

Philosophy of Instructional Technology

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The use of technology is growing in education. In the past twenty years, there has been significant changes in technology. It has become cheaper and easier to access. School districts throughout the United States are taking advantage of this. The use of technology has impacted teaching philosophy, the role of teachers and changed how students learn.

The use of technology allows for a student-centered teaching philosophy which focuses on engaging learners. Universal Design for Learning (UDL) is a great example of the student-centered philosophy. “UDL is a learning approach that designs curricular materials, activities and instruction with the flexibility to meet individual learners’ strengths and needs so all students can have access to what is being learned in the class” (Smith, et al, 2017, p. 2). UDL is a proactive approach to education. Students are able to engage in materials that meet their various learning styles and have the opportunity to complete assignments that show what they have learned. Technology has made UDL possible. Learning Management Systems (LMS) such as Moodle, Canvas and Blackboard house information that students can access. “Interactive web-based adaptive learning environment, given its flexibility and dynamic nature, allows a personalized learning environment which accommodates different learning styles” (Xia, 2017, p. 246).

Accommodating different learning styles is a priority of the UDL approach. An example of accommodating these styles is, a teacher creates a lesson for a class that involves the following course materials: videos, images, recorded lectures, website resources and a link to the digital book chapter that they are covering. A visual learner

will have an easier time grasping the content that is shown in graphics or videos. An auditory learner will benefit from the recorded lectures and videos that are presented. Reading/Writing learners will benefit from access to the digital book where they can read the course materials. A Kinesthetic learner will benefit from hands-on activities that are presented in the interactive lecture (Nakano, 2016). While it takes time for the teacher to find or develop these materials, their investment in time will pay off for the students.

Another benefit of UDL is it creates accessibility for all learners. In 2016, the National Center of Education Statistics reported that thirteen percent of students enrolled in public school had some form of disability. When UDL is used for design student with disabilities benefit. For instance, a video with closed captioning can help a hearing impaired student learn the materials. While they cannot hear the audio on the video they are able to read the captions to understand what is being presented. This would be similar for interactive lectures where a transcript or closed captioning is provided. It is critical teachers use the UDL approach in case they have students such as this in their classrooms.

Technology can be beneficial for student learning but if it's not implemented correctly it can have negative effects. The Handbook of Technological Pedagogical Content Knowledge (TPCK) for Educations commonly refers to technology as a "wicked problem". It's essential for a teacher to understand how to use technology in the classroom. The TPCK model states that for integration to be successful a teacher must have a good understanding of content, pedagogy and technologically. Content knowledge refers to the subject that is being covered. It's critical the teacher have

knowledge of what they are attempting to teach their students. Creating learning objectives helps an instructor have a measureable objective for content creation. Pedagogical knowledge is an understanding of the methods for teaching. This includes lesson development and classroom management. A teacher must understand how to develop a plan to present their materials to students. It's important the teacher keeps their students learning styles in mind when designing lesson plans. Technology knowledge refers to having an understanding of how to use the technology that is being used in the lesson. A teacher needs to be able to coach a student through how to use the technology and ensure that the focus of the lesson does not become learning the technology (TPACK, 2008, p.10-16).

If a teacher successfully creates a lesson that utilizes technology, it can have a positive impact on student learning. "A measure of success includes the extent of the skills developed by the students after the course" (Xia, 2017, p. 246). An example of a successful implantation of the TPACK model would be a teacher developing a lesson about the history of Akron, Ohio. The teacher creates a lesson that shows the history of how Akron got the name of being the rubber capital. The lesson includes pictures of the various companies that produced tires in Akron, videos of tire production and a timeline of when these companies closed. After the students have learned the history of Akron, the teacher gives them the task of writing a research paper or creating a presentation about the history of a specific tire manufacturer that started out in Akron. This assignment would involve students using the internet to research the history of the manufacturer and using either a word processing or presentation software to create the assignment. If students had not been exposed to these tools, it would be important for

the instructor to spend a short period of time going over the basics of using each type of technology. The assignment would be graded on how the students did on their research and organization of information. While the technology is being used to deliver this information, it would not be the focus of the assignment or evaluation of performance.

Teachers face the challenge of students having access to technology outside of the classroom, this is known as digital equity. Students who do not have regular access to computers will struggle in understanding how to use technology in the classroom. Teachers must become coaches for these students (Williamson & Redish, 2009, p.124-126). It's critical they take time familiarizing students with how to use the hardware of a computer and the digital tools they will be using in the classroom. Teachers may use hands-on training, videos and manuals to teach students how to use these tools. Providing students multiple options for learning to use computers and software will allow all learning styles the opportunity to master these skills.

Technology has made the role of the teacher challenging. Not only does the teacher need to focus on creating lessons according to the TPACK model, they must also ensure that technology is used ethically in the classroom. This is not an easy task; teachers must ensure students are abiding by copyright laws. Technology has made information easier to access. Students can now search the internet to find articles, graphics and videos on almost any topic. While this is a great advancement in technology, many students do not understand that if they do not cite the source used they are plagiarizing the source and are in violation of copyright law. Yale's Center for Teaching and Learning defines plagiarism as "the use of another's work, words, or ideas without attribution" (Yale, 2018). Teachers must educate students on how to properly

cite the sources they use on assignments. Technology can help with educating students on the proper ways to cite sources, there are many reputable websites such as the Purdue OWL – Writing Lab that provides detailed information about citing sources in APA and MLA styles. By directing students to these websites, the teachers are educating them on how to avoid plagiarism and teaching them how to critically think about citing sources.

Teachers must also make sure they are protecting student's privacy. The guidelines for this protection are stated in the Family Educational Rights and Privacy Act (FERPA). This law applies to all educational agencies that receive federal funding and focuses on student records. Teachers must ensure that student information is kept private. Teachers can only provide student information to parents unless there is a legally binding document for custody of the student. Some of the best practices for avoiding the violation of FERPA is to make sure gradebooks are accessible to students and other teachers, if a student has a question pertaining to their grade it should be answered privately not in front of the class and ensuring when speaking to someone requesting information that it is the student's legal guardian (FERPA Regulations, 2011).

As technology continues to evolve the use of it in education also evolve. One of the trends that is growing in education is the 1:1 computing initiative. Each student is supplied a computer that they can use in their courses. These computers are loaned to the student for the academic year. Positive impacts have been reported from the 1:1 computing initiative in areas including writing, literacy skills and science achievement. There are other benefits of this initiative including increased student engagement. This this initiative is a significant investment for the school districts, it's clear that students

are benefiting from the use of technology (Sauers & McLeod, 2018). The role of teachers has changed and it's important they keep up with current technology to ensure their students succeed.

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