and learning process (Tulodziecki et al., 2017; see Table 6). Most participants described learning and teaching activities related to the foundations for task solutions. Learning activities related to the agreement on objectives and the discussion of their significance, as well as to the agreement on the procedure, were described to a lesser extent compared to the respective teaching activities. Learning activities related to the comparison and summary of solutions and to application tasks were described more frequently than the respective teaching activities.

Table 6*Code Frequencies: Description of Learning and Teaching Activities Found in 71 Portfolios*

Learning Activities		
Deductive Category	Abs. Frequency	Rel. Frequency
Collect and Structure Foundations for Task Solution (4)	64	90.1%
Present, Compare, and Assess Solutions (6)	61	85.9%
Apply What Has Been Learned (7)	55	77.5%
Develop Task Solutions (5)	54	76.1%
Reflect on and Evaluate Learning Outcomes and Paths (8)	53	74.6%
Express Spontaneous Solution Proposals (1)	44	62.0%
Summarize What Has Been Learned (6)	40	56.3%
Collect Questions for Procedure (3)	33	46.5%
Consider the Significance of Learning Content (2)	28	39.4%
Consider Objectives (2)	28	39.4%
Propose Procedure (3)	11	15.5%
Teaching Activities		
Deductive Category	Abs. Frequency	Rel. Frequency
Provide Impulses and Assistance for Independent Task Solutions (4/5)	69	97.2%
Discuss Objectives and Significance of Learning Content (2)	56	78.9%
Initiate Reflections and Evaluations of Outcomes and Paths (8)	54	76.1%
Introduce Relevant Information for Procedure (3)	49	69.0%
Confront Learners with a Task That Stimulates the Learning Process (1)	44	62.0%
Offer Assistance for Summarizing What Has Been Learned (6)	34	47.9%
Encourage Presentations, Comparisons, and Assessment of Solutions (6)	31	43.7%
Introduce Application Tasks (7)	28	39.4%

Note. The numbers following the deductive categories of *learning activities* and *teaching activities* indicate the respective phase of a teaching and learning process according to the action- and development-oriented pedagogical approach for media education (Tulodziecki et al., 2017; see Table 4). The deductive categories are sorted in the order of the respective absolute and relative frequencies.

Complex Task

Most of the participants developed design tasks based on the action-oriented approach by Tulodziecki et al. (2017) in their lesson plans. In these design tasks, participants expected students to create documents, such as flyers or information sheets, media products, such as social media posts or explanatory videos, or playful activities, such as fictional role plays or student conversations. Often, this involved a change of perspective. For instance, students were instructed to adopt the perspective of an influencer, a public figure, a company, or a peer, as illustrated in the following complex design task:

In class 4a, the students are currently exploring social media. The teacher assigns them the task of discussing their own use of social media with their desk partner and sharing their personal experiences. The students Max and Emma have had very different experiences with social media. Max enjoys watching YouTube videos and started using WhatsApp early on. Therefore, he tends to focus on the advantages of social media. In contrast, Emma is more cautious; she has had some negative experiences, such as being bullied by classmates on WhatsApp and encountering inappropriate content on YouTube. How might the

conversation between Max and Emma unfold? What arguments could they both express regarding whether the use of social media, especially YouTube and WhatsApp, brings more opportunities or more risks? How can social media be used responsibly in general? (P28)

Complex evaluation tasks primarily referred to the assessment of media products and the media landscape, such as design features or potential influences on individuals and society, as exemplified by:

Since my lesson design involves a complex evaluation task, the lesson begins with the presentation of the subject of evaluation. In this case, this could be a political media artifact, such as the following Instagram post from the 'Alternative for Germany' (...) [I]t will be discussed that foundations and perspectives will be collected and structured to critically examine the Instagram post and political media artifacts in general. (P7)

Complex decision cases, mostly described by participants enrolled in initial teacher education programs for secondary schools, especially referred to processes of decision-making and changes in perspectives. One participant confronted the learners with the following complex decision case:

You've known for a while that your best friend is dissatisfied with his appearance, as he sees himself as too weak and untrained, even though objectively, this isn't the case. Recently, you've been going to the gym together regularly. During your last workout, your friend told you about a questionable supplement that supposedly accelerates muscle growth, and he's now considering taking it. When you ask him why he wants to do this, he shows you his Instagram feed, where only absolutely well-conditioned individuals are visible, and he explains that he would like to look like them and 'it's completely normal these days to take supplements'. Now, he's asking you what you think about his idea. (P34)

Agreement on Objectives, Significance, and Procedure

Most participants included descriptions of teaching activities. Regarding the discussion of objectives, significance, and procedure, many participants attributed a guiding and explanatory role to the teacher:

The significance will then be elaborated together with the class in a classroom discussion. Here, students should understand that diagrams are often used to form opinions, as they provide an engaging and simple way to disseminate information. They should recognize that especially in political, scientific, and societal contexts, diagrams are frequently employed to justify an opinion. (P15)

Fewer participants included descriptions of learning activities. Here, participants particularly included activities through which learners should recognize the topic's significance, internalize a structure for the procedure, and document it into writing: "Together with the teacher, the students formulate questions that help structure the further course of action and that need to be clarified in order to examine media contributions of self-presentation regarding their design and representation features" (P21).

Development of Foundations for Task Solution, and Solution of Complex Task

Most participants described teaching activities as supporting students through moderation, including the provision of additional information or prompting questions if necessary.

Many participants also mentioned supplying supplementary materials, such as information sheets, digital devices, and extra working or reading materials to meet students' individual needs. Participants highlighted activities that contextualize content to support students' learning processes, as illustrated by the following example:

The teacher supports the students. However, it is important for the teacher to critically draw attention to [an influencer]'s ambivalence. While on one hand, he dismantles gender-stereotypical roles and advocates for the diversity of all people, on the other hand, he contributes to the trivialization and normalization of Botox treatments and supports the Botox trend at a very young age (Kampmann, 2023). (P62)

Regarding learning activities aimed at collecting and structuring foundations for task solutions, most participants described students engaging with provided materials, such as worksheets, articles, internet sources, and social media posts, and referred to various social forms of learning:

The students examine the presented material (screenshots) in pairs, focusing on the complex task and questions agreed upon at the beginning. Initially, they can put their own thoughts but also clarify and revise them by incorporating the information sheets, by conducting independent Google research, and by reviewing provided explanatory videos. (P17)

In describing learning activities to develop task solutions, most participants referred to the initially presented complex task, which students should solve using the foundations for the task solution. An example is the following:

The complex case of the identification figure Lena is revisited as small groups develop arguments for individual courses of action. These options will then be presented within the group, and a decision will be made regarding which course of action should be pursued. (P6)

Some participants did not refer to their complex tasks.

Presentation, Comparison, and Summary

Some participants described learning activities that included the presentation, comparison, and summary of task solutions without referring to an assessment of results and solution processes: "Each group presents their results in front of the class (...) These findings are collected and summarized" (P60). The majority of other participants described presentations, comparisons, and summaries with a focus on assessing results. They emphasized assessment activities that considered various options, aspects, or criteria, as well as provided opportunities for personal suggestions for improvement and feedback:

The elaborated profiles on health fake news are presented and explained by the small groups. Subsequently, the profiles are compared and evaluated based on jointly compiled criteria, and the possible consequences of disinformation in healthcare are analyzed, such as: Why is the dissemination of medical disinformation particularly dangerous? What long-term societal effects do (health) fake news have? What are the probable motivations and intentions behind (health) fake news? In what ways are (health) fake news spread? (P36)

Descriptions of presentations, comparisons, and summaries with a focus on assessing solution processes were less frequent. In these cases, participants particularly emphasized that students should compare solutions regarding different target groups, discuss the occurrence of peculiarities and difficulties, and analyze and assess the correctness and appropriateness of the approach based on selected analysis criteria, as shown here:

According to Tulodziecki et al. (2017), certain criteria could include: the (empirical) correctness of the identified legal statement, the (logical) correctness of the solution to the initial problem, and the appropriateness of the solution paths. (P53)

Application, Continuation, and Reflection

Most of the participants described learning activities to apply what had been learned. Only about a third of participants referred to the introduction of specific tasks in addition to describing the application of what had been learned:

The knowledge acquired during the processing of the complex design task can now be applied through a complex assessment task. The students are assigned to analyze the profiles of well-known influencers in terms of their forms of staging and representation and reflect on their impact on their followers. (P63)

Most participants described both learning activities to reflect on and evaluate learning outcomes and paths, as well as teaching activities to share additional information and initiate reflections and evaluations:

During a reflection phase, the students are assigned to contemplate the following questions within a plenary oral discussion (...) Finally, the realized learning process is reviewed regarding its reasonableness, and a research task is assigned as homework (...) The homework results will be revisited in the following lesson through a short reflection and repetition to generate a starting point for the subsequent topic 'Scientific Methodology and Critical Thinking in Biology' (...)." (P36)

Discussion

Regarding RQ2, the following sections first discuss participants' descriptions of learning prerequisites and objectives, followed by their descriptions of learning and teaching activities. Recommendations for further practical implementations of the pedagogical concept are included accordingly.

Many participants utilized theoretical foundations and references to curricula or empirical evidence about adolescents' knowledge, media use, or specific media-related experiences to describe the learning prerequisites and objectives (Tulodziecki et al., 2021). However, some descriptions provided by other participants lacked theoretical and empirical support, with limited or no explicit references. Tulodziecki (2012) underscores the importance of empirical and normative considerations during lesson planning. This aligns with research highlighting the necessity for teachers to access scientific sources and utilize empirical evidence for their classroom practice (Böttcher-Oschmann et al., 2021; Rochnia & Gräsel, 2022). Identifying empirical findings and applying them in practice can enhance the quality of teaching (Gussen et al., 2023; Matjašič & Vogrinc, 2024).

Consequently, it is recommended that future practical implementations expand the selected content to include information on empirical research and criteria for assessing the reliability of empirical studies. Pre-service teachers should be encouraged to apply this information to develop a research-oriented mindset.

Many participants did not describe in detail how to promote adolescents' intellectual development. Some participants referenced promoting adolescents' thinking patterns regarding the number of considered options or assessment possibilities, the number of considered aspects or criteria in assessing options or situations, and the differentiation of aspects or criteria (Tulodziecki et al., 2021; Kohlberg, 1977; Piaget, 1979). Regarding the promotion of adolescents' socio-moral development, many participants referred to the importance of considering

the perspectives of others, and some participants related to the assumption of responsibility for living together with others (Tulodziecki et al., 2021; Kohlberg, 1977). Participants' lesson designs themed around disinformation, societal inequalities, cyberbullying, role model functions, and asymmetric relationships described socio-moral development were more often clearly associated with moral dilemmas and changes of perspectives. These topics are highly relevant in light of the current advancements in the media landscape (De Abreu, 2020). This underscores the importance of adolescents engaging in discussions about contemporary moral dilemmas and adopting different perspectives to become capable of acting socially responsibly (Hobbs, 2024; Tulodziecki & Grafe, 2018). Additionally, it suggests that integrating critical reflections on media into the curriculum encourages pre-service teachers to include topics in their lesson planning that require students to analyze the power dynamics and ideologies present within the media (Share & Mamikonyan, 2020; Schilder & Redmond, 2019). Thus, further implementations should ensure that pre-service teachers are encouraged to select exemplary content for their portfolio work that considers the promotion of both intellectual and socio-moral development (Tulodziecki et al., 2021).

Participants referred to a wide range of needs related to adolescents' media use, and many participants elaborated on the necessity of considering these needs during lesson planning. However, needs were addressed more frequently by participants enrolled in initial teacher education programs for special needs education (*Förderschule*) and for elementary school (*Grundschule*). Adolescents with disabilities encounter various disadvantages when using media, and their development of competence depends on specific individual needs (Causton & MacLaod, 2021; Theoharis & Causton-Theoharis, 2011). Moreover, in elementary schools, adolescents exhibit different levels of development and needs, often related to their living conditions, such as socio-economic inequalities and varied family and living structures (Tan, 2024). This highlights the importance for pre-service teachers in these types of schools to carefully plan lessons that address the individual needs of their prospective students (Tulodziecki et al., 2021). Participants who qualified to be secondary school teachers (*Mittelschule*, *Realschule*, *Gymnasium*) addressed adolescents' needs related to media use comparatively less often. However, media often provide an effortless and consequence-free way to fulfill specific needs for students across all types of schools (Tulodziecki et al., 2021). Previous research demonstrates that the use of different forms of media can be linked to the satisfaction of various needs (B. K. Johnson et al., 2021; Parent, 2023; Tamborini et al., 2010). Therefore, pre-service teachers for secondary schools should be especially encouraged to incorporate careful and context-specific consideration of individual needs during lesson planning (Ballard, 1999; Parent, 2023).

Overall, the majority of participants did not include comprehensive descriptions of learning prerequisites and objectives but rather referred to selected aspects. The conclusion that participants emphasized specific dispositions to a limited extent may be attributed to the heterogeneous types of schools and subjects they attended, their varying focus on content, or their individual beliefs regarding media education (Herzig et al., 2015). Individual perceptions of adolescents' media competence and its importance for establishing critical autonomy and self-expression may also play a role (Erdem & Erişti, 2022). The results are also consistent with Klač's (2020) observation that pre-service teachers find it easier to describe specific teaching methods, explicit media use, and involved social forms of learning within their lesson planning rather than specifying the learning prerequisites and contextual conditions. However, research has emphasized the importance for teachers to be aware of students' prerequisites, as misleading beliefs may prevent opportunities to support their development (Chu et al., 2016). Moreover, insufficient consideration of students' individuality may lead to uncertain outcomes in classroom practice (Küth & Scholl, 2024). Since Tulodziecki et al. (2021) identify knowledge and experiences, intellectual and socio-moral development, and needs as significant dispositions for critical reflections on media within contexts of action, it is recommended that theory-

and practice-based descriptions of all these respective dispositions be integrated into media education lesson designs.

In future practical implementations, pre-service teachers should be encouraged to provide more detailed and comprehensive considerations in their own lesson designs. In describing learning and teaching activities, participants highlighted phases of the teaching and learning process differently. Certain phases were emphasized primarily in terms of teaching activities, particularly evident in the phases of agreeing on objectives, significance, and procedure. The findings indicate that participants attributed a central role to the teacher in moderating and structuring activities, such as initiating discussions about objectives or introducing relevant information for solving tasks.

Interestingly, participants did not emphasize the teacher's moderating and structuring role when it came to encouraging discussions for comparison and offering assistance for summarizing what had been learned. Instead, they focused on students' activities during the phases of presenting, comparing, and summarizing solutions. These results are consistent with Herzog's (1998) findings, which observed that structuring and moderating activities are especially important in the initial phases of lesson design.

Additionally, differences in the descriptions of learning and teaching activities may arise from lesson planning for different subjects. Pre-service teachers might perceive the roles of teachers and students differently, resulting in imbalanced focuses in their descriptions of the respective phases of the teaching and learning process (Alanazi, 2019). However, in the context of an action- and development-oriented pedagogical approach to media education, students should be actively involved in considering lesson goals and their significance, as well as in collecting questions and planning procedures for solving tasks (Tulodziecki et al., 2017).

Consequently, it is recommended that pre-service teachers identify learning activities aligned with appropriate considerations of objectives and learning prerequisites instead of focusing solely on teaching activities. This will also enable them to make further decisions regarding the selection of content, social forms of learning, and media (König et al., 2020; Parsons et al., 2018; Tulodziecki et al., 2017).

Our findings show that most participants focused on learning processes centered on design, assessment, problem-solving, and decision-making. The descriptions of associated learning and teaching activities involved introducing complex tasks without prescribed solutions, hypotheses, or strategies, providing opportunities for active information search, encouraging independent structuring, allowing for alternative task solutions, and promoting the assessment of solution processes rather than just results. Learning and teaching activities were focused on adolescents' engagement with conflicts, varying viewpoints, their environment, and active participation in a dynamic classroom setting. These approaches are considered beneficial for promoting adolescents' intellectual and socio-moral development (Tulodziecki et al., 2021). Also, stimulating and supporting learning processes centered on design, assessment, problem-solving, and decision-making can empower students to correct and regulate social development and engage with media in an adequate, self-determined, creative, and socially responsible way (Tulodziecki & Grafe, 2018).

Overall, participants referred to learning prerequisites more often than to objectives, and in each case, the majority only described selected aspects. Additionally, there were differences in the ways participants illustrated the phases of the teaching and learning process. This resulted in some descriptions lacking sufficient detail on how prerequisites, objectives, and learning and teaching activities would correlate during the lesson. Küth and Scholl (2024) indicate that pre-service teachers in their first phase of initial teacher education may overlook certain aspects of lesson components due to the complexity of lesson planning tasks. Nonetheless, this study's findings show that pre-service teachers were able to incorporate a variety of theory- and practice-based descriptions.

The study's findings are subject to various limitations. The results are based on a non-representative convenience sample of pre-service teachers from advanced school pedagogy courses. Accordingly, the results cannot be generalized. Additionally, due to the research design aimed at providing initial empirical insights, the effects of the pedagogical concept cannot be determined. Furthermore, the possibility for students to select courses according to their thematic interests may have led to a positive sample bias.

Conclusion and Outlook

Regarding RQ1, an examination of frameworks and empirical studies revealed a need for theory- and practice-based pedagogical concepts designed to foster pre-service teachers' media education competence. Consequently, a pedagogical concept for initial teacher education was developed based on the principles of an action- and development-oriented pedagogy (Tulodziecki et al., 2017; Tulodziecki et al., 2021). In this context, the design of a pedagogical concept aimed at fostering media education competence should comprise various elements. The competence aspects and standards outlined in Tulodziecki's (2012) competence model for media pedagogy should align with action-oriented teaching and learning activities, as well as the use of learning and assessment portfolios (see Tables 1, 2, and 3): understanding and assessing individual or social conditions for media education activities, describing and evaluating theoretical approaches for media education activities, analyzing and evaluating examples for media education activities, and developing an own theory-based lesson design for media education in schools. Participants should develop media education lesson designs based on the action- and development-oriented approach, which considers essential components of lesson designs to promote adolescents' competence in critically reflecting media within contexts of action (Tulodziecki et al., 2021). The content should address contemporary advancements in the media landscape to stimulate critical discussions about their significance for the present and future of adolescents. Small group work facilitates pre-service teachers in exchanging ideas on school-specific study programs or related perspectives on media education topics. Learning management systems and content-sharing tools support students' learning processes.

An analysis of pre-service teachers' descriptions of key components of lesson designs (RQ2) provided insights into how they develop media education lesson designs to enhance adolescents' media competence. For this purpose, pre-service teachers' media education lesson designs documented in a portfolio were selected as a data collection source, which has proven effective in previous studies focused on media-related educational competence (e.g., Haşlamani et al., 2023). The participants' descriptions indicate that pre-service teachers recognize the necessity for media education lesson designs that adequately address contemporary advancements in technology, content, institutional systems, and the economy, all of which are relevant to adolescents' media use (Tulodziecki et al., 2021). Theoretical, curricular, and empirical references in media education lesson designs were utilized to establish connections between adolescents' experiences within their environment and the development of suitable media education in schools. Emphasis was placed on fostering adolescents to act socially responsibly through lesson designs that involved perspective changes and the promotion of a shared identity, as well as through lesson designs that considered adolescents' reflections on their needs to encourage a more responsible, confident, and self-reflective use of media platforms (Sjöström & Eiks, 2020). By articulating their students expected intellectual and socio-moral development, pre-service teachers considered whether they could already align their actions with societal norms and universal human values, and whether they could engage with lesson content through differentiated, criteria-based, or critical-reflective thinking patterns (Tulodziecki et al., 2017). These considerations significantly contribute to well-planned lesson designs that emphasize the principle of social responsibility and aim to promote adolescents' competence to critically re-

flect on media within contexts of action (Tulodziecki & Grafe, 2018). Therefore, it can be concluded that both the competence-standard model and the theory- and practice-based pedagogical concept are suitable for practical implementations to enhance pre-service teachers' media education competence.

Further research is needed on pedagogical concepts that focus on fostering media education competence compared to promoting media literacy and digital competence. Refinements of the pedagogical concept and empirical evaluations of its effectiveness to foster pre-service teachers' media education competence, in the context of design-based research (Bakker, 2018; Tulodziecki et al., 2021), should be conducted. For future studies, it would be beneficial to include pre- and post-assessments to evaluate the effectiveness of the concept. Qualitative measurements using competence- and standard-based tasks should be conducted to contribute to evidence-based research. Pre-service teachers' responses at pre- and post-intervention measurement points could be analyzed for differences in achieving media education competence based on the consideration of media education competence standards. Regarding transferability, the pedagogical concept can be applied to other national or international educational contexts with similar learning conditions (Tulodziecki et al., 2018). Under comparable circumstances, similar learning outcomes can be anticipated (Tulodziecki et al., 2018).

Moreover, by addressing media education standards, the pedagogical concept reflects important objectives for broader teacher professional development (Darling-Hammond, 2023; Darling-Hammond et al., 2017; Kultusministerkonferenz, 2022; Moore & Bonilla, 2014) and media education (NAMLE, 2024). Ultimately, there is a pressing need to further integrate media education into teacher education policies (Hobbs et al., 2022; Schilder & Redmond, 2019; U.S. Department of State, 2022).

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