

**INTEGRATION OF TRADITIONAL AND DIGITAL EDUCATIONAL RESOURCES:
THE LEVEL OF TRAINING OF FUTURE PRIMARY SCHOOL TEACHERS**

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Abstract

The purpose of this study is to determine the level of training of future primary school teachers in the use of traditional and digital educational resources and to study the possibilities of their integration.

The mixed method was used in the study. 146 respondents from students of the 3rd-4th year of primary education participated in the survey. In-depth interviews were conducted with 15 experts (professors and teachers). The data were analyzed in the SPSS program.

The results of the study showed that 78% of respondents prefer to use digital resources, but only 34 of them can integrate pedagogically correctly. The ability to use traditional resources is high (82%), however, there are difficulties in integrating them with digital resources.

Despite the high digital competence of future teachers, their level of methodologically correct integration of traditional and digital resources is insufficient. It is necessary to introduce special courses that combine these two approaches.

Keywords

traditional educational resources, digital educational resources, integration, primary education, future teachers, digital competence, methodological training

Introduction. In the 21st century - the age of information technologies, the education system is undergoing fundamental changes. Digital transformation processes are deeply penetrating all levels of education, including primary education, not only in developed countries, but also in Uzbekistan. According to UNESCO, by 2025, 60% of educational resources worldwide are expected to be in digital format (UNESCO, 2023). In the Decree of the President of the Republic of Uzbekistan dated January 28, 2022 "On the Development Strategy of New Uzbekistan for 2022-2026," the digitalization of the education system and increasing the digital competence of teachers are defined as priority tasks.

Primary education is an important stage that serves as the foundation for the further education and development of the individual. Therefore, the professional training of primary school teachers, including their skills in using educational resources, is of particular importance.

Studies conducted in recent years show that many young teachers, despite having a high level of technical skills in the use of digital technologies, face difficulties in their methodologically correct integration into the educational process (Karimova, 2023; Toshev, 2024). In particular, the issue of combining traditional and digital resources, taking into account the age characteristics of primary school students, has not been sufficiently studied.

The SAMR model (Substitution, Augmentation, Modification, Redefinition), developed by Puentedura (2022), describes the stages of technology integration into education. Russian researcher Ivanova (2023) studied the didactic possibilities of using digital resources in primary education.

However, research on a comprehensive study of the level of preparedness of future primary school teachers for the integration of traditional and digital educational resources is insufficient.

The purpose of this study is to determine the level of training of future primary school teachers in the use of traditional and digital educational resources and to study the possibilities of their integration. To achieve this, the following tasks have been defined:

1. Determination of the level of use of traditional educational resources by future primary school teachers.
2. Assessment of the skills of future primary school teachers in using digital educational resources.
3. Identify existing problems in the integration of traditional and digital resources.
4. Development of recommendations for improving the integrated approach.

The scientific novelty of the research lies in the fact that for the first time, using the example of higher educational institutions of Uzbekistan, the attitude of future primary school teachers to traditional and digital educational resources, the level of their use, and their preparedness for integration were comprehensively analyzed. A methodological model for combining traditional and digital resources has also been proposed.

Methods. The research is based on a mixed methodology and includes quantitative (questionnaire) and qualitative (interview) approaches. The study was conducted from September 2025 to January 2026.

The study involved 146 respondents from the 3rd and 4th-year students of the primary education program of three higher educational institutions of Uzbekistan (Tashkent, Samarkand, and Bukhara State Universities). The sample was formed by a random method. The age structure of the respondents was in the range of 20-23 years. In-depth interviews were also conducted with 15 experts - professors, teachers, and methodologists in pedagogical sciences.

The following data collection tools were used:

The questionnaire consisted of 25 questions and included three blocks: 1) use of traditional resources (8 questions); 2) use of digital resources (10 questions); 3) integration skills (7 questions). The questionnaire was assessed on the Likert scale (1-5 points).

- Interview: consisting of 10 open questions, the opinions of experts on integration problems, the effectiveness of existing courses, and proposals were studied.

- Analysis of practical assignments: lesson plans (notes) of 30 students were analyzed, and the level of use of traditional and digital resources was assessed in them.

Quantitative data were processed using SPSS (v.26). Average values (M), standard deviation (SD), and percentage indicators were calculated. T-test and ANOVA methods were used to

determine intergroup differences. The significance of the differences was assessed at the level of $p < 0.05$. Qualitative data (interviews) were processed using the content analysis method.

Results. The research results showed that the skills of future primary school teachers in using traditional educational resources are at a relatively high level. 82% of respondents ($n=120$) noted that they regularly use textbooks and teaching aids. The level of use of visual aids (posters, cards, models) was 71 percent ($n=104$).

Resource type	Regularly uses (%)	Occasionally uses (%)	Rarely uses (%)
Textbooks and manuals	82,2	15,1	2,7
Workbooks	76,7	18,5	4,8
Visual aids	71,2	21,9	6,9
Handout materials	68,5	24,7	6,8
Didactic games (traditional)	58,9	30,8	10,3

Table 1. Indicators of the use of traditional educational resources

Interestingly, no statistically significant difference in the use of traditional resources was found between 3rd-year and 4th-year students ($t=1.24$, $p > 0.05$). This can be explained by the similarity of traditional methodological training programs in both courses.

The results on the use of digital resources recorded significantly higher indicators. 93% of respondents ($n=136$) have a smartphone or tablet, and 87% ($n=127$) have a laptop or computer. The daily internet usage rate was 98 percent.

Resource type	Regularly uses (%)	Occasionally uses (%)	Rarely uses (%)
Electronic textbooks	64,4	28,1	7,5
Video lessons (YouTube)	89,7	8,9	1,4
Online tests and platforms	76,0	18,5	5,5
Multimedia apps	69,2	23,3	7,5
Educational games (digital)	56,2	31,5	12,3

Table 2. Indicators of the use of digital educational resources

78% of respondents ($n=114$) stated that they prefer the use of digital resources over traditional ones. However, only 34% of them ($n=50$) noted that they can pedagogically correctly select digital resources and methodologically correctly integrate them into the lesson process.

4th-year students ($M=4.2$, $SD=0.7$) have a higher indicator in the use of digital resources compared to 3rd-year students ($M=3.8$, $SD=0.9$) ($t=3.12$, $p<0.01$). This difference may be related to special courses such as "Information Technologies" and "Digital Educational Resources" taught in the 4th year.

According to the results of the survey and interviews, future teachers face the following problems in the process of integration:

- Methodological problems (67%): Not knowing at what stage of the lesson, in what way to use digital resources.
- Technical problems (54%): Insufficient technical equipment in schools, low internet speed.
- Didactic problems (48%): Inconsistency of digital resources with the age characteristics of primary school students.
- Time problem (41%): Preparation of integrated lessons takes a lot of time.

In an interview with experts, 80% of professors and teachers ($n=12$) noted the insufficiency of special modules on the integration of traditional and digital resources in the existing curricula.

Discussion. The research results confirmed the hypothesis put forward: the digital competence of future primary school teachers is relatively high (especially at the level of everyday use), but they do not have sufficient training in the methodologically correct integration of traditional and digital resources. The priority of using digital resources (78% preference) to a certain extent hinders the full use of the pedagogical potential of traditional resources.

The most important finding is that students can "technically" use digital resources, but cannot "methodically" integrate them correctly. This situation can be explained by the fact that the SAMR model proposed by Puentedura (2022) remains stuck in the first two stages (Substitution and Augmentation), cannot reach the stages of Modification and Redefinition. That is, students often use digital resources as a simple substitute for traditional resources, but cannot fully utilize their transformative potential.

Our results are consistent with the studies of Karimova (2023) and Toshev (2024). Karimova (2023) also noted in her research that the digital competence of future teachers is high, but their methodological training is low. Toshev (2024) found that 65% of primary school teachers face methodological, not technical, difficulties in using digital resources.

From a foreign study, Ivanova (2023) noted similar results in the Russian experience: 82% of students regularly use digital resources, but only 28% of them can successfully integrate traditional and digital resources in the learning process. However, unlike the results of Ivanova (2023), integration skills in our study are slightly higher (34%) - this may be the result of the digitalization reforms being implemented in Uzbekistan in recent years.

As Puentedura (2022) notes, the integration of technologies into education is carried out in stages, and the special training of teachers plays an important role in this process. The correlation identified in our study ($r=0.51$ between completing special courses and integration skills) confirms this opinion.

These findings make the following contribution to the theory of primary education didactics: the integration of traditional and digital resources should develop in two directions - technical (ability to use resources) and methodological (ability to use resources in accordance with pedagogical goals). The imbalance between these two directions (high technical, low methodological) negatively affects the effectiveness of integration. The study also expands the possibilities of applying the SAMR model in the context of primary education.

Conclusion. In this study, the level of preparedness of future primary school teachers for the use of traditional and digital educational resources and the possibilities of their integration were studied. The research results allowed us to draw the following conclusions:

1. The level of use of traditional educational resources by future primary school teachers is relatively high (on average 70-80%), especially regarding the use of textbooks and teaching aids. However, the development of skills in using didactic games and handouts is required.

2. Skills in using digital educational resources are technically high (on average 75-90%), but methodologically insufficient. Students actively use digital resources in everyday life, but face difficulties in integrating them into the educational process in accordance with pedagogical goals.

3. Skills in integrating traditional and digital resources are below average (average 3.2 points). The greatest difficulty is observed in the ability to combine digital resources with traditional methods and apply them sequentially at different stages of the lesson.

4. The main problems in the integration process are methodological (67%), technical (54%), and didactic (48%). The lack of specialized integration modules in existing curricula exacerbates these problems.

There is a positive correlation ($r=0.51$) between completing special courses and integration skills, which indicates the effectiveness of targeted training.

The main scientific novelty of the research is to identify the imbalance (high technical, low methodological) in the level of preparedness of future primary school teachers for the integration of traditional and digital resources and to determine ways to eliminate this problem.

Practical recommendations include:

- Implementation of special courses or modules on the integration of traditional and digital resources in higher educational institutions;
- Improvement of the mechanisms for developing and evaluating students' integration skills during pedagogical practice;
- Creation of a methodologically based bank of digital resources for primary education;
- Strengthening the role of professors and teachers in the formation of integration skills in students through professional development.

In conclusion, a modern primary school teacher should not only be able to use traditional and digital resources separately, but also organize effective and interesting lessons that correspond to the age characteristics of students, combining them. For this, it is necessary to improve the process of training future teachers in the higher education system, to ensure the harmony of theory and practice.

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