



## Schools without Technology? A Big Flat No

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### Abstract:

*Teaching is changing and, in many ways, is becoming a more difficult job because of the increasingly numerous expectations that were never part of what to expect from schooling. In fact, currently, schools are expected to equip students with high-level skills such as how to access, evaluate, analyze, and synthesize vast quantities of information. This is related to the age of information explosion that we are living in. Evidence indicates that when used effectively, "technology applications can support higher-order thinking by engaging students in authentic, complex tasks within collaborative learning contexts" (Means et al., 1993). Technology has become accessible almost to every student outside the school: from mobiles to PCs, to laptops, etc... This makes it critical for educational reform not only because it is available to students both inside and outside the school, but also because it is familiar and liked by them. The purpose of this paper was to (a) highlight the role of technology in shaping future schools, (b) analyze student gains from the use of technology in schools, and (c) suggest means for linking student learning in and out of the school by the use of technology.*

**Keywords:** *technology, future schools, teaching/ learning enhancement, pedagogy, curricula enrichment*

### 1. Introduction

Schools whose central purpose have long been considered to be: preparing children and young people for life; seem to be struggling at fulfilling such a role. In fact, schools seem to be sinking in a pool of demands from almost every quarter. They are no more requested to teach students how to read and write only, but rather to provide them with the skills and competencies that enable them to read critically, analyze mathematically and to inquire scientifically. Graduates are expected to be efficient problem-solvers and decisive decision-makers. This may never be realized unless they are equipped with the skills of learning how to learn and hence become life-long learners.

Despite the pressure exerted on schools and schooling, schools are still very much the same as they were more than 50 years ago. Hood (1998) makes this point explicitly:

I attended secondary school in England in the 1950s; there is little difference today in the way schools are organized for learning. Structurally the curriculum is much the same as it has been for the last 50 years, as is how teachers approach the curriculum. Students are still divided into classes of about the same number, primarily based on age. The day is rigidly fixed within specific time-frames and divided by inflexible timetables. Teachers teach subjects, and front up each hour to a different group of students. Classrooms are designed and used as they were 50 years ago, even though the decor might have changed. Assessment of learning is still dominated by national external examinations. (p. 17).

In other words, schools are not succeeding at making substantial departures from their traditional practices to become schools that point outwards and make use of every single opportunity or tool that may enhance teaching and learning.

A major opportunity that is being missed by schools is the effective use of technology (Howard & Thompson, 2016). In fact, we are living in an information age whereby information is made available to its seekers at the prick of their fingers (Sandall, 2016)). Computers, mobiles, mp 4 players, i-pods ,etc...have helped realize that. It is estimated that the number of Google searches is 2.7 billion inside the United States alone during one month (Sullivan, 2006; Sandall, 2016). This is the type of life enjoyed by students of the 21st century. Yet inside most schools, students are still spoon fed with information by their teachers!

Consequently, via a review of the scholarly literature and also by analyzing the views of high school students and teachers who are currently using educational technology, this paper sheds the light on how technology may act out as important learning tools that helps schools face challenges confronting them. Thus, the purpose of this paper was to (a) highlight the role of technology in shaping future schools, (b) analyze student gains from the use of technology in schools, and (c) suggest means for linking student learning in and out of the school by the use of technology.

## 2. Literature Review

Historically the field of education has been focused on instruction which is a one-way, centralized, broadcast with an emphasis on predefined structures (Tapscott, 1998). Technology has grown tremendously and has permeated all life areas. Perelman (1992) considers new technologies to possess the potential of changing the way learning institutions are organized. Kurzweil (1999) predicts that by the year 2019 most learning will be accomplished using "intelligent software-based simulated teachers" (p. 204). Students would continue to gather together and exchange ideas, but this would be done in a virtual environment. Tapscott (1998) argues that schools should mark a radical shift in learning, one in which interactive learning dominates, allowing the learner to gain more control over his/her learning. Glennan and Melmed (1995) explain that: "Technology without reform is likely to have little value: widespread reform without technology is probably impossible" (pp. xix-xx.).

Evidence indicates that when used effectively, "technology applications can support higher-order thinking by engaging students in authentic, complex tasks within collaborative learning contexts" (Means et al., 1993, p.7). It engages students in authentic, complex tasks within collaborative learning contexts" (Sandall, 2017). Moreover, technology seems to offer for students a rich, effective and efficient learning environment which improves their performance and learning (Hew & Tan, 2016).

Many new technologies are interactive, making it easier to create environments in which students can learn by doing, receive feedback, and continually refine their understanding and build new knowledge (Hew & Tan, 2016, Sandall, 2016). It can also help people visualize difficult to understand concepts which are difficult to state verbally (Hew & Tan, 2016).

Machado & Chung (2015) reported that fourth graders who showed greater frequency of technology use at school to edit papers were likely to have higher total English/language arts test scores and higher writing records on fourth grade test scores on the Massachusetts Comprehensive Assessment System (MCAS) English/Language Arts test. Prior achievement and socioeconomic status were controlled in this study. Machado & Chung (2016) studied the use of computers in an elementary school in the United States. 211 students from 10 classes (third and fifth grades) of low socioeconomic backgrounds constituted the sample. The study showed statistically significant improvement in mathematics achievement, and self-esteem among the technologically enriched.

Howard & Thompson (2016) assure that educational technology "complements what a great teacher does naturally", extending their reach and broadening their students' experience beyond the classroom. Table (1) presents Radlick's (1995) key areas in which technology impacts the curriculum, teaching and learning and assessment procedures.

**Table 1: Impact of Technology on Curriculum; Teaching/Learning**

| <b>Curriculum</b>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                 |                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Traditional Classroom</b>                                                                                                                                                                                                                                                                                        | <b>Reconstructed Classroom</b>                                                                                                                                                                                                                  | <b>Role of Technology</b>                                                                                        |
| Textbooks and pre-packaged materials                                                                                                                                                                                                                                                                                | Primary source materials and real-world projects                                                                                                                                                                                                | CD-ROM's and internet access to resource materials                                                               |
| Subject oriented Emphasis on covering content domain                                                                                                                                                                                                                                                                | Skill oriented. Opportunity to explore and develop understanding of particular areas through projects and themes                                                                                                                                | Multimedia projects that integrate information from many sources. Contact with real practitioners via Networks   |
| Focus on isolated facts, recognition and recall                                                                                                                                                                                                                                                                     | Application of analysis and synthesis within a real project                                                                                                                                                                                     | Network collaboration, use of computer tools, probes, simulations                                                |
| Text focused materials                                                                                                                                                                                                                                                                                              | Multimedia focus                                                                                                                                                                                                                                | CD-ROM, multimedia, simulations                                                                                  |
| Individual disciplines                                                                                                                                                                                                                                                                                              | Interdisciplinary-focus in integration through themes and projects                                                                                                                                                                              | Access to information and resources via network –interaction with real scholars and projects. Multimedia systems |
| Rigid curriculum outlines, based on disciplines, drive instruction                                                                                                                                                                                                                                                  | Student understanding drives instruction                                                                                                                                                                                                        | Networking and computer tools                                                                                    |
| <b>Teaching and Learning</b>                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                 |                                                                                                                  |
| <b>Traditional Classroom</b>                                                                                                                                                                                                                                                                                        | <b>Reconstructed Classroom</b>                                                                                                                                                                                                                  | <b>Role of Technology</b>                                                                                        |
| Students as receiver and consumer of information. Passive learning Didactic learning theory where teaching is planned structured and delivered by the teacher. Teaching here is equated with telling, learning is equated with listening, and knowledge is conceived of as being delivered or poured in to students | Students as active constructor / producer of information. Hands on learning Constructivist learning theory where students build relationships and collect new information as they interact with the world. The teacher acts as the facilitator. | Technology tools e.g. databases and text processing for student projects. Simulations and probes                 |
| Individual learning                                                                                                                                                                                                                                                                                                 | Individual as well as collaborative learning-social construction of knowledge                                                                                                                                                                   | Technology tools including networking allow production and interaction, presentation and sharing                 |
| Teacher-centered and controlled. Role of teacher is that of “a sage on a stage”                                                                                                                                                                                                                                     | Student-centered student empowered with greater control. Role of teacher is that of “a guide on the side” or facilitator                                                                                                                        | Technology tools and simulations                                                                                 |
| Teacher presents material-teacher as worker                                                                                                                                                                                                                                                                         | Student creates and presents material-student as worker with teacher facilitating learning                                                                                                                                                      | Network projects, involvement in community projects. Use of technology tools to create and present information   |
| Isolated classrooms and teachers                                                                                                                                                                                                                                                                                    | Cooperative learning. Teaching and learning community.                                                                                                                                                                                          | Group software such as electronic mail and shared writing                                                        |

|                                                                                |                                                                                                                                         | environments.                                                                                                       |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Teaching to average level of class. Verbal and textual presentation            | All students engaged in learning at their own level. Multi-modal teaching to diverse learning modalities                                | Real world network projects and computer tools. Multimedia including interactive video                              |
| School separate from real world                                                | School part of real world of work                                                                                                       | Students interact via network/In mentoring Project with scientists. Telepresence, simulations. And virtual reality. |
| Assessment                                                                     |                                                                                                                                         |                                                                                                                     |
| Traditional Classroom                                                          | Reconstructed Classroom                                                                                                                 | Role of Technology                                                                                                  |
| Paper and pencil, multiple-choice tests. Explicit assessment at point in time. | Performance-based, more authentic assessment. Continuous assessment of progress, which is embedded in to learning observations          | Simulations with options for student response. Application of knowledge in real projects.                           |
| Focus on facts and recall-content, which is covered.                           | Focus on organization and presentation of knowledge-emphasis on higher level skills of analysis, synthesis and application of knowledge | Capturing exemplars of student work in to electronic portfolios                                                     |
| Target for assessment is the teacher or undefined test markers                 | Focus is on peer review, parents or reviving audience                                                                                   | Networks for sharing student work and multimedia presentation systems                                               |
| Individual performance assessed                                                | Both individual and group performance assessed-collaboration part of assessment                                                         | Computer groupware, including networks                                                                              |

Kay and Honey (2005) list the critical skills needed for students to deal effectively with technology:

- Students must have skills to express themselves not only through paper and pencil but also audio, video, animation design.
- Students must have ability to crunch, compare and choose necessary data among the glut of data available in electronic formats.
- Students must pass on understanding of the power, limitation, and underlying assumptions of various data representation systems.
- Students must be able to manage the multi-tasking, selection, and prioritizing across technology applications that allow them to move fluidly among communities of practice, assignments, etc.
- Students must have an understanding of how to apply what they know and can do to new situations.
- Students must know and use strategies to acknowledge identify and negotiate risks.

However, some researchers have raised critics against incorporating technology into education. Postman (1995) argues that new technology may be useful for teaching facts, but it works against the learning of social values. Robertson (1998) sees the increased use of technology in education as one aspect of the commercialization of our educational system, thus widening the gap between the rich and the poor and thus giving control of the education system to corporations (Gilder,1998).

### 3. Method

Two focus group interviews were conducted with twelve high school teachers (N =12), such that each interview involved six teachers. Each group of teachers were from a K-12 school in Beirut that

employed technology in their classrooms. Data collection continued until data saturation in line with the grounded theory approach. On the other hand, sixty-four high school students (N=164) were involved in replying back to a statement posted by the researcher on Face Book. In both cases, respondents replied to the question:

*Some people are saying that the introduction of information and communication technology will change the whole nature of schools. (1) How far do you think such changes will go? (2) How much do you think teaching and learning will change?*

Focus groups were videotaped and transcribed verbatim by the researcher. Qualitative analysis using NVivo 7.0 computer software was used to analyze both the focus group interviews as well as students posts on Face Book.

### **3.1 Limitations and Assumptions**

The study assumes that teachers who are currently using information and communication technology in teaching have valuable insights and can help clarify some of the issues related to change in education environments. This is because they lie at the heart where teaching and learning takes place: The Classroom! Thus, the information derived from this category of people is of greatest value, rendering data derived key to inform possible impact of technology on future schooling.

On the other hand, the second assumption underlying this study is that students can best inform researchers about how the potential of technology at modifying such a process. In fact, the whole schooling is centered on learners. This makes their input to this study very critical. While this or any study can't predict the future with assured accuracy, it does provide alternative insights and highlights issues that might be overlooked when viewed from other perspectives.

The major limitation of this study was that the findings for the focus group interviews could not be generalized past the individuals interviewed. In fact, as this study belongs to the qualitative paradigm, it should be recalled that no generalizations may be made. However, transferability of the findings could occur if there were shared characteristics.

## **4. Findings**

The study offers divergent views on how information technology will impact upon the future of teaching and learning. Most respondents viewed information technology as totally transforming the future of teaching in a positive way; others offered warnings that information technology will have a negative impact upon teaching. The two main emerging themes are discussed below under three sections (1) role of technology in shaping future schools, and (2) student gains from the use of technology in schools. The paper also offers suggestions for linking student learning in and out of the school by the use of technology.

### **4.1 Role of Technology in Shaping Future Schools**

Both teachers and students converged at the same theme that technology will bring drastic changes to education. The internet, in particular, has been considered to enjoy a profound effect on what happens in the classroom. Computers were considered to possess the potential to open up a whole new learning environment for students. Classrooms will no longer be just the desk with the teacher in front of the class with the lectern and writing on the chalkboard. They will turn into resource rooms allowing students to maximize learning from various sources.

Sub-themes derived using NVivo 2.0 computer software indicated that technology in education tend to modify the physical set-up of schools and shift the role of teachers as well.



#### **4.2 Modifying physical set-up of schools**

With regard to changes in the physical set-up of schools, teachers could see several changes inside classrooms as well as across schools. The role of chalkboard would be minimized as teachers use technology to present notes they prepared before class.

“With PowerPoint presentations being used in classes, teachers will be less inclined to use the chalkboards.” (T3- S1)

Teachers thought that class time would be used for experimentation, analysis, activities, discussions, or other things that are more difficult to accomplish if time has to be taken to present information traditionally. The belief is that, as the use of technology increases, classroom time will be used to develop more meaningful learning activities and expand on students understanding of the subject.

“Because technology offers easy access to information, time usage in schools will be modified. I believe that students will spend more time thinking about what information they have collected.” (T6- S2)

Many teachers assured that schools will look like differently, but few were able to give a clear description of the change they pointed to.

“...I see structures loosening up. I see students maybe not having to come to school every day. I think we are going to have more freedom that way, more exchange of knowledge between students, maybe students actually going different places. So I do see a lot of excitement there.” (T5- S1)

Some students believed that school buildings will get obsolete, while others thought that they would see more courses on-line and less face-to face interaction with teachers inside schools.

“Technology will make us less bound to rigid time tables we encounter nowadays in schools. Schools will be more flexible and we will be able to learn at our own pace” (Yara)

“My friends and I have always questioned who the hero who will bravely close up schools is; I believe that this hero is technology. Students won't need to go to schools in the future. They can learn anywhere and anytime” (Alaa)

“Probably one or two decades later, our future generations will be studying in virtual schools whereby students attend lessons all on the web. Teachers will then make use of social websites such as Facebook, Twitter and YouTube to engage students in lessons.” (Rana)

One teacher expressed concerns that computers might become too much of a focus and “teachers may begin to organize schools around them, rather than keeping the focus on students.” (T5- S2)

#### **4.3 Shift in the role of the teacher**

With the use of technology in classrooms, teacher acknowledged that teachers' role will change. The new role will allow students to take on more responsibility for their own learning where the teacher becomes more of a facilitator.

“As we use technology more with students, we need to realize that our roles as teachers has modified. We are not there to spoon feed students anymore. We are to help them reflect better on the information they collect via such technology” (T3- S2)

Students themselves seem to realize that the use of technology in schools entails those teachers adopt a new approach to managing classes. This might be challenging for such teachers.

“...teaching will be dependent on technology and it will be much more interesting for students because this is a digital generation; electronic media is increasingly seductive, influential, and persuasive, but it will be a bit challenging for teachers so they have to work themselves to become tech-savvy teachers... (Zeina)

One teacher warned that the introduction of technology into teaching does not mean that teachers should be doing ‘the old things with new tools’.

“...Technology will force teachers to change their roles...they will have to act out as agents that help students fishing and not provide with fish on daily-basis as they always used to do. It will not work if they decide to continue to use old strategies with these new tools” (T4- S2)

### **1. Student gains from the use of technology**

Several teachers thought that the use of technology enhances teachers’ ability to be creative. It will enable them to provide students with learning opportunities that may not be possible in its absence. Examples include virtual field trips, simulations and web quests.

Sub-themes derived using NVivo 2.0 computer software indicated that technology in education tends to make information more available to students; enhance their higher order thinking skills; motivate them and raise their self-confidence; and enhance their achievement.

#### ***2.1 Information at the prick of a finger***

Teachers believed that with the use of technology learning is not restricted to the time spent in school. It provides opportunities for lifelong learning for all.

“The most important asset of technology is that it has the potential to maximize the learning time for students. Students would have the chance to learn outside the school; at home, in the playground, in the bus.....this will make them never stop learning” (T3- S1)

“The most important change that technology will bring about when well used is continuous and non-stop learning. It enables students to get the information they want by just clicking on their mobile that they never forget to have it with them” (T6- S2)

Students also believed that technology would make information more accessible to them, and helps them get rid of the heavy bags they usually carry to school.

“...no more bags! ...and more accessible books and information...you can even ‘search for a word’ unlike regular books!..... so cool” (Rasha)

“We will bring less books and plug in more to use what is on-line, as opposed to carrying around books in a book bag” (Dana)

One teacher cautioned that having access to information does not guarantee a better learning environment.

“You may have millions, billions and even trillions of information. That’s not the point. The point is that you need to have students know how to comprehend that information” (T4-S1)

Some students were very critical when they valued technology as being an important source of information. One student questioned the reliability of such sources of information.

“I believe that the technology, especially computers, will have severe negative effects on the future of schools and education. Relying on these technologies makes it easier to access information, true, but how effective and reliable the information is?” (Aya)

Not only this, because information can be obtained very easily, some students spoke about stories of how they wasted learning time inside classes with technology in the absence of skilled teachers.

“Personally, I always finished tasks quickly and turned into ‘solitaire’ where I often spend the majority of my time in class playing with it. In the presence of an internet connection, I would turn into Face Book and talk to my friends. With mobiles I would send messages to Mom asking her about the food she prepared for lunch” (Hiba)

This response has been counterbalanced by a response from another student who made it clear that the use of technology needs deep thinking on how to use it and under what rules and regulations.

“there can be like dedicated PCs, that have no games or even Face Book!! Even mobiles...classes can be in an area that has no coverage and with a Bluetooth detector in class” (Rasha)

In other words, the role of the teacher in schools that use technology is even of great importance and requires them to practice leadership to ensure effective learning of students.

### **2.2 Enhancing higher-order thinking skills**

With technology-assisted education, students would benefit from securing more time to practice higher order thinking skills because information is made available to them very easily. This view was shared by many teachers.

“Technology can help foster higher order cognitive skills for students. It’s because students would have access to information very easily, teachers would have ample time to teach students how to analyze data they collected and then synthesize it and eventually evaluate it. They will be somewhere at the highest levels of Bloom’s taxonomy of the cognitive domain” (T1- S2)

However, this may not be true if teachers are not themselves skillful in technology, according to some teachers.

“If teachers are not well trained on the effective use of technology themselves, they will waste instruction time and turn technology as a hurdle confronting students’ learning” (T2- S2)

Some students also made a point in the same direction. One student explained that because technology helps get the exact information straightforward, it has the potential to ruin students’ thinking skills.

“The easy access to information offered via technology carries a threat. Because it makes us get the information very easily, it would limit our thinking” (Aya)

### **2.3 Increased self-confidence and motivation**

With technology students seem to exhibit more self-confidence. Technology enriched environments seem to help students feel less threatened as they tend to feel that they have got all the information needed to carry out a task and all that they had to do is to make use of that information. This has been a joint view of both teachers and students.

“When students are allowed to use technology during learning, they tend to reflect more confidence in what they are requested to do. For example, when requested to research a topic via the net, even weak



students seem to be motivated to carry out the task. Technology makes them feel that that the information is there and all that you have to do is to collect it and put it in a meaningful way” (T4- S1)

“...when my teacher assigns a task where I can use the internet, I feel more secure, more at ease with it and more sure that I can do it...I feel that there is somebody there behind this screen that is helping me and aiding me” (Doha)

Teachers also noted that the level of student motivation has been noted to increase when they are allowed to use technology whilst learning.

“...I have used mobiles to teach English as a second language in my classroom. I cannot describe to you the level of motivation of students. It is just the same task that I normally used to carry out in my classes, but the thing is that I have been using the tools that students seem to like much: the mobile!” (T1- S1).

“ using technology in teaching makes us get less bored because we will not have to listen to teachers for long. This makes us more interested and more inclined to learn” (Lina)

Technology, then, seems to make students more motivated probably by virtue of allowing them to work more independently and more actively, by using tools that they liked and felt at ease with.

### **2.4 Improved students' achievement**

According to teachers, technology rich environments experienced positive effects on student achievement in all subject areas. They have attributed this to the fact that students exhibited improved attitudes towards learning and their self-concepts were dramatically modified when computers were used for instruction.

“ I teach in two schools and I am the same teacher here and there...I use the same text book and the same approaches and techniques, however, in this school I use computers. This has made a huge big difference between the two cases. My students in this school are more confident about what they are learning and their achievement is significantly better” (T4- S1)

Many students mentioned the power of technology at improving their achievement. This has been related to the fact that information would be made available to them.

“The term papers that I prepare using the internet always make me get higher grades. This is because the internet makes me access more articles, more ideas, more opinions which enrich my product. With traditional library search, I cannot really access that much of information” (Sara)

### **3. Implications**

Linking student learning in and out of the school is probably the most important outcome of the use of technology in education. This is because technology became part of the lives of students and it is user friendly with respect to them. Blogs, Wikis, Face Book, Twitter, or other social networking sites, which students use for chatting and enjoy the majority of their time with, may be powerful tools for their learning as well.

Connecting with students is probably one of the most important aspects of teaching. Students need to trust their teacher and understand that they can speak to him/her about anything. Using social networking sites in class, for example, allows students to make that connection with their teacher. This may help students not only get receptive to the idea, but even more open in class, willing to ask

questions and chat with the teacher. Teachers can post homework notices and other class notices, as well as have an interface for students to discuss class issues.

Not only this, social media applications highlight the importance of creating content over simply consuming it. By encouraging the student to build creative profiles, these applications allow them to express themselves, communicate, and highlight their talents and experience. They can use discussion boards to allow students to post reading responses and comment on each other's thoughts. These are very important skills that teachers employing traditional teaching methods would spend years to help them acquire them. Technology offers the space for unique and authentic real-life learning contexts. Just imagine the number of English students would learn to build a successful profile under the supervision of their teacher.

#### **4. Conclusion**

We are currently living in a technologically-advanced world and the Internet has been highly-regarded as a necessity in life. Technology became an integral part of the lives of people especially those enrolled in schools. Students enjoy dealing with technology and they reflect expertise in doing that. This necessitates making use of such tools by teachers to enhance student learning. This has been supported by the majority of teachers (N= 12) and the majority of students (N= 164) who constituted the sample of this qualitative study.

Dramatic possible structural changes in education delivery may accompany the use of technology in education such a use has the potential of modifying future schools by providing more flexible approaches to learning. Students can learn on their own and at their own pace, under the supervision of skilled teachers.

Technology has the potential to enhance teachers' ability to help students learn. Most teachers accept the fact that technology would change the delivery of traditional classroom-type programs. The physical set up of classrooms and the structure of lessons would change because of the presence of information and communication technology.

Technology will never replace teachers; on the contrary, with the use of technology a more important role is played by them. Their role is shifted from one where they represent the source of information to one that makes them facilitators of student learning encouraging them to analyze, synthesize and evaluate their learning. It makes them responsible for teaching students learn how to learn and how to contribute the knowledge society. This is a much more sophisticated role to be played by teachers when compared to spoon feeding students with knowledge. This is just opposite to studies that claim that the role of teachers would shrink in the presence of technology such as the work of Apple and Jungck (1992), Noble (1998) or Kursweil (1999).

The study supports the findings of (Means et al., 1993) by assuring that technology has the potential to promote higher-order thinking skills. It has the potential to (a) engage students in authentic learning contexts as explained by Roschelle et al.(2000), (b) offer for students a rich, effective and efficient learning environment which improves their performance and learning (Sherry, et al., 2002; Traynor, 2003) and (c) impact student achievement positively (O'Dwyer et al., 2005).

However, the debate of whether technology should be used in teaching will continue especially that everyday features an advancement in one or more technologies or the invention of new ones.

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