Supporting Friendly Atmosphere in a Classroom by Technology Implementation

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Abstract

Extremely rapid development of information technology and the lack of monopoly in the technological market have resulted in a sudden price reduction of the informatic equipment and gadgets enabling them to be used in all segments of a human life, hence the education as well. In the modern, digital era it is almost impossible to make any significant result without the integration of technology in work. However, integrating technology in a classroom and educational process does not imply only to equip classrooms and offices with modern technological equipment, but also to improve and readjust the curriculum in order to fully use the available IT tools. Using technology in a classroom must be efficient, transparent and simple. Furthermore, it aims at improving learning quality in a class, but also at preparing students for real-life situations. The necessity of technology implementation in classrooms is not only a formal process of equipping classrooms, but also adjusting the curriculum in order to refocus on the development of technological competences of both students and teachers. This will train future young generations for everyday life in their surroundings in which their class would be a functioning model of a friendly community simulating real life problems we are preparing for and dealing with successfully.

Key words: integration, educational and ICT classroom, tools

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1. INTRODUCTION

Not so very long ago, the concept of contemporary education and educational equipment implied only television. Today, however, due to extremely fast development of technology, it is available and accessible to everyone. Together with television, technology itself has rapidly developed, so almost every student today owns a smartphone - a device which can be considered as a 'pocket computer'. Due to technology accessibility and its use in consumerist societies, slowely but undoubtedly people have been entering the era where some basic tasks will be impossible to do without computers or similar devices usage. Moreover, communicating, shopping, entertaining, learning foreign languages, running state affairs can already be done using computers and the Internet without even leaving the comfort of your own home.

Implementing technology in educational system is a part of a general plan for improving methods of teaching and learning, work strategies, educational tools both inside and outside the classroom. School has the task to create a modern student who will be an active participant in the educational process and a creator of educational contents. A student should evolve together with technology instead of embracing it only when needed. Further, a student should learn how to develop critical thinking and creativity. Such student leaves school as an informatically and information literate person capable of using technology in a transparent way not only for solving problems, but also in everyday life situations. He should be able to keep up with the rapid social development and technological advancement. Technology leads us on a journey through new stages and possibilities of the classroom from the future which will emphasize cooperative work methods, thus change and create friendly atmosphere inside the classroom.

2. LET US NOT IMITATE, LET US LIVE LIFE IN A CLASSROOM

25 centuries ago, Confucius believed that learning liberates a person from four things: dogmatism, biased thinking, egoism and stubbornness (Wang and King, 2006, 2007). He considered learning to be an emphasised meditation through which an individual controls himself. Based on Confucius' learning on silent reflexion, the scientists divided learning on active and passive. Regardless of the learning definition, it is widely accepted that learning is reflected in behavioural changes as a result of experience (Haggard, 1963) and it has to be connected with development and growth (Merriam, 2004). Most likely did Maslow see the goal of learning in self-actualization that he explains as a complete utilization of talents, capacities and potentials (Maslow, 1970).

Using educational technology in a classroom enables us to create more effecient ways and methods of achieving educational goals and use different actions and means for successful teaching (Pastuović, 1999). Its effeciency can be achieved only by adapting its use to the goals of learning, contents and personalities of students. Educational means and related educational technologies should not only provide contents for learning, but also teach how to find and valuate information and how to be a 'good person': cooperative, tolerant, non-violent… (Matijević, 2004).

Regarding educational technologies, we have to take ICT (Information and Communication Technologies) into consideration. ICT is a diverse set of technological tools and resources used for communication and creation, spreading, storing and managing information. According to UNESCO, the definition of information and communications technologies used in education presents an area of fast changes and rapid growth. Having this said, ICT contributes to emphasizing new terms such are information-communication literacy and digital literacy. Information and communications technologies include a wide spectrum of computer hardware, computer software and telecommunication facilities including computer devices, ranging from the cheapest calculator to multimedia computers, projectors, local area

and broadband networks using computer systems which serve people who communicate over them (Anđić, 2007).

Cost-effectiveness and traditional views of school and education either limit or improve work possibilities. Education is a practical science; a place where we fulfil or destroy wishes and dreams of our students. Curriculum should not be focused only to the tools needed to develop sensible and logical constructions of new knowledge in different areas, but also aggressively create culture which encourages creativity of all students, not only of children, but also of responsible adults who have creative ideas that are feasible, rational and constructive (Jacobs, 2010). If we move the focus from technology to the formal review of every part of the curriculum, we will be able to find a potential connection between technology and the curriculum much easier. We will not modernize our work just by replacing an overhead projector with a video projector. This is not an advanced and innovative step indeed. The goal is to change the existing models. The change of our mental model of teaching, the way we teach, evaluate and grade the growth of our students will demand time and adjustments. Such changes require open-mindedness, flexibility, patience and courage. The change of the curriculum is preceeded with the change of our minds and followed by forming new habits and routines whilst ignoring traditional and obsolete ones. Many teachers are frustrated because they are trying to simultaneously prepare students for the present and the future - the time completely unknown to them all.

3. TECHNOLOGY INTEGRATION IN THE LIFE OF A CLASSROOM

Technology integration is a concept which can be defined in different ways each been partially correct. Technology integration in the curriculum is considered to be the usage of technology by both students and teachers with the aim of improving teaching, learning and strengthening the existing curricular plans and aims. Technology is not nor will it ever be a cure for all problems in the classroom because technological tools are not always the best or the most suitable for specific situations. Furthermore, technological tools will not themselves create contents, but more skilled teachers and interested students might benefit from them since they can create a better life in the class. Integration processes tend to develop the vision in which teachers easily use technology to realize the idea of teaching that is focused on a student. At the moment, teachers do not use technology easily and skillfully since most of them consider technology to be the reason of changing the existing ways of teaching instead of considering it to be the possibility for enriching their teaching abilities and programs.

Apple Classrooms of Tomorrow (ACOT) study discovered that teachers go through different stages while integrating technology into their teaching. Teachers who grasped the potential of technology for improving teaching tend to gain technological competences and change the way they teach. ACOT study led to the conclusion that teachers undergo five stages in which they learn how to implement technology in the classroom: First is an entering stage in which they learn the basics of technology; second is an adoption stage when teachers use new technologies as a support to traditional way of teaching; third is an adaption in which teachers already integrate technology into the classroom; fourth is an approval and focusing on cooperative projects and interdisciplinary work and finally the fifth stage in which teachers discover and create new ways of using technology for teaching (Sandholtz, Ringstaff, Dwyer, 1997).

The parallel to ACOT study identified four stages of how teachers learn to use technology: first stage is a survival one when a teacher resists to technology because it is new and unknown. Further, he has unrealistic expectations and uses it as less as possible; second stage is the time in which he develops tolerance toward technology, starts using new ways of integrating technology in the classroom and successfully solves minor problems in his work; third stage makes an impression on a teacher and he, amazed by technology possibilities, starts

using it in the classroom relatively easy. He keeps balance between his lectures and students' activities in projects focuing lectures on technology; fourth stage is the one in which a teacher fully accepts technology in his work to the extent that he self-initiatively organises a classroom in order to fully incorporate technologically adapted curriculum and students' activities; he modifies working environment and realizes ideas and measures he created himself (Mandinach and Cline, 1992).

The key of integrating technology in the curriculum is to focus on what needs to be achieved within the curriculum and then to identify the suitable technological tool which will help to achieve that goal. Teachers used to believe that the best way of teaching is to repeat, so students spent time learning new words by spelling them, rewrote history notes or repeated mathematical calculations until they would 'learn them'. Contemporary behaviourists see the surroundings as the key to successful learning in terms of stimulus and reaction. They have been trying to prove that students' behaviour is related to external rewards or amplification which follows stimulation in relation to a positive response. For example, problematic students 'learn' to sabotage a class looking for the attention from their teachers and classmates. Shy students 'learn' that their surroundings do not encourage social interaction so they become shy and silent. The result of all that is that students' behaviour is analysed in terms of history of substantiation (amplification).

Learning by discovering, deductive learning and the model of processing information represent the implementation of cognitive principles in technologically related lectures planning. Teachers look for an educational software which allows students to personally explore the subject, provides presentations offering students the basic information to build new ones, and the Internet pages that respect students' cognitive needs for encoding, storing and retrieving information.

Humanistic teacher creates an educational surrounding that encourages independent development, cooperation, positive communication and personalised information. Open education and cooperative learning are primary manifestations of Humanism. Technology supports open education through individual learning, while teachers primarily observe and ask questions. Humanistic teacher searches for a software designed for individual work, presentations used by groups of students and web pages that support interpersonal communication instead of thematic content itself.

Brains of today's students are for several hours a day (over)stimulated by video games, television, mobile devices and internet communications. One of the main reasons of students' boredom in the classroom is the perception that the methods used for presenting the curriculum are unimportant for the way they learn. In addition, there is the perception that school tasks and duties are of no importance. Why work so hard when whatever they are learning about seems irrelevant? (Jensen, 2005) Today's students are 'digital natives' born in the digital world, fluent 'speakers' and users of modern technology unlike 'digital immigrants' who later entered the world of technology and who will, no matter how skilful they are in using technology, always keep the certain 'immigrant accent' (Prensky, 2005/2006).

One of the newer trends in the process of technology integration in the curriculum is TPACK frame which tends to unite all currently existing theories into one unique leading thought. TPACK (Technological Pedagogical Content Knowledge) is a frame that identifies knowledge and ability of professors and teachers to efficiently teach using technologies. TPACK frame is based on Shulman's (1986) theory about pedagogical and content knowledge (PCK), and is designed to evaluate the kind of teacher's knowledge about successful integration of information-communication technology in the teaching process and teacher's activity (Altun, 2007; Akkoc, 2010). Building on Shulman's theory, Mishra and Koehler (2006) added technology into PCK and described the resulting TPCK as the intersection of technology, pedagogy and content knowledge. Finally, the name was changed into TPACK which is a combination of content, pedagogical and technological knowledge integrated into

one unit. Thus, we got the frame that focuses on complex interaction between teacher's content knowledge (CK), pedagogical knowledge (PK) and technologal knowledge (TK) (Mishra and Koehler, 2006).

With the appearance of digital technologies, technology itself has become very significant part of teachers' and students' lives changing the way they work and learn in technologically rich surroundings. Early attempts of technology integration would always treat it as a unit that has to be learned apart from pedagogical and content competencies. Today, however, researchers looking for complete teachers' knowledge start using TPACK as a frame for designing and developing programs with the aim of equipping teachers with correlated knowledge that concentrates on students' learning in different areas, especially technological pedagogical content knowledge (American Association of Colleges of Teacher Education, Committee on Innovation and Technology, 2008). TPACK served as a useful frame for thinking about what teachers need to know in order to successfully integrate technology in teaching and to continue developing that knowledge. This frame recognized unique and integrative parts that content, technology and pedagogy overtake in the learning surroundings. Furthermore, it suggested taking new forms of knowledge that go beyond idea of the content, technology and pedagogy into consideration (Mishra i Koehler, 2006). Each new situation that would be presented to teachers is a unique combination of these three factors and according to that, there is no unique technological solution applicable to every teacher, course or way of teaching. The solutions are to be found in teachers' competencies to successfully work within the elements of pedagogy, technology and contents and applying complex interactions in certain contexts. Under the complex upper layer of structures of these three domains, there are also three components of the teachers' knowledge: understanding contents, understanding teaching and understanding technology. The complexity of technological integration is based on the relationship between these three types of knowledge and the complex ways that are used in dynamic and ambiguous contexts of the classroom.

4. IMPLICATIONS FOR PARTICIPANTS IN EDUCATION

Since each context of teaching is unique and the interaction of technology, pedagogy and content may have different and situation-orinted implications, there is no universal solution for all teaching problems. Due to complex and intertwined connections of the mentioned three domains, teachers face a number of decisions they have to make. Decisions change according to every new permutation of technology, pedagogy, content of teaching or contexts inside the classroom. The diversity of possible answers implies that a teacher should be an active researcher and a designer of his own curriculum. The complex structure of teaching using technology leads towards the idea of 'teachers as designers' being included in an active and interactive process of detecting problems and creatively finding solutions to these problems (Koehler and Mishra, 2005). Firstly, teachers start the process of designing by detecting a problem. Secondly, they find a part of solution and try to find the meaning in all that. Finally, they try to change the situation and continue with solving that problem (Kafai, 1996).

Tens of methods for developing TPACK were suggested and each one differs regarding efficiency. The argument that teachers integrate technology in their praxis is more important than the argument what they are integrating in their praxis on (Mishra and Koehler, 2006). For example, methods and approaches that develop technological knowledge (TK) not connecting it with other types of knowledge do not manage to develop educational ways to use technology tools. Approaches that develop only pedagogy and content, and even pedagogical content knowledge, do not manage to grasp details of knowledge needed for effective teaching by using technology. Other methods of TPACK frame development dodged these problems by directing themselves to different approaches of developing context-oriented knowledge described in TPACK. There are two unique approaches to technology implications: 1.

designing learning technology in this approach is such that students are not receivers of instructions, but they engage in 'cognitive apprenticeship' with their instuctors (Nishra and Koehler, 2006). The principle of designing learning technologies is based on students creating educational technological artefact (e.g. online course, film, web page) which develops alongside with students' progress in acquiring the content or their professional growth; 2. learning according to the type of an activity where students build their technological knowledge on their teachers' knowledge. This approach has proven to help teachers make careful strategic decisions about integration of technology in their teaching. Teachers use this approach to set the goals of students' learning upon which they choose the types of activities suitable for chosen goals (Nishra and Koehler, 2006).

Each type of technology has its advanatages and disadvantages, hence the development of TPACK shoud begin with relatively familiar technological solutions and then gradually progress to more advanced ones (Koehler and Mishra, 2008; Koehler and al., 2011). Efficient use of technology is difficult since technology brings new variables into the already complicated equation of planning and teaching content. TPACK's frame describes the possibility of efficient teaching using technology by pointing out open relations between technology, pedagogy and content. Using TPACK's frame for teaching by using technology demands contextual knowledge and understanding of technology, where technology can be chosen or used differently to suit the specific pedagogical and content needs of versatile educational contexts (Mishra and Koehler, 2009; Kereluik, Mishra and Koehler, 2010).

5. TECHNOLOGY IN TERMS OF CREATING FRIENDLY CLASSROOM ATMOSPHERE

Integration of technology in the classroom does not only imply the physical aspect, but also social trends, the ways technology influences these trends and what implications does it have on culture, society, learning and teaching in the 21st century. New technologies combined with social and cultural adjustment fundamentally change our understanding of knowledge, its creation and authority. Teachers' duty is to examine these trends effects and answer the question: ″What does it mean to be educated in the 21st century?″

Today's student, regardless of his residential address, lives in the technological era in which the Internet and Google are present almost from the beginning of his education, and for many of them even from the beginning of their lives. Experiences of today's students are diametrically opposite from linear and hierarchical structures of knowledge that is widely accepted and institutionalized in educational systems developed a few generations ago which serve as today's educational frame. Needless to say, these frames and systems in today's world are completely obsolete and with no chances of succeeding. Retrospectively speaking, it is exactly the technological progress, e.g. adoption and development of symbolic system of communication – alphabet - that collapsed the previous system of oral knowledge passing. In addition, the invention of the printing press ended the era of scholastic authority of priests and religious communities which resulted in making common people in all cultures literate. The very similar scenario has been happening right now all around us with the new technology again changing the situation and redefining our understanding of the term literacy (Van't Hooft, 2008).

The need for controlling the traditional classroom led to the prohibition of using different modern technological tools which can be used for learning. Mobile phones, tablets and similar devices are forbidden in classrooms of many schools. We live in the time in which, for the first time, our children learn how to use these powerful technological tools without the supervision of adults. What concerns teachers and parents the most is the fact that children can also misuse the aforementioned technologies for private purposes. The chance of this happening is greater were there no adult supervision. We have to accept the fact that forbidding the use of technological tools children want to use for learning and in the classroom is pointless.

Furthermore, if we do not embrace them, it may only deepen the gap between a teacher and content on the one hand, and children on the other (November, 2010). Tools and services accessible over the Internet (e.g. Facebook) can have negative consequences for a student because they impede his learning process. Teachers have every right to fear that because of the services like Facebook, teaching might experience great damage in the whole process. We could ask a question from a different perspective: why is not then the culture of learning and teaching transformed in the direction of adjusting itself to the technological tools? Children are growing up in the time when global communication and unlimited sources of information are accessible almost for free. The real problem of technology integration in the curriculum is not adding technology to the preexisting programs, but changing the culture of learning and teaching (November, 2010). Mobile devices can indeed become valuable assets to technologically supported learning for a number of reasons. Such devices are relatively small, easier than a laptop or a computer to carry around, have multiple possibilities of connecting to the Internet, thus to information, too. Further, their price is gradually becoming more and more acceptable and as such, it encourages students to use technology throughout the whole curriculum and everyday activities because they accept mobile phones as the tools for lifelong learning which they can use anywhere at any time (Sharples, 2000; Inkpen, 2001). Mobile devices are bringing students closer to the theory of the omnipresent computerised surroundings which was defined in 1991 by Mark Weiser. He described it as ″the new way of thinking about computers in the world…it allows computers to disappear in the background″ and become invisible in everyday life. Furthermore, he points out that omnipresent computing means not only portability, movability and constant connectivity, but also the existence of the surroundings in which people use various devices of different sizes that communicate with each other. Those are combined with the changes in human psychology to that point that users know how to easily use technology and become unconscious of its existence (Weiser, 1991). This version of omnipresent computing was restored by Yyonne Rogger who suggests the modified version of the theory which says that ″technologies are not designed to complete tasks for people, but they actively involve them in what they are doing″ (Rogers, 2006). This theory perfectly fits into the current vision of technology integration into education and its potential impression on learning and teaching. Academic researches have shown that using computers and learning are closely associated with accessibility of computers to all students in their classrooms (Becker, Ravitz, and Wong, 1999, Shin, Norris, and Soloway, 2007).

Benefits of technology integration in the classroom are long term and multiple. It is important to distinguish learning from technology that is based on the assumption that a computer itself is a tutor that provides instructions for carrying out a task. On the other hand, there is the assumption that it is important to learn with the help of technology, where a computer is only one more tool used for solving a problem and is used in a way we use a pocket calculator, ruler or a divider. Due to that, scientists claim that if it is possible to solve a task using just a pen and a piece of paper, it should be solved by using just a pen and a piece of paper (Warlick, 2005). A teacher who wants to integrate technology in the classroom can present interesting relevant projects, questions and problem tasks to students, use the Internet to find and show the newest discoveries in fields students are studying, explore details about historical events, study the newest trends in teaching languages and so on. Researches show that software tools are very important for making study-encouraging surroundins in which students should use new technological tools to gather information, organize information, share with others what they have learned and demonstrate it (Norman and Hayden, 2002). In technologically improved classroom, the role of a teacher changes from an information provider to a creator and a supporter of cooperative surroundings. A teacher leads his students into the process in which they independently, through cooperation with others, shape their own knowledge. The role of students changes from a passive information receiver to an active

associate in the teaching process. A student defines goals, evaluates his progress being responsible for his own learning (Gebhard, 2008).

Using technology and computers, a student defines problems and organizes their solutions. This assumption supports the constructional teachings that technology is a cognitive tool which can broaden learning. Moreover, with the help of computers and the Internet, teachers can cooperate with other colleagues, schools, institutions or they can use modern technologies to show unique, invisible or imaginary phenomena (with the help of computer simulations). Teachers are left with far more time to design and organise contents when students work and learn on computers, instead learning from them. However, this can be done only if a student is informatically and information literate. Informatically literate person is a person who can evaluate a problem, search for its solution, think independently and solve a problem with the help of technology. In comparison, information literate person is a person who can process a large number of information, question, evaluate, analyse and synthetize only those which are needed and vital for solving the problem (Reeves, 1998).

Nowadays, however, teachers are better prepared for using software solutions in the classroom. Together with them, students who use these solutions instead of completed, complex applications for learning are also prepared. Nowadays, instructional technology is blossoming because teachers and students are much more informatically literate, computers are faster, simpler to use, completely focused on a user and are available in schools more than ever before (Kulik, 2003). Software enables students to develop higher levels of thinking; they show the improvement in the capability to write, understand mathematics better, have better capacity for solving problems, show more developed critical thinking and consequently show more trust in computers. One study showed that when students are presented with clear goals and expectations, when they are being evaluated during the whole process of learning and when they have the feedback from their classmates, they become higher motivated students, more engaged in learning and show the capacity of strategic thinking, planning and completing projects (McKenzie, 1998).

Computers improve the process of teaching and learning; however, they cannot control students and the classroom, though they can help in doing that. Technology can be an integral part of the organization of the classroom and the work with students. Using technology and different software applications, it is possible to simplify the preparation of the classroom even before the school year begins. One study examined the work of teachers who were using technology for these purposes. They recognized its importance when doing teachers' obligations, like keeping records of students' absence, communication, research, planning and making instructions for the classroom (Ascione, 2005). Computers and softwares can greatly help with the introduction to students, e.g. a teacher can print out the sitting arrangement of students or use 'name tags' which would fasten the introduction. As a classmaster, he can print a note or send an email to parents, send an initial letter or an invitation to the PTA meeting, etc.

As it frequently happens, there can be several students who are technologically superior to other students and sometimes to their teacher, too. To keep their motivation, avoid boredom and unproductiveness in the class, they can be assigned as class experts for special areas – software, hardware, help and support. Needless to say, we should not forget that technology per se is not nor will it ever be a teacher itself. Technology in the classroom must be a tool for helping students solve problems they are given. In today's schools, for various reasons, technology is being isolated. Computers are put in separate laboratories or classrooms and their separation from academic standards is not an efficient way of using them. But, if there is no other way, it is necessary to organise classes using this technology in the arrangement with a teacher assigned for that equipped classroom.

Although technology makes work significantly easier, it has its downsides. Computer components are sensitive to atmospheric changes and other conditions. Because of the large

number of equipment using electrical supply, it is necessary to install a sufficient number of electric plugs that need stable power and voltage which results in financial costs of equipping the classroom. Furthermore, computers and computer components optimally function only in specific atmospheric conditions (low humidity and room temperature) which require additional equipment for the classroom (air-conditioning and similar). Another problem is the purchase of computer components and equipment. For successful operating and showing the screen to the whole class, the classroom needs a video projector, being a bit priceful. For purchasing computer components, school can rely on local companies, hardware stores and other institutions that can donate the equipment, thus contributing to schools modernization.

Additionally, it is necessary to include the human factor. In the case of some equipment malfunctioning, a person in charge of maintainance should be available at every moment in order to fix problems on a computer, internet connection or communicational system.

Technology integration in the classrooms demands ″radical turnover in the style of teaching and in the teacher's vision what actually life in the classroom is. This vision is the one that changes teacher's role by diminishing the importance of ″write and talk″, increasing the sensitivity towards problems and achievements of each individual, describing the changes of the physical arrangement of the classroom, how to evaluate, how teachers treat their colleagues and a large number of other situations in the everyday life in the school″ (Kerr, 1996).

6. CONCLUSION

Classroom as the place children are prepared for life with their competencies being developed must provide technological competences acquisition. Those competences students, as modern young citizens, will be able to transparently use in order to improve their personality, knowledge and skills. Integrating technology does not mean to equip the classroom with computers or provide students with portable devices and tablets and to expect a teacher to know what to do and how to use these advanced tools. Technology development has helped us to get a better insight in the ways people learn and acquire knowledge. Having this said, we can help students upgrade their knowledge by using specifically developed technological tools. It is vital to make changes in the existing educational praxis, methods and ways of teaching with the aim of helping a modern teacher to adjust to teaching by using technology. Teachers will never refuse the possibility of technology implementation into their teaching once they realize it undoubtedly improves their work and increases students' capability to learn. For the professional development of teachers, numerous scientific methods can be used; methods which can improve that process, including also TPACK frame of pedagogical and content knowledge. This is a very useful frame because the three starting domains of knowledge (pedagogical, content, technological) unite in one common frame in which teachers do not have a unique, clearly defined technological solution for every single problem, but both teacher and students are capable of using their own creativeness and imagination in creating solutions.

On the other hand, the results gained through technology implementation in the curriculum regarding students' success and improvements are remarkable. Numerous studies have shown that today's young people are very skilful in using technological tools like the Internet, social networks, systems of instant communication (instant messaging) outside the classroom. Simultaneously, obsolete forms and methods of work are considered to be boring. Further, students do not see the point of using methods irrelevant to the ways they acquire knowledge. Availability of smart phones and tablets has solved the issue of students' access to technological tools. Hence, students can be guided to use devices, they normally use outside the classroom, inside it. Consequently, a teacher can create exercises and contents specifically adjusted for those devices.

Speaking of technology in classrooms, physical aspect (computer components) seems to be the more used one; however, virtual elements (software applications) are undoubtedly more important. Using software, the traditional way of school work may be transformed. Digitally prepared papers can be easily rearranged, reorganized, problematic parts removed or changed in comparison to hand-written papers. Needless to say, papers written on a computer look nicer and more professional. Moreover, students can be included in the creation process.

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