



CHETANA
International Journal of Education (CIJE)

Peer Reviewed/Refereed Journal
ISSN : 2455-8279 (E)/2231-3613 (P)

Impact Factor
SJIF 2024 - 8.029



Prof. A.P. Sharma
Founder Editor, CIJE
(25.12.1932 - 09.01.2019)

[Conference Special-NTMAE-24]

Integration of Technology in Education

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First draft received: 15.05.2024, Reviewed: 18.05.2024, Final proof received: 18.06.2024, Accepted: 22.06.2024

Abstract

An important thing behind the integrating technology in education is that learning should be effective by a focus on students and their proficiency with specific competencies, and providing them aid of technology, not by old school structures and arbitrary, age-based benchmarks. Technology use and digital media have fundamentally transformed all aspects of our lives, and many education reformers agree that it can and must be an important part of current efforts to personalize education. Use of technology can help to improve and enhance the acquisition of knowledge and skills, and learning with and about technology is essential for students to gain the competencies to function well in a 21st century society and workforce. Technology is intrinsically motivating to many students and also highly customizable, it is particularly well suited to support student's all round development in academics, personality groom up as well as many more aspects of their life.

Keywords: *school structures, arbitrary, age-based benchmarks, technology etc.*

Introduction

There is a growing consensus among education reformers that improving the preparation of students for the 21st century, including post secondary education and careers, requires fundamental and systemic changes in how middle and high school education is organized

Technology is ubiquitous, touching almost every part of our lives, our communities, our homes. Yet most schools lag far behind when it comes to integrating technology into classroom learning. Many are just beginning to explore the true potential technology offers for teaching and learning. Properly used, technology will help students acquire the skills they need to survive in a complex, highly technological knowledge-based economy.

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competencies, and providing them aid of technology, not by old school structures and arbitrary, age-based benchmarks. Technology use and digital media have fundamentally transformed all aspects of our lives, and many education reformers agree that it can and must be an important part of current efforts to personalize education. Use of technology can help to improve and enhance the acquisition of knowledge and skills, and learning with and about technology is essential for students to gain the competencies to function well in a 21st century society and workforce. Technology is intrinsically motivating to many students and also highly customizable, it is particularly well suited to support student's all round development in academics, personality groom up as well as many more aspects of their life. The past, school reform efforts driven by technology have often failed). In an effort to know about effectiveness of technology integration in learning of students, this substantial review of research has been carried out. Literature on technology integration used as a framework for

understanding various types and uses of technology to personalize learning. This paper summarizes the findings from these reviews.

Concept of Technology Integration

Seamless integration is when students are not only using technology daily, but have access to a variety of tools that match the task at hand and provide them the opportunity to build a deeper understanding of content. Willingness to embrace change is also a major requirement for successful technology integration. Technology is continuously, and rapidly, evolving. It is an ongoing process and demands continual learning. Definition of technology tools encompasses a broad range of digital devices such as computers, tablets, multi-touch screens, interactive white boards, mobile devices, cameras, DVD and music players, audio recorders, electronic toys, games, e-book readers, and older analog devices still being used such as tape recorders, VCRs, VHS tapes, record and cassette players, light tables, projectors, and microscopes etc. Technology when it fits comfortably with the curriculum or instructional plans of teaching is an indicative of integrated technology. Thus, technology rather than an additional layer in the classroom is embedded within the design of the teacher's lesson plan and the pedagogy. Thus, in this approach, the teacher designs learning activities and students use technology to construct their own learning.

"Effective integration of technology is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and present it professionally. The technology should become an integral part of how the classroom functions -- as accessible as all other classroom tools." (National educational technology standards for students, international society for technology in education)

When technology is effectively integrated into the curriculum, technology tools can extend learning in powerful ways. These tools can provide students and teachers with access to up-to-date, primary source material, Methods of collecting recording data, Ways to collaborate with students, teachers, and experts around the world, Opportunities for expressing understanding via multimedia, Learning that is relevant and assessment that is authentic, Training for publishing and presenting their new knowledge. When technology integration is at its best, a child or a teacher doesn't stop to think that he or she is using a technology tool, it is second nature. Students are often more actively engaged in academics when technology tools are a seamless part of the learning process.

Types of Technology Integration

There are many ways technology can become an integral part of the learning process. Just a few of these ways are listed below but new technology tools and ideas emerge daily.

Online Learning and Blended Classrooms

While K-12 online learning gains traction around the world, many teachers are also exploring blended learning as a combination of both online and face-to-

face education. Dixon (2009) reported that online video sharing sites such as YouTube.com enable students to create and share reflective video journals focusing on both their formal and informal learning experiences. This study sought to determine the factors that enhance the effectiveness of reflective video journals to increase the metacognition of adolescent students. Twelve high school students participated in a six-session after-school reflective video journaling program. Diverse data collection methods were used. The research revealed several factors that enhance students' metacognition including highly structure prompts, privacy during production, and a focus on content over production value. Factors detracting from the student reflection include student autonomy, the voluntary nature of this study, and prompts not tied to a content area.

Project-Based Activities Incorporating Technology

Many of the most rigorous projects are infused with technology from start to finish with a one-to-one laptop program.

The Buck Institute for Education (BIE) defines Project based learning (PBL) as "a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks."

According to the Northwest Regional Educational Laboratory benefits of project-based instruction include:

- Preparing learners for the workplace by exposing them to competencies such as collaboration, project planning, decision making, and time management
- Teachers often see increased motivation through higher levels of attendance, participation, and homework
- Learners have greater collaborative opportunities to construct knowledge
- Increases in social and communication skills
- Learners are able to see connections between disciplines
- Increased problem-solving skills

Game-Based Learning and Assessment

There has been a lot of buzz about the benefits of incorporating simulations and game-based learning activities into classroom instruction. Dominguez *et al.* (2013) designed and built a gamification plugin for a well-known e-learning platform and made an experiment using this plugin in a university course, collecting quantitative and qualitative data in the process. Findings suggest that some common beliefs about the benefits obtained when using games in education can be challenged. Students who completed the gamified experience got better scores in practical assignments and in overall score, but findings also suggest that these students performed poorly on

written assignments and participated less on class activities, although their initial motivation was higher.

Learning with Mobile and Handheld Devices

Once widely dismissed as distractions, devices like cell phones, mp3 players, and tablet computers are now being used as learning tools in forward-thinking schools. The pace of change is so rapid that society is experiencing a disruption almost as significant as when there was a shift from oral language to print literacy, and again when the printing press expanded access to books and the printed word. The shift to new media literacies and the need for *digital literacy* that encompasses both technology and media literacy will continue to shape the world in which young children are developing and learning.

Web-Based Projects, Explorations, and Research

One of the first, and most basic, ways that teachers encouraged kids to use technology was with online research, virtual field trips, and web quests.

Miller et al. (2004) conducted a study and central hypothesis examines whether brief exposure to a Web adventure format containing virtual lab experiments and computer games within an engaging story line can impact student learning. An episodic adventure series, MedMyst focuses on infectious diseases and the microbes that cause them. In the online adventure, the player (student) enters a futuristic world in which he or she becomes a "reconstructor," a member of an elite team charged with preventing the spread of infectious disease. The series consists of three "missions," each lasting approximately 30 to 40 minutes and designed to address a limited set of learning objectives. Middle school students, classroom teachers, scientists, and clinicians assisted the game development process. A field test involving over 700 students from nine schools assessed the knowledge gains attributable to playing MedMyst. Gain scores from pretest to posttest indicated that middle school students retained important information by interacting with the online material for as little as 30 minutes per adventure; however, gains for high school students were less persuasive, perhaps indicating a different learning tool or content is required for this age audience.

Collaborative Online Tools like Wikis or Google Docs

Connecting with others online can be a powerful experience, both for teachers and for students.

Light and Polin (2010) conducted a study. Under that particular study twenty-two schools were observed and over 30 educators were interviewed and observed, to document Web 2.0 and social networking technology use in classrooms across the United States. As the paper is descriptive, only hypotheses are offered. The paper provides a trove of Web resources, while describing how teachers use them in K-12 classrooms. In general, interactive and a synchronous features of Web 2.0 tools seem to extend and deepen the educational environment when they facilitate meaningful communication among teachers, students, parents, and larger communities toward authentic goals. screened these studies to find those that contrasted an online to a

face-to-face condition, measured student learning outcomes, used a rigorous research design, and provided adequate information to calculate an effect size. As a result of this screening, 51 independent effects were identified that could be subjected to meta-analysis. The meta-analysis found that, on average, students in online learning conditions performed better than those receiving face-to-face instruction. The findings suggest that the positive effects associated with blended learning should not be attributed to the media, per se. An unexpected finding was the small number of rigorous published studies contrasting online and face-to-face learning conditions for K-12 students.

Using Social Media to Engage Students

Though social media tools are still blocked in many schools, students around the world spend vast amounts of time on social networks outside of school.

Ternes (2013) concluded in his study that the two most common social media sites, Facebook and Twitter, offer several tools for interacting with students on a college campus. Professionals can take advantage of the tools that seem to work best for the situation in which they find themselves. Using Facebook groups and Pages allows the reach of the campus activity to extend beyond the time spent together and can enhance the level of student engagement and the learning that takes place as a result of these activities. Twitter offers the opportunity to interact with other users and specific content through the use of hash tags, mentions, replies, and re-tweets. These features allow students and professionals to interact with each other in real time. This capability creates a community that can extend conversations past the face to face and can enable users to interact with each other and engage with the content in new and meaningful ways. Social media use will continue to grow with college aged individuals; the websites, features, applications, etc. will change and adapt over time, but the concept of interacting with one other online is here to stay. Establishments of higher education and the professionals.

Reasons behind need of technology integration in students learning process

There are several reasons cited in the literature as to why technology should be an integral part of learning for students. **First, even though the relationship between technology and learning is complex, research indicates that specific uses of technology can improve student outcomes.** While the availability of technology in the classroom does not guarantee impact on student outcome. when used appropriately, it can help to improve students' performance on achievement tests.

Using technology for drill and practice generally has been found to be less effective than using technology for more constructivist purposes such as writing, research, collaboration, analysis, and publication. For instance, based on an analysis of NAEP data. Found that for eighth-grade reading, use of computers for writing activities positively affected test scores, but use of computers for grammar/punctuation, reading drills, or tutorials negatively affected test scores. The educational use of technology also can enhance competencies that

go well beyond the knowledge and skills typically measured by these achievement tests. These competencies include improved understanding of complex concepts, connections between ideas, processes and learning strategies, as well as the development of problem solving, visualization, data management, communication, and collaboration skills, which are among the skills that employers find lacking even in many college graduates.

Second, recently released standards documents emphasize that the use of technology in education is essential in helping students build 21st century skills. The Partnership for 21st Century Skills (2009) has identified the skills and expertise that are essential for succeeding in work and life in a 21st century global society. These include information, media, and technology skills; learning and innovation skills; and life and career skills. These three skill sets are both required for and applied through sophisticated uses of new digital media. While the Partnership's definition of 21st century skills is not universally accepted, there is considerable overlap between their recommendations and those of professional teacher organizations and the U.S. Department of Education. Specific technology literacy skills that the National Educational Technology Standards encourage teachers to incorporate across content areas include: 1. Using technology to demonstrate creative thinking and to develop innovative products, 2. Using technology to communicate and work collaboratively, 3. Applying digital tools to gather, evaluate, and use information, 4. Using critical thinking and problem solving to make informed decisions regarding appropriatedigital tools and resources, 5. Understanding human cultural and societal issues related to technology and practicing legal and ethical behavior, 6. Understanding technology operations and concepts. Similarly, the recently released National Educational Technology Plan, emphasizes the importance of enabling students to experience technology in the ways professionals do in their fields (e.g., to conduct experiments, organize information, and communicate) and encourages educators to create learning experiences that mirror students' daily lives and the reality of their futures.

Third, students are highly motivated to use technology. Technology and media use is pervasive among children and youth.

Fourth, technology now has considerable presence in public schools. Teachers thus have at their disposal a powerful set of tools to support teaching and learning. More and more studies show that technology integration in the curriculum improves students' learning processes and outcomes. Teachers who recognize computers as problem-solving tools change the way they teach. They move from a behavioral approach to a more constructivist approach. Technology and interactive multimedia are more conducive to project-based learning. Students are engaged in their learning using these powerful tools, and can become creators and critics instead of just consumers.

Technology integration based outcomes for students

Despite the ready availability of technology in schools and compelling reasons to use it to enhance teaching and learning, research indicates that it is not widely integrated into classrooms. According to a recent survey of more than 1,000 high school teachers, IT staff members, and students conducted by CDW Government LLC, only 8 percent of the teachers surveyed fully integrate technology into the classroom. Further, the survey found that teachers use the technology primarily to teach (e.g., to give presentations), while students lack opportunities to use technology hands-on. Sixty percent of teachers reported that they use technology in the classroom, but just 26 percent of the students indicated they are encouraged to use technology themselves. Both teachers and students reported that they use hand held technology (iPods, MP3 players, and smart phones) and social media (e.g. online text or video chat, blogs, podcasts) in their private lives, but only about 12 percent or fewer of teachers reported that they use these technologies in the classroom. Not surprisingly, 43 percent of students reported that they felt unprepared or unsure of their level of preparation to use technology in higher education or the work-force.

Summary

Integrating technology into classroom instruction means more than teaching basic computer skills and software programs in a separate computer class. Effective technology integration must happen across the curriculum in ways that research shows deepen and enhance the learning process. In particular, it must support four key components of learning: active engagement, participation in groups, frequent interaction and feedback, and connection to real-world experts." Technology helps change the student/teacher roles and relationships: students take responsibility for their learning outcomes, while teachers become guides and facilitators. Technology lends itself as the multi-dimensional tool that assists that process. For economically disadvantaged students, the school may be the only place where they will have the opportunity to use a computer and integrate technology into their learning. There is a growing body of evidence that technology integration positively affects student achievement and academic performance. However, while technology can support student centered learning, technology alone it is not likely to transform traditional learning environments into student-centered ones.

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