

Instructional Technology: Through the Use of Computers

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According to Reiser, instructional technology can be defined in two ways (Reiser 11). The most familiar technology definition of instructional is the use of media that reinforce or help teach a lesson such as: television, films, overhead projectors, computers, etc. Since then technology has evolved to digital projectors, DVDs, documents cameras, interactive white board, digital cameras, video cameras, and much more. Teachers frequently teachers say, “I teach through the use of technology referring to the fact they use media to present the same information that is in their textbook or curriculum.” Instructional technology goes beyond the use of hardware and software in the classroom as defined in Reiser’s second definition.

The second definition of instructional technology describes it as a process. “It is a systematic way of designing, carrying out and evaluating the total process of learning and teaching” (Reiser 12). According to Dick and Carey, there is no single systems approach model (Reiser 21). One model that was introduced in this course was the ADDIE model, which means Analysis, Design, Development, Implementation, and Evaluation. This model requires higher order thinking and research, which is more suitable for high school and higher education learning. One model that is frequently used in my own classroom and by other districts using CScope is the 5E model. The 5E model allows students to Engage, Explore, Explain, Elaborate, and Evaluate. Both of these models are learner centered and requires teachers to be more a facilitator or instructional coach who assist students when needed. With this approach to learning students are able to formulate their own ideas and opinions over different topics.

There is one technology device I could not live without. Most may say this would be their cell phone, but for me it would be my computer. There is so much a computer can do with different applications, software, and of course the Internet. Through my masters courses my eyes have been opened to the endless possibilities of how a computer with Internet access can change a classroom and student learning. I am truly fascinated with all the free online applications called Web 2.0 tools that allow students to be creative, collaborate in groups, and take ownership of their learning. For this reason I have

chosen a computer as my topic. I wanted to learn in what ways computers have been incorporated in the classrooms and the effects it has had on students.

My icon could fall under both of Reiser's definitions of technology. This icon is a form of media that can assist a teacher in creating lessons and presenting lessons to the students. It could also be incorporated in a system approach of teaching. For example in a case study done in two Taiwan high school Living Technology courses, a simulation group used computer based learning and the control group had lecture and demonstrations over residential electrical wiring (Liu and Su 598). In order for the students to learn about residential wiring, students have to practice wiring safety codes, circuits, electrical panels, and other devices. Since students run the risk of making a mistake and possibly receiving a high voltage shock, both groups of students can't participate in those hands on activities. The simulation group instead was able to use computer simulations to experiment with electrical wiring in a safely manner. Students were able to redo any experiment they needed extra practice in for better mastery. The control grouped learned the theories of wiring through lecture and teacher demonstration. "The results of the study showed that the simulation group learned significantly better and reported a higher cognitive load then the control group" (Liu and Su 608).

In an elementary school, students were asked to create a wiki to display their work of a novel they were reading during library time. Instead of having students write a book report using pencil and paper, students used a computer and an online Web 2.0 tool PB Wiki to summarize the novel, literary elements, and create discussions to collaborate with other students. Librarian Kendra Molen shares that the experience was rewarding to her and the students. "Their level of enthusiasm was evident as they said things such as, 'I can't wait to work on my wiki at home'" (Molen 58). Both examples show that incorporating my icon in a lesson or classroom had a positive impact on the students. In the first example student achievement was higher in the computer-simulated course. In the second example students had positive feedback and great enthusiasm for learning using a computer in a typical reading lesson.

My icon has been incorporated in lessons in the classroom from the early 1990's. In 1994, at Blackstock Junior High School students raised their student achievement ranking from 56th to 94th percentiles (LaRue 2). They attributed this success to a computer program and their policy of having a computer on every desk. Students participated in computer-based lessons that allowed them to view in English or their native language. Around the same time National Teacher of the Year, Bill Burrall, used computers and telecommunications to set up electronic pen pals with students and inmates of a maximum state penitentiary (LaRue 2). He felt students learned about the Internet but at the same time also his curriculum unit over society's problems. The icon was used as a supplemental resource in these lessons and would not replace the teacher. In present times technology is still be incorporated in lessons. Teachers like myself are researching the buzz over Web 2.0 tools and how they can be integrated into lessons. Teachers are still an important role in the classroom to make sure students meet student expectations and state standards. What is to come in the future with the use of computers? According to a CNN article, my icon will eventually replace teachers in the classroom. Research review by the U.S Dept of Education say that students who complete part or all of the class online have preformed better on average (Ferenstein 1). This information is enticing to those school districts facing large budget cuts and bankruptcy.

Realistically I don't believe this will happen. The argument for teachers is that we inspire creativity, serve as a caregiver, and mentor (Ferenstein 3). In ten years I do believe my icon will be much more accessible in the classroom. Teaching through technology may not be possible now due to lack of computers in the classroom but I believe that will change. Every student will have a computer with Internet access and curriculum changes will be made to keep up with this fast paced world. Technology is booming and we as educators must ask ourselves are we preparing our students for this high-tech world we are living in. According to Philip Molebash, teachers are not changing their ways of instruction despite technological advances and system approaches being implemented in curriculum such as the 5E model (2). I will admit I am guilty of this way of teaching. Most teachers are so stressed over state

assessments and scores that we just revert back to old habits and give lecture, reading passages, and multiple-choice problem solving examples that most state assessments. Sometimes its not even the teachers who want to do this either, but we are forced by administration to focus strategies to get students to pass the test. Teachers don't allow our students to participate in collaborative group projects due to lack of time or give students the freedom to be responsible for their learning. Changes in technology are happening everyday and we as educators must make sure that we are preparing our students for jobs that don't even exist. That sounds like its impossible, but if we just give our students a chance to use their critically thinking skills rather than just focusing on memorization, we would be making a world of a difference for them.

References

Ferenstein, Gregory. (2011). Will computers replace school teachers?. Retrieved from

http://articles.cnn.com/2011-06-09/opinion/computers.replace.teachers_1_schools-change-online-teachers-cash-strapped-school-districts/

This source was used to define how my icon would affect instructional technology in the future. Ferexstein based upon research by the U.S. Department of Education believes that students who take part or all of a course online do better on average than students who have an actual teacher. This brings the question will this effect teaching jobs. The author believes if states do away with state assessments, then students can freely learn on their own through the use of computers.

LaRue, J. (1994). A tool for the teaching. *Wilson Library Bulletin*, 68, 76-7.

This source was used to see how technology has been incorporated in lessons in past years. Almost twenty years ago teachers were incorporating technology in their lessons. Students in a California middle school almost doubled their student achievement percentile through completing computer-based lessons in their native language or in English. Another teacher used computers and Internet to teach students about technology and society's problems by having students establish electronic pen pals with inmates of a penitentiary.

Liu, Han-Chin, and I-Hsien Su. "Learning residential electrical wiring through computer

simulation: The impact of computer-based learning environments on student achievement and cognitive load." *British Journal of Educational Technology* 42.4 (2011): 598-607. *Education Full Text*. Web. 10 Dec. 2011.

This source was used to connect my icon to my definition of instructional technology. A case study was done to show how computer based learning affected student achievement. Students in the simulation group performed higher than those in the controlled group who learned the same concept through lecture and demonstration. Students benefited from being able to do hands on activities using the simulation program without putting themselves in danger.

Molebash, Philip. Technology and Education: *Current and Future Trends*. Retrieved from

<http://www.itari.in/categories/futuretrendsineducation/FutureofEdu-Tech.pdf>

This source was used for my reflection of how my icon will be used in ten years. This article stressed that we as teachers are not preparing our students for this technology age we live in. He believes teachers much prepare our students for jobs that don't even exist by incorporating technology in our classrooms. We must allow students to participate in learner centered activities why using technology.

Molen, K. (2009). Wee Wikis: *Implementing the Use of Wikis with Elementary Students*. Library Media Connection, 27(4), 57-8.

This source was used to connect my icon to my definition of instructional technology. Students in the article used a computer, which by definition is a media source. It also feel under the systematic process because the librarian developed a lesson through the use of wiki, carried it out with the students, and evaluated their work. She reflected that it was a great experience for her and her students. The students were very enthusiastic about learning and their projects.

Reiser, Robert.1987. *Instructional Technology: A History*. Hisdale, New Jearsy: Lawerence Erlbaum Associates, Inc. (11-48).

This source was used to define instructional technology. The author defined it in two ways: as media and a systematic process. He explained the definition used the most was that instructional technology was teaching using media such as overhead projectors, televisions, films, other hardware and software. The systematic process is developing a lesson through design, carrying out the lesson, and evaluating.