



## Integration of Technology in the Instructional Process for Students with Special Needs

*Original research article*

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### Abstract

*Teachers are the main guides in supporting students’ physical, social, emotional, and cognitive development. Classrooms have diverse learners, including those with special needs; thus, appropriate instructional methods are highly needed to support such environments. Students with special needs experience difficulties in almost every avenue of life; hence, especially in learning at school, they require special teaching approaches. Technology has provided an avenue for reducing barriers and increasing inclusion during instruction. The current study aims to establish whether technological tools and multimedia motivate, engage, and support students with special needs in both learning and classroom integration. A quantitative approach was adopted, in which 25 items of a questionnaire were completed by teachers, assistants, and psychologists from rural and urban primary schools in Gjilan, Kosovo. Results reveal that increased use of technology enhances both inclusion and motivation for students with special needs and that limited staff training acts as an inhibitor of effective implementation. The outcomes also demonstrated greater integration in private schools and lower use of technology among older and more experienced teachers.*

**Keywords:** *integration, inclusion, special needs, special education, technology*

Every single student in the education system is important, including students with special needs. In Kosovo, inclusive education remains a challenge for teachers, who often cannot distinguish

between the learning difficulties of the student with a disability from other causes. These students require instruction through specialized methods and careful attention to their individual personalities. Nowadays,

the use of technology in classrooms is indispensable, especially in language classes. Laptops, tablets, and multimedia materials can make learning more active, creative, and accessible, helping students with different abilities related to seeing, hearing, movement, comprehension, attention, and memory.

This study investigates how technology can enhance learning outcomes for students with disabilities, how teachers put technological tools into practice to facilitate instruction, and what other teaching approaches are utilized. In so doing, it examines whether technology provides more effective learning than traditional methods and identifies the challenges teachers face when supporting students with special needs. It emphasizes that understanding and appropriately putting relevant teaching strategies into practice will enhance both the teaching and learning process for more inclusive and effective classrooms in Kosovo.

### Literature Review

The following literature review presents findings from numerous researchers who have investigated students with special needs and the effectiveness of using technology as a supportive learning tool, particularly for students with disabilities. Technology development has had a great influence on the entire system of education, including ICT classes, too. Many scientists, researchers, and educators have proven that technology as a tool helps students to learn faster and more easily. "Technology can be a highly engaging and interactive tool, providing a source of real language, both written and spoken, in the classroom, and motivating learners to produce more language than they otherwise might have done" (Stanley, 2013).

Teachers experience various students during their teaching career and you can never know if you will or will not have a student with special needs in your classroom. In all of these cases, technology is used to help students participate. Students with special needs experience difficulties in all aspects of their lives, especially in schools. Because of their disabilities, different methods and different ways should be applied towards them, in order to make the process of learning easier. According to Westwood (2015) educators in US prefer

the term "exceptional children", rather than students with special needs. Exceptional children are described as having differences that occur to such an extent that they require additional services and modifications to school practices. Drexler (2010) mentions that using technology for teaching purposes is considered to be beneficial and effective for these students, who require additional methods to be taught towards them. He states that the use of technological tools empowers learners to transcend the traditional concept of the classroom.

### Special Education

Teachers encounter a wide range of students throughout their careers, and they can never be certain whether they will have a student with special needs in their classroom. Students with special needs experience difficulties in almost all aspects of their lives, especially at school. Because of their disabilities, different teaching methods and approaches should be applied to make the learning process easier for them. "The classroom teacher is the main method of attitude change or acceptance by peers of the student with a disability" (Dhawan, 2005). "In the most general terms, special education is education individualized and adjusted to accommodate the unique learning needs of students who are, in some domain of functioning, above or below what is considered normal in their culture and social context. Areas of need include impairments in the physical, intellectual, communication, and social aspects of functioning" (Mazurek and Winzer, 2002).

As we may know, students of all abilities and backgrounds want to be in a classroom that includes them all and conveys respect, but students with disabilities have more difficulties and challenges in the classroom setting, and they need accommodation and consideration. It is the teachers' responsibility to help students be inclusive in the classroom and help them improve their skills. Students with special needs require special treatment and special methodologies while teaching them. Teachers should modify or if needed, change all their teaching methods while working with these students compared to those teaching techniques and methods applied with regular students. In inclusive schools, when all students attend the same classes,

teachers should engage all the students in the same way and enhance collaborative working. We as humans should accept each other as we are and help each other as we need. "Cooperative learning is especially effective with students with disabilities. The types of adaptations you choose will, of course, depend on the needs and strengths of students with disabilities and the nature of the skills and concepts to be learned" (Glatthorn and Tripp, 2013).

Around the world, people have their own personalities and characteristics. They differ in their physical appearance, intelligence or even in their behaviors. Bala and Digumarti (2007) state that in the classroom, some children deviate physically, mentally, socially, and educationally from normal children. Such children are called exceptional children and they require special educational care and their adjustment problems have to be tackled in an exceptional manner.

According to them, exceptional children can be categorized into four groups:

- Gifted children with a high level of intelligence or a special aptitude for music, painting, etc.,
- Mentally retarded or handicapped children with a low level of intelligence.
- Physically handicapped children, such as blind, deaf, dumb, etc., and
- Socially disadvantaged children, such as orphans, destitute, etc. (Bala and Digumarti, 2007)

Exceptional children are described as having differences that occur to such an extent that they require additional services and modifications to school practices. Students with special needs experience different disabilities, which may cause them to have special requirements in specific fields. Those specific fields may involve: Autism, Down syndrome, Visual impairments, hearing impairments, reading impairments, Writing impairments, Physical disabilities, OCD (obsessive-compulsive disorder), etc.

### **Use of Technology in the Language Classroom**

Teaching with technology changes the perception and organization of the classroom for both teachers and students when its use is beneficial and effective in improving students' proficiency as second-language learners. In the technological

age, it is impossible to ignore the impact of technology or to avoid implementing its tools in the educational system. Increased student motivation and interest encourage the regular use of technological tools. Technology is considered a beneficial resource because it provides visual materials that engage students more actively in the learning process and improve the way they learn. The implementation of technological tools in teaching and learning is a modern and effective strategy that has recently been adopted by many teachers who work with students with disabilities. Although students with special needs may face certain difficulties when using technological tools, these challenges can be overcome through collaboration and support from teachers and peers. As countries strive to improve their educational systems, the integration of technology continues to produce positive results in students' proficiency. Through technology tools, teachers try to make their teaching more comprehensible, creative, and interactive. "ICT, under the pedagogical conditions, may be one of the most important tools for teachers and students to develop crucial skills (cognitive, social, and technological) to be able to respond, critically and creatively, to the needs of the new social and economic reality that is constantly changing." (Anastasiades and Zaranis, 2017)

Presley and D'Andrea (1976) discussed a time of great technological change and achievement of the last decades of the 20<sup>th</sup> century, when in public schools:

- Teachers use interactive whiteboards to post class notes that students download onto their laptops.
- Teachers using online digital video clips from daily newspapers to supplement social studies and history textbooks
- Students using computer-based reading programs to improve their vocabulary, fluency, and writing skills
- Students creating multimedia projects in which they use their computers to conduct research, write the results, and print a report, as well as to create an electronic slide show to share with classmates. (Presley and D'Andrea, 2008)

According to Stanley (2013) technology to teach and learn a second language can be used to: access different information about the language, it enables

students to be exposed to the targeted language, it also has different entertaining materials (i.e. reading or listening for pleasure), creating texts, publishing student's work online in classroom's website or other sources, it also enables students to communicate and interact with other language users/learners through online apps recommended by the teachers, to create a community, manage, and organize learning, which can help students with special needs acquire a second language. So, technology used for educational purposes is considered very attractive and effective for students with special needs, understanding the English language, because it offers them new methods of seeing and acquiring words. "Technology can help "facilitate the attainment of learning goals for individuals with wide differences in their abilities to see, hear, move, read, write, understand English, sustain attention, organize, engage, and remember" (Brand, Dalton and Favazza, 2012).

Since our students are very familiar with technology tools, the use of technology may be very attractive and effective for them. If used properly, it may be very useful to them to get a lot of information and acquire a language as well. During my classes, I mostly use different YouTube videos, games, music and PowerPoint presentations. The majority of my students progressed very much in creating electronic slide show and different presentations, using PowerPoint and Prezi. We often watch different movies, which help my students expand their vocabulary and acquire the language better. "Multimedia and other technologies can connect student learning in the classroom to real-life situations and authentic learning situations" (Waxman and Padron, 1996).

The Oxford Dictionary (2015) defines technology as digital or electronically based devices, resources, or processes that facilitate the teacher and learners' ability to think, perform, and succeed. Technology implementation brings creativity and

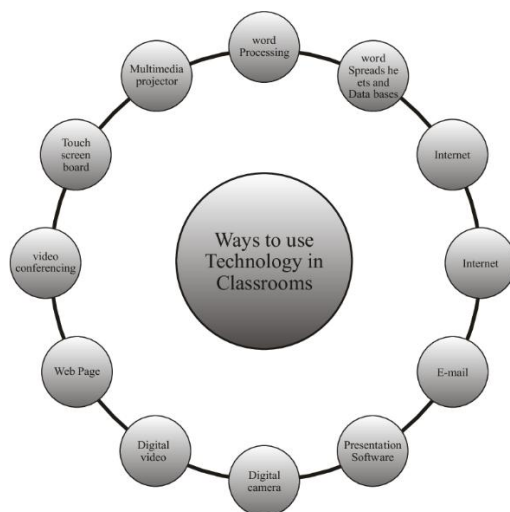
interactivity into an inclusive classroom. Students and teachers engage together and develop their critical thinking and their creative spirit as well. It brings motivation too, while changing their environment, showing different videos, online games, and presentations. Even students with different disabilities enjoy classes with technology tools, since the environment is not always the same as in traditional classes. Implementation of technology in English language classes inspires teamwork as well, which is a very good step for students' progress. "Opportunities for engaging in research and innovative practices in English language learning through technology are countless" (Nurmala et al., 2023).

Davison (2005) mentions that the use of technology has become a social practice, as the use of English, so obviously a socio-cultural and critical analysis of the role of technology in English language learning and teaching is needed because of the application of technology.

During my teaching experience, I have encountered many times the interest and engagement of my students, including students with special needs, when I implemented the technology tools. Its strength to motivate them is evident. It helps them to change their everyday routine, when in most of their classes their only source of information is their teacher. It enhances their collaborative working and their engagement, compared with their traditional classes. "Educational technology is the study and ethical practice of facilitating learning, indicating that helping people to learn is the primary and essential purpose of educational technology" (Januszewski and Molenda, 2009). There are many ways to use Technology to facilitate both teaching and learning. Technology offers many tools that help organize classes better and give good results.

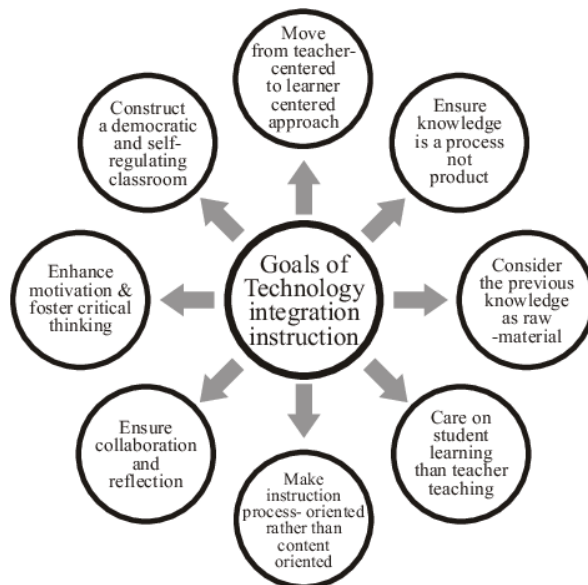
Raihan and Lock (2012) have shown the following figure, presenting some ways of how to use technology in the classroom:

**Figure 1.**  
*Technology Use in the Classroom (Raihan and Lock, 2012)*



**Note:** Figure 1 shows different classroom technologies, including word processing, spreadsheets, databases, the Internet, email, presentation software, digital media, web pages, video conferencing, touch screens, and projectors, arranged in a circular layout to highlight their diverse educational uses.

**Figure 2.**  
*Goals of Technology Integration (Raihan and Lock, 2012)*



**Note:** Figure 2 presents key goals of technology integration, including shifting from teacher-centered to learner-centered instruction, promoting collaboration and reflection, enhancing motivation and critical thinking, supporting democratic and self-regulated learning, focusing on learning processes, and valuing students' prior knowledge in the learning experience

Through the application of technology, the classroom environment changes from traditional classes to modern classes. Learners have more space than in traditional classes. First goal of technology integration is to move from the teacher centered to learner centered approach. Of course, teachers should be there for anything their students need, but should not be the only source of information. Students can get many sources of information through the tools of technology. It connects with the other goal of using technology to foster critical thinking. Not all things should be served to students. They should try to find information and research materials they

need, in order to develop their critical thinking. Bringing good results from gathering information from the internet or exchanging emails with their mates and teachers, their motivation enhances everyday more. Teachers motivate their students by letting them decide and judge from their own perspectives. Technology use offers care on students' learning rather than teachers' teaching and ensures collaboration and reflection. While working with their peers, students exchange their experiences and reflect on their own learning. It makes the instruction process-oriented rather than content-oriented.

**Table 1.**

*The Nine Categories of Technology Use in the Classroom (Pitler, Hubbell, and Kuhn, 2012)*

Category	Definition	Examples
Word Processing Applications	Applications that create documents in which the text can be displayed in linear or visual modes.	Google Docs, Microsoft Word, Wardle
Organizing and Brainstorming Software	Software that helps users organize thinking, connect and categorize ideas, and show processes.	Web Inspiration, Smart Tools
Data Collection and Analysis Tools	Tools that allow users to gather and analyze data.	SurveyMonkey, Microsoft Excel, Clicker, Poll Everywhere
Communication and Collaboration Software	Software that replaces or enhances traditional communication using video, audio, text, or combinations of these; enables users to share and discuss ideas, images, links, and collaborate across distance.	Skype, FaceTime, Typewith.me, Facebook, Twitter
Instructional Media (Learner as Consumer)	Technologies that provide or facilitate the creation of videos or recordings intended for learning.	BrainPOP, Discovery Education Streaming, Khan Academy
Multimedia Creation (Learner as Producer)	Technologies that allow users to combine audio, video, music, images, drawings, or combinations into a final product.	PowerPoint, Keynote, Photoshop, Photo, iMovie, VoiceThread
Instructional Interactives	Technologies manipulated by learners to enhance understanding of a skill or concept, including games, manipulatives, and adaptive learning software.	StarChat
Database and Reference Resources	Resources that provide users with information and data.	Wikipedia, Thesaurus, etc.
Kinesthetic Technology	Technologies that interact with the user's physical location or movement.	Nintendo Wii, Xbox, GPS devices

*Note: Table 1 displays nine categories of classroom technology use, outlining different ways digital tools can support teaching and learning.*

### Types of Technology in Education

Technology in education is unique, especially with recent technological developments. Tools, didactic resources, and online platforms have transformed the work of teachers and have greatly aided in the inclusion of students with special needs in schools. Now, educational technology is both well-known and specifically recognized. Education technology is the application of new tools and ideas that help teachers teach and students learn. Education technology can automate processes, improve information access, enable sharing of knowledge and data, duplicate information between media forms, curate important knowledge, communicate ideas, visualize critical concepts, and more (Fernández-Batanero, Montenegro-Rueda, Fernández-Cerero, & García-Martínez, 2022). The types of technology in contemporary teaching include a wide range of new devices and platforms, without being limited to the following:

- Video Games
- Interactive Whiteboards (e.g., Google Jamboard)
- Voice Search
- Haptic Response
- Blockchain
- Augmented Reality
- Virtual Reality
- 5G
- AI-Generated Applications
- Deep Neural Networks
- Automation and Hyper automation
- Apps, social media platforms like Facebook, Instagram, math programs, etc.;
- YouTube live video streaming platforms (from YouTube or Twitch for video games to streaming public events to Strategies for Using TikTok for Learning for learning)

Educational technology has improved the learning of children with special needs, addressing all the sensory and intellectual difficulties faced by this category of students. Educational Technology is one of the most important forms of learning, such as:

- Synchronous and Asynchronous
- Linear Learning
- Collaborative Learning (Sharma, 2021).

The types of technology in education encompass a wide range of instructional tools, platforms, and approaches,

revolutionizing acquisition through explanation, illustration, concretization, interaction, critical thinking, easier and faster understanding, inclusion of students with special needs, and increasing self-assessment for students facing difficulties in vision, hearing, walking, and movement. The type of technology in education also depends on the level of development and the degree of financial investment at the state and regional levels, as states with the most advanced technology in education invest significant financial resources, adopt, and equip themselves with the latest technology in education. Kosovo faces many challenges at the pre-primary, primary, secondary, tertiary, and post-tertiary levels. Although investments have been made since 1999 in rebuilding schools and infrastructure, following the severe consequences of the armed conflict in 1998-1999, apart from some laboratories for ICT lessons and practical work, Kosovo has not managed to invest more in new technological devices for the access of children with special needs. However, in recent years, through foreign donations and awareness of special needs, there has been an increase in investments in educational technology.

Technology in education is diverse nowadays. Through it, students have facilitated access to various textual, visual, and audio materials, as well as individualized and personalized independent learning processes. Additionally, it enables distance learning regardless of the physical location of traditional schools, through digital and online access. Computer software and online tools help learners absorb the material much more easily and also hone useful language skills. Technology is most successful in maintaining the interest of students while engaging them in the lesson (Roy, 2019).

Examples Of New Technology In Education are:

- Learning Simulations
- Hybrid Learning
- Adaptive Learning Platforms
- Interactive Video
- Learning Analytics
- Automation
- App-Based Learning (TeachThought, 2024).

Types of technology in education are continuously changing, especially after numerous innovations in the field of artificial

intelligence, as well as the widespread use of information technology, internet access, reaching a large portion of learners and students worldwide. There are many specific and general types of technology in education:

- Course management software
- Quiz, exam, and survey tools
- Online learning communities
- Live course delivery platforms
- Interactive learning labs
- Class management software (Fernández-Batanero et al., 2022).

There are several challenges in providing all technological devices in the classroom environment, as they can be quite costly. Additionally, to successfully implement all technologies in education, continuous and pre-training is required for teachers and students on how to use the devices, how to interact with them, and how to be motivated in their systematic use. Technologies in education also require techniques to regulate and repair them, as they may encounter various malfunctions during their use. An additional challenge arises when educational technologies are applied to students with special needs, as they require specific training, both for teachers and students.

### Methodology

Research design describes the design of experimental research regarding the effectiveness of the use of technology to teach technology to the students with special needs. This section will provide information about the methodology of the study, that is, information about the participants, the instruments of research, the main research methodology, as well as the procedure of the data analysis. It provides gathered data with the main concern if the use of technology is effective in learning ICT by students with special needs from different schools in Kosovo, and the difficulties that their teachers and parents have while dealing with these students.

### Participants

The participants of this study were 75 teachers of the five primary schools in Gjilan, in urban and rural areas. The reason why these schools were chosen is because of the largest number of students with special needs who attend their learning process. In total,

seventy-five questionnaires were distributed to the teachers who worked in primary school “Thimi Mitko” in Gjilan, in primary school “Rexhep Elmazi” in Gjilan, in primary school “Selami Hallaçi” in primary school “Abaz Ajeti” and in primary school “Dëshmorët e Kombit” in the rural area of Livoc.

Teachers were approached easily. They filled the questionnaires during the breaks in the hallway, in the relevant schools where they work. A short oral explanation related to the research was given to twenty teachers in case they did not understand what the aim of this particular research was. Also, before distribution, the teachers were told that their answers would be confidential and will not be misused. While completing the questionnaires, none of the teachers had any uncertainty related to the questions, and the time given was sufficient for completion. Afterwards, the questionnaires were collected, and there was no problem during the distribution of the questionnaires. On the meantime, during one month I observed 20 students of these schools twice a week. During a week in close cooperation with their teachers, we had one class using technology tools, and one class using only the book as a source of information. This process was the same until the end. Out of eight classes I observed students with special needs, who were attending the same schools with regular students.

### Data Collection Instruments

After the formulation of the questions, the questionnaires were ready to be distributed and the investigation was ready to be held. A special permission was needed from competent people in these schools in order to fill the questions and to observe their students for some weeks. In total, seventy-five questionnaires were distributed to the teachers of these schools. A short oral explanation related to the research was given to the teachers. Also, before the distribution of questionnaires, teachers were told that their answers would be confidential and would not be misused.

### Results

The research, besides reviewing literature, was primarily based on quantitative methodology, employing a

questionnaire. Table 2 presents the results of a survey conducted in 2023 in the municipality of Gjilan, Kosovo. In total, 75 respondents participated in this questionnaire, representing various professions such as teachers, support teachers, and psychologists.

The questionnaire included 25 closed-type questions, which were analyzed to draw conclusions and various evaluations in the field of applying technologies for learning by children with special needs.

**Table 2.**

*General Data on the Implementation of the Questionnaire*

Variable	Description
Number of respondents	75
Profession of respondents	Teachers, support teachers, psychologists
Number of questions in the questionnaire	25 closed-type questions
Survey year	2023
Survey location	Municipality of Gjilan, Kosovo

*Note:* This table presents general information related to the administration and completion of the questionnaire.

Table 3 describes the gender distribution of respondents in the questionnaire study. Out of a total of 75 participants, 76% are female, and 24% are male. There is a clear dominance of female participation in this study. One possible reason for this imbalance is that more women tend to choose the Faculty of Education in cities and universities such as the University of Gjilan “Kadri Zeka”, the University of Prishtina “Hasan Prishtina”, and beyond. This also reflects a trend of higher female engagement in the field of education and teaching.

Another contributing factor is that many women choose the profession of pre-primary and primary education. In Kosovo’s transitioning society, certain gender stereotypes related to education—particularly those associating teaching with women—

remain present. Additionally, the double role of Kosovar women in both the workplace and household may influence career choices, with teaching and early childhood education being perceived as more suitable due to shorter working hours in preschool and primary institutions, allowing more time for household responsibilities and child upbringing. Therefore, there may be other sociocultural reasons that contribute to the higher participation of women in education and in this sample.

The data from this table may serve to analyze and assess gender representation in the field of preschool and primary education in Kosovo, not only in the Municipality of Gjilan. The cumulative percentage shows what proportion of the total respondents belongs to each gender category.

**Table 3.**

*Gender Identity of the Respondents*

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	57	76.0	76.0	76.0
Male	18	24.0	24.0	100.0
<b>Total</b>	<b>75</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Note:* The gender identity of the respondents indicates a clear predominance of females.

Table 4 presents the professional categories of the respondents participating in the study. There is a clear dominance of teachers, who represent 82.7% of the total respondents. This indicates that most participants in the study are teachers. A key factor is that schools in the Municipality of Gjilan still do not have a significant number of assistants, support teachers, psychologists, or special education pedagogues, resulting in teachers being the majority.

Assistants represent a relatively small portion of the respondents, accounting for only 12%. Psychologists have an even lower

representation, making up only 5.3% of the total respondents. The cumulative percentage shows that 94.7% of participants are either teachers or assistants. The table reflects the concentration of educational personnel participating in this study.

While most respondents are teachers, assistants, and psychologists also hold a meaningful presence in data analysis. Examining the differences in the representation of professional categories provides important insight into the needs and challenges of the various fields within education.

**Table 4.**  
*Professional Category of the Respondents*

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Assistant	9	12.0	12.0	12.0
Teacher	62	82.7	82.7	94.7
Psychologist	4	5.3	5.3	100.0
<b>Total</b>	<b>75</b>	<b>100.0</b>	<b>100.0</b>	—

*Note:* This table presents the distribution of respondents according to their professional category.

Table 5 describes the place of residence of the study respondents. It is evident that most respondents, 81.3%, reside in Gjilan, primarily in urban areas where most schools are located. A smaller portion of respondents, 18.7%, are engaged in schools located in villages within the Municipality of Gjilan, which consists of more than 40 villages.

In this context, Gjilan represents the city with the highest level of participation in the study. The cumulative percentage indicates that Gjilan accounts for the majority of the total respondents. Although rural areas have a smaller representation in the table, it is important to understand the impact of rural and urban differences in education.

As noted, there is also a significant shortage of special education professionals for children with special needs in rural areas. Analyzing the respondents' place of residence may provide valuable insights into the social and economic context in which they work. Such a distribution may reflect specific needs and challenges faced by the education system in both urban and rural settings, as well as the need for increased investment in personnel and technology in rural educational environments.

This table also serves as a useful basis for the development of educational policies and strategies tailored to the specific needs of students with special needs in both urban and rural areas.

**Table 5.**  
*Residence of the Respondents*

Residence	Frequency	Percent	Valid Percent	Cumulative Percent
Village	14	18.7	18.7	18.7
City	61	81.3	81.3	100.0
<b>Total</b>	<b>75</b>	<b>100.0</b>	<b>100.0</b>	—

*Note:* This table presents respondents' place of residence, highlighting the distribution between urban and rural areas.

## Questionnaire Results

According to the data from the questionnaire results with teachers, assistants, and psychologists who are engaged in schools with students with special needs, the total number of respondents is 75. As for variable X, the values are as follows:

- They do not have assistive technology devices ( $X = 1$ ): 38 respondents
- They have few assistive technology devices ( $X = 2$ ): 22 respondents
- They have an average number of assistive technology devices ( $X = 3$ ): 12 respondents
- They have many assistive technology devices ( $X = 4$ ): 3 respondents

As for the second variable Y, the values are as follows:

- None ( $Y = 1$ ): 3 respondents
- Few ( $Y = 2$ ): 44 respondents
- Average ( $Y = 3$ ): 13 respondents
- Many ( $Y = 4$ ): 15 respondents

To calculate the Pearson correlation between X and Y and to test the hypothesis, we first classified the values of X and Y, and then calculated the covariance, standard deviations, and Pearson correlation.

- The values of X are: 1, 2, 3, 4. Their frequencies are: 38, 22, 12, 3.
- The values of Y are: 1, 2, 3, 4. Their frequencies are: 3, 44, 13, 15.

To assess the interaction between variables X and Y, we will interpret the value of the Pearson correlation coefficient:

- If the Pearson coefficient is close to +1, this indicates a strong positive correlation between variables, meaning that an increase in one variable is associated with an increase in the other variable.
- If the Pearson coefficient is close to -1, this indicates a strong negative correlation between variables, meaning that an increase in one variable is associated with a decrease in the other variable.
- If the Pearson coefficient is close to 0, this indicates a weak correlation between variables, meaning that the interaction between them is weak or does not exist.

## Results from the Experiment

### Pre-Test Results

Before the implementation of activities involving assistive technologies, a pre-test was administered to evaluate the initial level of knowledge, skills, and

preparedness of teachers, support teachers, and psychologists regarding the use of technology with students with special needs. The results of the pre-test showed that the majority of respondents demonstrated limited familiarity with assistive technology tools and their practical application in inclusive classrooms.

Most participants reported that schools lacked sufficient technological devices, and many of them expressed uncertainty about how to effectively integrate technology into individualized learning plans. These pre-test findings highlight a clear need for training, resources, and professional development in this field.

### Post-Test Results

After the implementation of training sessions and awareness activities on the use of assistive technologies, a post-test was conducted with the same group of respondents. The post-test results indicated noticeable improvements in participants' knowledge and confidence in using assistive technology tools. Respondents demonstrated a better understanding of device functions, strategies for integrating technology in daily teaching, and methods for adapting digital tools to the needs of students with disabilities.

In general, the post-test showed higher levels of readiness compared to the pre-test, confirming that exposure to technology-related training had a positive impact on participants' attitudes and competencies. This improvement suggests that continuous professional development and access to appropriate technological resources can significantly enhance the quality of education for students with special needs.

## Conclusion

This research provides empirical evidence on the role of technology as a facilitator of inclusion and engagement for students with special needs, with particular reference to primary education in Kosovo. The results confirm that the appropriate use of technology and assistive technology is positively correlated with higher levels of inclusion, motivation, and engagement among students with special needs. By examining the perspectives of teachers,

assistants, and psychologists, this study contributes to the existing body of literature on inclusive education by offering empirical evidence from a post-conflict and developing educational context, which remains underrepresented in international research. From a theoretical perspective, the findings add to the existing literature by reaffirming the argument that technology is not merely a supplementary tool for teaching and learning, but also a key enabler for overcoming learning barriers faced by students with special needs. The study further demonstrates that successful technology integration is highly dependent on teachers' professional preparedness, age, and the level of institutional support available. In terms of practical implications, the results highlight several challenges to inclusive education. The limited availability of assistive technology and the insufficient preparedness of teachers, particularly more experienced teachers, in using such tools represent major barriers. These challenges can be addressed through targeted professional development and training programs. Additionally, inadequate investment in assistive technology remains a significant concern. The findings may assist relevant authorities in designing interventions to improve the country's technological readiness and to ensure that students with special needs have equal access to learning opportunities. The study also emphasizes the importance of institutional and governmental support in ensuring the effective integration of technology in inclusive classrooms. Such support is essential for the successful application of technology in inclusive education. These findings address concerns raised by experts regarding the gap between inclusive education policies and their practical implementation.

Finally, the findings of this study provide a foundation for future research. Further studies may employ longitudinal or experimental designs to examine the long-term effects of assistive technology on students' academic achievement and social integration. Comparative studies could also explore the influence of different contextual factors on technology-based inclusion. Such research would contribute to the development of more inclusive, equitable, and technology-responsive education systems.

### Conflicts of Interest

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