What is the Effect of Technology Integration on Student Motivation, Engagement, and Interest?

LT 785 – Research Methods in Educational Technology

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I - Statement of the Research Question/Problem

What is the effect of technology integration on student motivation, engagement and interest?

II - Summary of the Literature

According to Webster's Dictionary, Technology Integration is a term used by educators to describe effective uses of technology by students and teachers at the K-12 and university level. Teachers use many different ways of technology to support math, social studies, science, language arts and many other content areas. By integrating technology into their classroom, learners are empowered to be actively engaged in their learning.

As we move into the 21st century, technology has become more and more important to our society. Computers are becoming more affordable and are depended upon by many people to aid them in their daily lives. Since computers are becoming more affordable to purchase, schools have been able to purchase more computers for their students. As more and more computers are purchased, a growing need for technology education emerges. What is the importance of integrating technology into a student's curriculum? What benefits do our students receive from technology? There are many ways that technology can benefit students.

The students of today’s society have grown up with more technological devices than ever before. If technology motivates students to learn then there should be evidence of academic success or lack of success should reveal less motivated students. But, do they provide extra motivation when it comes to learning? There are many researchers that would say "yes" to this question. Yet, others believe that there is more to it than technology alone.

A teacher once said to me, "I don't need a computer to teach math." Of course she doesn't, but the computer can add an element of excitement and interest that paper and pencil might not have, especially for the "modest achievers" who sit in our classrooms and challenge us to motivate them. Technology offers our reluctant learners an additional opportunity for success that they might not otherwise experience in their daily lessons.

Lemke says that the first way that technology can benefit students is that it can accelerate, enrich and deepen basic skills. Under the right conditions, students learn faster with more depth of understanding using technology (Jones, 2008). David Dwyer is vice president of advanced learning technologies for Computer Curriculum Corporation. He leads the company's Educational Enterprise Group and develops next-generation solutions for the learning, management and communication needs of schools. In an interview with Judy Salpeter (Jones, 2008), he says that in one study conducted by the University of
Michigan, the study compared the use of computers for basic skill instruction with paper and pencil approaches and found increases of 10 to 15 percent in the computer-using group. Another finding that studies showed was an increase in efficiency. It took students 30 percent less time to learn the same things with help from the computer.

According to Lumley (1991), “The struggle of classroom teachers to deal with student motivation problems is as old as schooling itself” (p. 14). A teacher using technology to motivate students is more compelling and productive than one just using textbooks and lectures. These selected technologies can support and empower proven student motivation principles. In a technology intensive classroom, the teacher or student can begin an activity by accessing visual images, reams of text, audio, etc. at a touch of a key. In technology environments, success and failure often take place only between the student and the computer. Students are so involved in the technology and creation of a product that making mistakes or being embarrassed is far from their concerns. This protects their dignity by not embarrassing them. Technology can be used to help students manipulate objects, graphs, charts, etc. while receiving personal feedback. In a multimedia classroom, it can be commonplace for students to be on task for an entire class period. People walk and children rarely look up because they are so absorbed in their work. When students are that absorbed, it follows that mastery can be achieved and maintained.

Other changes may also occur in the learning environment. Scheduling of classes is often based on short periods of time. Jonassen (2000) suggests that since computers require engagement and we encourage the students to be engaged learners, we need to recognize that "engagement cannot always reach fruition in 50-minute periods" (p. 277). Once students get involved in their learning, they need larger blocks of time to dig deeper, discuss, analyze and make meaning in their collaborative groups. Flexible timing, scheduling, timetabling are all issues in the development of a changed learning environment more in line with constructivist philosophy.

Motivation is a feeling of interest or enthusiasm that makes somebody want to do something, or something that causes such a feeling. Motivation has been shown to be a strong indicator of academic achievement. (A. Phillips, n.d.) If this is the case then academically successful students should be highly motivated.

Through an in-depth examination of the literature, A. Phillips (n.d.) believes that intrinsic motivation does not come by just using the computer. In a study done with Japanese math students, student motivation increased with the use of cooperative learning and relevant activities. She also states that secondary students have indicated a lack of motivation due to a belief that their coursework is irrelevant. She suggests that the incorporation of technology with student-centered assignments using an effective instructional design is key to
developing a sense of relevancy. In student-centered instruction students have more ownership in their learning. They may be able to choose activities that are more interesting to them and fit their learning styles.

When students are using technology as a tool or a support for communicating with others, they are in an active role rather than the passive role of recipient of information transmitted by a teacher, textbook, or broadcast. The student is actively making choices about how to generate, obtain, manipulate, or display information. Technology use allows many more students to be actively thinking about information, making choices, and executing skills than is typical in teacher-led lessons. Moreover, when technology is used as a tool to support students in performing authentic tasks, the students are in the position of defining their goals, making design decisions, and evaluating their progress (Effects of Technology on Classrooms and Students, n.d.).

Another effect of technology cited by a great majority of teachers is an increased inclination on the part of students to work cooperatively and to provide peer tutoring. While many of the classrooms we observed assigned technology-based projects to small groups of students, as discussed above, there was also considerable tutoring going on around the use of technology itself. Collaboration is fostered for obvious reasons when students are assigned to work in pairs or small groups for work at a limited number of computers. But even when each student has a computer, teachers note an increased frequency of students helping each other. Technology-based tasks involve many subtasks (e.g., creating a button for a HyperCard stacks or making columns with word processing software), leading to situations where students need help and find their neighbor a convenient source of assistance. Students who have mastered specific computer skills generally derive pride and enjoyment from helping others (Effects of Technology on Classrooms and Students, n.d.).

The most common—and in fact, nearly universal—teacher-reported effect on students was an increase in motivation. Teachers and students are sometimes surprised at the level of technology-based accomplishment displayed by students who have shown much less initiative or facility with more conventional academic tasks. Teachers talked about motivation from a number of different perspectives. Some mentioned motivation with respect to working in a specific subject area, for example, a greater willingness to write or to work on computational skills. Others spoke in terms of more general motivational effects—student satisfaction with the immediate feedback provided by the computer and the sense of accomplishment and power gained in working with technology. Students clearly take pride in being able to use the same computer-based tools employed by professionals. As one teacher expressed it, "Students gain a sense of empowerment from learning to control the computer and to use it in ways they associate with the real world." Technology is valued within our culture. It is something that costs money and that bestows the power to add value. By giving students technology tools, we are implicitly giving weight to their school activities.
Students are very sensitive to this message that they, and their work, are important (Effects of Technology on Classrooms and Students, n.d.).

Achieving motivation in the classroom setting is a very difficult task especially since every person is motivated differently and different types of motivation must be applied depending on the age group of the students. There are four major groups that are categorized by age.

The first major age group is the primary-grade students, which consist of students in elementary school, Kindergarten through fifth grade. Motivation for this age group can be achieved in a positive physical environment and a psychological atmosphere. Creating a positive physical environment for the students could involve having the classroom decorated with brightly colored signs and posters (Jones, 2008). This environment would create a friendly atmosphere that would inspire students to be interested in what they are doing in the classroom. In Jones’s article on students’ motivation to learn, she states, “Young children appear to be propelled by curiosity, driven by an intense need to explore, interact with, and make sense of their environment” (2008). This again proves that a primary-grade student’s motivation can be created through a positive physical environment. An effective way to create a positive psychological atmosphere, according to Lumley, is that when students give incorrect or incomplete answers, the teacher communicates to them that mistakes are normal. They are a natural part of the learning process, and most learning comes from understanding why the mistake was made and then correcting it (2008). Elementary students should also be praised for doing the right things, instead of only being reprimanded for doing things incorrectly. A good example can be seen at Walter P. Carter Elementary School, in Maryland. Virginia Marshall, a teacher at Walter P. Carter Elementary School, came up with a new innovative program that is called "Catch Me Being Good". “Children ‘caught being good’ earn points for such things as attendance, completing homework…and classroom participation. The incentive for earning a lot of points is the right to participate in the best end-of-the-year “Fun Day” activity” (Wang & Reeves, 2006). Programs such as this motivate students to have fun and work hard in school because they see that their peers are being rewarded for it.

The second age group that needs special attention, when it comes to motivation is the middle school years, which consists of sixth grade through eighth grade. This is an especially important age group involving motivation, because at this age students are starting to understand that they are becoming more independent and are able to decide more things for themselves. Teaching effectively and creating a motivational atmosphere for this age group is tough because the teacher cannot be too demanding or sincere, which would ultimately turn students away from school, and the teacher cannot be too easy or lenient as this would allow students to not take school seriously. This is the ultimate problem that teachers face when trying to motivate students and it is a very fine line that they must walk on. In order for teachers to have well-motivated students,
the teachers must encourage students to do their best and to be excited about what they are doing (Encyclopedia of Education, 2008).

The third age group is the high school age, which consists of ninth grade through twelfth grade. This is can be a very difficult time for teachers as well, because many of their students have already been shaped by their teachers in junior high and some are very motivated to learn, while others have been turned away from school. At this time, many students feel like they are adults and should treated like adults by their parents and their teachers. The problem that many high school students complain about is that they are not being treated like adults, which turn them away from paying attention and doing work. To motivate students, teachers should introduce some aspects of a college classroom in their own classroom. “Fueling the trend [in motivating students] is the notion that early exposure to college courses may spark a newfound interest in academics in many students” (Lords, 2000). In Lords article, a female freshman stated that she became a lot more attentive and focused in college, because the teachers actually treated her like an adult, unlike in high school. Another good way that high school can be motivating for students can be achieved outside of the classroom as well. Many high school teachers are coaches and directors for sports and clubs. If students are actively participating in sports and clubs, they will be more motivated to attend school and also more attentive to teachers as they see them outside of the classroom. School is a major part of a student’s environment and the characteristics of the school powerfully determine whether students feel “connected” to it and to the adults associated with it (Irby & Pittman, 1999). The “connectedness” that the authors described can be achieved by the participation of the school’s activities and sports. High school is a very important time for students and motivation must be achieved in order to have a successful and worth while education.

Finally, the last age group is the college level, which consists of a student’s first year in college until they enter the work force and have completed college. This age group is very difficult as well and there are many teachers that do not worry about student motivation since people pay to go to college and should already be motivated. This notion is not adequate for many professors though since many more people are in college because their family makes them or because they just want to have a well paying job, which is hard to achieve nowadays without a college degree. What can teachers do then at the college level that will motivate adults who should already be motivated?

III - Summary and Conclusions

Motivation in the classroom is very difficult to achieve with every student, since not every student is exactly alike. Teachers, however, can implement and try many new ideas for their class that they feel might motivate the students. Technology is a great source to use for today’s students and many teachers are
learning the technology themselves, so that they may use it in the classroom. One day, hopefully, every student will be able to find something that motivates them in some way and students will be eager about school, but until then, teachers will continue to try new and better ideas.

As teachers integrate technology they may become aware of the need for a changed learning environment which offers all students a quality education; an education where each child is encouraged to pursue personal areas of interest, enabling them to use their own talents and skills, all within a caring, safe environment. Several authors suggest a variety of instructional approaches as being effective when using technology in a more constructivist approach but it was clear that individual or isolated strategies could not create a community of learners.

With the integration of technology in today's classrooms, we may begin to see transformation of the teaching and learning process. There appears to be a growing interest in using the communities of learner's model to restructure schools and technology may be the catalyst for many changes to occur. It seems that if technology is used effectively as a tool for learning, students can be more creative, autonomous and collaborative than in classrooms where technology is not accessible to students.

With the studies showing that technology does have an impact on student motivation and learning, school districts are challenged to implement programs that provide equitable opportunities for all of their students. School districts are not all alike. Not only do school districts have different circumstances, schools within the district and classrooms within the schools have different dynamics. Managing these unique situations will need to be accomplished if we are to provide all students with equitable opportunities to use technology.

**IV - Effect that the Educational Technology Could Have in a Typical School/Classroom**

This research has a number of implications in a typical school. Technology supports our efforts to appeal to different learning styles. With a variety of learning tools, students can understand their experiences through verbal, written, spatial, quantitative, and/or graphical means. As a result, many more students become engaged in the learning process.

Technology supports our multidisciplinary approach to learning. Integrating different disciplines helps students combine their mathematical, logical, scientific, linguistic, artistic, and social knowledge to make their lives and interactions with the world clearer. Technology integrated lessons need to eventually become part of each teacher's repertoire with the support of district technology integrationists.
List of References


