

THE IMPORTANCE OF ADVANCING TECHNOLOGY BASED ON EDUCATIONAL INNOVATIONS IN VOCATIONAL SCHOOLS

PhD. can Fakeke Duraku

fakete_duraku@hotmail.com

Abstract: *Vocational schools have to develop such technology-based educational innovations that would shape the future workforce for better quality in education. This paper overviews how the integration of information technology into the curriculum transformed the vocational course while highlighting its potential to transform teaching-learning processes. The vocational schools need to develop technology-based educational innovations in the light of molding the future workforce with better quality education.*

This paper thus intends to outline an overview of how the integration of information technology within this curriculum has transformed the course and its transformation into teaching and learning processes. Therefore, the development of technology-based educational innovation in vocational school training for a future workforce will lead to improvements in the quality of education forthcoming. This paper provides an overview of how information technology integration into the curriculum has revolutionized the vocational course and is bound to alter how teaching and learning are carried out. The paper further underlines the possible role of ICT in the personalization of learning for individual students and in developing competencies of the 21st century. In some cases, such technology-driven ways of vocational education pay off even with better learning outcomes and result in very good preparation in the quite fast-changing labor market. Amongst others, it indicated how information and communication technology can at least partly provide an answer to adapting learning to the needs of students and enabling the competencies demanded from an inhabitant of the 21st century.

The findings hint at a possible role of ICT in accommodating students with special learning needs and developing 21st-century competencies. One positive finding, however, is that more technology-driven vocational education approaches pay off not just in terms of learning outcomes per se but even in better preparations for a rather rapidly changing labor market.

Keywords: *information technology, vocational schools, educational technology, technology innovation, 21st-century skills, interactive learning, personalized learning.*

Introduction

The rapid development of education has always included technology as a great contributor to the innovation of teaching and learning methodologies. Vocational schools equip students with employable practical skills; thus, the integration of technology-driven educational innovations is vital for them. This would facilitate bridging the gap between theory and practice through the use of advanced digital tools and platforms within vocational education in order to train students for increasingly technology-based professional demands.

In the last three decades, countries that have focused on the technological development of educational systems have shown significant changes in learning environments (OECD, 2010). These changes have been influenced by efforts towards creating enabling conditions for technology integration, enabling educators to implement innovations in digital developments, and supporting research communities to document and analyze developments in education. Computing, the Internet, and advanced software applications have fully replaced traditional methods of learning to make it far more accessible, interactive, and effective.

The role of information technology in education is not restricted to access to digital resources but acts more as a strong tool for problem-solving, critical thinking, and collaborative activities among students. These new technologies, including virtual reality, augmented reality, and artificial intelligence, have really transformed vocational training into immersive training that allows active learning. Such tools let students first practice in a safe environment while building competency and confidence before going live.

Moreover, introducing educational innovations into the vocational school is a modern trend in the labor market. A worker will be more welcome when he can show better digital literacy and be easy with the novelties of technology. This means not only that the effective integration of technology will improve learning in vocational education but also provide the graduate with the proper role in the contemporary industries.

The paper covers the development of improving technology through educational innovation in vocational education. It discusses how the integration of technology, its implementation challenges, and digital tools can be helpful in improving students' knowledge retention, skills, and engagement. Thus, this research will provide insight into the trends and best practices that exist today in order to motivate the need for embracing technological advancement within vocational education in building a skilled, quality workforce that is able to compete in the future.

THE IMPORTANCE OF ADVANCING TECHNOLOGY BASED ON EDUCATIONAL INNOVATIONS IN VOCATIONAL SCHOOLS

Technology can provide the applicability of important devices to enhance teaching and learning as well as open new possibilities and methods. Countries that have supported technological advancements and adapted them to the necessary educational innovations have adjusted educational projects based on innovations in various ways over the past three decades.

(OECD, 2010). **Typically, in educational policy, significant efforts have been made in three directions:**

1. Determining the conditions that enable the application of technology, covering a wide range of issues, starting from the availability of devices, teacher training, technical and technological support, and the production and distribution of digital materials for learning.

2. Empowering schools and teachers to generate discrete innovations at the classroom level or by offering various forms of incentives for the role and importance of technological innovations

3. Providing support for interested research communities in documenting and analyzing new educational innovations

Computers, the Internet, and information technology in the broadest sense have opened the door to new and diverse possibilities that have almost completely changed human life. However, schools are still a fundamental environment for individual experiences on the path to success. Education practitioners and policymakers pay attention to the use of IT for educational improvement and policy.

Information technology has been used to improve teaching and learning, including software applications for teaching and learning.

The purpose of applying information technology in education is the development of IT skills for problem-solving in real life. The main content may include computer architecture and cyber ethics. Information technology is necessary for people living in this society.

(Guri Rosenblit, 2005). Digital devices are connected to computers and enhance their productivity and effectiveness when applied in schools. There are many misunderstandings regarding educational programs compared to hardware devices. The most sophisticated hardware is useless without appropriate software. Technology investments require professional or academic

versions, such as general-purpose software applications, professional software, teaching with CD or DVD, and software with a system for monitoring and managing learning.

Today, on a global scale, the Internet is included in various enterprises and corporations that influence the economy, finance, trade, politics, communication, research, development, and education. Information technology goes beyond national boundaries, creating great potential for reshaping learning environments at all levels. (Virtual, n.d.).

The argument for the application of new technologies in the education system by adapting to innovations consists of three ideas regarding the use of information technology in educational projects:

- **New information technologies enable advanced change by facilitating the transfer and transformation of information into the creation, sharing, and mastery of knowledge.** Active collaboration between teachers in developing knowledge related to technological innovations advances effective implementation rather than simply gathering data from what others have done before. This advanced change in sharing possible practices also increases overall speed and effectiveness and enables the application of educational innovations. Mobilizing knowledge and proper and timely utilization represent the mirror of the desired quality and type of changes in educational practice, shifting from passive information delivery to active knowledge construction in line with achievements.

- **Efforts to disseminate information should include all necessary information for the successful implementation of exemplary practices, providing a series of interconnected innovations that mutually reinforce systematic change.**

The distribution of technology-based learning environments strategies for professional development, and the necessary technological infrastructure and support services, are critical. New interactive technologies offer numerous powerful opportunities for the detailed communication of information.

- **Overall, challenges and educational innovations are helping the teaching process.** New interactive technologies can enable virtual communities that provide effective and social support, leading to a deeper transformation in educational practices.

The development of technology based on educational innovations in vocational schools is important because it can help improve the quality of learning and development of professional skills of students. In this regard, advanced technologies in vocational education may contribute to

very important competencies such as teamwork, communication, problem-solving, and the use of technologies.

Virtual and augmented reality, for example, provide possibilities for simulating a variety of work situations in an interactive way of learning and practicing professional competencies. Learning technology can also help learners to self-regulate regarding their learning pace and instruction tailored to individual needs. It means that these educational innovations influenced the development of technology in a certain way to create new and improved tools for learning and professional training. With innovations in educational fields, newer technologies such as the internet, e-learning, and digital learning platforms have resulted in higher efficiency and quality learning that helped students achieve better knowledge and experiences.

Vocational schools are taking an important step into the future as technology is in development based on educational innovations to give the best to their students for the making of successful professions.

The advancement of technology in schools has several important benefits, such as:

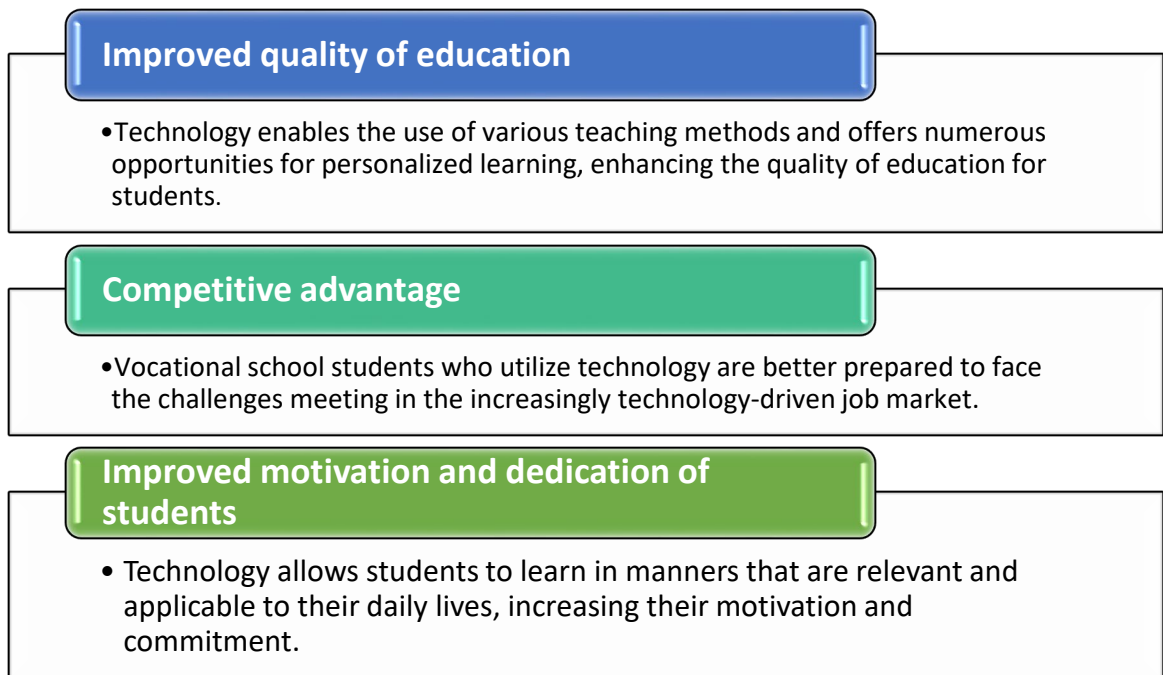


Figure 1. The advancement of technology in schools has several important benefits

Nowadays, the role of educational technology is quite important in the modern education system. The use of communication technologies for exchanging and receiving information creates an interactive environment that is quite helpful for teaching and learning purposes. Various applications support online learning and make the work of instructors quite easy and more effective than ever because now they can easily interact with their students and share knowledge through digital media. The schools also have to consider the value of educational technology because, for one, it opens up new dimensions and methods of teaching. Upon implementation, educational technology would lead to the development of an interactive and adaptive environment for all kinds of students, both normal and with special needs. Besides this, educational technology can facilitate the learning of thinking, communication, and collaboration.

(**BBVA, n.d.**). Today's students are already children of digitalization, so it is important to equip these students with adaptable tools and resources to enhance the quality of the teaching and learning process. These technologies have the potential to improve relationships between students and teachers, encourage collaboration among students, and promote time management skills.

Technology has brought revolutionary changes in all areas of life, from interpersonal communication to the economy, entertainment industry, and even education. It seems that today, more than ever, students are facing changes that radically alter the way they learn and their daily lives. The extraordinary impact of modern technologies on the younger generations of students is simply impossible to ignore. Children are growing up with laptops, tablets, various devices, and modern digital systems, so they have been ready for the modernization of education for some time. The importance of technology in education is becoming increasingly apparent. Learning styles have changed over the years, gradually introducing new potential technologies to enhance teaching. Technology in the classroom is excellent news because the digital era brings advantages to education and all other fields of life. Therefore, students need to learn to harness the full potential of modern society while still in school.

Information and communication technology (ICT) can be a useful tool for improving the quality of education and professional development. ICT can increase students' motivation and dedication and facilitate basic skills, enhancing the learning experience. Additionally, ICT can assist teacher training by providing opportunities to learn and develop new pedagogical skills.

The key components of ICT include:

1. Computers, which include personal computers, laptops, tablets, and servers
2. Networks, which include local area networks (LAN), metropolitan area networks (MAN), wide area networks (WAN), and the internet
3. Phones, which include traditional phones, mobile phones, and smartphones
4. Applications, which include software for various educational purposes,
5. Data, which includes data stored on computers, stored on various networks, and stored in the cloud.
6. Hardware: this includes physical devices such
7. as cameras, scanners, and others.

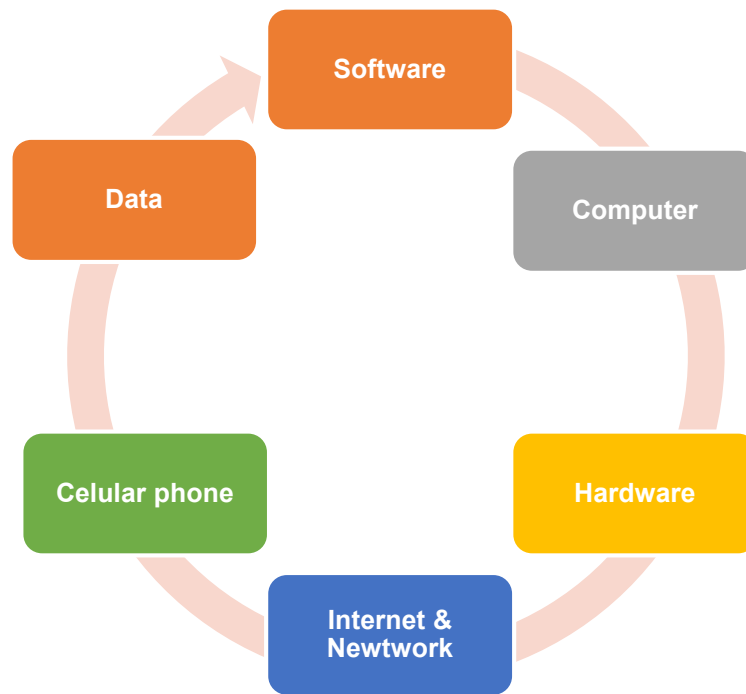
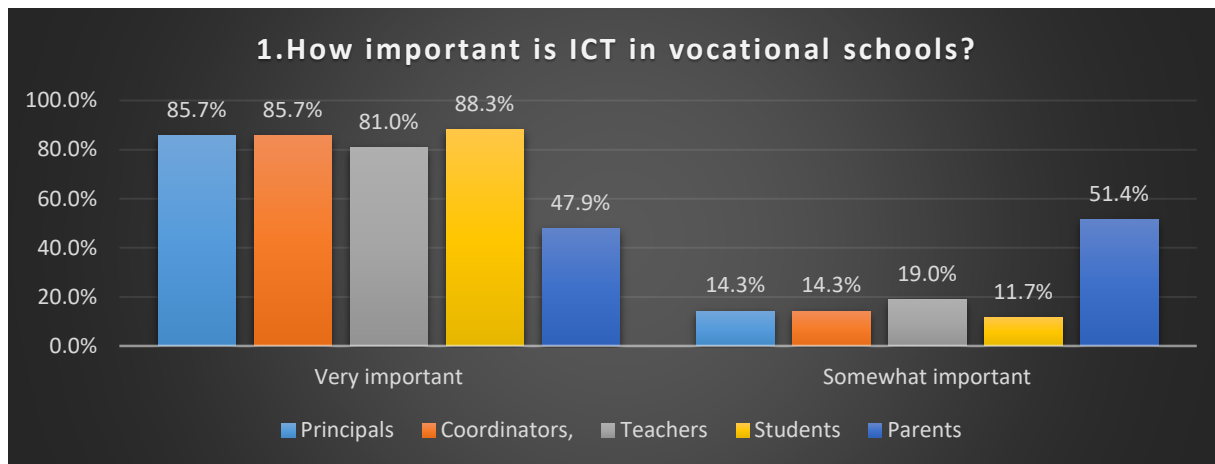


Figure 2. The key components of ICT (Information and Communication Technology)

General results of the research

In the graph 1, there is the question posed to directors, quality coordinators, teachers, students and parents of vocational schools that "How important is ICT in vocational schools?" Based on the data obtained from the survey, we came to this conclusion that 85.7% of the principals responded that ICT is very important in vocational schools, while 14.3% of the principals answered that ICT is somewhat important. While 85.7% of coordinators answered that ICT is very important

in vocational schools, while 14.3% of coordinators answered that ICT is somewhat important. On the other side 81% of teachers answered that ICT is very important and 19% of teachers answered that ICT is somewhat important in vocational schools. 88.3% of students answered that ICT is very important in vocational schools, while 11.7% of students answered that ICT is somewhat important. 47.9% of parents answered that ICT is very important in vocational schools, while 51.4% of students answered that ICT is somewhat important. According to the results of the survey, the conclusion is that the respondents (directors, quality coordinators, teachers, students and parents) greatly appreciate the importance of ICT in vocational schools, while parents, on the other hand, were more divided in their opinions, where a part of them evaluates ICT as very important, while the other part of them evaluates it as somewhat important.

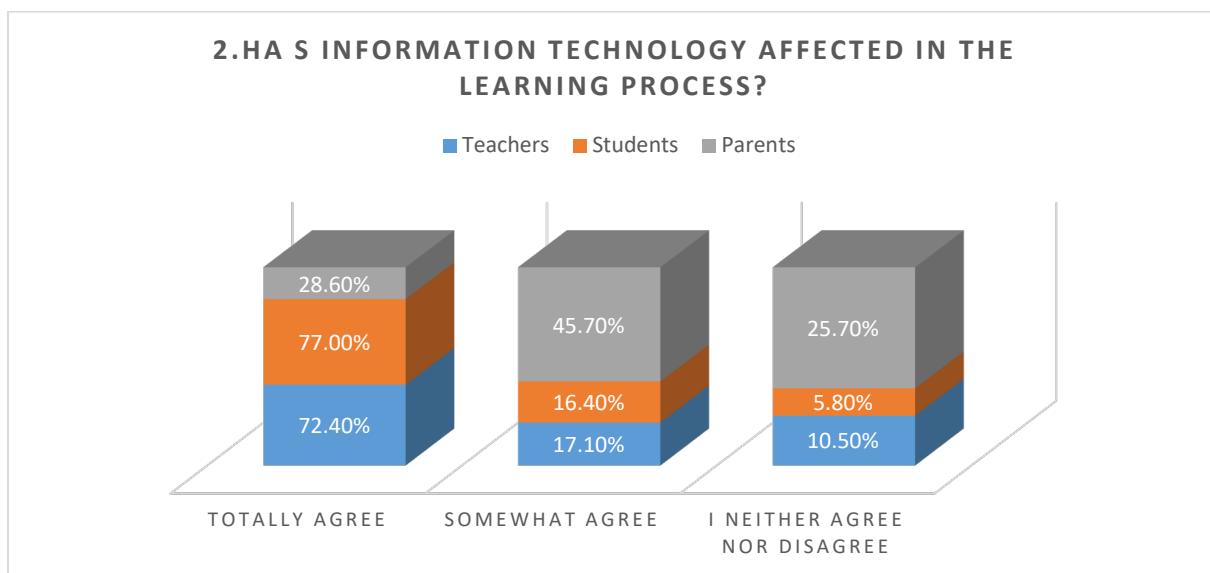


Graph 1. presents the results obtained from question 1, Questionnaire I. Principals, coordinators, teachers, students and parents = 629 respondents in 7 (seven), vocational schools of the Municipality of Prishtina

In the graph 2, there is the question posed to teachers, students and parents of vocational schools that "**Has Information Technology affected in the learning process?**" Based on the data obtained from the survey, we came to this conclusion that 72.4% of teachers responded that ICT has influenced the teaching process and 17.1% of teachers answered that ICT has influenced the teaching process to some extent, while 10.5% of teachers neither agree nor disagree that ICT has influenced the learning process. 77% of students answered that ICT has influenced the learning process, while 16.4% of students answered that ICT somehow has an impact in this process, while

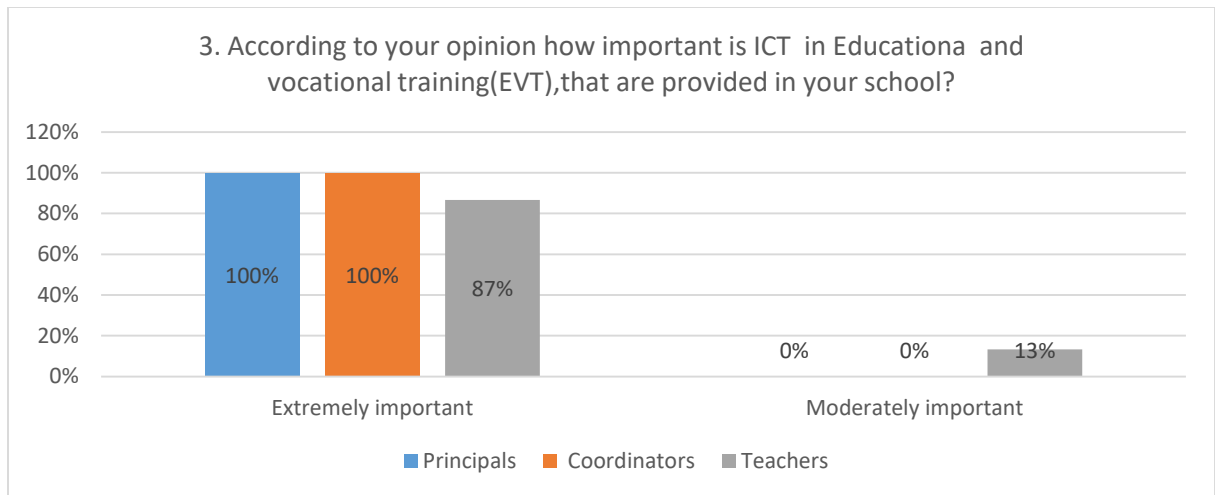
5.8% of students do not even agree that ICT has influenced the educational process. 28.6% of parents answered that ICT is very important in vocational schools, while 45.7% answered that ICT has somehow influenced the learning process, while 5.8% of parents claimed that it has influenced the process to some extent.

According to the results of the survey, the conclusion is that the respondents (teachers, students and parents) estimate that ICT has an impact on the learning process, while parents, on the other hand, were more divided in their opinions, where some of them estimate that ICT -un somehow has an impact on the learning process.



Graph 2 presents the results obtained from question 2, Questionnaire I., teachers, students and parents = 615 respondents in 7 (seven), vocational schools of the Municipality of Prishtina

In the graph 3, there is the question posed to principals, coordinators, teachers of vocational schools that **"In your opinion, how important is ICT in the Vocational Education and Training (VET) programs offered in your school?"** Based on the data obtained from the survey, we came to this conclusion that 100% of the principals responded that ICT is important in the Education and Vocational Training program and 100% of the coordinators responded that ICT is important in the Education programs and vocational Training. 86.7% of teachers answered that ICT is important in Education and vocational Training programs. According to the results of the survey, the conclusion is that the respondents (principals, coordinators and teachers) assess ICT as a very important element in Education and Professional Training programs.

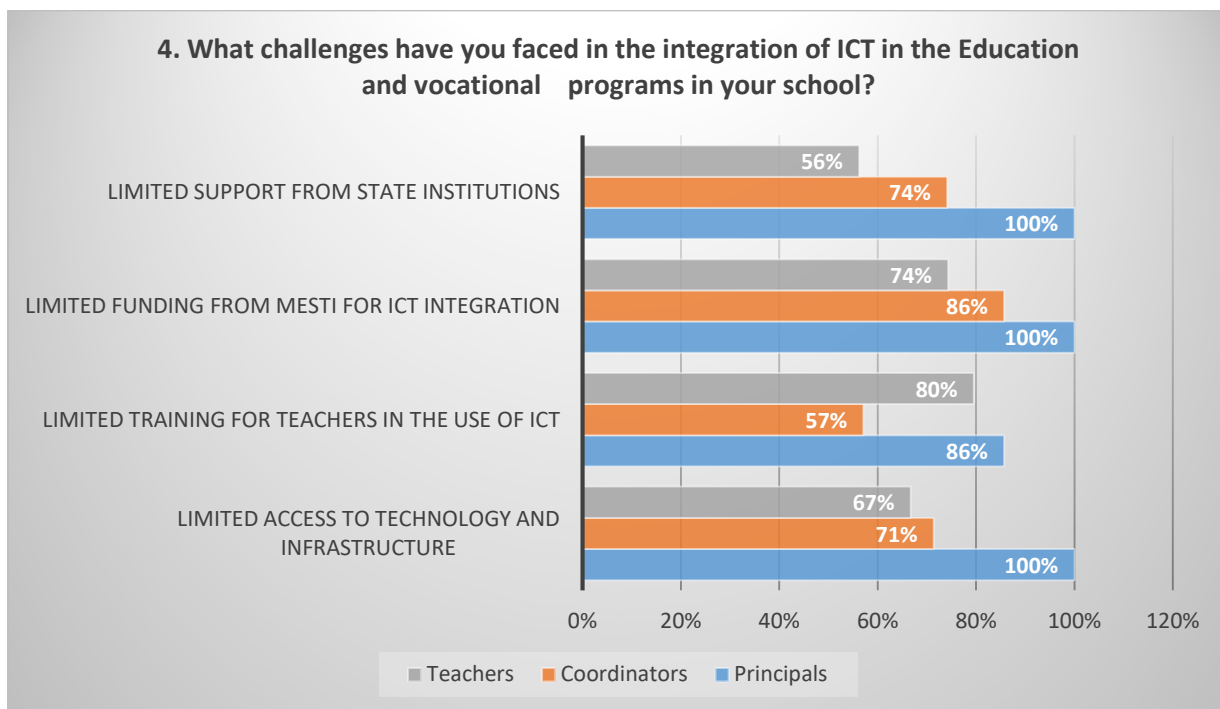


Graph 3. presents the results obtained from question 3, Questionnaire I., principals, coordinators and teachers = 224 respondents in 7 (seven), vocational schools of the Municipality of Prishtina

In the graph 4, there is the question posed to principals, coordinators, teachers of vocational schools that **"What challenges have you faced in the integration of ICT in the Education and Vocational Training programs in your school?"** Based on the data obtained from the survey, we came to this conclusion that 100% of the principals responded that vocational schools challenge the integration of ICT in VET programs in the limited access to technology and infrastructure, limited funding from MESTI for the integration of ICT and 85.7% of the principals claimed that a challenge in VET is limited training for teachers in using the ICT.

With 85.7% of the coordinators have answered that the challenge of AAP is the limited funding from MESTI for ICT integration, 71.4% of the coordinators have answered that the challenge of AAP is limited access to technology and infrastructure and limited support from government institutions while 57.1% of coordinators challenge is limited training for teachers in using ICT. 79.5% of the teachers answered that there is limited training for teachers in application of ICT, while 74.3% of the teachers answered that the limited training for teachers in the use of ICT is a challenge, and 66.7% of the teachers answered that the challenge is the limited access to technology and infrastructure and 56.2% of the teachers it is the challenge and limited support from the government institutions. According to the results of the survey, the conclusion is that the respondents (principals, coordinators and teachers) have assessed that VET programs have some challenges in the integration of ICT, such as limited access to technology and infrastructure,

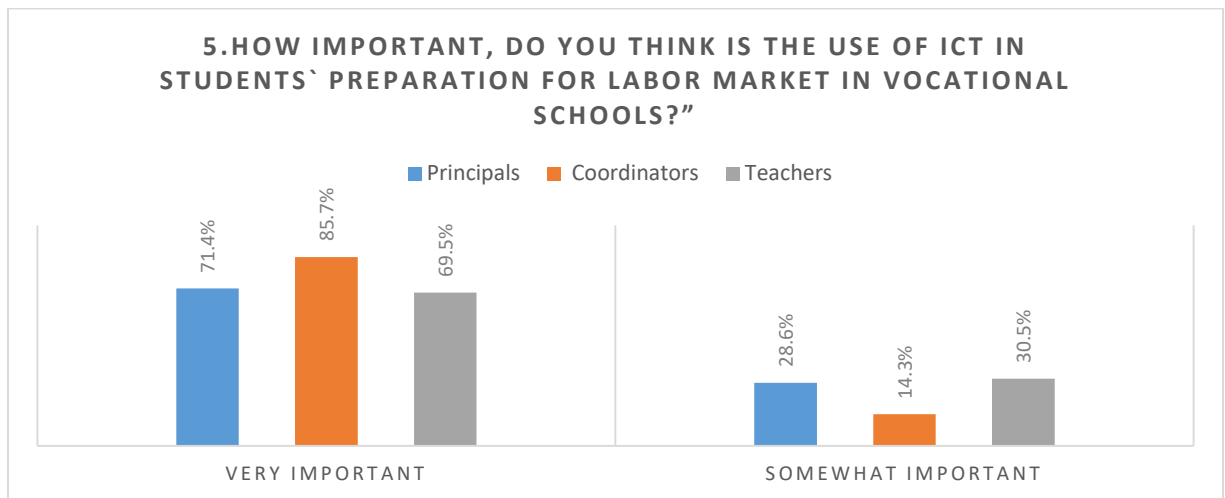
limited training for teachers in application ICT, limited funding from MESTI for the integration of ICT and limited support from state institutions.



Graph 4. presents the results obtained from question 4, Questionnaire I., principals, coordinators and teachers = 224 respondents in 7 (seven), vocational schools of the Municipality of Prishtina

In the graph 5, there is the question posed to principals, coordinators, teachers of vocational schools that **"How important do you think is the use of ICT in preparing students for the labor market from vocational schools?"** Based on the data obtained from the survey, we came to this conclusion from responded principals who estimate that the use of ICT is very important for the preparation of the labor market, 71.4% and somewhat important 28.6%, while the coordinators estimate the use of ICT as very important ICT for the preparation of students for the labor market, 85.7% and somewhat important, 14.3% and teachers consider the use of ICT important in preparing the labor market with 69.5% and somewhat important with 29.5%.According to the comparative results of the data from the respondents shows that the use of ICT in vocational schools to prepare students for the labor market is an important element and that there may be a need for a greater investment in ICT infrastructure in vocational schools. This

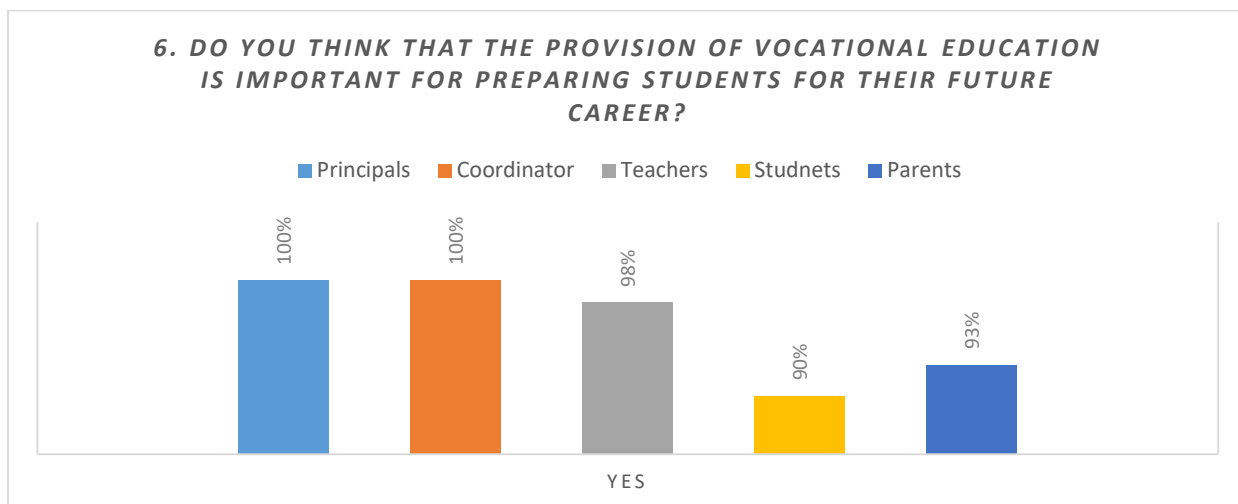
would help increase students' skills and prepare them for the labor market in a technologically developed environment.



Graph 5. presents the results obtained from question 6, Questionnaire I., principals, coordinators and teachers = 224 respondents in 7 (seven), vocational schools of the Municipality of Pristina

In the graph 6, there is the question posed to principals, coordinators, teachers, students and parents of vocational schools that **"Do you think that the provision of vocational education based on technology is important for preparing students for their future careers?"** Based on the data obtained from the survey, we came to the following conclusion: the principals estimate that the provision of vocational education based on technology is important for the future career of students with 100%, while the coordinators estimate that this provision of vocational education based on technology is important, and 100% and the teachers estimate that the provision of vocational education based on technology is important for the future career of students with 98.1%, while the students estimate that it is important for their future career with 92.7% and parents estimate that the provision of technology-based vocational education is important for the future career of students with 90%. According to the results, we conclude that the comparison of the data is that the use of technology in the provision of vocational education can affect the preparation of students for their future career in a positive way. This can be considered as an important indicator for the need to incorporate technology in the process of vocational education in schools. This may

also indicate that investing in technology and vocational education can be an important solution for enhancing students' skills and careers in an increasingly diverse and technological world.



Graph 6 presents the results obtained from question 8, Questionnaire II., principals, coordinators, teachers, students and parents = 638 respondents in 7 (seven), vocational schools of the Municipality of Prishtina

Conclusion

Vocational schools worked on developing the technology with an aim toward a serious step of betterment in education and preparation for eventual jobs. Learning can be extended with quality and modern digital tools by teachers, making it interactivity-efficient to keep it relevant to changes in the industrial demand for labor. It enables adaptation through virtual reality, artificial intelligence, and digital platforms where students can acquire important technical and soft skills. The fact is that such technological innovations bring about challenges notwithstanding resource allocation, teacher training, and infrastructure development, which are dwarfed by the long-term benefit. Successful technological integration that helps instructors and students adjust to new teaching and learning methods is what governments, legislators, and educational institutions should be concerned with.

Innovations have produced a better and more competitive workforce in vocational education. It is, therefore, in the interest of vocational schools that put emphasis on digital literacy and experiential learning that students will emerge with the needed arsenal to compete in a fast-changing labor market. In fact, effective technology use directly concerns the future of education,

and proper incorporation thereof into vocational schools will surely prepare the students for both challenges and opportunities that this digital age has in store for them.

Vocational schools need the development of technology based on educational innovations. New technology and advanced tools help students to acquire the best knowledge and experiences, which enable vocational schools to shape successful future professions. The Ministry of Education, Science, Technology, and Innovation should go on investing in technology based on educational innovations for a better future for students and their professions. Professional education in the Republic of Kosovo plays a significant role in the economic and social development of the country. With the specialization programs offered, vocational education with technology prepares the future workers with the necessary knowledge and skills for the successful performance of their professional careers. Professional education in Kosovo enables students to create a perfect continuity in their careers, and it represents one of the key investments in social and economic development.

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