

Attitudes of Teachers: using contemporary technology for effective teaching

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ABSTRACT – Attitudes of Teachers: using contemporary technology for effective teaching. The use of modern technology to achieve effective teaching is very necessary in the development of education in Kosovo. This study aims to investigate teachers' attitudes regarding the use of modern technologies in effective teaching. Technologies are considered to be the main factor in the development of the learning process. During the research, we analyzed the current findings, challenges, risks, and benefits that may appear to us from the use of contemporary technologies. To get the results from the research, we conducted a semi-structured interview with 10 primary education teachers in Kosovo. The results of the research are comparable to the reviewed literature, based on which we have argued our findings.

Keywords: Technology. School. Teacher. Conditions. Infrastructure.

RESUMO – Atitudes Docentes: utilizando a tecnologia contemporânea para um ensino eficaz. O uso de tecnologias modernas para alcançar um ensino eficaz é fundamental para o avanço da educação no Kosovo. Este estudo tem como objetivo investigar as atitudes dos professores referentes ao uso de tecnologias modernas para um ensino eficaz. As tecnologias são consideradas o principal fator no desenvolvimento do processo de aprendizagem. Durante a pesquisa, analisamos os atuais achados, desafios, riscos e benefícios que podem surgir com o uso de tecnologias contemporâneas. Para obter os resultados da pesquisa, realizamos uma entrevista semiestruturada com dez professores do Ensino Fundamental I no Kosovo. Os resultados da pesquisa são semelhantes aos da literatura revisada, com base na qual discutimos nossos achados.

Palavras-chave: Tecnologia. Escola. Professor. Condições. Infraestrutura.

Introduction

Changes in school infrastructure and teaching methods are generally easy to make; it is accepted that technology and teaching changes are made for the development of contemporary teaching and learning effectiveness. In fact, the importance of new teaching technologies and methods is an essential element of building so-called "knowledge societies." In addition, at least apparently, teachers and administrators are in favor of changes that occur in the learning process continuously (Karaca, 2011). However, recognition of the need for such changes and the implementation of changes are two different things. Accomplishment and, especially, preservation of these changes require high levels of experience from a large number of people who act directly in the teaching process at school (Lindfors; Pettersson; Olofsson, 2021). They also require coordination among experts from different fields of subjects and academic disciplines to achieve positive change. Finally, they require long-term engagement by government leaders, which is a particularly difficult thing in creating the conditions suitable for using technology in contemporary teaching (Center for Democracy and Reconciliation in Southeastern Europe, 2013). Referring to the data taken by USAID (2013), most schools in Kosovo have computers placed in cabinets, either as a static computer or laptop, to which all schools have access. These classrooms have mobile computer labs that contain netbooks and regular laptops, internet access, and mobile booths for carrying and charging laptops and other devices. Other schools have computer labs with laptops and internet access. In addition, there are other schools that have computer labs and electronic testing learning platforms, where contemporary teaching is conducted through technology (USAID, 2013). However, these findings do not mean that schools in Kosovo meet all the conditions for the development of contemporary teaching through technology, as these tools are not sufficient from the very fact that the realization of this process requires more devices and investment in meeting the requirements of contemporary schools (MASHTI, 2022). However, during the year 2021, the Ministry of Education compiled the Strategy for Digitization of Education in Kosovo 2021-2026 in order to improve teaching and learning and put technology into the function of developing digital competence for young people by setting objectives and drafting an action plan (MASHTI, 2022).

To have a school interaction, they have to be equipped with computers and have a plan for their use. The way of using them is a factor that influences the interaction and cooperation of the students, so the teacher should consider the organization of classes when designing activities that are accomplished with the help of teaching technology. Since the process of teaching is not just acceptance and dissemination of mutual knowledge but also a multilateral process that is carried out with activities such as drawings, songs, games, sports activities, visits, and meetings and through the use of ICT during the accomplishment of the learning process. Setting up computers

can be done in many ways, from placing them in IT cabinets to one-and-a-half computers, up to classrooms with one and many computers (Mexhuni, 2014).

Now Kosovo is a country with a high level of use of information and communication technology on the part of the population, as in most developed countries; on the other hand, Kosovo schools have a computer for students, while over 50% of the teaching staff are trained in ECDL (MASHT, 2016a). This situation requires rapid movement towards the application of technology in the classroom (Pahamzah; Agaj Avdiu, 2022), because the opposite may reduce the importance of the school to future students (Paidican and Arredondo 2022). It is expected that the use of technology over the next five years will take on other dimensions, which for now cannot be foreseen (Jobirovich, 2022). Therefore, it may happen that later amendments to the Kosovo Strategic Plan for Education should be made in favor of faster integration of technology in schools (MASHT, 2016c).

The education system in Kosovo is structured as follows:

- Preschool Education (children aged < 6 years)
- Primary Education (grades 1-5, children aged 6-10 years)
- Lower Secondary Education (Grades 6-9, Children Aged 11-14)
- Higher Secondary Education (grades 10-12, children aged 15-18)
- Higher Education (MASHT, 2016c).

In view of new technological developments, the ICT skills field is not fixed but is a function of new technological developments (Makharova et al., 2022). This is evident with the appearance of advanced technology like the Internet in recent years, changes that result in ways students build knowledge and interact with others (Waxman et al., 2013). During the use of technology, students develop skills in using it for work related to the use of technology: management, information creation and presentation, problem-solving, decision-making, communication, cooperation, performing assigned tasks, creative expression, and empirical argumentation (Rakhimovich; Ib-rokhimovich, 2021). This includes conducting research, creating multimedia information products, data analysis, drafting problem solving, and controlling equipment working independently and in collaboration with others (Khlaif; Sanmugam; Ayyoub, 2022). Through the use of technology, students learn about utilization due to their needs in everyday life (MASR, 2017).

The use of technology serves all fields with concepts and skills. The ICT connection with other areas enriches the learning situations in which the student develops his/her competences. Using technology helps in better absorption of subjects by the student by making them more accessible and more feasible. Using technology plays an important role in all areas of use. Technology helps students focus longer in the classroom because the information can be transmitted in various forms through technological programs (MASR, 2017).

The school management and provision of conditions for the use of technology in teaching

School and its management provide for students all the conditions and opportunities to be educated and prepared for lifelong learning by constantly cultivating curiosity and interest in learning. In this function, teaching and learning are promoted based on styles and effective learning strategies (A'mar; Eleyan, 2022). In contemporary developments in society, science, technology, and economics, it is not possible to demand that all knowledge, skills, and attitudes be achieved through education. So, the school should create the necessary conditions for students to learn and use the technology according to the needs of the time (MASHT, 2016b). The primary role and task of each school in the Republic of Kosovo is to ensure the mastery of the main competencies defined by the state curriculum by all students in a safe, inclusive, friendly, and encouraging environment for the entire school community, among which is also the provision of conditions for the use of technology at school (IPK, 2016).

The work of school directors is inevitably related to quality education (GIZ, 2012). Now in Kosovo, the Ministry of Education, Science, and Technology has an Education Information Management System (EMIS), which is functional, and the many indicators based on which we measure the progress of achievements in many education areas provide the statistical data that this system offers to the situation of all schools in Kosovo (MASHT, 2018).

In the context of ICT integration in the education system in general, as well as in the development and application of ICT standards for students, teachers, and school administrators, they should take a number of measures:

- In the education management system.
- Physical infrastructure.
- Teachers' qualifications for ICT use.
- Development of ICT curricula in pre-university education.
- Alternative sources of teaching to be part of the planning (MASR, 2009).

Equipping schools with technological tools is the first step that should make the management of schools easier; however, only investing in equipping schools with information technology was not a good practice, as reported by several European countries (Abduraxmanova, 2022). School management should provide long-term policies; set detailed objectives on a wide scale of action based on the quality of education at the school for a period as long as possible; reform the organization and management of education processes; provide long-term training for students; use technology in a timely manner and in the right place; enhance ICT competences for teachers and administrative staff; and increase efficiency in school administration using technology (Birisci; Kul 2019). The key issue, according to numerous studies, is

the focus on the use of educational technology issues, and in our research, we are focused on using technology directly in contemporary teaching in primary schools in Kosovo (Mexhuni, 2014). School development plans are potentially oriented to improving quality in institutions. School development plans currently have a strong focus on improving infrastructure, technology equipment with accompanying tools, school facilities, and teaching materials (MASHT, 2016a).

Teachers' knowledge of using technology

In our lives we often use the term successful teacher, and such a teacher receives this label when he is able to achieve the goals and program objectives and, above all, use his skills to accomplish all the tasks he has set for himself (Djamdjuri; Kamilah, 2022). A teacher with authority and professionalism always accompanies devotion to students, being responsive to the profession (Spiteri; Rundgren, 2020). There are even teachers lacking authority and professionalism, always associating poor results, expressing stiffness, and making language mistakes during lessons. But there are also teachers who have not solved their professional destination, though they work, get tired, and have no effective work (Bowman et al., 2022). When a teacher is such, he/she must leave the profession himself/herself or by the competent authorities (Gjoka, 2009). Teachers' knowledge of using computer software makes it possible to produce more interesting messages by animating their work with pictures, drawings, sounds, and videos (Hennessy et al., 2022). A clean message and attractive design not only make learning easier to understand but also show professionalism and dedication to work (Gixhari, 2016). At the time of digitization, technology tracking and updating of knowledge on their use are considered a necessity in being successful in work and life (Yunus; Yunus, 2021).

The integration of technology in today's education has advanced with giant steps around the world by significantly enhancing its quality even for us, but this is always linked to the knowledge of teachers that have over its use (Rohaani; Taconis; Jochem, 2012). It is clear that in the context of globalization, students are already expecting technologies to be part of their learning experience (Achilovna; Furkat, 2022). Today many forms of teaching through technology can be effective teaching tools if used wisely and appropriately (Antonietti; Cattaneo; Amendun, 2022). Therefore, it is important for teachers to understand its importance and to apply these technologies to the teaching process. As we move through the era of information technology, education cannot be immune to these changes, and teachers must be trained and walk in step with the times (Gixhari, 2016).

As we move through the era of information technology, education cannot be immune to these changes, and teachers must be trained and walk in step with the times:

- Design, plan, manage, create, and evaluate solutions;
- Be creative, innovative, and take initiatives;

- Understand how contemporary technology has developed;
- Make decisions and information on using technology for a sustainable future;
- Engage and build trust, responsibility to choose, manipulate the technologies, materials, and data information systems;
- Analyze, evaluate, and criticize problems, needs, or opportunities to identify and create solutions (MASR, 2017).

To reach the appropriate level of teachers' knowledge and use of technology in the teaching process, these measures should be taken:

- Training that should always be planned in line with the professional standards of teachers and their content should be drafted based on clear competence objectives (Pinto-Santos; Garcias; Garcias, 2022).
- Annual training planning, which should be based on midterm national or local strategic plans, as well as the scientific identification of the professional needs of teachers at the central or local level.
- Teacher training of the pre-university education system in ICT integration in curricula and during the learning process;
- Pre-university education system teacher training in ICT integration into curricula through learning based on projects that are implemented by them (MASR, 2009);
- Establishment of a national training center for the use of technology by teachers and the professional development of teachers at the established center (Saqipi, 2023).

In the use of new technologies in contemporary teaching, both the age and the experience of teachers play an important role. The facts show that the age of the teachers associated with this, and also their experience, is presented as an important element for the implementation of technologies and their use in practice. It is clear that experienced teachers seeking greater freedom incline more toward traditional approaches or their modification in the teaching process (Gixhari, 2016). Teachers' knowledge to promote learning by means of electronic technology helps create a more effective learning environment and is more beloved by students, as different media facilitate the provision of information in different ways by adapting to students with different styles of teaching, as well as enabling students to have access to learning materials and to engage in learning activities at any time and with appropriate conditions for them (Kafyulilo; Fisser; Voogt, 2016). Very important is that teaching through technology is spread all over the world (Mexhuni 2014). Knowledge about the use of the Internet by teachers is already indispensable to achieving goals in contemporary teaching because it attracts children extraordinarily (Derbel, 2017). Internet-based learning is a method of education that focuses on pedagogy, technology, and the design of curricula aimed at educating students through the use of new teaching technologies (Avdiu, 2021).

During the time of Covid-19, good experience has been gained in the greater use of technology in the learning process; the transformation of the learning process and the use of technology by teachers have shown good results in achieving learning outcomes (Pischetola, 2022).

There are several studies of this nature in Kosovo, but they are generalized and do not base their research on the attitudes of teachers regarding the use of technology in the teaching process (MASR, 2009; Council of Europe, 2020; Gixhari, 2016). And because of this situation, this research is of particular importance and creates the opportunity to compare this work with other countries.

The purpose of the research is to get the attitudes of primary school teachers on the use of modern technology for effective teaching, current findings, challenges, risks, and benefits that can be shown from the use of technologies.

In order to get answers about the purpose of this research, we have submitted five research questions:

1. How much knowledge do teachers have about the use of modern technology in the teaching process?
2. How do teachers understand the use of technology for effective teaching?
3. Do teachers have challenges or barriers during the learning process for using technology, and what are they?
4. Do teachers think that there are risks that appear when using technology in teaching?
5. What are the benefits of using technology during the learning process?

In primary education, the concepts of modern technology are well allocated, which include the use of digital tools such as tablets, computers, and educational applications to improve the learning process. These technologies allow students to engage in interactive ways, explore multiple materials, and develop critical skills such as research and communication. Through the integration of technology, learning becomes more personalized and stimulating, preparing students for the challenges of the digital age in modern times (Selwyn; Potter; Cranmer, 2009).

The use of technology is a process that helps students to develop the necessary knowledge and skills to achieve the desired results in various educational subjects and to prepare for success even after school. Students have the opportunity to use technology as a tool to solve and verify solutions and to gather, communicate, and discover information. The use of information and communication technologies (ICT) is important for the development of practical activities, the realization of electronic projects, various tasks, and research for certain levels. Students should use ICT programs during the learning process and in the completion of school assignments, as well as engage with ICT and media effectively and responsibly as important

tools for information, communication, and interaction in the digital age. This is determined by the Basic Curriculum for Primary Education in Kosovo (MASHT, 2016b).

Information and Communication Technology (ICT) is essential in the framework of primary education in Kosovo, where it promotes the development of students' digital skills and supports learning in various subjects. The integration of ICT in the curriculum includes several key aspects: developing digital skills for the use of computer tools, encouraging active and exploratory learning through projects, improving communication through digital tools, and providing access to information resources and learning materials. Also, ICT facilitates cross-curricular learning, helping students to see connections between concepts. In this way, ICT contributes to preparing students for the challenges of the 21st century and develops the necessary skills for success in a digital age (MASHT, 2016b).

By analyzing the research questions, the study explores the attitudes of primary school teachers about the use of modern technology for effective teaching. The research analyzes and generates findings on the use of technology for effective teaching in elementary schools in Kosovo.

Methodology

Research design: theoretical perspective

This study is a qualitative study (Avdiu-Kryeziu; Kryeziu 2024). The research is oriented on the use of technology in the educational process in elementary schools in Kosovo. The purpose of the research is to explore the qualitative way of respondents (in the case of this research, primary school teachers) who have experience in teaching to get their attitudes regarding the use of technology in the learning process (Pandey; Pandey 2015). A qualitative approach in research with teachers, and in this case for the use of technology in the teaching process, gives us the possibility of a more general analysis of the problem and the daily practices of realizing the teaching process by means of ICT (Hammarberg; Kirkman; Lacey, 2016). For this reason, this research uses a phenomenological model, which is based on the attitudes (perceptions, experiences, thoughts, and data) of the teachers, exploring the findings from the perspective of the teachers on this issue (Köhler; Smith; Bhakoo, 2022).

Sample and sampling

The research is based on the experiences of 10 primary education teachers in primary schools in Kosovo (Lakens, 2022). The teachers involved in this research were selected intentionally; it was a purposive sample (Denieffe, 2020). Purposive sampling means the selection of people for research who are particularly important for the collection of research data (Vogrinc; Saqipi, 2020). In this case of research, all the teachers involved are graduates of four-year bachelor's

studies, and some of them even have master's studies. At the same time, they have knowledge and experience in the use of technology in the teaching process. Their teaching experience ranges from 2 to 25 years (Table 1).

Table 1 – Structures of Participants

Nr	Gender	Qualification	Working experience (years)	The classroom in which you teach	Code
1	F	BA degree	15	5	T-1
2	F	BA degree	8	5	T-2
3	M	MA degree	17	3	T-3
4	F	Cand PhD	13	4	T-4
5	F	BA degree	5	4	T-5
6	F	MA degree	9	2	T-6
7	M	BA degree	12	1	T-7
8	F	BA degree	25	3	T-8
9	F	MA degree	18	2	T-9
10	F	BA degree	7	5	T-10
Total	10				

Source: Authors.

Instruments and data collection procedures

A semi-structured interview was used as the main instrument for data collection in this research (Ruslin et al., 2022). The interview that was conducted for this study was developed to get more detailed information about the research problem; the interview process lasted 45-60 min for each participant (Naz; Gulab; Aslam, 2022). The semi-structured interview consists of 5 questions related to the research problem. The interviews conducted for this research were recorded, transcribed, and coded, and finally the data obtained was analyzed from the semi-structured interview (Buys et al., 2022). The participants in this research remained confidential and were coded (identified) as T (Teacher 1-10).

Validity and Reliability

To ensure the validity and reliability of this research on the use of contemporary technology in effective teaching, we focused on the appropriateness of the research tools, methodology, research questions, sample selection, and data analysis (Avdiu-Kryeziu; Neziri, 2025). These elements are closely related and contribute to strengthening the final results of the research, thus ensuring the reliability and validity of the findings. To ensure the quality of the study, we reviewed the relevant literature and consulted with specialists in the field of education, as well as academic professors who have addressed this topic in the past. After these consultations, we concluded that the

use of semi-structured interviews is an appropriate approach for this qualitative research (Rezapour Nasrabad, 2017).

Ethics

The research ethics were approved by the municipal directorates of education and the principals of the schools where the study was conducted. Participants were informed about the nature and purpose of the research and gave their voluntary consent to participate. They were informed that participation was voluntary, and they could withdraw at any time. During the research, participants were guaranteed confidentiality, ensuring that the data would be coded and that the research processes would be protected (Sadeghi; Smith, 2024).

Data analysis

The research data were analyzed from multiple perspectives to explore new facts; this analysis followed the thematic order of the semi-structured interview. Coding of data from the research was done by the authors (Creswell, 2009).

The data for this research were analyzed based on the thematic analysis of what the participants said, why they said it, and what they wanted to say about the research issues. After analyzing the interview from the transcripts, they were read and realized by identifying the main problems and categorizing them into themes. The researchers focused on the data that had the most similarities to the research (Baumbusch, 2010). The grouping of data was done in themes, and then they were divided into sub-themes determined by the questions and researched literature (Table 2). The data analysis was coded according to the answers received from the interviewees, where all the information obtained from the research remained completely confidential and ensured full confidentiality of the participants (McIntosh; Morse, 2015).

Procedure

The research was conducted in three phases:

Phase one included obtaining permission for research, selecting participants, preparing for the research, and conducting a semi-structured interview.

Phase two included conducting a semi-structured interview with selected teachers in the respective schools to collect data regarding the use of modern technology for effective teaching.

Phase three-structuring and analyzing the data collected from the first and second phases.

10 primary education teachers participated in this research, which was conducted in 2023.

Results

This study aimed to investigate the attitudes of teachers regarding the use of modern technologies for effective teaching, which are the main factors in the development of a learning process, in Kosovar society, which is in transition and is faced with challenges in the development of the education process and the lack of technological equipment. The study also describes not only what teachers know but also how they know and practice the use of ICT in the teaching process.

Another important issue for the research was collecting data related to the current findings, challenges, risks, and benefits that may appear to us from the use of modern technologies in daily work with students at school and how this can be realized in the future. The data from the semi-structured interview research is provided with a narrative description of teachers' knowledge, daily practices at work, and the needs for future improvements. Findings from the research were defined in topics that emerged as a result of the research questions and literature review, issues that were referred to by the primary education teachers. During the process of analyzing the data, the quotes were adapted by the researchers from the most important information, and they were arranged, and the quoted sentences were translated into English. Table no. 2, which will appear below, shows the topics from the data analysis from the research, the coding.

Attitudes and knowledge of primary education teachers about the using of technology for effective teaching

Findings: ICT use - Current findings

The teachers involved in this research, the findings about the use of modern technology for effective teaching are mainly related to achieving results with the students. Teachers mainly believe that the use of technology brings many benefits during the learning process, and students can achieve better results in the learning process. In this way, the interviewed participants (teachers) stated that the use of technology in the learning process is:

- Teachers are sufficiently informed and trained regarding the use of modern technology in the learning process (T-1).
- Teachers understand technology for effective teaching as a powerful tool in the development of knowledge (T-2).
- We think for now that 95% of teachers are aware of the importance of using modern technology in the teaching process (T-4).
- Teachers are trained in the use of technology ... they are aware of the great importance it has (T-5).
- ... not everyone is capable of using it during teaching (T-6).

- We think that all teachers in Kosovo now have more favorable conditions regarding the use of contemporary technologies in teaching (T-7).
- Contemporary technologies are innovations in the teaching process; they have started to be used more in the teaching process, and now we also have digital competence in the curriculum (T-8).
- ... as a necessary need for the realization of the teaching-curricular plan (T-9).
- Software devices: laptops, digital smart boards, tablets, video projectors, etc., are some of the technological tools that in the last 10 years are being used more in order to have effective teaching (T-10, T-3).

Table 2 – Themes, sub-themes from content analysis

Category	Themes	Description
Teachers' knowledge of the using of technology	ICT use – Current findings	- Teachers are sufficiently informed and trained - technology for effective teaching - powerful tool - 95% of teachers have knowledge - teachers in Kosovo now have more favorable conditions - Teachers are trained to use technology - not everyone is capable of using it during teaching - Contemporary technologies are innovations in the learning process - digital competence in the curriculum - indispensable need for the realization of the teaching plan - technological tools that in the last 10 years are being used more and more - we have effective teaching
Teachers' understanding of technology use		
Challenges, barriers during the learning process for using technology	Challenges and barriers	- Non-participation of all students - The evolution of technology, innovations in the teaching process - Not enough training for teachers - Lack of technological equipment's in schools - We do not have people who are engaged in defects cases - achievement of curricular digital competence by students
Risks that appear during the use of technology in teaching	Risks	- browsing the information that students receive on the Internet - potential risk that they misuse - Misuse of technology by students - more dangerous are the shows of contents with scientific untruths - getting rid of the habit of reading books and dependence on technologies - insufficient technological equipment in schools - lose the habit of writing by hand, spelling, calligraphy

Benefits of using technology during the learning process	Benefits - <i>Provides a more engaging learning environment</i> - <i>Prepares students for the future</i> - <i>Increase cooperation</i> - <i>develops students' achievements</i> - <i>Develops critical thinking, creativity</i> - <i>they can engage themselves in different projects</i> - <i>Facilitates access to the learning process in time</i> - <i>Information is accessed faster</i> - <i>achieving digital competence</i>
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Source: Authors.

Challenges and barriers

- ... Non-participation of all students (T-1), In addition to the non-participation of all students, no other barriers can be presented because technology is considered an appropriate form for the development of knowledge (T1).
- The evolution of technology, innovations in the teaching process (T-2).
- Not enough training for teachers (T-4).
- There are many challenges, starting with the lack of a network in school that covers the entire school space (T-5).
- ... lack of laptops, projectors, and cabinets; lack of knowledge by the teachers about the use of technology; and maintenance of laptops if there are any in the school (T-6).
- We do not have people who are engaged in cases of defects in technological equipment (T-7).
- The need for continuous training for teachers to achieve curricular digital competence by the students (T-8).
- Greater space to create the necessary conditions for all teachers without differences (T9).
- The obvious challenges are the lack of technological equipment in schools, and the distribution of the network (Wi-Fi) does not cover the entire space of the school facility, and this also presents difficulties (T-10).

In the study conducted, several important challenges and barriers related to the use of technology in teaching have been identified. The lack of participation of all students in learning activities and the lack of sufficient training for teachers are some of the main obstacles. Also, the technological infrastructure is insufficient, including the lack of equipment, such as laptops and projectors, and the internet network that does not cover the entire school. Teachers also face difficulties in maintaining equipment and the lack of staff committed to resolving technological defects. The risk of screen addiction and the negative impact on the development of skills such as handwriting and

mathematical calculations are also concerns mentioned. To support these findings, the study by Kokaj et al. (2023) provides these challenges and barriers that coincide with our study (Kokaj et al., 2023).

The Risks

- ... browsing the information that students get on the Internet (T1).
- In the absence of maintenance staff to avoid problems that occur in computer systems such as hardware and software, the planning of the teaching unit may fail (T-3).
- If it is not used in a controlled manner, students can develop a screen addiction that can reduce engagement or participation in other activities. (T-7, T-8)
- Students may not develop the habit of writing by hand, spelling, calligraphy, or even mathematical calculations that must be done on the board by writing with a hand. (T-10)

The risks of using technology in teaching include browsing inaccurate information by students, lack of maintenance staff to deal with technical problems, development of screen addiction that affects students' engagement and social skills, and the negative impact on the development of basic skills such as handwriting and mathematical calculations, but these risks may only be for some students, as we have mentioned in this study; however, the use of ICT in teaching has many positive sides (Gregori; Zohar; Magallanes, 2025).

Benefits

- Provides a more engaging learning environment... (T-1)
- Technology also helps us in the assessment process, compiling tests and other assessment instruments. (T-2)
- Prepares students for the future... Supports learning... (T-3)
- Better connects with the students for the realization of the learning process. (T-4)
- Increases cooperation, develops students' achievements. (T-5)
- The most effective use of technology for teaching brings us the visualizations of every process or phenomenon during the development of a lesson, remains longer in the student's memory, and is almost unforgettable. (T-6)
- Develops critical thinking, creativity, and many skills in the students. Encourages independent research. (T-7)
- ... they can also engage themselves in various projects using modern technology. (T-8)
- Facilitates access to the learning process in accelerated and record time for students and teachers to get faster to the information. (T-9)
- It helps in the implementation of the curriculum and the achievement of digital competence. (T-10)

Discussion

In this study, we obtained teachers' attitudes about the use of technology for effective teaching. The use of technology for effective teaching is also found in other studies; teachers think that the use of technology brings innovation and success in the achievements of students in primary school (Burden; Byrd, 2019; Sherman; Kurshan, 2005).

A study from Cahyani & Cahyono (2012) found that the application of technology, computer software, and the use of laptops for PowerPoint presentations is not new in the learning process, as they are now a daily part of the learning process (Cahyani; Cahyono, 2012). In our research, the main attitudes from the teachers were that teachers are informed and trained enough for the use of technology, and now teachers in Kosovo have more favorable conditions for the use of technology; teachers are trained for the use of technology, and even in Kosovo the use of technology is no longer a novelty but a need of time.

Challenges and barriers in the use of technology for effective teaching are the non-participation of all students, receiving wrong or incorrect information during internet research, the evolution of technology every day, and lack of proper support from school leaders. Similar attitudes of teachers about these problems are also given in this research (Vatanartiran; Karadeniz, 2015).

The use of technology in primary education has brought new approaches that transform the learning process, being concretized in active learning, which encourages students to engage interactively through activities and digital tools, promoting the personalization of learning content, allowing teachers to adapt approaches according to the needs and learning style of each student, and facilitating collaboration between students, providing opportunities for group work and joint projects. These theories and approaches contribute to the development of necessary 21st-century skills such as creativity, problem-solving, and communication for effective teaching (Kryeziu, 2021).

The benefits of using technology for effective teaching are numerous, offering us more engaged learning environments, increasing collaboration, bringing visualizations that remain longer in memory, developing critical thinking, creativity, and independent research for students, facilitating access to documents that are not physically accessible, and achieving curricular competencies more easily (Wijnen; Molen; Voogt, 2021); (Coleman et al., 2015).

Daily practices have shown that the use of modern technology for effective teaching leads to a faster development of society. We are in step with the times in the latest technological developments, and students are better prepared for life and work in the future where these are given, also in other research that we encountered during the literature review as well as in our research (Ningsih; Mulyon, 2019; Vanderlinde; Aesaert; Braak, 2014).

In the educational process in Kosovo, the use of technology in teaching has provided opportunities for improving the way of teaching and learning; however, its impact is still developing (ARKEP, 2023). Comparing this with other similar educational systems, such as those of the Western Balkan countries or Eastern European countries, we can notice that there are differences in the implementation and adaptation of technology in teaching (Qorraj; Kačaniku, 2023). For example, in some countries in the region, the use of digital platforms and online learning materials has become more widespread and institutionalized, offering great opportunities for teachers and students in various fields (USAID, 2023). In Albania, the use of technology has started to become more widespread, especially in urban schools, where opportunities for the use of digital tools and advanced teaching have been created (ASCAP, 2021). In North Macedonia, the use of technology in teaching has seen a significant increase, especially after the pandemic, with the implementation of digital platforms and online learning materials (Gecevska, 2023).

One aspect that requires in-depth analysis is the pedagogical impact of these technologies on the educational process. As the literature shows, the use of technological tools can improve student engagement and offer opportunities for personalized learning, but this also brings challenges in terms of teacher training and their adaptation to these technologies. Some teachers in Kosovo express that while technology can be useful for engaging students, it also requires ongoing support and additional resources to ensure its effective use. Likewise, institutional implications are important to ensure an adequate infrastructure and administrative support that can support the long-term implementation of technology in Kosovar education (Zhubi; Ismajli, 2022).

Conclusion

Many factors affect the achievement of effective teaching; among the most important is the use of modern technology, which has developed rapidly in all spheres of life, as well as in the teaching process. Our research is mainly focused on the attitudes of primary school teachers regarding the use of technology for effective teaching, current findings, challenges, risks, and benefits that can be shown from the use of modern technologies in daily work with students at school.

The attitudes of primary school teachers regarding the use of technology for effective teaching are based on the achievements of the students, the curriculum of Kosovo, which has digital competence as one of its main competencies, the need for the use of technology, and the benefits, challenges, barriers, and risks that appear during the journey of realizing the learning process through technology.

For the realization of effective teaching, teachers are the main factor by taking the use of technology as the main tool in the teaching process during planning, designing tests, assessment, development of

the lesson, and using different computer programs as well as different technological devices during the teaching process.

During the research, we found that teachers have knowledge and are trained in the use of technology, but at the same time, they have also shown the difficulties they encounter in the practical implementation of teaching work through technology, such as the lack of technological tools, the lack of internet in all school spaces, the lack of support by the school leaders, etc.

Different studies show that the use of technology for effective teaching brings many benefits to the learning process as well as to the students themselves, who achieve better results in learning and for their future lives (Mishra; Koehler, 2006). With the use of technology, teaching becomes easier, time is saved, we are in step with the developments of the time, we get new knowledge, apply the curriculum, raise the interest of students in innovation, and encourage critical thinking and creativity of students (Kosumi; Avdiu-Kryeziu, 2025), seeing even those difficulties that are presented in the process of implementation in daily practices (Cavas et al., 2009; Wijnen; Molen; Voogt, 2021)¹.

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Note

¹ *Limitations of the study:* this study is based on teachers' attitudes about the use of modern technology for effective teaching. Based on the fact that the use of technology in Kosovo has received a rapid development recently. In the future, we think that for this problem we will do more in-depth studies, including more teachers, by carrying out a quantitative study in order to compare the results. We think that we could get other results if we were to use another instrument for this research. Future studies aim to contribute to the realization of goals from Kosovo's Education Strategy 2022-2026, AEM-Eionet Strategy 2021-2030, specifically objective 4, etc.

References

- A'MAR, Fadia; ELEYAN, Derar. Effect of principal's technology leadership on teacher's technology integration. **International Journal of Instruction**, v. 15, n. 1, p. 781-798, 2022.
- ABDURAXMANOVA, Shaxnoza Abduhakimovna. Individualization of professional education process on the basis of digital technologies. **World Bulletin of Social Sciences**, v. 8, p. 65-67, 2022.
- ACHILOVNA, Axmadova Nasiba; FURKAT, Kuldoshev Siroj. Information tecnology in the professional development of moden teachers. **International Journal of Discoveries and Innovations in Applied Sciences**, v. 2, n. 2, p. 73-77, 2022.
- ANTONIETTI, Chiara; CATTANEO, Alberto; AMENDUN, Francesca. Can teachers' digital competence influence technology acceptance in vocational education? **Computers in Human Behavior**, v. 132, n. 1, p. 107266, 2022.

ARKEP. **Agjenda Digjiale e Kosovës 2030**. Proshtina: ARKEP, 2023. Disponível em: <https://arkep-rks.org/desk/inc/media/82582FB3-CD31-4D3D-A2AA-F7CC21ACADCA.pdf>. Acesso em: 11 jan. 2023.

ASCAP. **Manuali “Përdorimi i TIK-ut në procesin e mësimdhënies – nxënies”**. Tirana: UNICEF-Albania, 2021. Disponível em: <https://www.ascap.edu.al/wp-content/uploads/2020/10/FINAL-MANUALI-I-TRAJNIMIT-PER-ICT-16.03.2021-1.pdf>. Acesso em: 11 jan. 2023.

AVDIU, Teuta Agaj. Non-native English teachers' views on the use of music and songs in teaching English as a foreign language to primary school learners. **Rast Muzikoloji Dergisi**, v. 9, n. 3, p. 3105 - 3120, 2021.

AVDIU-KRYEZIU, Shqipe; KRYEZIU, Veli. Attitudes of students of the Faculty of Education (Kosovo) about pedagogical practice in their preparation for service. **Práxis Educativa**, v. 19, p. 1-21, 2024.

AVDIU-KRYEZIU, Shqipe; NEZIRI, Mansur. The role of the teacher in documenting summative assessment in primary. **Human Research in Rehabilitation**, v. 15, n. 1, p. 217-231, 2025.

BAUMBUSCH, Jennifer. Semi-structured interviewing in practice-close research. **Journal for specialists in pediatric nursing**, v. 15, n. 3, p. 255, 2010.

BIRISCI, Salih; KUL, Umit. Predictors of technology integration self-efficacy beliefs of preservice teachers. **Contemporary Educational Technology**, p. 75-93, 2019.

BOWMAN, Margaret A. et al. Teachers' exposure to professional development and the quality of their instructional technology use: The mediating role of teachers' value and ability beliefs. **Journal of Research on Technology in Education**, v. 54, n. 2, p. 188-204, 2022.

BURDEN, Paul R.; BYRD, David M. **Methods for Effective Teaching**. United States of America: Pearson, 2019.

BUYS, Tania et al. A reflexive lens on preparing and conducting semi-structured interviews with academic colleagues. **Qualitative Health Research**, v. 32, n. 13, p. 2030-2039, 2022.

CAHYANI, Hilda; CAHYONO, Bambang Yudi. Teachers' attitudes and technology use in Indonesian EFL classrooms. **Teflin Journal**, v. 23, n. 2, 2012.

CAVAS, Bulent et al. A study on science teachers' attitudes toward information and communications technologies in education. **Turkish Online Journal of Educational Technology**, v. 8, n. 2, 2009.

CENTER FOR DEMOCRACY AND RECONCILIATION IN SOUTHEASTERN EUROPE. **Mësimdhënia e të mësuarit një udhëzues referencë për mësuesit e Orientuar drejt rezultateve (Teaching Learning a Reference Guide for Results Oriented Teachers)**. Belgrade: Center for Democracy and Reconciliation in Southeastern Europe, 2013. 46 p.

COLEMAN, LaToya O. et al. Integrating computing across the curriculum: the impact of internal barriers and training intensity on computer integration in the elementary school classroom. **Journal of Educational Computing Research**, v. 54, n. 2, p. 275-294, 2015.

COUNCIL OF EUROPE. **Manuali për edukimin e qytetarisë digjitale (Manual for digital citizenship education)**. Prishtina: Council of Europe Publishing, 2020.

CRESWELL, John W. Mapping the field of mixed methods research. **Journal of Mixed Methods Research**, v. 3, n. 2, p. 95-108, 2009.

DENIEFFE, Suzanne. Commentary: Purposive sampling: complex or simple? Research case examples. **Journal of Research in Nursing**, v. 25, n. 8, p. 662-663, 2020.

DERBEL, Faiza. Technology-capable teachers transitioning to technology challenged schools. **Electronic Journal of e-Learning**, v. 15, n. 3, p. 269-280, 2017.

DJAMDJURI, Dewi Suriyani; KAMILAH, Iil Hilyatul. Assisting the integration of technology and its effect on students' attitudes in distance learning. **Journal of Community Empowerment and Innovation**, v. 1, n. 1, p. 1-14, 2022.

GECEVSKA, Valentina. Report on ICT in education in the Republic of North Macedonia. In: ZHUANG, Rongxia et al. **Smart Education in China and Central & Eastern European Countries**. Singapore: Springer, 2023. P. 235-269.

GIXHARI, Aurora. **Metodat efektive të komunikimit në mësimdhënie (Effective methods of communication in teaching)**. Tirana: Botimet Strehë, 2016. 81 p.

GIZ. **Seminari një edukim cilësor pikëpamja e përgjithshme (Seminar a quality education overview)**. Prishtina: GIZ - Kosovo, 2012. 28 p.

GJOKA, Fran. Autoriteti i mësuesit (The authority of the teacher). **Mësuesi**, p. 7-9, 04 fev. 2009.

GREGORI, Lovely Diana Rose; ZOHAR, Mahilum Dan; MAGALLANES, Christopher L. Teacher's experiences in using information and communication technology (ICT) tools. **International Journal Of All Research Writings**, v. 6, n. 6, p. 492-506, 2025.

HAMMARBERG, Karin; KIRKMAN, Maggie; LACEY, Sheryl de. Qualitative research methods: when to use the method how to judge them. **Human Reproduction**, v. 3, n. 3, p. 498-501, 2016.

HENNESSY, Sara et al. Technology Use for teacher professional development in low- and middle-income countries: A systematic review. **Computers and Education Open**, v. 3, p. 1-32, 2022.

IPK. **Korniza për sigurim të cilësisë së performancës së shkollës në Kosovë (Framework for quality assurance of school performance in Kosovo)**. Prishtinë: Kosovo Pedagogical Institute, 2016. 7 p.

JOBIROVICH, Yarashov Mardon. Tools of using digital technologies in primary educational courses. **European Journal of Modern**, v. 2, n. 4, p. 112-123, 2022.

KAFYULILO, Ayoub; FISSER, Petra; VOOGT, Joke. Factors affecting teachers' continuation of technology use in teaching. **Educ Inf Technol**, v. 21, p. 1535-1554, 2016.

KARACA, Feride. Teacher and student perceptions about technology use in an elementary school in Ankara. **Journal of Social Studies Education Research**, p. 43-59, 2011.

KHLAIF, Zuheir N.; SANMUGAM, Mageswaran; AYYOUB, Abedulkarim. Impact of technostress on continuance intentions to use mobile technology. **The Asia-Pacific Education Research**, p. 1-12, 2022.

KÖHLER, Tine; SMITH, Anne; BHAKOO, Vikram. Templates in qualitative research methods: Origins, limitations, and new directions. **Organizational Research Methods**, v. 25, n. 2, p. 183-210, 2022.

- KOKAJ, Agon et al. The effect of ICT in education and teaching: Student evaluation based verification. **Journal of Educational and Social Research**, v. 13, n. 5, p. 255-264, 2023.
- KOSUMI, Bajram; AVDIU-KRYEZIU, Shqipe. Teachers' attitudes on the impact of creative teaching for an innovative environment on the achievement of learning outcomes. **Orbis Linguarum (Ezikov svyat)**, v. 23, n. 1, p. 81-95, 2025.
- KRYEZIU, Veli. **Roli i mediave në mësimdhënien e historisë (The role of the media in teaching history)**. Prishtinë: Lena Graphic Design, 2021.
- LAKENS, Daniël. Sample size justification. **Methodology and Research Practice**, v. 8, n. 1, p. 33267, 2022.
- LINDFORS, Maria; PETTERSSON, Fanny; OLOFSSON, Anders D. Conditions for professional digital competence: the teacher educators' view. **Education Inquiry**, v. 12, n. 4, p. 390-409, 2021.
- MAKHAROVA, Gaukhar et al. The level of efficiency of using digital resources for developing primary school students' linguodidactic potential. **Cypriot Journal of Educational Sciences**, v. 14, n. 1, p. 217-230, 2022.
- MASHT. **Kurrikula bërthamë për klasën përgatitore dhe arsimin fillor të Kosovës (klasat 0, I, II, III, IV dhe V), (Core Curriculum for Preparatory Grade and Elementary Education of Kosovo (Grades 0, I, II, III, IV and V))**. Prishtina: MASHT, 2016b. 19 p.
- MASHT. **Korniza Kurrikulare e Arsimit Parauniversitar të Republikës së Kosovës**. Prishtinë: MASHT, 2016a. 16 p.
- MASHT. **Strategjia e Sigurimit të Cilësisë për Arsimin Parauniversitar në Kosovë 2016-2020 (Quality Assurance Strategy for Pre-University Education in Kosovo 2016-2020)**. Prishtina: MASHT, 2016c. 22 p.
- MASHT. **Raport vjetor statistikor me tregues arsimorë 2017/18 (Annual statistical report with educational indicators 2017/18)**. Prishtinë: MASHT, 2018. 9 p.
- MASHTI. **Strategjia e Arsimit 2022-2026 (Education Strategy 2022-2026)**. Prishtina: MASHTI, 2022.
- MASR. **Integrimi i teknologjisë së informacionit dhe komunikimit të edukim në Shqipëri (The integration of information and communication technology in education in Albania)**. Tirana: Ministry of Education of Albania, 2009. 5 p.
- MASR. **Kurrikula me zgjedhje – Lënda TIK (Elective curriculum – ICT subject)**. Tirana: Ministry of Education, Sports and Youth, 2017. 10 p.
- MCINTOSH, Michele J.; MORSE, Janice M. Situating and constructing diversity in semi-structured interviews. **Global Qualitative Nursing Research**, v. 2, p. 2333393615597674, 2015.
- MEXHUNI, Arbnesha. **Integrimi i teknologjisë informative të komunikimit në mësimdhënie dhe nxënie (Integration of information communication technology in teaching and learning)**. Prishtinë: Instituti Pedagogjik i Kosovës, 2014.
- MISHRA, Punya; KOEHLER, Matthew J. Technological pedagogical content knowledge: A framework for teacher knowledge. **Teachers College Record**, v. 108, n. 6, p. 1017-1054, 2006.
- NAZ, Nuzhat; GULAB, Fozia; ASLAM, Mahnaz. Development of qualitative semi-structured interview guide for case study research. **Competitive Social Sciences Research Journal**, v. 3, n. 2, p. 42-52, 2022.

NINGSIH, Sri Kusuma; MULYON, Herri. Digital assessment resources in primary and secondary school classrooms: Teachers' use and perceptions. **International Journal of Interactive Mobile Technologie**, v. 13, n. 8, p. 167-173, 2019.

PAHAMZAH, John; AGAJ AVDIU, Teuta. The effects of using whiteboard animation application in mastering English vocabulary and grammar. **Revista Educaonline**, v. 16, n. 1, p. 19-37, 2022. Disponível em: <https://revistaeducanline.eba.ufrj.br/>. Acesso em: 11 jun. 2023.

PAIDICAN, Miguel Angel; ARREDONDO, Pamela Alejandra. The technological-pedagogical knowledge for in-service teachers in primary education: A systematic literature review. **Contemporary Educational Technology**, v. 14, n. 3, p. 1-15, 2022.

PANDEY, Prabhat; PANDEY, Meenu Mishra. **Research methodology: tools and techniques**. Romania: Bridge Center, 2015.

PINTO-SANTOS, Alba R.; GARCÍAS, Adolfin Pérez; GARCÍAS, Antonia Pérez. Development of teaching digital competence in initial teacher training: A systematic review. **World Journal on Educational Technology**, v. 14, n. 1, p. 1-15, 2022.

PISCHETOLA, Magda. Teaching novice teachers to enhance learning in the hybrid university. **Postdigital Science and Education**, v. 4, p. 70-92, 2022.

QORRAJ, Gazmend; KAÇANIKU, Fjolla. Exploring digital transformation of teacher education in the Western Balkans: Case of Kosovo. **Human Systems Management**, v. 42, n. 2, p. 209-217, 2023.

RAKHIMOVICH, Fozilov Ibromkhon; IBROKHIMOVICH, Fozilov Jakhongir. The use of information technology in primary schools. **Texas Journal of Multidisciplinary Studies**, v. 2, n. 2770-0003, p. 7-10, 2021. Disponível em: <https://zienjournals.com/index.php/tjm/article/view/165>. Acesso em: 22 jun. 2023.

REZAPOUR NASRABAD, Rafat. Criteria of validity and reliability in qualitative research. **Journal of qualitative research in health sciences**, v. 6, n. 4, p. 493-499, 2017.

ROHAAN, Ellen J.; TACONIS, Ruurd; JOCHEM, Wim M. G. Analysing teacher knowledge for technology education in primary schools. **Int J Technol Des Educ**, v. 22, p. 271-280, 2012.

RUSLIN, Saepudin Mashuri et al. Semi-structured Interview: A Methodological Reflection on the Development of a Qualitative Research Instrument in Educational Studies. **Journal of Research & Method in Education**, v. 12, n. 1, p. 222-29, 2022.

SADEGHI, Nazanin; SMITH, Tom. Ethics in qualitative research. **How to Conduct Qualitative Research in Finance**, p. 108-132, 2024.

SAQIPI, Blerim. **Teacher education in Kosovo: Responding to a challenging local context and converging towards good international practices**. Cham: Palgrave Macmillan, 2023. 225 p.

SELWYN, Neil; POTTER, John; CRANMER, Sue. Primary pupils' use of information and communication technologies at school and home. **British journal of educational technology**, v. 40, n. 5, p. 919-932, 2009.

SHERMAN, Thomas M.; KURSHAN, Barbara L. Constructing learning: using technology to support teaching for understanding. **International Society for Technology in Education**, v. 32, n. 5, p. 10-13, 2005.

SPITERI, Marthese; RUNDGREN, Shu-Nu Chang. Literature review on the factors affecting primary teachers' use of digital technology. **Technology, Knowledge and Learning**, v. 25, p. 115-128, 2020.

USAID. **Zhvillimi i shkathtësive të shekullit 21 në klasat me nxënësin në qendër (Developing 21st century skills in student-centered classrooms)**. Pristina: USAID, 2013. 26 p.

USAID. **Kornizë për edukim mediatik në arsimin fillor**. Shkup: IREX, 2023. Disponíbel em: <https://www.irex.org/files/media-literacy-framework-albanian.pdf>. Acesso em: 11 jan. 2024

VANDERLINDE, Ruben; AESAERT, Koen; BRAAK, Johan van. Institutionalised ICT use in primary education: A multilevel analysis. **Computers & Education**, p. 1-10, 2014.

VATANARTIRAN, Sinem; KARADENIZ, Sirin. A needs analysis for technology integration plan: Challenges and needs of teachers. **Contemporary Educational Technology**, v. 6, n. 3, p. 206 - 220, 2015.

VOGRINC, Janez; SAQIPI, Blerim. **Hulumtimi në shkencat e edukimit (Research in the educational sciences)**. Tiranë: Albas, 2020.

WAXMAN, Hersch C. et al. Principals' perceptions of the importance of technology in schools. **Contemporary Educational Technology**, p. 187-196, 2013.

WIJNEN, Frances; MOLEN, Juliette Walma van der; VOOGT, Joke. Primary school teachers' attitudes toward technology use and stimulating higher-order thinking in students: a review of the literature. **Journal of Research on Technology in Education**, p. 13965, 2021.

YUNUS, Yusufzoda Shabnami; YUNUS, Yusufzoda Xiromon. Use of innovative technologies in improving the efficiency of primary school students. **Middle European Scientific Bulletin**, v. 11, p. 154-159, 2021.

ZHUBI, Arjana; ISMAJLI, Hatixhe. The Interconnection Between Technological, Pedagogical and Content Knowledge in Primary School Lesson Planning. **Journal of Social Studies Education Research**, v. 13, n. 2, p. 125-146, 2022.

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