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The Role of Technology in Achieving SDG 4 in Developing Countries: Case of Kosovo

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This paper analyzes the role of technology in achieving Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive and quality education, focusing on developing countries with a special emphasis on Kosovo. In the context of global digital transformations, technology has become a key factor in improving access to education, increasing the quality of teaching, and developing 21st-century competencies. This study is based on an analysis of existing literature and international reports, examining the impact of technologies such as online learning, artificial intelligence, and digital platforms on the education systems of developing countries. The findings show that technology can significantly contribute to expanding educational opportunities, especially for marginalized groups and rural areas. However, in the case of Kosovo, challenges such as the lack of digital infrastructure, socio-economic inequalities, and low levels of digital competencies limit the effectiveness of these interventions.

In conclusion, the study argues that technology can be an important catalyst for achieving SDG 4 in Kosovo and other developing countries, only if accompanied by comprehensive policies, strategic investments, and human capacity development.

Keywords: Developing Countries, Digital Divide, Digital Education, Educational Inequality, Educational Technology, Kosovo, SDG 4

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Introduction

Sustainable Development Goal 4 (SDG 4) aims to ensure inclusive, equitable, and quality education for all, promoting lifelong learning opportunities. Digital transformation has significantly changed the way education is delivered and experienced, positioning technology as a key factor in achieving this global goal (García-Martín et al, 2026). Digital technologies, including online learning platforms, artificial intelligence, and interactive tools, have the potential to increase access to education and improve the quality of teaching, especially in developing countries (Abuhassna et al., 2025).

However, contemporary literature emphasizes that the impact of technology on education is twofold. On the one hand, it can contribute to reducing inequalities by offering new opportunities for students in rural areas and for marginalized groups. On the other hand, the lack of digital infrastructure, devices, and technological skills can deepen the " digital divide". divide ", creating new forms of educational exclusion (Tripon, 2025; Çelik et al., 2025). This problem is particularly pronounced in developing countries, where socio-economic factors directly affect access to and use of technology in education.

Recent studies show that the integration of technology in education is closely linked to public policies, institutional capacities, and the level of teacher preparation. For example, the use of artificial intelligence and digital platforms can improve learning outcomes and personalize the teaching process, but requires significant investments and well-structured strategies to avoid increasing inequalities (Apata et al, 2025; Veytia Bucheli & Gómez-Galán, 2024). In this context, technology is seen as a transformative tool, but not sufficient in itself to guarantee the achievement of SDG 4.

In the case of Kosovo, the challenges are mainly related to disparities between urban and rural areas, the lack of digital infrastructure, and the limited level of digital competencies among students and teachers. However, recent developments in the digitalization of education and the use of online platforms show considerable potential for improving access and quality of education. Therefore, this study aims to analyze the role of technology in achieving SDG 4 in developing countries, with a special focus on Kosovo, identifying the main opportunities and challenges in this process.

1.1. **Problem Identification**

In the context of Sustainable Development Goal 4 (SDG 4), ensuring inclusive and quality education remains an ongoing challenge for developing countries. Despite progress in the digitalization of education, inequalities in access and quality persist, often exacerbated by the unequal use of technology (Durrani et al, 2023). Digital transformation has created new opportunities for learning, but has also exposed and amplified the digital divide between different social and economic groups.

One of the main problems is related to unequal access to technology, known as the "digital divide", which includes the lack of equipment, internet connectivity, and digital competencies. Studies show that this gap directly affects educational outcomes and students' opportunities to benefit from digital learning (Abuhassna et al, 2025; Tripon, 2025). In this sense, technology, rather than serving as an equalizer, can become a factor that increases existing inequalities in education.

In developing countries, these challenges are even more pronounced due to infrastructural and economic constraints. The literature highlights that a lack of investment in digital infrastructure and human capacity development hinders the effective integration of technology into education systems (Apata et al, 2025). Furthermore, lack of teacher training and sustainable education policies contribute to the ineffective use of technology in the learning process (Veytia Bucheli & Gómez-Galán, 2024).

In the case of Kosovo, the problem becomes more concrete due to the differences between urban and rural areas, as well as socio-economic inequalities that affect access to technology and the quality of education. Although steps have been taken towards the digitalization of education, many educational institutions face a lack of adequate equipment, stable internet, and sufficient digital competencies. This situation limits the potential of technology to contribute to the achievement of SDG 4 and creates the need for more in-depth analysis on how technology can be used effectively and inclusively.

Therefore, the main problem addressed by this study is related to the contradiction between the potential of technology to reduce inequalities in education and the reality of its use, which in many cases contributes to the deepening of these inequalities, especially in the context of Kosovo and developing countries.

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1.2. **Purpose of the Study**

The purpose of this research is to analyze the role of technology in achieving Sustainable Development Goal 4 (SDG 4), with a particular focus on reducing inequalities in education in developing countries, specifically in Kosovo. The study aims to critically examine how the use of digital technologies, including online learning, educational platforms, and artificial intelligence, impacts improving access, quality, and inclusion in education.

More specifically, this research aims to identify the key factors that influence the effective use of technology in the education system, including digital infrastructure, technological competencies, and educational policies. The study also aims to analyze the challenges associated with digital inequalities and their impact on educational outcomes, assessing whether technology serves as a tool for reducing or deepening these inequalities.

In the context of Kosovo, the research aims to provide a deeper understanding of the current state of digitalization in education and to identify existing gaps in access and use of technology. Through the analysis of literature and existing practices, this study aims to contribute to the development of recommendations that can assist policymakers and educational institutions in designing more effective strategies for achieving SDG 4.

In conclusion, the main goal of this research is to provide an integrated analysis of the relationship between technology and equity in education, highlighting the conditions under which technology can serve as a transformative tool for improving the education system in Kosovo and other developing countries.

1.3. **Research Objectives**

Based on the purpose of this study, the research objectives are as follows:

Overall objective:

- To analyze the role of technology in achieving Sustainable Development Goal 4 (SDG 4), with a focus on reducing inequalities in education in developing countries, specifically in Kosovo.

Specific objectives:

- To examine the impact of digital technology on improving access and quality of education.
- To analyze the role of online learning, digital platforms, and artificial intelligence in the learning process.
- Identify the key factors that influence the effective use of technology in education, including infrastructure, digital competencies, and educational policies.
- To assess the level of digital inequalities (digital divide) and their impact on educational outcomes.
- To identify the challenges and barriers that hinder the effective integration of technology into the education system in Kosovo.
- To assess whether technology contributes to reducing or deepening inequalities in education.
- To provide recommendations for improving educational policies and practices in order to achieve SDG 4.

Literature Review

1.4. The Role of Technology in Improving Education

Digital transformation has significantly impacted global education systems, making technology a crucial component for achieving SDG 4. Studies show that the use of digital technologies, such as online learning platforms and open educational resources, has significantly increased access to education and improved the quality of learning (Lu et al., 2025). These technologies enable greater flexibility and personalization of the learning process, adapting to the individual needs of students.

Similarly, research shows that integrating technology contributes to the development of 21st-century competencies, such as critical thinking, collaboration, and digital skills (Chin et al., 2026). Furthermore, the use of technology in education is associated with improved academic outcomes and increased student engagement (Hui & Xinrui, 2025). However, the effectiveness of these technologies depends on the way they are implemented and on institutional support.

1.5. The Digital Divide and Inequalities in Education

Despite the benefits of technology, the literature emphasizes that it can contribute to deepening inequalities in education. The concept of "digital divide" refers to differences in access, use,

and digital competence between individuals and social groups (Rahma et al., 2025). This gap is particularly evident in developing countries, where a lack of infrastructure and financial resources limits the effective use of technology.

Studies show that students from low-income families and from rural areas have less access to devices and the internet, negatively affecting their academic performance (Rahmanov et al., 2025). In this context, technology does not always function as an equalizing factor, but can create new forms of educational exclusion (Hui & Xinrui, 2025). Furthermore, the lack of digital skills among students and teachers exacerbates this situation, limiting the effective use of technology in the learning process (Rahma et al., 2025).

1.6. **The Role of Artificial Intelligence and Advanced Technologies**

Recent developments in artificial intelligence (AI) have opened up new opportunities for transforming education. Studies show that AI can be used to personalize learning experiences, analyze student data, and provide real-time feedback (Chin et al, 2026). This can contribute to improving the quality of education and increasing the efficiency of the learning process.

However, the literature warns that the use of advanced technologies requires a cautious approach, as it can increase inequalities if it is not accessible to all (Lu et al., 2025). For example, educational institutions with limited resources may not be able to implement advanced technologies, creating large differences between education systems (Rahmanov et al., 2025). Therefore, it is important that the use of AI in education is accompanied by inclusive policies.

1.7. **Challenges and Opportunities in Developing Countries**

In developing countries, integrating technology into education faces numerous challenges, including a lack of digital infrastructure, financial resources, and human capacity. Studies show that these factors significantly limit the effectiveness of technology in achieving SDG 4 (Rahmanov et al ., 2025). Furthermore, the lack of clear policies and long-term strategies hinders the development of sustainable education systems.

However, the literature highlights that technology also offers great opportunities for these countries. The use of online learning and digital platforms can help overcome geographical barriers and increase access to education (Lu et al, 2025). In addition, investments in teacher

training and digital competence development can significantly improve the quality of education (Chin et al., 2026).

In this context, Kosovo represents a typical case of a developing country that faces similar challenges, but also has the potential to benefit from technology in education. Therefore, analyzing this context is important to better understand the role of technology in achieving SDG 4.

1.8. The Case of Kosovo: Challenges and Opportunities in Integrating Technology in Education

In the context of developing countries, Kosovo presents an interesting case for analyzing the role of technology in achieving SDG 4. The education system in Kosovo has made significant progress towards digitalization, especially after the COVID-19 pandemic, which accelerated the use of online platforms and digital tools in the learning process (Poleschuk, 2023). However, this transition has also highlighted a number of structural challenges related to access and use of technology.

One of the main challenges in Kosovo is the digital divide between urban and rural areas. Studies show that students in rural areas have more limited access to technological devices and stable internet connections, compared to those in urban areas (Shala & Grajcevci, 2018). This inequality directly affects students' opportunities to benefit from digital learning and to develop the competencies needed for the modern labor market.

Another important aspect is related to the level of digital competencies of teachers and students. The literature highlights that, although there are efforts to integrate technology into education, the lack of continuous training for teachers remains an obstacle to its effective use (Qorraj & Kaçaniku, 2023). As a result, technology is often used superficially and fails to fundamentally transform the teaching and learning process.

In addition, infrastructural and institutional challenges remain a limiting factor in Kosovo. The lack of sufficient investment in digital devices, the internet, and educational platforms negatively impacts the sustainable implementation of technology in education (Rajasekaran et al, 2025). These limitations make it difficult to fully realize the potential of technology to reduce inequalities in education.

However, Kosovo also has significant opportunities to benefit from technology. The increasing use of digital platforms and initiatives to digitize education indicates a readiness for transformation (Shahini, 2021). Furthermore, integrating technology into education can help improve access for marginalized groups and increase the quality of education, if accompanied by sustainable policies and strategic investments.

In conclusion, the case of Kosovo clearly illustrates that technology has great potential to contribute to the achievement of SDG 4, but this potential remains conditional on addressing challenges related to digital inequalities, competencies, and infrastructure. Therefore, an integrated and well-coordinated approach is essential to ensure that technology serves as a tool for equality and not exclusion in education.

Methodology

1.9. Research Design

This study is based on a qualitative approach, using the literature review method, *with* the aim of analyzing the role of technology in achieving Sustainable Development Goal 4 (SDG 4), with a focus on developing countries and specifically in Kosovo. The literature review approach is appropriate for this study, as it allows for the analysis and synthesis of existing scientific knowledge on a complex and multidimensional phenomenon (Snyder, 2019).

This research is exploratory and analytical in nature, aiming to identify the main patterns, trends, and challenges related to the use of technology in education. Through this approach, the study contributes to the development of a deeper theoretical and practical understanding of the role of technology in reducing inequalities in education (Paul & Criado, 2020).

1.10. Data Sources and Research Strategy

The data for this study were collected from secondary sources, including scientific articles published in international journals, reports of international organizations, and relevant educational policy documents. The literature search was conducted in academic databases such as *Scopus, Web of Science, Google Scholar,* and *ERIC.*

Keywords such as "SDG 4" and "educational" were used to identify relevant studies in “technology", "digital divide", "educational inequality", "e- learning", "developing countries",

and "Kosovo". The selection of articles was limited mainly to publications from recent years (2023–2026), in order to ensure the timeliness and relevance of the data (Booth et al., 2021).

1.11. Literature Selection Criteria

To ensure the quality and reliability of the study, the following criteria were used for literature selection:

- Articles published in peer - *reviewed scientific* journals
- Studies that address the connection between technology and education
- Publications related to SDG 4 and inequalities in education
- Studies focused on developing countries and/or contexts similar to Kosovo
- Publications for the period 2023–2026

On the other hand, studies that were not relevant were excluded. directly related to the topic or that did not meet academic standards.

1.12. Data Analysis Method

Data analysis was carried out through the thematic analysis method, which allows for the identification of key themes and patterns in the literature (Braun & Clarke, 2021). Initially, the selected studies were systematically reviewed, identifying key concepts and relevant findings.

These findings are then grouped into thematic categories, such as:

- The role of technology in education
- Digital inequalities
- Use of artificial intelligence
- Challenges in developing countries

This approach has enabled a structured analysis and an in-depth interpretation of the existing literature.

1.13. Study Limitations

Although this study provides a broad literature review, it has several limitations. First, the study is based only on secondary sources and does not include primary empirical data. Second, the

literature selection is limited to publications available in the selected databases, which may affect the inclusion of all relevant perspectives.

Also, the focus on Kosovo is largely based on existing studies and may not fully reflect the latest developments in practice. However, despite these limitations, the study provides a strong theoretical and analytical foundation for understanding the role of technology in achieving SDG 4.

Findings

The analysis of the contemporary literature on the role of technology in achieving SDG-4 highlights that technology has considerable potential to transform education systems and expand access to education. Studies show that the use of digital platforms and online learning has significantly reduced geographical barriers, enabling students from isolated or resource-limited areas to access quality educational resources (Gupta & Chakraborty, 2025). Furthermore, technology has contributed to the creation of more flexible learning environments, allowing students to learn at their own pace and according to individual needs. This is particularly important for the realization of inclusive education, which is one of the main pillars of SDG 4 (Amjad et al, 2025). However, the literature emphasizes that these benefits are conditional on the availability of infrastructure and institutional support, which are often lacking in developing countries (Ramírez-Correa et al., 2025).

Consolidated findings in the literature are that the digital divide continues to be a major obstacle to achieving equality in education. This gap is not only related to access to devices and the internet, but also to digital skills and the way in which technology is used in the learning process. Studies show that students from low-income families and from rural areas have fewer opportunities to benefit from technology, creating significant differences in academic performance and educational inclusion (Gürsakal, 2025; Mpofu, 2025). In this context, technology does not always function as an equalizing factor, but in many cases contributes to the deepening of existing inequalities (Chigwada & Ngulube, 2024). This finding is particularly relevant for developing countries, where economic and infrastructural constraints are more pronounced.

Another important finding relates to the growing role of emerging technologies, especially artificial intelligence, in transforming education. The literature shows that these technologies

have the potential to personalize the learning experience, analyze student data, and provide support tailored to individual needs (Asghar, 2025). Furthermore, the use of advanced technologies can improve teaching efficiency and increase the quality of education (Amiri et al., 2025). However, these benefits are not distributed evenly, as institutions with limited resources often lack the capacity to implement advanced technologies, creating new differences between educational systems (Álvarez-Sánchez, 2026). This shows that technology, although innovative, can also be a new source of inequalities if not managed carefully.

Literature findings also highlight the importance of socio-economic and institutional factors in determining the success of technology integration in education. Studies show that a lack of investment in digital infrastructure, teacher training, and educational policy development significantly limits the positive impact of technology (Tangwe & Nizeyumukiza, 2025). Similarly, institutional support and long-term strategies have been identified as key factors for the successful implementation of technology in education (Pham Xuan & Håkansson Lindqvist, 2025). Without these elements, the use of technology remains fragmented and ineffective, failing to contribute sustainably to the achievement of SDG 4.

Table 1Main themes identified from the literature

Main topic	Description	Main findings	Reference
Increasing access to education	Technology expands learning opportunities	Increases access for rural areas and marginalized groups	Gupta & Chakraborty (2025); Amjad et al. (2025)
The digital divide (Digital Divide)	Inequality in access, skills, and use	Low-income and rural students are more disadvantaged	Gursakal (2025); Mpofu (2025); Chigwada & Ngulube (2024)
Emerging technologies (AI)	Using AI and digital innovation	Improves personalization of learning, but increases the risk of inequality	Asghar (2025); Amiri et al. (2025); Álvarez-Sánchez (2026)
Socio-economic factors	Impact of economic conditions	Dependence on infrastructure and financial resources	Tangwe & Nizeyumukiza (2025)

Policies and institutions	The role of governments and institutions	Policies and strategies are crucial for success	Pham Xuan & Håkansson Lindqvist (2025); Ramírez-Correa et al. (2025)

Thematic analysis of the literature highlights a complex interaction between technology and equity in education, identifying several key dimensions that directly impact the achievement of SDG 4. First, technology emerges as an important factor in expanding access to education, especially for marginalized groups and geographically isolated areas. This indicates that technology has the potential to act as a democratizing tool for education, reducing traditional barriers to access (Gupta & Chakraborty, 2025). However, this finding is conditioned by other structural factors.

At the same time, the digital divide emerges as one of the most dominant and problematic themes in the literature. It is not limited to the lack of devices or the internet, but also includes deeper dimensions such as digital skills and the effective use of technology. This suggests that inequalities in education are not only technological, but also social and economic (Chigwada & Ngulube, 2024). As a result, technology can function as a "double-edged sword", reducing or deepening inequalities depending on the context.

Another important dimension is the role of emerging technologies, especially artificial intelligence. These technologies offer new opportunities for personalizing learning and improving the quality of education, but at the same time, they increase the risk of creating a new digital divide between institutions and countries with different levels of development (Álvarez-Sánchez, 2026). This shows that technological innovation must be accompanied by inclusive policies.

Furthermore, the analysis highlights that socio-economic and institutional factor play a crucial role in determining the impact of technology on education. Without sufficient investment in infrastructure, teacher training, and sustainable policy development, the potential of technology remains untapped (Tangwe & Nizeyumukiza, 2025). This is particularly important for developing countries like Kosovo.

In conclusion, the thematic analysis confirms that achieving SDG 4 through technology does not depend solely on the availability of digital tools, but on a combination of factors that include

social equity, institutional capacities, and public policies. This complexity necessitates an integrated and strategic approach to the use of technology in education.

1.14. Study Findings: The Case of Kosovo

The literature review addressing the Kosovo context shows that the impact of technology on education is characterized by a combination of opportunities and structural challenges. One of the main findings is that the use of technology has increased significantly in recent years, especially after the COVID-19 pandemic, accelerating the adoption of online learning and digital platforms in educational institutions (Poleschuk, 2023). This has contributed to increasing access to education and the continuity of the learning process in crisis conditions. The findings of the study by Orhani (2021) reflect the high scores of participants regarding the integration of technology in mathematics lessons, and that this is becoming increasingly evident in online learning, perhaps even in the development of distance learning during the COVID-19 pandemic.

However, the literature highlights that this development is not equal for all students. One of the most important findings is related to the existence of a pronounced digital divide between urban and rural areas in Kosovo. Studies show that students in rural areas face a lack of technological devices and unstable internet connections, which significantly limit their participation in digital learning (Shala & Grajcevci, 2018). This situation creates significant differences in academic performance and opportunities for educational development.

Another important finding relates to the level of digital competencies in the education system. The literature shows that, although there is an increasing use of technology, many teachers do not have sufficient training to effectively integrate it into the teaching process (Qorraj & Kaçaniku, 2023). As a result, technology is often used in a basic way and fails to significantly improve the quality of teaching. Similarly, students also face a lack of digital skills, which affects how they benefit from online resources.

The findings also show that infrastructural challenges remain a major obstacle to the effective integration of technology in education in Kosovo. The lack of sustainable investment in digital equipment, computer labs, and educational platforms limits the use of technology in many educational institutions (Rajasekaran et al, 2025). This situation reflects a high dependence on economic and institutional factors, which directly affect the quality of education.

However, despite these challenges, the literature also highlights a significant potential for development. The increasing use of digital platforms and initiatives to digitize education indicates that the education system in Kosovo is in a transition phase towards a more modern and technology-based model (Shahini, 2021). In this regard, technology can play an important role in improving access and quality of education, if accompanied by sustainable policies and strategic investments.

Table 2Key findings for the Kosovo case

Dimension	Description	Key findings in Kosovo	Implications for SDG 4	Reference
Access to technology	Availability of equipment and internet	Increased use of technology after COVID-19, but unequal access	Improves access, but not equally	Poleschuk (2023)
The digital divide	Urban-rural and socio-economic differences	Rural areas have more limited access to devices and the internet	Increases the risk of educational exclusion	Shala & Grajcevci (2018)
Digital competences	Skills of teachers and students	Lack of training for teachers and ineffective use of technology	Limits the quality of teaching	Qorraj & Kaçanik (2023)
Educational infrastructure	Digital devices and systems	Limited investment in technology and educational platforms	It hinders technology integration.	Rajasekaran et al. (2025)
Policies and development	Strategies for digitalization	Growing initiative, but partial implementation	Potential for long-term improvement	The Shahin (2021)

The data presented in the table shows that the education system in Kosovo is in a phase of transition towards digitalization, where the benefits of technology are evident but unevenly distributed. While the use of technology has increased access to education, the digital divide and the lack of digital competencies remain major obstacles. This suggests that achieving SDG

4 in Kosovo requires an integrated approach that combines investments in infrastructure with human capacity development and improved education policies.

Findings from the Kosovo case confirm that technology has the potential to contribute to achieving SDG 4, but this potential remains constrained by digital inequalities, skills gaps, and infrastructure challenges. This necessitates an integrated approach that simultaneously addresses the technological, social, and institutional dimensions of education.

In summary, the findings of this study show that technology has a dual role in education: it can serve as a powerful tool for expanding access and improving the quality of education, but it can also deepen inequalities if not accompanied by comprehensive policies and sufficient investment. This contradiction is particularly evident in developing countries, where structural challenges limit the transformative potential of technology. Therefore, the role of technology in achieving SDG 4 needs to be understood in a broader context, encompassing economic, social, and institutional factors.

Discussion

The results of this study confirm that technology is a key element in efforts to achieve Sustainable Development Goal 4 (SDG 4), but its impact on education is complex and conditioned by multiple structural factors. In line with contemporary literature, the findings show that technology has considerable potential to expand access to education and improve the quality of learning, especially in contexts where geographical and socio-economic barriers are pronounced (Lu et al, 2025). The use of digital platforms and online learning has contributed to creating more equal opportunities for students, supporting the principles of inclusive education.

However, the discussion of the findings shows that this potential is often limited by the existence of the digital divide, which remains one of the greatest challenges in implementing technology in education. In line with the studies of Gürsakal (2025) and Chigwada and Ngulube (2024), the results show that inequalities in access to devices, the internet, and digital skills create significant differences in educational inclusion and academic performance. This implies that technology is not automatically an equalizing tool, but can even contribute to deepening existing inequalities if not accompanied by appropriate policies and targeted interventions.

The case of Kosovo clearly illustrates this duality between opportunities and challenges. While the use of technology has increased significantly, especially in the wake of the COVID-19 pandemic, its benefits remain unevenly distributed. Urban-rural disparities, as well as the influence of socio-economic factors, continue to limit equitable access to technology and educational resources (Shala & Grajcevci, 2018). This is consistent with the argument that local context and structural conditions are crucial for the success of integrating technology into education (Rahmanov et al, 2025).

Another important aspect that emerges from the discussion is the role of digital competencies and human capacities. The findings show that the lack of sufficient training for teachers and the ineffective use of technology significantly limit their impact on the quality of education. In line with Chin et al. (2026), the development of digital competencies of teachers is a prerequisite for the successful integration of technology into the learning process. This suggests that investments in technology should be accompanied by investments in the professional development of educational staff.

Furthermore, the discussion highlights the importance of educational policies and institutional support. Studies show that countries that have clear strategies and well-structured policies for the digitalization of education achieve better results in reducing inequalities and improving the quality of education (Pham Xuan & Håkansson Lindqvist, 2025). In this regard, it is essential for Kosovo to develop comprehensive policies that address not only the technological aspects but also the social and economic dimensions of education.

Another important dimension is the role of emerging technologies, especially artificial intelligence. The literature suggests that these technologies can significantly improve the learning process through personalization and data analysis (Asghar, 2025). However, in line with the findings of Álvarez-Sánchez (2026), there is a risk that these technologies will create new forms of inequality if they are not accessible to all. This requires a balanced and equity-oriented approach to the implementation of technological innovations.

In summary, the discussion of the findings highlights that technology has an important but not sufficient role in achieving SDG 4. Its impact is dependent on the interaction of various factors, including access, competencies, infrastructure, and policies. This implies that to achieve a more equitable and quality education system, an integrated approach that combines technological innovation with social and institutional interventions is needed. In this context, the case of

Kosovo provides a clear example of the challenges and opportunities that characterize developing countries in the process of digitalizing education.

Conclusion

This study aimed to analyze the role of technology in achieving Sustainable Development Goal 4 (SDG 4), with a particular focus on reducing inequalities in education in developing countries, specifically in Kosovo. Based on the analysis of contemporary literature and the identified findings, it can be concluded that technology represents a powerful tool for transforming education, but its impact is conditioned by numerous structural and contextual factors.

One of the key findings of the study is that technology has significant potential to increase access to education and improve the quality of learning. The use of digital platforms, online learning, and emerging technologies, such as artificial intelligence, has created new opportunities for educational inclusion and the development of 21st-century skills. This is particularly important for developing countries, where technology can help overcome geographical and social barriers.

However, the study confirms that technology is not a universal solution to inequalities in education. The digital divide remains one of the greatest challenges, reflecting inequalities in access, skills, and use of technology. In this context, technology can contribute not only to reducing but also to deepening existing inequalities, if not accompanied by comprehensive policies and sufficient investments.

In the case of Kosovo, the findings show that the education system is in a transition phase towards digitalization, with notable advances in the use of technology, but also with significant challenges. Inequalities between urban and rural areas, the lack of digital infrastructure, and the limited level of digital competences remain key obstacles to the effective integration of technology in education. This indicates that the benefits of technology are not distributed evenly and require targeted interventions.

Furthermore, the study highlights the importance of institutional factors and educational policies in determining the success of technology use. Investments in digital infrastructure, teacher training, and the development of long-term strategies are essential to ensure that technology effectively contributes to achieving SDG 4.

In conclusion, this study argues that the role of technology in education needs to be understood holistically, taking into account the interaction of technological, social, and institutional factors. To achieve the objectives of SDG 4 in Kosovo and other developing countries, an integrated approach that combines technological innovation with comprehensive policies and human capacity development is necessary. Only in this way can technology serve as an effective tool for reducing inequalities and building a more equitable and sustainable education system.

1.15. Recommendations

Based on the findings and discussion of this study, the following recommendations aim to contribute to improving the role of technology in achieving Sustainable Development Goal 4 (SDG 4), particularly in the context of Kosovo and developing countries.

First, it is essential to increase investment in digital infrastructure in education. Educational institutions should be equipped with adequate technology, including computer equipment, stable internet, and functional digital platforms. In particular, attention should be paid to rural areas and marginalized communities, with the aim of reducing the digital divide and ensuring equal access to education.

Secondly, it is recommended to develop and implement continuous training programs for teachers in the field of digital competencies. Effective integration of technology into the teaching process requires not only equipment, but also pedagogical and technological skills. Therefore, building the capacities of teachers is a key factor in improving the quality of education.

Third, education policies should focus on developing comprehensive strategies for the digitalization of education. These strategies should simultaneously address the technological, social, and economic dimensions of education, ensuring that technology is used as a tool for equality and not for exclusion. In this regard, cooperation between public institutions, the private sector, and international organizations is essential.

Fourth, it is recommended to promote the use of innovative technologies, such as artificial intelligence and adaptive learning platforms, in a controlled and inclusive manner. These technologies can contribute to the personalization of learning and the improvement of academic outcomes, but they should be implemented in a way that does not increase existing inequalities.

Fifth, it is important to develop programs to enhance students' digital skills, preparing them for the demands of the modern labor market. Digital education should be an integral part of the educational curriculum at all levels.

Finally, it is recommended that future studies include empirical analysis and primary data to more thoroughly assess the impact of technology on education in specific contexts such as Kosovo. This will help develop more evidence-based policies and improve educational practices.

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