Technology/Computing Fosters Better Education

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ABSTRACT

Today, we live in what is known as the Information Age where humanities access to all-encompassing information is literally a touch of a button away. But have we ever stopped to think, how all this technology has impact us, in the way we think, in the way we learn, in the way we educate ourselves. And has all these changes benefited us or has it caused harm. *My Belief is that Technology/computing has only benefited us and that it fosters better education*. This paper illustrates the benefits and opportunities the use of technology has afforded us and its use as a teaching aid, has had on education. We then weigh it against the harm, over-use or misuse of technology has caused, concluding with an evaluation of both the scenarios to reach a decision.

1. INTRODUCTION

Education is an important aspect of our lives because of the value it holds, value in the knowledge it provides and in its ability to enable us to utilize that knowledge. Education can be classified into two distinct categories, 1) Formal Education and 2) Informal Education.

- **Formal Education** refers to knowledge received in a formal environment, like an institution, where the quality of education is quantified as grades [1].
- **Informal education** refers to knowledge received outside of a formal environment, usually through self-tutoring (autodidactic) using means available to the general public. Since all knowledge here is informally learned, no quantitative or qualitative measure exists [1].

In the older days, formal education received a higher regard when compared to informal education because a holistic knowledge base was guaranteed in formal education while the knowledge of an autodidact may not be holistic due to the way they amass knowledge [1].

In today's age this distinction is thinning as more preference is given to our ability to apply knowledge rather than knowledge in itself.

This change can be mostly attributed to the way technology and education is related in today's information rich world. The arguments that can be made for the use of technology in a pedagogic environment are as abundant as the technology themselves.

2. TECHNOLOGY FOSTERS BETTER EDUCATION

Since early history, mankind has devised means to help people learn in ways that are easier, faster, surer, or less expensive than previous means. From this perspective, educational technology can be traced back to the emergence of very early tools, such as paintings on cave walls [2]. Technology is the biggest medium which has affected education and the way it is edified. Be it the invention of papyrus and ink, the printing press or modern day computers. The opportunities and advantages that technology has bought to the field of education can be gleaned through the discussion of some of the technological advanced and their impact.

2.1. THE PRINTING PRESS

In order to better understand how technology today impacts society we may look at how printing press technology impacted literacy and society five hundred years ago. Just as today another technology, the Internet, is democratizing knowledge and empowering the public by providing greater access to information. Five hundred years ago when the printing press was invented there was a shift from laborious manuscript making to a print technology allowing large numbers of copies of written work to be created quickly, giving greater access to information and setting the stage for a slow but important transformation of societal literacy [3].

Prior to 1450, before Guttenberg created his version of a moveable type printing press, there were many examples of writing remediation where technology shifts were improving on and often eventually replacing the previous technology. Clay tablets in Mesopotamia gave way to papyrus scrolls and then to the manuscript codex on parchment or paper. All of these print technology developments kept improving print, often resulting in the obsolescence of the prior technology. Guttenberg combined the technologies of paper, oil based ink and the wine press to create a hybridized technology: the printing press, allowing mass production of printed books [4]. This then eventually replaced the need for the hand-scribed manuscript codex.

The printing press is credited as a catalyst for the profound societal and cultural transformations that began to occur in the 16^{th} century. Even though it bought in a profound change, the medieval scholars, now considered skeptics, still argued against the merits of printed books in education [5]. But we now know as fact that the printing press had a positive impact on educational practices.

2.2. MULTIMEDIA CLASSROOMS

Classrooms have changed dramatically over the last two decades with the advent of new technologies and equipment developed to make teaching and learning more diversified and interactive. Today, more teachers than ever are using multimedia projectors in the classroom. Students no longer have to crowd around a computer monitor to view presentations, websites or training programs. Multimedia projectors are becoming the centerpiece of classroom technology that directly engage students and add impact to each lesson.

To get a better understanding of the actual benefits of visual media aids in classes, Quality Education Data Inc. (QED) surveyed 500 U.S. public schools to learn more about technology and equipment trends in classrooms. When asked how multimedia projectors affected the teaching and learning experience, several areas of influence were identified, including visual aid, greater flexibility for alternative teaching methods, enhanced teacher demonstrations, heightened student awareness and customized curriculum applications [6].

- **Visual aid:** Multimedia projectors allow teachers to provide diverse content to all students in the classroom at once, allowing students to have a visual and colorful learning experience during a given lesson. These projectors are perfect for this generation's visually oriented youth because they help make abstract concepts easier to understand.
- **Alternative way of teaching:** By not forcing a teacher to rely solely on books, a multimedia projector makes more educational information available to students. It changes conventional habits and rituals in the classroom. In fact, some survey participants believe a multimedia projector could soon replace the chalkboard and overhead projector.
- **Makes teaching easier and better:** Instead of having students crowd around a PC, the entire class can view one big screen without difficulty. The multimedia projector has made the teaching of Internet-related subjects and the demonstration of new software applications much easier - heightening student‟s awareness and expectations, while captivating their attention and increasing their motivation. The projectors also accommodate the electronic submission and viewing of student work.

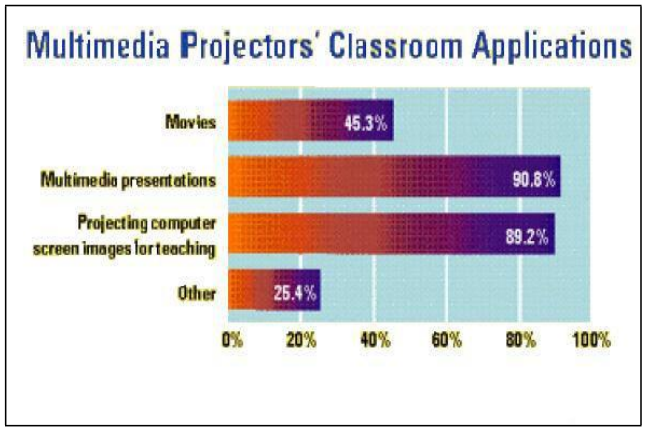

Figure 1: Application of Visual Aids in Education

2.3. TECHNOLOGY AND EDUCATION TODAY

Today, technology has revolutionized the way humans interact and connect with each other, and modern classrooms, homes, and offices are drastically different from how they were just 20 or 30 years ago. Students today need to prepare for a workplace more exposed than ever to modern computing, social media, and other technological advancements. By bringing technology into the classroom, teachers help prepare students to handle the professional world of the future [7].

In consideration of this, the use of computers and internet for coursework are being accepted and encouraged; more so today than it was less than half a decade ago. As an effect the teaching trends in educational institutions are also changing. A decade ago, teaching was based more on pushing knowledge onto the students utilizing repeated quizzes, assignments, etc. Now however the teaching is based more on students pulling the knowledge themselves through assignments and projects dictated by the teachers [8].

Of the numerous arguments that can be sited for the use of technology in classrooms, the most weighted arguments would be the following:

1. Expansion of Time and Space: In a typical high school a student has access to a teacher 40 minutes per day. That means each student has access to that teacher 5% of her waking day, and even that time is shared with 25 classmates. On the other hand the student has access to the Internet 100% of the time. Technology is no substitute for an inspiring teacher. However, on-line materials are far more available. Using the „textbook plus classroom‟ approach, the places where learning can occur are limited. On the other hand, a wireless laptop has access to the teacher's course material and the entire Internet almost anywhere. This is also a vastly larger resource than can be practically carried on paper in a backpack. Thus, information technology allows learning anywhere, anytime; not just in one particular classroom for forty minutes a day.
2. Global Interaction: A vital skill in the new digital world is the ability to work collaboratively on projects with others who may not be physically close. Many university projects are undertaken by teams spread around the world. The worldview of the student can be expanded due to the zero cost of communicating with other people around the globe. The Internet permits free video conferencing which permits interaction in real time with sister schools and project collaborators in other countries.
3. Media of Self-Expression: Using modern technology they can: record/edit spoken word, do digital photography, make a video, run a class newspaper, run a web based school radio or TV station, compose digital music on a synthesizer, make a website, create a blog. The students are afforded the opportunity to express themselves in ways best suited to them. And due to the vastness of the internet, the get to interact with individuals and communities with similar interests even if they are geographically far apart.
4. Opportunity and Confidence: Opportunities that technology provides for acquiring problem-solving skills - either through instructional software designed to teach problem solving (including open-ended exploratory software such as LOGO) or through the many requirements for solving problems that naturally emerge when one is trying to use computer tools to accomplish a task (e.g., the selection of appropriate software, figuring out what to do when the system doesn't behave as you expect it to) [11].

A survey conducted by Pew Internet and American Life Project from 754 students between the ages of 12-17 produced the following results [9] [Figure 2].

School-related use of the Internet *The percent of online teens who have ever…*	
Used the Internet for school research	94%
Used the Internet as the major source for their most recent school project	71%
Used a Web site set up by school or a class	58%
Downloaded a study aid	34%
Created a Web page for a school project	17%

Source: Pew Internet & American Life Project Teens and Parents Survey, Nov.-Dec. 2000.

Figure 2: Survey of 750 youths of age 12-17

The ability to solve problems effectively also has a passive effect on the students. It promotes self-esteem and self-worth through practical molding of the belief that they have the ability to solve problems and accomplish tasks. This confidence is developed through the numerous practical assignments and projects assigned to the students [11].

3. TECHNOLOGY HINDERS BETTER EDUCATION

Like all arguments, there are also contradictory views standing against technology and education integration. The most relevant argument that can be made from their stance are two in total:

1. Technology provides a better platform for cheating:
   It is true that technology makes it easier for students to cheat on homework assignments. The method of cheating involved is usually blatant plagiarism, where the students copy entire texts from online materials or pay someone online to do their assignments for them.
   The survey conducted by Pew Internet and American Life Project used in previous reference also produced the following results [9].

Using the Internet to cheat *The percentage of online teens who know anyone who has used the Internet to cheat on a school paper or test:*	
All teens	18%
Boys	21%
Girls	15%
Younger (12-14)	12%
Older (15-17)	23%
Internet experience	
A year or less	9%
2-3 years	19%
More than 3 years	28%

Figure 3: Survey results of 750 Students

2. Use of technology makes us dumber: The technological transformation or revolution we have experienced over the past 15 years must have clear educational implications. Consider the way students are assessed at school and university. They are still pretty much asked to memorize and repeat information. But that learning model is in conflict with the way we learn, think, and solve problems today. If the most important form of knowledge today is in knowing how to find information (and how to assess it) [10]. Then the purpose of storing and retrieving information from memory loses its value.

4. EVALUATION OF CONTRADICTION

There is some credibility in the opposing viewpoint. It is true that technology has made it easier to cheat and plagiarize work. But cheating and plagiarism existed even before technological integration with education. But most forms of internet based cheating websites are fraudulent in nature where they charge you for the services and deliver D or lesser grade work [9]. This wouldn‟t occur if parents restrict a child‟s access to money and monitor how they spend it.

Furthermore, the claim that use of technology is making people dumber, is an unfound claim based on peoples own opinion and skepticism holding no warrant [10]. Though it can be agreed upon that technology is changing the way younger generation communicate among themselves, in text or otherwise. But this can be explained as a trend in the evolution of language. For example, the evolution of english language from Shakespearean to Classical and Contemporary English. All are relevant forms of the same language used in different era‟s.

5. CONCLUSIONS

In this paper, we have examined and explored information from the perspective of both, corroborative (technology benefits education) and negative (technology hinders negation) standpoint. With the information illustrated in this paper we can conclude that my standpoint and the thesis of this paper is correct, that *technological does foster better education.*

But it has its limitations. As the saying goes "Too much of anything is a bad thing." The most important thing that we can do is not use technology in the curriculum more, but to use it more effectively.

6. REFERENCES

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