Education Technology Trends

By: Courtney Gendron

Courtney Gendron
UNCC Summer 2020

An overall trend in education is moving the content on-line and using more technology tools rather than books and classroom training. We see the technological shift with training being tracking on a Learning Management System, introduction of Mobile Learning, wearable technologies, gamification, social media, and the flipped classroom.

Define Trends

Mobile Learning

Mobile learning or m-learning can be defined as learning informally or formally on a portable device.

Wearable Technologies

Wearable technology (also called wearable gadgets) is a category of technology devices that can be worn by a consumer

Gamification

The fusion of technology, industry, culture, and society with particular attention on their collective penetration into modern consumerism.[1]

Social Media

Websites and applications that enable users to create and share content or to participate in social networking.

Flipped Classroom

Flipped classroom is a subset of blended learning. The flipped classroom typically includes a lecture element to be reviewed outside of the classroom and homework element and exercises to be completed during class time.

Impact Learning

Mobile Learning

Educational apps allow students and educators to access resources and learning content on mobile devices anytime, anywhere. There are multiple tools currently available which include the TedEd app, an excellent tool which includes a library of pre-recorded resources, customizable lessons for students, and an option for students to share ideas and educate others using the Student Talks program. Google classroom, which is not only a Learning Management tool for educators, but it allows the capability to review educational content anytime or anywhere by just logging in with their google credentials on any device. And allows for educators to create workflows for the student. Voki and VoiceThread are similar applications which both provide an interactive presenter tool for training, ease of use for the teacher and the student and available in either a web or mobile device platform. Voki does provide an ability to create an avatar for teaching and creating presentations. The last tool I find impactful to teaching is YouTube. YouTube was founded in 2005 as a video-sharing on-line tool to easily share videos. Teachers began to use YouTube videos in class to enhance classroom lessons as stated in the Mullen & Wedwick journal publication, Avoiding the Digital Abyss: Getting Started in the Classroom with YouTube, Digital Stories, and Blogs on page 66.[2]

[1] Jenkins, H. (2006). Convergence culture. Where old and new media collide. New York: New York University Press.
[2] Mullen, R., & Wedwick, L. (2008). Avoiding the digital abyss: Getting started in the classroom with YouTube, digital stories, and blogs. The Clearing House: A Journal of Educational Strategies, Issues, and Ideas, 82(2), 66-69

In Maziriri, et al. publication on "Student Perceptions towards the Use of YouTube as an Educational Tool for Learning and Tutorials." published 1 Apr. 2020, concluded that the use of YouTube in a formal learning environment was overall positively received by students.[3]

Hootsuite statistics conclude that 2 Billion users' login monthly to YouTube and is the second most preferred platform for watching videos. YouTube is seen as an educational resource for informal and formal learning with the Here and Now mobile learning concept proposed by Dr. Florence Martin and Jeffrey Ertzberger in the 2013 article on Here and Now Mobile learning: an experimental study on the use of mobile technology.

It could be concluded that the use of YouTube in a formal learning environment was positively received. Furthermore, most notably the relationship between the student attitudes towards the use of YouTube and behavioral intentions was significantly strong possibly suggesting that this e-platform is a success with student learning at tertiary level. The results support all the postulated hypotheses, and managerial implications of the findings, limitations of the study and suggested future research were discussed. This study contributes new knowledge to the existing body of education management, instruction, and learning literature in the African setting – a research context that is often neglected by academics.

Wearable Technologies

In Chuka Eze's presentation on Wearable Computing, the future of mobile, he provided an example of what we have tried in wearable technology and how it has merged into one device. The impact of utilizing mobile technology in education, not only provide a different method to present learning, but also increase the digital fluency of students and teachers. Educators can use wearable technology in a classroom setting to efficiently collect data, to safely conduct experiments and to access content not readily available to their student. I will provide examples of each.

For example, in Tim Hart's article, Wearable devices and the impact they have on classroom students, he provided a scenario where an educator used wearable technology in a health class. The students recorded nutritional data by hand for one week, then the following week used wearable technology to record the information. The students could see firsthand, the efficiency of collecting the nutrition data on a smart device, rather than the time-consuming effort of writing each item down in a journal. The students improved their digital fluency and realized the benefits of using wearable technology.

The second impact of using wearing technology in an educational setting is the ability to have safe experiments. Teachers would no longer have to provide animals to dissect or expensive materials for chemical experiments. The experiments could all be completed using augmented reality in a safe classroom setting. The school would have a material savings, over time, and students would improve their digital fluency by using technology in a safe science based educational setting.

The last impact of using wearing technology in an educational setting, is the access to resources, ancient artifacts on another continent, art work in museums and other resources that are not readily available for students to experience. A field trip to the Louvre to see the Mona Lisa could be accomplished in a classroom setting with augmented reality. Students and educators could choose what they want to learn and access a more fulfilling experience using wearable technology.

[3] Maziriri, et al. "Student Perceptions towards the Use of YouTube as an Educational Tool for Learning and Tutorials." *Handle Proxy*, Eskisehir Osmangazi University, Faculty of Education, 1 Apr. 2020, hdl.handle.net/2263/73929

Gamification

Gamification has increased enjoyment of learning by creating empowered learners and assists in improving spatial skills. Prensky listed twelve elements of computer and videogames that are potentially the most engaging pastime in the history of mankind and have positively impacted education and learning.[4]

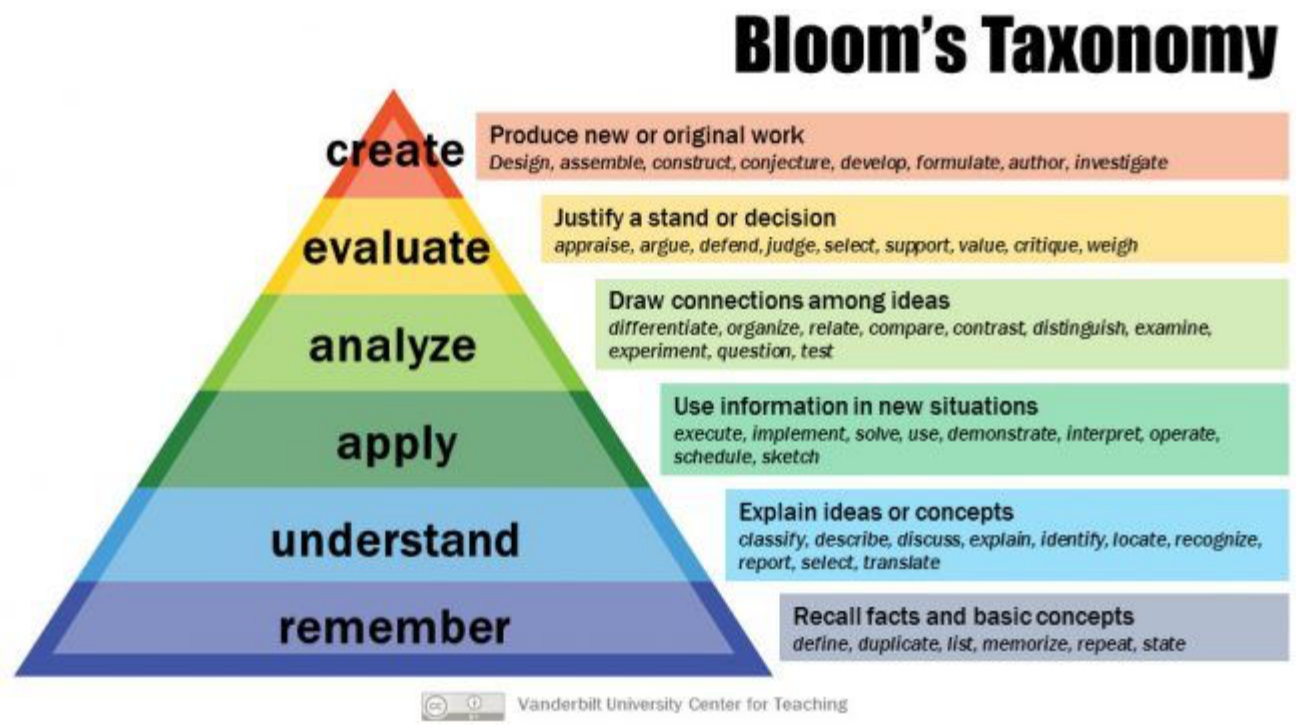
Social Media

Social media, specifically YouTube and Facebook have "…allow the creation and exchange of user-generated content"[5] in an educational environment. The impact is more than generational and allows more access to education and learning worldwide.

Flipped Classroom

A flipped classroom reimages Bloom's Taxonomy, presented by Benjamin Bloom in the 1950's. In the original Bloom Taxonomy, the students focused on the bottom portion of the pyramid during classroom instruction, specific to recalling facts and comprehending an idea or concept. The pyramid shifts with a flipped classroom, having the student focus on the top portion of the pyramid during class time and practicing knowledge reviewed and learned prior to class.[6]

The flipped classroom allows for student to practice a concept in class, and not endure a didactic lecture from a teacher. The teacher's role shifts to an expert or facilitator to be a resource for the students during class work. The flipped classroom approach provides a consistent review of the content and provides students the ability to practice and use knowledge in a real-life experience



[4] Prensky, M. (2001). Fun, Play and Games: What Makes Games Engaging. Retrieved from http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Game-Based%20Learning-Ch5.pdf

[5] Rodriguez, and Julia E. "Social Media Use in Higher Education: Key Areas to Consider for Educators." OU Libraries, Journal of Online Learning and Teaching, 1 Dec. 2011, our.oakland.edu/handle/10323/2153.

[6] Talbert, Robert. "Re-Thinking Bloom's Taxonomy for Flipped Learning Design." *Robert Talbert, Ph.D.*, Robert Talbert, Ph.D., 25 Apr. 2019, rtalbert.org/re-thinking-blooms-taxonomy-for-flipped-learning-design/.

How to keep up with trend

In the 2019 Educause Horizon Report on Higher Education, the Significant Challenges - Impeding Technology Adoption included Improving Digital Fluency, Evolving the Role of Faculty and Advancing Digital Equity.[7]

Digital Fluency

A student at any age or learner type will need clear instructions on how to access and utilize mobile learning, wearable tech, gamification, social media and flipped classroom content. All of the listed learning solutions should be designed and deployed using increasingly sophisticated technology. Learners today need to gain new skills to meaningfully engage with those technological tools. If the skills are not learned, they will not have a meaningful learning experience.

New learning technologies should support critical thinking and complex problem solving. At times digital fluency can be difficult to measure, but a 2018 study indicated 66% of students agree or strongly agree that technological skills developed in their courses effectively prepares them for their careers. Digital fluency is important and will need to continuously improve for learners of all types and ages to successfully use technology in a learning environment.

Faculty Role

For some faculty, using an unknown educational technology they are not familiar with and implementation of a new educational technology can be difficult at an institution of any type or size and face a range of challenges. Some challenges may include, stakeholder buy in, training and tech implementation.

By including the faculty in the decision-making process of using a new learning tool, increases the likelihood of a successful roll out for a department or school wide. Institutions that address the needs of all faculty prior to implementation are better positioned to overcome the barriers to adoption that can impede scale.

Training should be provided to faculty and staff when a new educational technology is introduced and expected to be implemented in each class. The faculty and staff should feel comfortable using the new tool(s) and be able to provide education to students and/or parents who may need assistant with buy in for using a new educational technology. And if technical questions arise by any of the stakeholders, faculty, staff, student or parent/guardian, there should be a technical support set up to respond to questions and concerns. Implementing new technology can be successful with support of an evolving faculty.

Digital Equity

The last significant challenge for implementing new learning technology is digital equity. Digital equity refers to access to technology, specifically to broadband connectivity to enable full participation on the World Wide Web.

Broadband access remains globally unequal across variables such as income, education, gender, age, ability status, and native language, as well as national, regional, and cultural dimensions. If a

[7] Alexander, B., Ashford-Rowe, K., Barajas-Murph, N., Dobbin, G., Knott, J., McCormack, M., Pomerantz, J., Seilhamer, R. & Weber, N. (2019). *Horizon Report 2019 Higher Education Edition*. EDU19. Retrieved June 14, 2020 from https://www.learntechlib.org/p/208644/.

learner is unable to access broadband internet, they will not have a successful outcome in many of the new classroom environments.

Once each of the significant challenges is addressed, digital fluency, the role of faculty and digital equity, it is not significant to only look at the age or the learner type, but the need to look at the entire eco system of a student and all of the possible factors they have to encounter in order to have a successful educational experience.

Two examples of each of the technologies

Mobile Learning and Social Media

An example of mobile learning and use of social media in education include the use and creation of YouTube. YouTube not only allows for just in time education but is also is a social media platform that can be accessed anytime, anywhere. Another example of mobile learning and social media is Facebook, a social media tool that includes similar benefits to YouTube and other social media platforms.

Wearable Technologies

Wearable technology provide access in a learning environment. An advantage of using wearing technology in an educational setting is the ability to have safe experiments using an augmented reality. Teachers would no longer have to provide animals to dissect or expensive materials for chemical experiments. The experiments could all be completed using augmented reality in a safe classroom setting. The school would have a material savings, over time, and students would improve their digital fluency by using technology in a safe science based educational setting.

Another example of using wearable technology in an educational setting, is the access to resources, ancient artifacts on another continent, art work in museums and other resources that are not readily available for students to experience. A field trip to the Louvre to see the Mona Lisa could be accomplished in a classroom setting with augmented reality. Students and educators could choose what they want to learn and access a more fulfilling experience using wearable technology.

Gamification

An example of gamification I utilized in Yoga Teacher Training. We used James Gee's principles of pleasant frustration for the students. Each student had to create a class using one pose as the apex, or goal pose. The student felt challenged but knew they would create a class flow and feel competent at the end of the lesson. We also used a similar tool in the propane industry in our train the trainer sessions. Similar approach to Yoga Teacher Training, by allowing the trainer to present new content in a safe space and feel competent at the end of the lesson.

Overall using games to create engaged learners, either with James Gee's Principles of Gaming; Empowered Learner, Problem Based Learning and Deep Understanding or Prensky's twelve elements of games, these techniques can create a more robust training program created to produce experts and not just memorization.

Flipped Classroom

March of 2020, many parents across the globe became reluctant homeschool teachers. The ability to retain knowledge from lessons taught over 20 years ago, would certainly be forgotten based on the Ebbinghaus' Forgetting Curve.

Two flipped classroom videos used during this time included What's and Inequality by Virtual Nerd and MooMoo Math & Science "Solving Inequalities-Word Problems- Math. The "What's and

Inequality" short video provided the initial reminder of how to define an inequality for myself and my student. The "Solving Inequalities – Word Problems – Math" video was used by my student to clarify written instructors by the teacher. The written instructors were not enough to fully understand how to solve an inequality problem.

Both videos were immensely helpful and assisting in educating myself and my student on inequality problem solving utilized in 6th grade, middle school, math.

Design classroom activity (Practice Yoga class)

I would use a combination of mobile learning, wearable technology, gamification, social media, and the flipped classroom in Yoga Teacher training. The exercise would include each of the students to choosing a yoga pose withing the Facebook Group, and reviewing 3 on-line videos demonstrating a yoga pose. For example chair pose. One video a student could review would be https://youtu.be/eq4aMcV6Ies.

The students would review 3 videos and the classroom activity would include a practice teaching opportunity for each of the students while wearing a Fitbit, Garmin, or Apple Watch to track time and heart rate. The activity would allow each student to teach the pose while using the Sanskrit term, anatomical references, and safe modifications. Reviewing a video or being told how to achieve a certain yoga pose is not as effective as teaching a pose to a student and receiving the real-world experience. This approach includes use of gamification using James Gee's principles of pleasant frustration for the students. The student feels challenged but would feel competent at the end of the lesson.

Overall, I enjoyed learning more about each of the trends and why it is an important to understand how each would positively impact a learner's experience.