Technology and the Classroom

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Abstract

Our current generation of students are the first to come of age during the "digital-revolution" and therefore have been shaped by their use of technology. Changes in our society and culture have altered the way our students process information, think, and learn. Although technology has almost seamlessly been woven into nearly all aspects of everyday life, the use of technology in the classroom is still lacking. Educators still struggle with incorporating and repurposing digital tools to be used in the classroom. Several models and frameworks have been established as well as standards and best practices to assist educators as they continue to integrate technology into their curriculums. The conceptual framework TPACK (Technological Pedagogical Content Knowledge), is a model that assists educators with purposefully selecting technology to align with curriculum. Resources provided by the International Society for Technology in Education (ISTE) and ISTE's standards (referred to as NETS- National Educational Technology Standards) provide another framework for educators that assists in promoting student-centered learning and the development of 21st century skill sets. By examining them together, TPACK and NETS provides valuable resources for educators from beginning- by helping them review and assess technology needs, to the end- by demonstrating how to properly embed technology into their classrooms and learning environments.

Technology has consistently impacted and transformed society. From the pencil to the personal computer, society has integrated technology into almost every facet of life. Today, people communicate, work, and most importantly learn by way of technology. While technology plays such a prominent role in the everyday life of the individual, the one area where technology is still trying to catch up is in education. Educational technologies need to move from an analog curriculum (using pencil and textbooks) to a digital curriculum where content becomes relevant to the individual student, and students have the power to employ and extend learning to outside of the classroom. (Abbey, n.d., p.4-5)

This transition from using analog technologies to integrating digital technologies has become increasingly important as traditional methods of education are no longer sufficient for the current generation of learners. Today's students, "digital natives" are people who think and process information differently from their predecessors. Since students in the classroom were born with technology being integrated from the time of birth, they are "native speakers" of the digital language of computers, video games, and the Internet. Antiquated methods of learning, such as traditional lecturing, is no longer sufficient or engaging for today's students. Students want to be active participants in their learning and the integration of technology into the curriculum provides students with the necessary tools to create and absorb information in a language they understand (Prensky, 2001).

Those working in education are already tasked with the challenge of bridging content and pedagogy. Due to the pressures of incorporating technology into the curriculum many school districts and the educators that work for them, miss the mark when it comes to integrating technology into the learning experiencing. This creates what Abbey (n.d.) describes as a

"peripheral "use" of technology, where technology is treated as a side item during the school day, a separate chunk of learning circumstances and environment" (p.5).

One framework assisting educators in accomplishing this goal is TPACK (Technological Pedagogical Content Knowledge). TPACK was developed by educational researchers Koehler and Mishra. TPACK sprang out of Lee Shulman's Pedagogical Content Knowledge (PCK) framework that emphasized that teaching and content need to be transformed and brought together in intellectual ways so that it can be accessible to students (Mirsha, 2012).

TPACK is designed around the idea that content (subject) and pedagogy (how you teach) must be the basis for any technology that educators integrate into their classroom. TPACK goes further by also considering pedagogy, content, and technology within a broad setting or "context." The broad landscape of context is further broken down by internal context (student's need, preferences, prior knowledge, teacher's pedagogical beliefs, subject and school culture) and external context (ethnicity, culture, community, and socioeconomic status). Approaching integrating technology through the TPACK framework allows educators, technology coaches, administrators, and others working in the educational field to consider the various social, ethical, legal issues that come with incorporating technologies into our schools. (Herring, Koehler, Mishra, 2016).

While the TPACK framework examines the interplay between content, pedagogy, technology and the broader context or settings in which these three ideas live, TPACK also encourages creative pedagogical practices and suggests educators be flexible in navigating the affordances and constraints of technology. TPACK does this by proposing instructors develop several ideas when incorporating purposeful digital tools into the classroom or even by suggesting that educators repurpose existing tools to fit their educational needs. This ultimately

not only enhances pedagogy but also facilitates and support student learning. (Koehler & Mishra, 2009)

Along with the TPACK framework, resources for technology standards and best practices have been issued by the International Society for Technology in Education (ISTE). ISTE provides technology standards (NETS) which outlines standards for the follow groups: students (NETS-S), teachers (NETS-T), administrators (NETS-A), coaches (NETS-C), and computer science educators (NETS-CSE). When implemented, these standards facilitate thoughtful and purposeful engagement of technology by and for every individual in the educational system.

The implementation of a digital curriculum cannot be executed without the support of educational administrator who are often the architects for change on their campuses or districts. NETS-A provides the framework for administrators so that they can lead their districts into the digital-age. Standards for coaches describe the skills and knowledge coaches have so that they can "help bridge the gap from where we are to where we need to be." NETS-C provide an outline for coaches that allow them to guide our use of technology in educational systems and help move their districts forward. Further review of NETS shows similar standards across the board. Standards advance as you move from students, teachers, coaches, and so on. For instance, NETS-S emphasizes that students should be empowered to leverage the use of technology and are encouraged to be responsible digital citizens while NETS-T for teachers expects educators to facilitate learning experiences using technology and model appropriate digital citizenship. NETS-C should encompass the above skills and standards while also being proficient in helping others determine how technology can be used to support learning. Coaches should also model digital citizenship and be prepared to address common issues and resolutions regarding ethical,

legal, and social issues that come with increased technology use (International Standards for Technology in Education, 2018).

Students going through the education system today are different from students in previous decades. The proper integration of technology in the curriculum will allow digital-age learners to connect with content so that they can understand, develop, and interpret the material in their own unique way. Furthermore, proper use of technology and technology standards will allow students to enhance and hone in on 21st century skill sets. Both TPACK and NETS support educators and students by providing a frameworks or outline for everyone from the outset of technology integration and beyond. TPACK and NETS emphasizes flexible, creative, collaborative and transformative student-centered learning experiences. The TPACK framework meets educators where they are at in terms of integrating technology into the classroom and provides educators with tools to address common challenges of effectively using technology. As Koehler & Mishra (2009) explain, the "knowledge of technology, content, and pedagogy does not exist in a vacuum; it exists and functions within specific contexts. Teachers face a wide array of elements that make their contexts unique and different from other teachers" (p. 17). Despite the challenges that individual educators and educational institutions face, TPACK and NETS provides us with the tools to create innovative learning environments and show that integrating educational technologies into curriculum is attainable through reframing how we approach teaching and how we expect students to learn.

References

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