The History Tools: Technology of the Moment Opens a Door to the Past

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An Interview with
Cynthia M. Okolo, Special Education Professor, Michigan State University

“If The New York Times best-seller list is an accurate barometer, history is a fascinating field for many Americans,” observes Michigan State special education professor Dr. Cynthia Okolo. “Unfortunately, however, many middle and high school students are not as fond of history as are adults.” This disconnect, she points out, “is due largely to the way that we are often constrained in school to teach history – through textbooks. Especially in special education we are fully aware of the limitations of textbooks for children who struggle in school.”

In special education, she continues, “we’ve often focused on ways to improve skills such as reading, writing, listening and speaking, which are important for improving students’ ability to understand and learn. However, content-area disciplines have their own systems of thinking and inquiry and their own criteria for knowledge and for what counts as knowledge and as evidence. We haven’t given as much attention to how to teach students in the content areas.”

Technology’s Foundational Role

Several years ago, in order to harness the latest educational technology to more fully engage students with disabilities in the study of history, Dr. Okolo helped establish the Virtual History Museum (VHM), a history-focused, web-based inclusive learning environment offering cognitive supports. When formulating the basis for her Virtual History Museum, Dr. Okolo took a page from The REACH Institute with which she had earlier been associated and which investigated instructional interventions to improve the learning of all students, including those with mild learning disabilities. An important aspect of the REACH project, she says, was the exploration of disciplinary perspectives in special education instruction.

“In REACH we tried to be sensitive to what the expectations were within the
discipline. In the VHM we’ve tried to maintain disciplinary integrity. Students learn history but we try to have them approach history like historians, which includes engaging in history as an interpretative, inquiry-oriented process where one must account for multiple perspectives as well as for what is often an incomplete historical record.

Technology, she explains, plays a critical role in the VHM approach. “Technology is an effective tool for us because there are so many sources of information available through technology to help children learn history. Many primary and secondary historical sources are now easily accessible through the web.

“In addition to this bountiful body of information that’s often instantaneously available to students and teachers, there are tools that we have built into the VMH that help kids organize and make sense of that information.”

**Museum as Metaphor**

When it comes to helping VHM history students organize information, she comments, “we use the museum as a metaphor. Teachers can organize information topically or thematically in ‘exhibits’.” Exhibits, she explains, “consist of artifacts, which include words, images, music, movies or texts, for example. They also include activities, which are goal-directed tasks that help students engage with and learn from the artifacts in an exhibit.”

Technology, she points out, is a tool that provides access to information through multiple representations. “So if a child struggles to read the Declaration of Independence, for instance, on the page there will be a way to read the document to that child. There can be links to other information that will help her to better understand the Declaration.”

She adds, “Those multiple representations are important. Technology gives us the tools to juxtapose those representations so students can gain nearly instantaneous access to several representations of a piece of information or to a topic.” With VHM exhibits, “teachers can link information to information; they can provide digital information that is accessible to a range of learners.”
Students, teachers and parents can access the VHM free of charge on any web browser. “This format enables teachers to organize information topically. It aids teachers in injecting a range of media into the ‘exhibit’ organizational unit. It also helps teachers create activities that will engage students with the information, because we’d like students to not only explore information and resources on the web, but also use them in tasks related to historical reasoning and inquiry.”

“All the Printouts Look the Same”

VHM, she notes, features sets of activities that teachers can create to help students learn from the information they access. “We layer on opportunities to differentiate the activities. For instance, if a teacher assigns students an essay on Andrew Jackson, perhaps some students may choose to present the information in the form of a newspaper article. For kids who struggle with writing, however, teachers create supported versions of that activity so that prompts are built into the standard activity. Those prompts might tell the student, ‘Write the headline of the article.’ Then, ‘Write a lead sentence explaining what happened’ followed by, ‘In your next three sentences explain the key results of Jackson’s triumph.’

“The teacher decides which students get the supported version as an activity and which students get the regular version.” This system “enables students to sit at the computer and perform their assigned version of an activity that engages them with the content. When they print out their work all the printouts look the same.”

Because VHM is a browser-based system, it can take advantage of the support tools that already exist on the web, including text-to-speech, translators, dictionaries, annotating, and bookmarking tools. All these tools can further help students by providing better access to information.

For Students with Disabilities, the Learning Pace Is Accelerated

At VHM, she explains, “we’ve learned that we can engage students, especially those with disabilities, with content, which encourages them to learn more history.” In fact, she notes, The Virtual History Museum has helped students with disabilities to accelerate the pace of their learning. “When we graph our results, we can see that students with learning disabilities are learning at a faster rate than the kids without learning
disabilities." She credits VHM-induced student engagement for her students' accelerated learning. "We have observational data to show that the students are more engaged when they use a tool like the VHM than when they participate in more traditional social studies activities."

Dr. Okolo emphasizes, however, that although VHM is at least partially responsible for the students' accelerated pace of learning, "it does not mean that these students have 'caught up' with their peers without disabilities." What it does mean, however, she asserts, "is that what they learn in that unit of time is at a pace that is quicker than that of their peers without disabilities."

She attributes the accelerated learning pace to students' newly instilled motivation, their exposure to more easily accessible information "and perhaps to the fact that they hadn’t succeeded previously in their social studies classes and now they have a way they can succeed."

A “Tricky Issue”
Dr. Okolo calls the significance of an accelerated learning pace for students with disabilities “a tricky issue” that she does not want to misrepresent. “The truth is that students with disabilities must learn more at a faster rate in order to catch up and close the gap. Perhaps if we could use responsive, engaging instructional materials all the time, the gap between students with and without disabilities wouldn’t be so large. That’s an encouraging idea.

With the VHM, as in REACH, she adds, “we learned that students can understand complex content. The VHM, as well as other tools and technologies, motivates kids by making content more accessible. However, learning content doesn’t necessarily translate to improved performance on tasks that use that content."

Instead, she continues, "Maybe they have access to more content and know more facts, but that doesn’t necessarily correlate with being better able to write about history, or to reason more incisively regarding a historical topic."
Facilitating Behaviors to Spur Literacy and Learning

What her VHM project has yet to accomplish, she emphasizes, “is the development of historical thinking strategies.” Literacy skills and knowledge are key ingredients in executing those strategies “We have to understand, interpret, look between different texts, try to make sense of what we find and communicate our findings.” Literacy is the foundation of that effort, she notes.

Consequently, Dr. Okolo also serves as principal investigator for a related project, Promoting Academic Literacy: PAL. This project is being conducted in collaboration with Freedom Scientific, and Co-Principal Investigator Roberta Brosnahan. PAL utilizes technology to help students deal with informational content complexity, as well as to assist them in accessing, developing and organizing information around specific literacy and disciplinary goals and content. Technology and literacy are at the heart of the project’s approach, she explains.

“The strategy we are building enables students to work with text and gives them a series of steps to follow when learning from text. The project asks: If a student has a textbook and needs to read and understand the book’s content in order to take a test or to fulfill the requirements of a writing assignment, what strategic process might help the student to accomplish that task?”

Her response, she explains, is a sequential strategic process, called PREPARE. Embedded in a software program, PREPARE consists of the following steps aimed at aiding students in gleaning more knowledge from text:

- **Preview**, in which students set goals for reading
- **Read**
- **Examine**, in which students study the text to meet objectives or answer specific questions, which can be color coded to help students locate and organize information
- **Pick** what’s important, which calls for pertinent text to be highlighted, using different highlight colors in response to the color-coded questions
- **Arrange**, when highlighted text is extracted by color; students may arrange text topically
- **Reduce**, in which students write a summary; notecards are created for study or to support writing
- **Explain**, in which supported writing is provided for narrative or expository texts, for example.

According to Dr. Okolo, the benefit of embedding a strategy within a software program “is that the strategy speaks to the affordances of the program.” For example, she explains, “a student previewing text will find that the text can be chunked in various ways on a computer or that specific information can be highlighted.” In addition, she continues, “students can be provided with goals that are inserted by the teacher that will direct students’ thinking about the text. Students are also provided with a link that will help them to activate their prior knowledge.”

The existing features of the PREPARE software facilitate behaviors, such as highlighting, that help students learn more from the text. Says Dr. Okolo, “WYNN and other literacy software programs that have annotating and highlighting features enable students to locate and organize information, such as they might do in a history text when asked to study the causes of the Civil War.”

Those highlights, she adds, “can then be extracted into several files, which provide the students with annotated text spotlighting the causes of the Civil War with the Union and Confederate perspectives highlighted.

“Students will have narrowed down concepts, obtained the needed information and can create notecards, if needed, or an outline for a report if a report has been assigned.”

The project’s approach, she notes, “is to utilize technology to support these cognitive and procedural tasks, melding tools with strategy.”

**Literacy, History and UDL: All Representations Are Not Created Equal**

Literacy and Universal Design for Learning (UDL) seem to be an ideal match in the digital age. With Dr. Okolo, however, some ambivalence about the potential fragility of this marriage is evident.
“The concept of ‘smart from the start’ – the basis for UDL – is a critical concept in the design of instruction,” Dr. Okolo declares. “In theory, it’s a great concept. That’s the good news.” The not-so-good news, she emphasizes, is that implementation of UDL is very difficult, even with technology support.

“UDL is profound,” she acknowledges. “It appears simple – to design instructional environments that are ‘smart from the start’ because they provide many different ways to learn and perform. However, although UDL appears ideal for a diverse classroom, it is challenging to implement in ways that give all students an equal opportunity to learn.”

In her work with middle school students and teachers, “what I see is that we think we are implementing UDL when we offer some different options for learning content and for demonstrating mastery of content. So, for example, when we teach a topic, the California Gold Rush, for instance, I often see teachers letting students choose from multiple representations of the content: an online text, a YouTube video, or a website.

“We pat ourselves on the back because we are using UDL to meet the needs of all students. However, we don’t fully consider whether these different representations of information give students access to content of equivalent quality or depth.”

It is misleading, she alleges, to assign equivalence to multiple representations. “We need to have multiple ways of performing or responding, but our mistake is in treating them as if they are all equally good, when they are not. If we say, ‘a YouTube video is as beneficial to students as reading a trade book about the Industrial Revolution’ then we are probably shortchanging students who could learn more but are not given the opportunity because we value representation (video) over depth of content. The fact is, all representations are not created equal.”

Therefore, she continues, “writing a paper may not be the same as giving an oral report. They are two different performances, but are not necessarily equivalent and, if we always let students give an oral presentation, they are deprived of opportunities to learn how to write. They are not equivalent tasks, nor is text necessarily equivalent with video or any representation of information. It depends...”
Dr. Okolo adds, “We don’t take into account the task, what students are being asked to do. And we don’t take into account at a richer level what it is that we want kids to learn. In our well-intentioned eagerness to implement UDL, we also fail to take the content into account. What is it about the nature of, say, the Industrial Revolution that would dictate how we teach it?” That’s a question that must be asked and answered, she emphasizes, to use UDL more effectively.

Her thinking about technology and literacy, she says has shifted from considering how technology can be employed to help kids read print-based text and write on paper. “I think technology, for most of us, enables us to better read, write, think, and understand. It’s time to move away from the idea that technology is a scaffold for kids with disabilities. A scaffold is a temporary support; something that’s put in place until a learner can perform a task without support. But, why would we want to take technology away from a child for whom it is so clearly beneficial?”

In general, she adds, “some of the instructional elements that technology enables me to improve upon result in a more engaging, more interactive, more motivating instructional method. If I want my instructional method and the content to be all of those things to students -- and I do -- then technology helps me achieve that.”

Resolving the UDL dilemma so that UDL fits the educational mold Dr. Okolo envisions, requires that educators better articulate the principles of UDL and ways to implement them “to make sure that the materials we develop for classroom use are truly universally designed.”

**Educational Technologies: Reciprocity and Responsiveness Are Necessary**

Dr. Okolo defines educational technology, which she views as a general term, as technologies that are interactive and are responsive to the nature of the individual student. In other words, she explains, “Reciprocity and a level of authentic interactivity are necessary. That’s the technology that I work with, although there are probably as many definitions of educational technology as there are teachers who use it.”

She notes that technologies in general have been defined as artifacts of a culture. “In that context a pen or a book can be categorized as technology; any kind of written information is technology.”
As for the ed tech she favors, Dr. Okolo says she is becoming interested in the many open-source, low-cost/no-cost technologies that are effective in an inclusive classroom environment. “Schools are facing extraordinary economic difficulty. There is much available free or inexpensive technology that we can make better use of if we learn more about it, if we package the technology in ways that can help students and if we better understand how to integrate it into instruction.”

Her personal favorites, she says, are the educational technologies “that I can put on my toolbar for immediate access. Apps that help me to write, to find information, to translate are always useful for me.” Overall, she notes, “visibility and accessibility are the most important attributes of the technologies I select for my personal use.” Despite its continuing proliferation nationwide, educational technology’s effectiveness is sometimes disputed by researchers. If she were a referee in this disagreement, she says, she would be hard-pressed to resolve it.

“There’s no simple answer as to the effectiveness of educational – or any technology – in schools because the response depends on why and how technology is used for learning and with which learners.” One of the more significant challenges to her field, she remarks, “is that when we ask big questions – like, is technology effective? – there is no single answer.”

In fact, she adds, “I’m unsure if that question is relevant anymore because technology is not going away. We all use it now to some degree; it’s a ubiquitous part of life and of the education environment. Because technology is part of our lives, what we need to determine, in partnership with our technology, is how kids can learn better, how we can help them to be more motivated, how we can better prepare them to get and hold a job and to be citizens in a democracy. To me the question about the relative efficacy of technology use, as compared to learning without technology, no longer has meaning.”

**Her Favorite Classroom Apps**

Because Dr. Okolo works mainly with middle school students and above, she says that the technology she chooses “is influenced by the types of activities that students in this age range must complete to be successful in school.” The following are three
applications that she believes offer support to students with learning disabilities while providing gateways to academic opportunities:

- **Evernote** (https://www.evernote.com/Login.action?targetUrl=%2FHome.action): “a free application that works on mobile devices, web and desktop. Great for keeping track of information; students and teachers can enter notes directly from within the application in the form of audio, text and images. The search function recognizes text within images and other types of print. It syncs automatically and very reliably on all devices, notes can be shared with others and a web clipping feature makes it easy to create a note from a web page. New programs that use its features, such as a study tool, continue to appear. Evernote is always open on my computer. I use it to keep track of my schedule, to-do-list, ideas for research and resources for projects I’m working on.”

- **Diigo** (http://www.diigo.com/index): “a free cloud-based ‘personal information management system’ that runs on desktop and supported mobile devices. Users can bookmark web pages of interest, tag them and store them in libraries and can also add highlights and sticky notes to those pages that remain on a cached version of the page when revisited. Users can take screen shots and then draw on the page to annotate them. The library is shareable, enabling students to work together on research projects and other collaborative endeavors. Diigo also has a web clipping feature and is easy to use.”

- **WriteOnline** (http://www.cricksoft.com/us/products/tools/writeonline/default.aspx): “a subscription-based literacy software program that runs in a web browser, so students can access it from anywhere. The program includes text-to-speech, word prediction, and a wordbar feature that is highly customizable. The wordbar can be set up to offer supports that include dictionary definitions, topic-specific vocabulary assistance, writing prompts or links to additional information.”

“I Love Facebook!”

For group learning Dr. Okolo turns to Facebook. “I love Facebook!” she declares, although not necessarily for group learning on the classroom level. Using Facebook, she explains, “I can connect to a group to learn
what I want to learn and I can connect with others who have interests that match mine. These groups are flexible; I can join and un-join them as needed."

In addition to Facebook, she uses RSS feeds to follow events and comments. “I can be a group member, a contributor, a viewer – and I can drop in and out whenever I desire. I can be very selective about the intensity of my attention to these groups, depending on my information needs of the moment. I like the concept of social bookmarking and do that often.” She also uses Delicious (http://www.delicious.com/), a social bookmarking web service for sharing, storing and discovering web bookmarks.

For students, however, including those with disabilities, the value of Facebook and other social media in a classroom environment is largely untested, Dr. Okolo says. “Social networking isn’t used much yet because we view it as a distraction to learning. But learning is highly social, and social networking can be used to help students obtain ideas and help from peers and others, to share resources, to collaborate as they engage in inquiry or to generate products that communicate the findings of their inquiry, or just to obtain the social support that might help them get through a class, a day or the school year.”

She also professes love for her iPad, although she concedes that enthusiasm about its use currently outstrips research about how to use it effectively with middle and high school students. “The iPad, though, has certain affordances,” she notes. “There’s a touchscreen, for example, as well as other features that make it easier for me to work with kids with mild learning disabilities by virtue of the device’s mobility. There is also very good video and sound.”

**Riding the Moment**

The key to the immediate future for children with mild disabilities, their middle and high school teachers and the teachers, like Dr. Okolo, who teach the teachers, is how to garner the most impact from the right technology at the right moment. “Our challenge as educators is to learn, design and use instructional methods that provide the requisite support to students.” The best way to meet that challenge, she emphasizes, is to forge a working partnership between educators, students and parents. Technology can be a glue in that partnership, she says.
But technology moments flit past fast, changing the educational landscape and altering learning options and accepted teaching truths. The trick, for the parents, kids and educators, she emphasizes, is to ride the moment, learn from it and surge forward.

"Technology and our expectations of it are constantly changing," Dr. Okolo declares. "We can announce the success of a device or an app but what’s available in terms of relevant technology may soon change that assessment. This accelerated rate of technological development in our education sphere continually provides us with new questions, and, by the time we formulate answers to those questions, technology has moved on again."

Five years ago, she continues, “how many of us used Facebook? No seer could possibly have predicted then that Facebook would dominate kids’ lives. Five years from now will Facebook still exist and if not, what will be its replacement and what will the replacement’s impact be on students? Who would have predicted that the career of a too-visible member of Congress would be snuffed out by Twitter, a technology that barely existed just four years ago?"

Today, she adds, “there’s a debate about whether or not we should use Wikipedia in the schools. Come on! That train left the station years ago. The point is that we should be trying to figure out how to use it effectively.

“However, I don’t want to be pessimistic and say that change is coming at us so fast that we are always fated to start anew. There are certain principles in education that appear to be timeless no matter what and how technology is used."

For example, she says, “we can ask about the value of social collaboration in learning. Facebook is one embodiment of that principle. We can ask about that principle independent of the technology, but the technology pushed our ideas about what the important educational principles are and will continue to do so as the present quickly becomes the past. I think our Virtual History Museum students would understand that concept perfectly.”