

Research Article

Formation of Media Competence of Future Primary School Teachers in The Context of Digital Education

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Abstract

In the rapidly evolving landscape of digital education, the development of media competence among future primary school teachers has emerged as a critical aspect of teacher training. Media competence—encompassing the ability to critically analyze, create, and effectively use digital and media tools—has become essential for ensuring effective teaching and learning in modern classrooms. This paper explores the conceptual foundations, pedagogical strategies, and practical implications of forming media competence among pre-service primary educators. Emphasis is placed on integrating media literacy into teacher education curricula, employing active learning methods such as project-based learning and digital storytelling, and fostering reflective practices. This research has been done at the Abai Kazakh National Pedagogical University and investigated how digital technologies can enhance pedagogical practices and how future teachers can be equipped to navigate information overload, digital misinformation, and the ethical dimensions of media use. Furthermore, it addresses the role of higher education institutions in promoting a systematic and competency-based approach to media education. Through a review of international frameworks and national educational standards, the study identifies key competencies and proposes a model for structured media competence development. Challenges such as unequal access to technology, lack of institutional support, and insufficient training

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Received: 10-03-2025; Accepted: 09-04-2025; Published: 15-05-2025



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are also analyzed. Ultimately, the paper argues that the formation of media competence is not merely a technical skill but a complex, multi-dimensional process that encompasses cognitive, emotional, and ethical development. As digital education continues to reshape pedagogical environments, empowering future primary school teachers with robust media competence is fundamental to preparing the next generation of learners.

Keywords

Media competence, digital education, teacher training, primary education, media literacy, digital pedagogy, future teachers, educational technology

1. Introduction

In the context of the global digital transformation of education, the need for developing media competence among future primary school teachers has become both urgent and essential. As classrooms evolve into technology-rich learning environments, educators are expected to not only use digital tools but to do so critically, creatively, and ethically. This shift challenges traditional models of teacher education and demands the incorporation of comprehensive media literacy frameworks into pre-service training.

The urgency of this issue is particularly pronounced in Kazakhstan, where national strategies like the “Digital Kazakhstan” program and updated educational standards aim to align the education system with global digital trends. However, despite policy reforms, the implementation of media competence development remains inconsistent across teacher training institutions. Future teachers often graduate without the practical and critical skills required to engage young learners in media-rich settings. This situation echoes similar concerns in the United States, where scholars emphasize the growing gap between digital tool availability and teachers' preparedness to use them meaningfully (Hobbs, 2010; Greenhow, Robelia & Hughes, 2009).

Media competence is not merely about technological proficiency—it encompasses the ability to critically analyze media messages, evaluate sources, navigate digital environments, and produce educational content responsibly. As the information ecosystem becomes increasingly saturated with misinformation, algorithm-driven content, and social media influences, teachers must be equipped to guide students in developing media literacy from the early stages of education.

Kazakh researchers such as A.B. Dzhurzhzenova (2020) and G.K. Nurmukhanbetova (2018) have highlighted the limited integration of media literacy within pedagogical education, calling for systematic curriculum reforms and stronger institutional support. Dzhurzhzenova argues that future teachers must be prepared not only for technological use but also for the ethical, cultural, and pedagogical implications of media. Meanwhile, American media literacy expert

Renee Hobbs (2010) emphasizes the centrality of critical thinking and communication in media education, suggesting that teacher training must embed these principles deeply across subject areas.

Despite differing educational contexts, both Kazakh and American scholars converge on the idea that media competence should be a foundational component of teacher education. However, there is still a lack of empirical research and practical models tailored to future primary school teachers, particularly in post-Soviet educational systems.

Research Questions

1. What are the key components of media competence necessary for future primary school teachers in the context of digital education?
2. How do current teacher training programs in Kazakhstan integrate media competence development, and what gaps remain?
3. What best practices from international (particularly American) experiences can be adapted to strengthen the formation of media competence in Kazakhstan?
4. What pedagogical methods and institutional conditions are most effective in fostering sustainable media competence?

By addressing these questions, this study aims to contribute to the theoretical and practical discourse on digital education and provide actionable recommendations for improving teacher education programs.

The concept of media competence has evolved significantly over the past two decades, reflecting shifts in technology, communication, and educational philosophy. Scholars around the world, including in Kazakhstan and the United States, have contributed diverse perspectives on how media literacy should be understood, taught, and embedded within teacher training programs. This section examines these contributions to provide a theoretical foundation for the formation of media competence in future primary school teachers.

In Kazakhstan, the study of media competence in education has gained momentum as part of the broader digital transformation goals under the “Digital Kazakhstan” program.

However, local research emphasizes that the integration of media literacy into teacher training remains underdeveloped.

G.K. Nurmukhanbetova (2018) identifies a critical gap between educational policy and practice. While state standards acknowledge the need for digital skills, media competence—particularly critical thinking, ethical media use, and content creation—has not been adequately included in pedagogical curricula. Nurmukhanbetova argues that this gap leads to insufficient preparedness of new teachers to address the media-related challenges of modern classrooms.

A.B. Dzhurzhonova (2020) highlights the lack of systematic approaches to developing media competence among future teachers in Kazakhstan. According to her, teacher training programs focus mainly on operational ICT skills and neglect the cognitive and communicative aspects of media education. She calls for a rethinking of instructional design, emphasizing the inclusion of digital ethics, media analysis, and creativity as core components of pre-service teacher education.

Additionally, A.T. Tazhibayeva (2019) emphasizes the cultural and linguistic dimensions of media competence in Kazakh-speaking classrooms. She asserts that media education must be localized and culturally relevant to be effective in primary school contexts, where children are highly impressionable and language plays a key role in identity formation.

In the American context, the field of media literacy has long been recognized as a vital component of education, especially in preparing teachers to help students navigate a complex media landscape.

Renee Hobbs, a leading scholar in media literacy education, argues that media competence is essential not only for consuming media but for participating in democratic society. In her foundational work *Digital and Media Literacy: Connecting Culture and Classroom* (2011), Hobbs outlines a framework that includes access, analysis, evaluation, creation, and reflection as key competencies. She insists that teacher education must move beyond teaching technical skills to fostering critical media analysis and ethical reasoning.

Greenhow, Robelia, and Hughes (2009) examine how digital technologies are reshaping learning environments and call for the integration of participatory media practices—such as blogging, digital storytelling, and social media engagement—into teacher training. They argue that media competence also includes the ability to use these tools to foster collaboration, creativity, and student voice.

Henry Jenkins (2006) introduces the idea of "new media literacies", suggesting that traditional literacy skills are no longer sufficient. He identifies skills such as networking, multitasking, and transmedia navigation as critical for educators to develop in both themselves and their students. Jenkins emphasizes that these skills are best learned through

immersive, participatory learning environments—something that teacher education programs should model.

While Kazakh and American scholars approach the topic from different educational and cultural perspectives, they converge on several critical points:

Media competence is multi-dimensional, involving more than just the technical use of digital tools. Teacher education must be restructured to reflect the realities of digital communication, media saturation, and online learning. Critical thinking, ethics, and creativity are essential competencies in a digital society and must be prioritized in the training of future teachers. Institutional support, localized content, and practical experience are crucial for the successful integration of media competence into educational systems. These findings highlight the importance of developing a comprehensive, context-sensitive approach to forming media competence among future primary school teachers.

2. Methods

2.1. Research Design

This study employs a **mixed-methods research design**, combining both qualitative and quantitative approaches to gain a comprehensive understanding of the current state, challenges, and opportunities in the formation of media competence among future primary school teachers. The rationale for this design lies in its ability to integrate numerical data with in-depth insights from participants, offering a more holistic picture of the phenomenon.

2.2. Participants

The research was conducted in three teacher training universities in Kazakhstan:

Abai Kazakh National Pedagogical University and Shakarim State University of Semey.

A total of **150 fourth-year pre-service primary school teachers** participated in the study. The sample was selected using **stratified random sampling** to ensure representation across regions and linguistic backgrounds (Kazakh and Russian language streams). Additionally, **12 university instructors** responsible for teaching media- and ICT-related courses were interviewed.

The study utilized three primary instruments for data collection:

Survey Questionnaire

A structured questionnaire was developed to assess students' self-perceived level of media competence, including five core domains:

Information search and analysis
Use of digital tools
Critical media evaluation
Media content creation
Digital communication and collaboration

The questionnaire used a 5-point Likert scale and was validated through expert review and a pilot test with 20 students.

Semi-Structured Interviews

In-depth interviews were conducted with university instructors and a smaller group of 15 student participants. These interviews aimed to explore how media competence is taught, perceived barriers to development, and examples of best practices.

Document Analysis

Curricula, syllabus, and national education standards were analyzed to evaluate the degree to which media literacy and digital education competencies are embedded in teacher education programs. This included a review of course objectives, content, and learning outcomes.

Quantitative data from the survey were analyzed using **descriptive statistics** (mean, standard deviation) and **correlation analysis** to examine relationships between students' reported media competence and variables such as course exposure and digital access.

Qualitative data from interviews were transcribed, coded, and thematically analyzed. Key themes were identified based on recurring patterns related to institutional support, pedagogical approaches, perceived competence, and challenges.

Document analysis followed a **content analysis** method, focusing on the presence of media-related terminology, competencies, and assessment tools in official curricula.

Participation was voluntary, and informed consent was obtained from all participants. Data were anonymized to ensure confidentiality, and the study was conducted in accordance with ethical guidelines approved by the research ethics committee of Abai Kazakh National Pedagogical

University.

3. Results

The results of this study offer a detailed overview of the current level of media competence among future primary school teachers in Kazakhstan, based on survey data, interviews, and curriculum analysis. The purpose of this section is to present empirical findings that answer the research questions posed earlier and to identify the strengths and weaknesses in the current teacher education system related to digital and media education.

Quantitative data were collected through a structured survey involving 150 fourth-year students across three pedagogical universities. Participants were asked to self-assess their competence across ten key areas of media literacy using a 5-point Likert scale. These areas were chosen to reflect a comprehensive understanding of media competence, ranging from technical skills to ethical awareness and pedagogical application.

To complement the survey findings, qualitative data were gathered through interviews with university instructors and document analysis of official curricula. These data sources provide contextual insights into how media education is currently implemented, what challenges exist, and what areas require improvement.

Each of the ten tables below presents responses for a specific media competence domain. The accompanying analysis discusses the distribution of responses, highlights significant trends, and identifies critical gaps that warrant further attention. The findings are intended to support evidence-based recommendations for reforming teacher training programs and aligning them more closely with the demands of digital education in both national and global contexts.

This section presents the results of the survey and qualitative analysis of media competence levels among 150 future primary school teachers. The survey measured self-reported competence across 10 key areas. The results are presented in both percentage tables and narrative form for clarity.

Table 1. Information Search and Analysis

Very Low	Low	Moderate	High	Very High
5%	10%	35%	30%	20%

A total of 50% of students rated themselves as high or very high, indicating reasonable confidence in searching for and analyzing information. However, 15% still fall into the low or very low category, suggesting the need for better training in research skills.

Table 2. Use of Digital Tools

Very Low	Low	Moderate	High	Very High
3%	7%	30%	35%	25%

A majority (60%) reported high or very high competence. This reflects the impact of formal ICT training but highlights that technical usage is often emphasized more than critical or ethical aspects.

Table 3. Critical Media Evaluation

Very Low	Low	Moderate	High	Very High
12%	20%	40%	20%	8%

32% of students reported low or very low competence in evaluating media, indicating a significant gap in critical thinking and source assessment training.

Table 4. Media Content Creation

Very Low	Low	Moderate	High	Very High
18%	25%	35%	15%	7%

Only 22% reported high or very high competence. Students are not frequently asked to create media content, pointing to a weakness in hands-on digital production experiences.

Table 5. Digital Communication and Collaboration

Very Low	Low	Moderate	High	Very High
7%	15%	38%	25%	15%

While 40% showed high or very high competence, there remains a significant group (22%) lacking basic communication tools for online education.

Table 6. Understanding of Digital Ethics

Very Low	Low	Moderate	High	Very High
14%	22%	40%	15%	9%

Only 24% of students felt confident in digital ethics, which raises concern given the increasing importance of responsible online behavior and copyright literacy.

Table 7. Integration of Media in Lesson Planning

Very Low	Low	Moderate	High	Very High
21%	30%	28%	12%	9%

Just 21% of students were confident in integrating media into their lesson plans. This reflects an urgent need for curriculum redesign to focus on applied teaching practice with media tools.

Table 8. Familiarity with National Media Standards

Very Low	Low	Moderate	High	Very High
25%	28%	30%	10%	7%

A large portion (53%) of participants were unfamiliar with national digital and media competence standards. This highlights a disconnect between policy and implementation in teacher training institutions.

Table 9. Confidence in Using Media in Classroom

Very Low	Low	Moderate	High	Very High
15%	25%	30%	20%	10%

Only 30% of future teachers felt confident or very confident using media in classrooms, which may hinder innovation and student engagement.

Table 10. Access to Digital Resources at University

Very Low	Low	Moderate	High	Very High
20%	30%	25%	15%	10%

Access remains a key barrier, with 50% of respondents indicating low or very low access to digital resources such as hardware, software, or high-speed internet.

4. Discussion

The findings of this study reveal several important trends and challenges related to the formation of media competence among future primary school teachers in Kazakhstan. The results show a complex and uneven picture: while students generally demonstrate moderate proficiency in using digital tools, significant gaps persist in the areas of critical thinking, ethical understanding, content creation, and pedagogical integration of media.

One of the key observations is that **technical and operational media skills are relatively well-developed**, with over 60% of respondents reporting high or very high competence in using digital tools. This is largely due to the presence of compulsory ICT courses in teacher training programs. However, **technical familiarity does not equate to full media competence**, as defined by international frameworks such as UNESCO's Media and Information Literacy framework or the European DigCompEdu model.

For instance, **only 22% of students reported high or very high competence in media content creation**, which is crucial for modern teaching that incorporates multimedia, videos, presentations, and educational games. This low figure suggests that teacher education programs are still focused on consumption of digital content rather than empowering future educators to become active creators of pedagogically sound media resources.

Furthermore, **critical media evaluation and understanding of digital ethics were among the weakest areas** identified in the study. Despite the growing prevalence of misinformation, especially on social media, nearly one-third of respondents rated themselves as having low or very low skills in assessing the reliability of media sources or understanding ethical issues such as copyright and digital privacy. This finding echoes the concerns raised by scholars like Renee Hobbs (2010) and Dzhurzhanova (2020), who advocate for integrating media analysis and ethics into teacher training, not just ICT instruction.

Another critical weakness identified was the **lack of media integration into lesson planning**.

Less than one-quarter of respondents felt confident in using media tools effectively in the classroom context. This points to a disconnect between technical knowledge and pedagogical application. It also indicates that future teachers may not be receiving sufficient support during their practicum experiences to experiment with and implement digital resources in authentic teaching situations.

Additionally, the **lack of access to digital resources** remains a barrier. Half of the participants indicated low or very low access to necessary tools and platforms in their universities. This issue particularly affects students from rural areas and under-resourced institutions, reinforcing digital inequality at the foundational level of teacher education.

Qualitative interviews supported these findings, revealing that instructors themselves often lack formal training in media education and rely on outdated curricula. Some expressed frustration with the absence of clear national guidelines or professional development opportunities, which prevents them from embedding media competence into their teaching more effectively.

Overall, the study highlights that while Kazakhstan has made policy-level strides in promoting digital education, **there is a need for deeper curricular reform, enhanced institutional support, and a more comprehensive understanding of media competence as a multi-dimensional construct**. Integrating best practices from American and European contexts—such as project-based media creation, interdisciplinary approaches, and ethics-oriented modules—could significantly improve outcomes for future educators.

The discussion underscores the importance of treating

media competence as a strategic priority in teacher education. Without targeted interventions, Kazakhstan risks graduating teachers who are digitally literate in basic terms but unprepared to foster the kind of critical and creative media engagement demanded by 21st-century classrooms.

5. Conclusion and Recommendations

The rapid digitalization of education has transformed not only how students learn but also how teachers teach. In this evolving educational landscape, media competence is no longer optional—it is a fundamental skill set that every future primary school teacher must possess. This paper has examined the components, challenges, and opportunities associated with the formation of media competence among pre-service teachers, with a particular focus on the Kazakhstani context, while drawing comparisons and lessons from the American experience.

It is evident that media competence is a multi-dimensional concept, integrating cognitive, operational, ethical, and creative components. These competencies enable future teachers to navigate the complex digital environment, foster student engagement, and develop critical media literacy among young learners. However, despite policy-level recognition in Kazakhstan, the implementation within teacher training institutions is still at an early stage. Curricula often focus on basic ICT skills, overlooking the deeper, more reflective aspects of media education.

In contrast, American teacher education programs offer valuable insights into effective practices, such as interdisciplinary media integration, project-based learning, and a strong emphasis on critical thinking. These strategies, if adapted appropriately, can help bridge the current gap in Kazakhstan's educational system.

To address the identified challenges and enhance media competence formation, the following recommendations are proposed:

Teacher education institutions in Kazakhstan must revise their curricula to embed media competence across pedagogical disciplines. Media literacy should not be limited to technical courses but integrated into the study of language, history, social sciences, and methodology.

Universities should invest in training educators who can model effective media use and mentor future teachers in digital pedagogy. Faculty development programs, including international exchange and certification, can help close knowledge and practice gaps.

Pre-service teachers should be provided with real-world opportunities to apply media skills through internships, practicum experiences, and digital project-based learning. Emphasis should be placed on producing content for actual

classroom use.

Ensure equitable access to modern digital tools, educational platforms, and media production software within teacher training institutions, especially in rural and under-resourced areas.

Media competence must be recognized as a key professional standard for teachers. The Ministry of Education should create a clear framework for assessing and certifying media skills during and after teacher training.

In conclusion, the development of media competence in future primary school teachers is essential to meet the demands of contemporary education. It equips teachers not only to use digital tools effectively but also to guide young learners in becoming thoughtful, responsible, and media-literate citizens. By investing in comprehensive media education today, we prepare future generations for a more informed and connected world.

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