



Online Tools for Teaching Learning and Evaluation in the 21st Century

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ABSTRACT: The 21st century is a time of rapid change, and while the brain may not be changing (much), the tools we use to feed it are. This puts the 21st century teacher in a critical spot—of mastering constantly evolving technology and digital learning tools—the same tools their students use every day. If the purpose of secondary schooling is to educate the upcoming generation to become active participants in society, evaluation of teaching and learning in the information-rich digital age should be underpinned by relevant theories and models. This article describes an evaluation tool developed using emerging ideas about knowledge creation and learning in a connected society. The digital age learning matrix was successfully trialled and applied in a study of six digitally able beginning teachers during their first year of teaching to identify aspects of learning occurring as digital technologies were integrated into their teaching practice. An implication of this study is that teachers, even the digitally able, will be limited in their ability to teach the upcoming generation to be active participants in a digitally enhanced society without understanding how to apply theories of learning that are relevant to a digital age into their practice. The Council for 21st Century Learning is committed to supporting 21st-century learning by offering consulting and training to districts and schools. Their work begins with a diagnostic to identify areas of need. Support is then provided through coaching, workshops, and presentations. One thing I find interesting about C21L is that they emphasize two components for successful implementation- in and for. Learning IN the 21st-Century involves the use of technology to process, interact, and publish information. Learning FOR the 21st-Century refers to the experiences and skill sets necessary to thrive when interacting with technology such as critical thinking and collaborating.

I. INTRODUCTION

When students are allowed to make their own choices, they own their learning, increase intrinsic motivation, and put in more effort—an ideal recipe for better learning outcomes. Another important attribute is to go paperless—organizing teaching resources and activities on one’s own website and integrating technology can bring students’ learning experience to a different level. Sharing links and offering digital discussions as opposed to a constant paper flow allows students to access and share class resources in a more organized fashion. Technology allows collaboration between teachers and students. Creating digital resources, presentations, and projects together with other educators and students will make classroom activities resemble the real world. Collaboration should go beyond sharing documents via email or creating PowerPoint presentations.[1] Participating in Twitter chats is the cheapest and most efficient way to organize one’s PD, share research and ideas, and stay current with issues and updates in the field. We can grow professionally and expand our knowledge as there are great conversations happening every day, and going to conferences is no longer the only way to meet others and build professional learning networks. As today’s students have access to authentic resources on the web, experts anywhere in the world, and peers learning the same subject somewhere else, teaching with textbooks is very 20th-century. Today’s students should develop their own driving questions, conduct their research, contact experts, and create final projects to share, all using devices already in their hands. All they need from their teacher is guidance. Even though it’s true that teachers are people, and they want to use social media and post their pictures and thoughts, we cannot ask our students not to do inappropriate things online if we ourselves do them. Maintaining professional behavior both in class and online will help build positive digital footprint and model appropriate actions for students.[2]



II. DISCUSSION

There are basic 9 tools available commonly:

1. RSS or Social Readers (e.g., Flipboard)

While Google Reader is going the way of the dodo, social readers like Feedly and Flipboard continue to surge in popularity because they're attractive, accessible across devices, and make it easy to skim large amounts of information at once.

Why Every 21st Century Teacher Should Be Able To Use It

Extracting data from the internet is like trying to listen to the subtle melody of a Korn song. Tools like twitter, facebook, and Flipboard can act as a kind of volume control (if you'll allow a mixed metaphor) so that you can hear what you want, when you want.

2. Google+ Communities

Google+ is the awkward social media thing from the search engine giant that everybody's heard of but few are unsure exactly what to make of. It never took hold like facebook, but what has? And even facebook has to reinvent itself constantly to stay relevant (if not annoy users).

Why Every 21st Century Teacher Should Be Able To Use It

So what's the big deal for educators? Cloud-based communities that can be as open or closed as you want them, available on any smartphone or mobile device.

You can share documents, publish videos, socialize project-based learning artifacts, communicate with colleagues, send messages, participate in threaded discussions, and interact with families and community members in a social media setting. And the best part? You can make groups open or closed, giving you control over the transparency of data and interaction.

3. YouTube Channels

By far the most consistently underrated digital learning tool we see, YouTube Channels have evolved YouTube from a steaming cesspool of mixed garbage, to a serious distribution tool for any kind of content—academic or not. So much so that important academic ideas such as the flipped classroom, blended learning, and the Khan Academy are literally based around its distribution model.

YouTube is capable of enabling self-directed learning, academic direct instruction, full-on test preparation (if that's your thing), or authentic project-based learning, and absolutely deserves a spot in any 21st century teacher's classroom.

4. iTunesU

While MOOCs haven't yet found significant traction in K-12 public education, iTunesU has quietly operated under your nose for years now offering quality course materials for every possible content area. And being that it is part of the Apple and iTunes ecology, it gives you—and students—direct access to a sleeping giant in edtech: podcasts.

Why Every 21st Century Teacher Should Be Able To Use It

Whether you use it for a flipped classroom, blended learning environment, for project-based learning, or to personalized learning for struggling or gifted learners, it is essentially an online course catalogue of diverse academic content. While it may be more complex than turning a student loose on iTunesU, properly implemented the education materials found here are simply too good to ignore.[3]

5. Cloud-Based Word Processors (e.g., Google Drive)

Cloud-based word processors were a boon to teachers frustrated by smallish floppy disks, lost flash drives, or school network-based storage drives. With cloud-based word processors, students can collaborate on writing pieces from anywhere, save comments, and curate all steps of the writing process in digital portfolios (in this case, literally a simple digital folder).

Whether you use Google Drive, Zoho Documents, Microsoft Word online, or something else entirely, cloud-based word processing—and their sister presentation software, spreadsheets, concept mapping tools—are absolutely indispensable for the 21st century teacher.

6. Dropbox (or other file-sharing platforms)

Dropbox is one of hundreds of ways to backup, store, and share files on the internet.

Why Every 21st Century Teacher Should Be Able To Use It

This one's simple: You need a way to backup files and share media, and whether you use Dropbox or the more direct approach of an app like dropcanvas, this is the kind of function you'll undoubtedly need. And if you never do—if you



have never needed to send or receive a large file ever, this is a sure-fire sign you may be under-utilizing the internet's potential.

7. Evernote

At first blush, Evernote is just a simple note-saving tool with categories, tags, and an app everyone keeps talking about. But if you think of the possibilities, you'll quickly see why.

Why Every 21st Century Teacher Should Be Able To Use It

Organize anything. Literally anything.[4]

Take pictures of papers or learning products.

Save web screenshots.

Take quick notes.

Use it as a word processor in a pinch.

Organize by notebook, literary genre, class, student, academic year.

Use the mobile app, your web browser, or the computer-based app.

Some people use Evernote for a few days and are underwhelmed by its lack of flash, but Evernote is whatever you want it to be, and that kind of flexibility makes it the perfect tool for the 21st century teacher.[5]

8. Pocket

Pocket is a natural response to the inundation of good stuff you find on a daily basis across the interwebs. If you see something and don't have time to read it—or did have time and want to “keep it” (in your digital pocket, presumably), if you have the bookmarklet on your tool bar, you simply click the button and it's available for later reference across any mobile or non-mobile device.

9. Zotero

Zotero is a tool that quite simply makes research more functional and organized.

Why Every 21st Century Teacher Should Be Able To Use It By allowing you to save academic research artifacts with a single click, with access to a library of citation support materials, Zotero reminds us all that citing sources is more complicated than a hat tip, and collecting those works cited pages are an important part of the academic and social learning process. Anything that makes this formerly cumbersome process more streamlined deserves a spot in your browser.

III. RESULTS

In a year when the global COVID-19 pandemic has forced many educators to suspend in-person schooling and separate teachers and students, it is critical for educators to ensure that there are robust and effective learning pathways for our youth. Written before the pandemic, “*Designing for 21st century learning online: A heuristic method to enable educator learning support roles*,” presents an approach for designing, enacting, and evaluating the digital platforms that teachers need for thoughtful exchanges with students. The teachers remind us that every platform has a design and structure that shapes and influences the learning process. To guide the exchanges with young people, the teachers use the Online Learning Support Roles or the OLSR framework, designed by one of the authors, to delineate roles that can be taken by teachers beyond direct instruction. “Encourager,” “Friend,” “Learning Broker,” “Model,” or “Promoter” are some of the roles they delineate to support and facilitate student learning in a way that can encourage youth to “build production skills through interest-driven, scaffolded projects, opportunities to showcase work online and in performance spaces and develop relationships with adult mentors”. The teachers also promote the use of the heuristic as an evaluative tool. They examine the iRemix online platform, which have been designing and researching. They summarize the “Effectiveness and Efficiency Scores” indicating how frequently iRemix features were used, by role. [6]

Students need well-designed online knowledge-building and knowledge creation opportunities. During this pandemic, when so many students are reliant on online learning, it is important to embrace the best teaching and learning practices to engage students in meaningful learning. To create these opportunities, teachers need thoughtful preparation and support to implement new teaching behaviors. Technology platforms themselves cannot prepare teachers to succeed at this work, even when they are optimally designed and structured. The heuristic presented can certainly raise awareness and provide pathways for teachers, but more contextual support is needed. The authors make only passing reference to critical variables such as the need for professional development, implying more faith in the structural capabilities of the software to bring about change than is suggested by a theory of change. Any theory of change that involves technology cannot rely solely on the technology itself to bring about the change. The renewed call for educational equity demands



that we prioritize the development of high-quality remote learning environments for all students. Network designers need to evolve their practices to address the critical transitions needed for twenty-first century learning. Future research can embed the heuristic in a broader systemic effort to prepare teachers and designers to enact the thoughtful student-centered online learning environments that all students deserve.[7]

IV. CONCLUSION

In schools, teachers generate criteria based on learning outcomes for the subject and grade and on expected levels of performance. In the early years, performance scales and written reports outline progress in relation to expected development of students in similar age ranges. In grades 4-12, letter grades indicate performance in relation to learning outcomes. Teachers may use performance standards which describe expected levels of achievement in reading, writing, numeracy and social responsibility. Assessment methods and tools recommended up until the present have included observation, student self-assessments, daily practice assignments, quizzes, samples of student work, pencil-and-paper tests, holistic rating scales, projects, oral and written reports, reviews of performance and portfolios. Evaluation is based on criteria which is based on learning outcomes. Norm-referenced evaluation (basic skills tests, diagnostic tests) is also permitted to be used for large-scale system assessments. In assessment *for* learning, teachers use assessment as a research tool to find out as much as they can about what their students know and are able to do, as well what presumptions and misunderstandings they may have. Teachers also use assessment *for* learning to boost student's motivation and commitment to learning.^[5] Examples of 21st century assessment for learning tools, which include both diagnostic tests and formative assessments, are eportfolios, teacher observations, class discussions, and works in progress with comments, think-pair-share, journals, observation checklists, concept maps, and rubrics. Examples of 21st Century Assessment of Learning tools are eportfolios, with "best piece" samples to show progress, open-ended response questions, descriptions of observations in Science experiments, historical role-playing arguments about the impact of decisions on current life, the writing process applied to poetry, long-term projects and problem-based reports. Current or traditional assessment practices are teacher focused, done with tests, quizzes and worksheets, completed outside of the learning and teaching activities and are done at the end of the learning activity for grading purposes. [8]

Most of these tools would be considered as Assessment "of" learning. 21st Century assessment tools will emphasize assessment "as" and assessment "for" learning tools. E-learning is already a major driver for education and training beyond K-12 in higher education, employee training and lifelong learning. In higher education, the Sloan Consortium reported that 2.5 million students enrolled in at least one class online in 2004, equivalent to 11% of all students in accredited degree-granting institutions. Growth in online higher education programs steadily increases by 400,000 students annually. Online delivery through learning management systems can improve data-driven decisions and strengthen the school to parent connection. Online learning allows rich data environments to better inform instructional and administrative decision-making to improve student achievement. Learning management systems include tools that allow parents to view grades, completed or incomplete assignments, teacher feedback, and updates or announcements from teachers. While most middle or high school parents in traditional school settings will admit that they know very little about what North American Council for Online Learning and the Partnership for 21st Century Skills goes in during the school day, parents of online students can be as involved as they want to be at the click of a button. As the use of learning management systems grows for online learning, it is quite conceivable that their use will also grow in traditional settings—especially as the lines between online learning and traditional learning continue to blend.[9]

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