

## Technology and its Influence on Education in the 21<sup>st</sup> Century

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### Abstract

Improvements in technology are paving the way to provide better opportunities to increase better learning and teaching in the higher education system. Nonetheless, views on the efficiency on technology are divided over such an approach and the degree to how much technology should be allowed in teaching and learning. This article explores the advantages and disadvantages of using such technology to direct teaching and learning.

### Introduction

In this digital age, technology has grown more significantly into everyone's lives. Third graders texting on their cell phones, kindergarteners can navigate an iPod Touch, and Middle-schoolers have Internet following on their blog or YouTube channel (Blair, 2012). There has also been a growing number of adults going back to school to learn new IT skills or to increase the skills they already have (Kasper, 2001). As Kolderie and McDonald (2009) say, information technology has transformed the work industry into opening up new types of work processes and business organizations and has increased productivity and consumer innovations. With these constant changes in technology it is not enough for students to simply be watching videos or playing Internet games. Students nowadays want quick access to new knowledge and they are able to learn at a whole new level (Blair, 2012).

From this we can see that there is a need for teachers to adjust to the role of technology in the classroom to satisfy the demands of the students. In other words there is a need to change the focus from the technology itself to ways where technology can be used to bring out the very best in how teachers can teach and how students can learn (Robin, n.d.). According to Ertmer and Ottenbreit-Leftwich (2009) schools are currently investing heavily into technology, buying new computers or softwares, installing Wi-Fi, and programs or devices to assist teachers and students. However, not everything is as easy as it seems, for there are a lot of difficulties and problems that comes with implementing technology into schools. This article will define what technology in the 21<sup>st</sup> century is as well as the uses and tackle on the advantages, disadvantages, and the challenges ahead.

### Definition

To begin, we should ask what the 21<sup>st</sup> century is. *What is 21st Century Education?* (2008) explains that we are at a time where there are a lot of technological changes. As mentioned earlier, these new emerging technologies offers unlimited possibilities students should and could learn skills to be able to help change the world, they can learn to do this by participating in real life learning projects to tackle real-world problems. This is defined as 21<sup>st</sup> century skills and education. These are the skill sets and education students need to adapt to the changes in the world.

There is a change from traditional way of teaching from textbook-driven, teacher-centered, to a new way of teaching where technology allows the students interests, needs, strengths and weaknesses to direct the learning process (Kolderie & McDonald, 2009). Teachers are transformed from being the information provider to being the guide in helping students turn information into knowledge and wisdom. Students are encouraged to be interested in their learning and to think critically. Other traits of the students in the 21<sup>st</sup> century include

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having a sense of curiosity; be flexible in the ways teachers instruct and to excite learners so that they will continue to be interested in learning no matter when or where.

### **Technology and Education: Advantages**

According to Blair (2012) students are now able to discover and explore instead of just listening to lectures. For example, students can now discover and explore through the Internet research and multimedia resources which can lead them to be able to understand, analyze, and evaluate their experiences in answering questions. Students can also work together in projects (Maximizing the Impact..., n.d.). In other words, students can now investigate, inquire, create, and transform knowledge with meaningful purposes in authentic situations. Secondly technology offers students to become creative and be able to design their own works, and by letting students demonstrate their skill and knowledge in customizing, students become more confident in their own abilities. Students can also personalize in dynamic and unpredictable ways (Kolderie & McDonald, 2009; Maximizing the Impact..., n.d.). This advantage can lead to students being motivated to do their own work with better end products and allowing students to search for and construct their own knowledge. Thirdly with this new way of teaching instruction, and by having differentiating methods, individual needs can now be met one way or another because of the difference in strengths and weaknesses of each of the students and technology offers a way for students to find their own strengths and weaknesses. Lastly and one of the best reasons why we should use technology is that when students use technology in their work it can reach out to everyone, to a real and bigger audience. It tells students that their work is worth sharing with others instead of just showing it to the one teacher.

The advantages of authentic use of technology is that they are more flexible, and can be used as a form of communications medium, and be able to be used in any class and the teacher's teaching practice. Some ways where we can present authentic use of technology is by requiring students to complete written tasks on word processing software. Aside from benefiting just the students, Kolderie and McDonald (2009) also state that this approach in teaching improves the teachers work from presenting material to planning, advising, and evaluating. So instead of the teacher doing everything, students are now given more responsibility to search for information with the teachers guiding them. Another advantage of technology is that the process of assessing work can be improved (Kasper, 2001). Feedback for students can now be given immediately even while they are in the process of working. Assessment now not only checks how much the students know but also how they understand and use it. By letting students work with different types of tools, it offers them the experience that gets them ready for the world outside of school.

### **Technology in Education : Disadvantages**

According to Kasper (2001), how technology in the classroom is handled may be a threat, instead of the technology itself. Wiske (2004) said that teachers are worried that technology will replace them or that the Internet will poison or distract students. While these are valid points, they should not be focusing on worrying but instead focus on the reasons why technologies are not being used properly (Robin, n.d.) and how they can use the best of what they have available to them.

All these requires teachers to be familiar and confident in choosing the right technology to use in class, this depends on the teacher's training and time in testing out the technology to be used by the students. And because of this, many teachers do not get enough training to pick out the right technologies and to also have enough support to implement it (Overview of Technology and Education Reform, nd). Parents as well can also be unfamiliar with these technologies, so there will be some difficulty for parents to understand what is going on and for teachers to use it efficiently in the classroom. So to be effective, teachers must work together with technology for it to offer demanding learning opportunities to students. To be able to design activities and be lifelong learners to be able to keep up with the ever changing technology and the benefits it brings. And those teachers must be well trained to be able to use it effectively (Kasper, 2001). Hall and Bannatyne (nd) also says that as technology becomes more and more complex we need to address the skills needed to use it. Content standards and curriculum resources should also be looked into because it is not easy to just employ technology into lessons, the technology should be unbiased, current, and appropriate to the curriculum and be able to promote student interest (AL-Bataineh & Brookes, 2003).

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## Challenges of Technology in Education

Here is a look at three of the challenges technology may pose when integrated into education: teachers having difficulty in adapting to the uses of technology, the distractions of technologies on both teachers and students, and the worry that technology will replace instruction.

### Adaptation

According to Ertmer and Ottenbreit-Leftwich (2009) it is promising that most teachers are now using technology to support student learning. Teachers have now increased the use of computers to manage and to communicate with students and parents as well. However there is also a problem of integrating technology to support the kinds of instruction.

For teachers who are rather conservative, they are not open to change and tend to rely on traditional teaching methods. While they use technology to help them with their professional and personal tasks more efficiently, they are more hesitant to use the same technology in the classroom because of the lack of knowledge. Nelson, Palonsky, and McCarthy (2007) say that technological knowledge involves a working understanding of technical and operational language, an understanding of common technological equipment and related software. It also includes the use of technology to learn to discover, analyze, test, and understand ideas. They go on to say that some teachers are not prepared to educate students with technology. They can set classroom rules that prevent students from bringing in technological equipments. This prevents teachers from exploring the benefits and uses of these useful technology tools. The problem stems from the lack of support, resources, or the motivation to use these new technologies. With equipments being expensive and bans imposed on equipment in class because of misuses by students, it is hard for schools to be motivated to support the use technology in the classrooms. Furthermore, technology changes rapidly. Teachers are not able to keep up with the pace or even if they are keeping up they are not able to make proper use of what is available to them (Bajpai, 2012).

We can see the difficulty here for teachers to keep up and be able to adapt continuously (Pablo, 2012). With technology we can make it quicker or easier to teach the same things in routine ways as well as making it possible to adopt new and better approaches to instruction and or change to the content or context of learning, instruction, and assessment (Ertmer & Ottenbreit-Leftwich, 2009). Most of today's teachers find this to be the most challenging, because they require the most amount of change. So there is a need to help teachers understand how to use technology to facilitate meaningful learning. Teacher change is a complicated process, affected by the teacher's knowledge, beliefs, as well as the culture from which the teachers work. To encourage and aid teachers to adapt means efforts from all fronts including teacher education programs, teacher professional development, leadership and administration, as well as the individual teachers themselves. This shift from a teacher-centered environment requires educators to revisit their methods. But even so most teachers use technologies that are useful to them and ignore those that aren't (Nelson, Palonsky, & McCarthy, 2007).

Burbules and Callister (as cited from Lavin, Korte, and Davies, n.d.) suggests that technology can be used well or poorly, meaning that the effectiveness of the technology depends on how it used, by whom and for what purpose. It is a complex problem, but one where if teachers and administrators work together to see what can be done, what training teachers need and what best technology to use that can let students learn then we can see a more better and efficient education. Teachers should be willing to take chances and be able to figure out not just how technology works but also how it works for each student and where its use is most appropriate.

### Distraction

Distraction is one of the biggest problems faced by students and teachers alike. While technology has brought access to all sorts of information to students (Porter, 2013), here is also where the problem lies. Students are able to search for anything online even those that are not related to studies. They could be playing games, social networking, reading other articles, and all sorts of other entertainment when they are supposed to be doing their work. Students are even constantly being

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distracted while learning in the classroom, outside in the hallways or even at home. Porter (2013) goes on to say that 76 percent of teachers believed students are being accustomed to find quick answers through the Internet which they believe hurts the critical thinking and the student's ability to do their homework. About 60 percent of teachers said that this hinders the students' ability to write and communicate face to face. McCarthy (2012) shares the same opinion by saying that with the latest technology and social media platforms, students are less likely to have conversations face to face. This leads to concerns on whether students' written, verbal and social skills will suffer. With these distractions comes a lack of discipline (Bane, 2013) leading to a dip in grades.

### **Technology Replacing Instruction**

Gulley (2003) says that many people believe that computers are doing all the work for the students, and not allowing students the chance to grasp what they have learned in class. A good example of this is the calculator; why try to understand the logic behind mathematics when you can solve the problem with the press of a few buttons? Boyle (as cited from Gulley, 2003) argues that technology "may actually be making us stupid." He argues that computers take more of the thinking process out of students. Meaning students are going to become less critical thinkers and more dependent on technologies. Another worry is that the use of computer might take the emotion and heart out of the classroom. Teachers need to know the importance of student's emotions, and that they need human support from the teacher-based instruction. The problem in computer technology is of the belief that computers can solve the problems that teachers cannot. And schools are now focusing more on technology than learning. And with this technology replacing instruction, teachers suffer too, respect for them decreases, their teaching skills and value of academic/professional judgment as well (Nelson, Palonsky, & McCarthy, 2007).

### **Conclusion**

Technology is a very helpful tool for teachers to use as well as for students to become interested in and motivated to learn, with all this in mind to help prepare students for their future work. Technology is ever continuously changing and thus teachers and students alike need to be able to adapt or else be left behind. We do not even know what technology will be like in the future workplace, so students should be learning skills that allow them to be able to adapt to use future technologies and teachers must understand the latest trends in technology and find out what interests students. From the case studies, we can also see that there will always be problems without always having solutions presented to us. There will not be a single solution for all but different solutions depending on different situations.

Teachers are still the ones that guide the student's learning and technologies are used as a way to improve teaching and learning. A good example of this is the use of calculators where when left alone wouldn't teach students much but can make work much easier for everyone, so in this case the calculator is just a tool and that students must learn to use it. From the advantages and disadvantages, for technology to be used efficiently and to have significant changes in learning, we need to be able to change the school's practice, the goals and materials, assessment policies, and teacher development. Not doing so would be like continuing to support the traditional practices. And while there are doubts about the costs or on the misuse of technology, there are much more benefits from using it for learning in the classroom and we must keep in mind that technology is the way forward just like authentic instruction. Another point is that it is not like we are always going to be using technologies in the classroom so teaching instructions can and should be balanced through having a balance of traditional and authentic instructions. Most importantly it is how teachers understand and use these technologies in the classroom, because how well teachers answer these questions will result in how well the technology can be beneficial to the students. We do know that technology is a very helpful tool in the classroom; we just need to understand it and be able to use it wisely.

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