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Using Digital Resources for Student Instruction

Rebekah Thurston

The modern classroom is an area where many teachers are electing to incorporate increasing amounts of technology into their curriculum. (Mardis, at al., 2012) The correlation between technology and the teaching and library professions is clear; increasing amounts of teachers use computers, educational software and the internet to grade, plan, and even deliver content. Technology as the primary modus for the delivery of content via internet libraries, museums, and archives is the focus of this brief essay.

The use of technology and the internet in the classroom is growing. (Mardis, et al., 2012) Some teacher librarians have begun to use digital libraries, museums, and archives (also referred to simply as "digital resources" or "digital artifacts") as a component of their curriculum. With such a vast array of digital resources available through the internet, instruction can be tremendously enriched when a teacher incorporates the right digital resources into their lessons. (Clough, 2013) This overview discusses the topics of of how to effectively utilize digital resources, like online libraries, museums, and archives in classrooms and libraries. Also included is a discussion of the positive effects that increasing the use of digital resources can have student learning, as well as a list of some excellent online resources that can be useful to teachers who are beginning to incorporate more digital artifacts in their classroom.

This article is intended to give educators, teachers, and teacher librarians basic advice and a starting point for incorporating more digital media into their curriculum. Citations of sources utilized for research of this article follow in the Resources section. In addition to consulting a variety of educational research sources, the author relied on her own experience as a high school teacher who incorporated many digital resources into her U.S. History curriculum to inform this article.

The Advantages of Digital Resources:

One way that digital resources can be empowering is that they allow students to access information needed for research and assignments in or outside the classroom, as well as prepare for class on their own time and in their own way. (Sarifabadi, 2006) Research indicates that the number of students who have reliable access to the internet continues to increase. The Pew Research Center survey reports that 96 percent of young adult Americans have some form of access to the internet. The report also indicates that internet usage has grown over the past 15 years among Americans of all ethnicities, ages and genders. (Perrin and Duggan, 2015) While it might be argued that a textbook allows a student the same capability of 24/7 access to information, a textbook pales when compared to the wealth of information available for student consumption on the internet. Educators who chose online resources to supplement learning are allowing students access to a nearly limitless amount of content, at any time of the day, seven days a week. The same availability cannot be said of any library's physical holdings.

Furthermore, students at higher levels of education increasingly require flexible schedules; college and even high school students often maintain a jobs while pursuing an education (Bureau of Census), so offering resources with scheduling flexibility is key for any teacher who wants to ensure the success of all their students.

While this article does not prescribe to the school of thought which opines that "anything digital is superior to analog," it is true that computers, cell phones, and other internet equipped devices are more visible and prevalent in today's classrooms than any time in the past. Often teachers, especially at the middle and high school levels, lament the loss of attention that these devices have causes in their classroom. (Thomas, O'Bannon and Britt, 2014) However, where these teachers are seeing an obstacle, they should see an opportunity. The distractive power of technology is readily harnessed towards furthering student learning when information rich digital resources such as digital museums, libraries, and archives are inserted into the curriculum. A 2009 article by Fang suggests that there are many options for teachers to incorporate technology into the classroom. This study suggested that even student's cell phones can be used in the classroom to leverage student's access to resources via the internet, and for the quick, easy communication that cellphones offer. (Fang, 2009)

Another advantage of incorporating digital resources into curriculum is the amount of time and energy that these resources can save teachers, if properly used. Imagine that a seventh grade world history teachers is guiding students through a unit on Ancient Egyptian History, and has set aside a day for the students to examine the art of Ancient Egypt. What options does the teacher have for resources related to Ancient Egyptian Art? Overhead slides, a powerpoint, textbooks, and photographs are all possibilities for delivering the desired content. However, what about a trip to the library or computer lab? Granted that the teacher has access to a space where there are at least enough computers for small groups of students to work collaboratively (or even one student per computer), the teacher could let students explore Ancient Egyptian Artwork at their own pace! In fact, there are several websites that are verified, scholarly sources of reliable information about Ancient Egyptian Art; the Metropolitan Museum of Art as well as the British Museum offer digital resources related to Ancient Egypt and Ancient Egyptian Art. These websites contain not only pictures of artwork, but also videos of the artwork and 3-D replicas of busts and pyramids. If the teacher chooses this technology-based method, all students are able to look through the digital collection at their own pace. Students can expend their time on the artifacts which interest them most, contributing to a more meaningful and productive learning experience.

To add to the advantages of teaching this way, the internet at large provides a wealth of information about Ancient Egyptian Art, meaning that students will be able to practice answering their own questions throughout the class period, while simultaneously increasing their research and web navigation skills! By teaching in this fashion, an instructor manages to teach not only the content of Ancient Egyptian Art, but can also allow student time to practice information literacy skills.

The aforementioned example is one of an thousands of instances where a teacher could effectively use an online library or museum as an excellent tool for increasing student's learning. Though the payoff is great, this is not to say that this method of teaching is necessarily easy or

planning-free for an instructor. Once a teacher or librarian has decided that they wish to use more digital resources for content delivery in their lessons, there is an array of issues that the instructor must consider before diving in to the world of teaching with digital resources. The remainder of this essay provides basic information about how to guide students to internet resources, tips and troubleshooting for using digital resources, and finally, recommendations about how to find high quality, information rich internet resources to include in curriculum.

The Basics – How to Guide Students to the Resource You Choose:

One of the lessons a teacher is conveying to students when they take learning online is that the internet is a valuable learning tool that can be used for education. Students should not simply be engaging with the internet to learn content; but should be should be mastering technology and information literacy skills simultaneously. For a framework of these skills, the American Library Association publication Information Literacy Competency Standards for Higher Education can be a great reference point. Teachers should be deliberate in how they guide students to online resources.

When a teacher has chosen a specific website or webpage they want the students to use during a lesson, the instructor must plan how they are going to get students to that specific page. Posting the URL in a powerpoint or writing it on the whiteboard may be the easiest way to show students the link, but it is not the best. Typing in long URLs manually is difficult, confusing, ripe for error, is not professional, and uses too much class time. An alternative to this method is for teachers and librarians to create their own webpage to provide students with these links.

Some instructors may be wary of engaging with students over the internet. News stories where educators are disciplined for the their direct engagement and communication with students over the internet are not uncommon. There are potential liabilities when engaging with students over the internet. (Weaver, 2010) Certainly teachers need to be familiar with a school's teacher/student internet communication policy, but the amount of platforms for educators to start webpages with is numerous and there are various options. Instructors do not need to create educator websites with a 'social aspect' that facilitates teacher/student communication unless they desire to.

Some teachers and librarians may wish to create a Twitter handle, and post links to web resources via tweets, or use a Facebook account to connect students with resources. These examples of teacher incorporation of technology include social aspect, many refer to this as 'web 2.0.' With methods like these, students can not only see the materials that the teacher wishes for them to connect with, but would have the option to comment on the material and share their thoughts with the rest of the class, in addition to sending messages to the teacher and perhaps other students in the class.

Other teachers may wish to mitigate any liability that a webpage on a social platform entails and opt for a more traditional website without 'web 2.0' elements. With these types of webpages, students simply visit the page for the latest links, readings, homework assignments, and reminders. An analogy would be that websites like this are basically online bulletin boards that do not give students the ability to comment, 'like', or 'retweet' an educators posts. Websites like

these are not as engaging as 'web 2.0' sites where students can react to content online, nor do these sites allow the students to communicate directly with each other or the teacher. However, these types of educators websites are still valuable as an option for students to access educator resources outside of the classroom.

Some schools districts and educational institutions have predetermined platforms for teacher use, and will include a link to a teachers webpage from the school homepage. In either case, as long as students have access to a teacher's webpage page, teachers can make it easier for students to reach educational resources, both in and out of the classroom.

Tips and Troubleshooting – How to Incorporate Digital Resources:

While it may be the case that when using online resources students have more freedom to explore the material at their own pace, this in no way means that an educator is not responsible for planning a lesson which incorporates a digital resource as a key part of teaching. And, just like teachers do with textbooks or assigned readings, incorporating a digital resource as part a part of the curriculum or course means a teacher must complete considerable research on these sources.

Vetting Resources: Digital libraries and museums are great resources for students. That said, reliability and accuracy of resources that are online may be harder to ascertain than the reliability of a textbook produced by a distinguished publisher and approved by a school district or other educational governing body. For teachers who want more digital resources in their classroom, separating high-quality resources from less desirable options may be time consuming. (Mardis, et al, 2012) After all, websites, including those that are hosted by digital libraries, museums, and archives, are created with more ease than a book is published; there may be less editing and oversight with the creation of a website. Therefore, a teacher wanting to use such an online resource must do adequate research to ensure that the information provided in their chosen resource is accurate.

A good way to engage in this vetting process is to, as the instructor, ensure that all content contained on the website has been reviewed before assigning the webpage to be used in or out of class by students. Look at a map of the website, examine each image or exhibit as well as the accompanying information, and look for bibliographies and sources cited which informed the creators of the website. Just like a teacher should be familiar with any assigned reading in analog form, so should the teacher be familiar with all the elements of a website to be used for education. Teachers should make sure that they can assist students with website navigation confusion, and answer questions about any information found on the website, or at least be able to direct curious students to another source for more information about their question.

Another aspect to consider when incorporating digital resources into the curriculum is technological compatibility. A resource that worked great on your home internet connection via Safari on a Mac may not necessarily work as well in the computer lab, via Internet Explorer on eight year old PCs. For this reason, it is highly encouraged that an educator test websites on the computers students will use. Will accessing the source require any downloads or logins? If so, what are the school policies on downloads to student computers?

Additionally, an instructor should take the aforementioned elements into account when assigning students to access a resource outside of class. Students may be hesitant or unable to install certain software on their personal computers, or may not want to give personal information required to create an account needed to access a certain resource. Internet resources that require minimal downloads and can be used without an account (or possibly through school account) are recommended over those which do require these things, if the quality of information is comparable.

Finally, teachers should take into account the type of resources they will be exposing students to through any given digital resource. Are the sources on that resource primary, secondary, or both? Teachers should evaluate the lesson goals and objectives, and ensure that the types of information in their selected digital resource will enable students to accomplish those goals and objectives. In the article Teaching in Objects and Photographs: A Guide for Teachers, Hatcher (2012) offers a examples of the many ways which teachers can use objects, which are often primary sources, in their teaching. Though this article often references having the physical objects in the classroom, there is no reason that teachers cannot adapt the methods to suit the use of digital resources.

Maintaining Familiarity with Resources: When a new addition of a book is published, or an article is revised and the content is changed, this is easy information for an educator to track. Changes on websites, however, are not always as easy to spot. Thus, the malleability of a webpage is both an asset and a liability. (Mardis et al., 2012) Websites are easier to change than publishing new editions of books, so internet based resources are likely to contain the most recent and up-to-date opinions, interpretations, statistics, news and facts. However, this also means that a website could easily change from being usable to unusable for a certain educational purpose overnight.

For example, when a teacher has been using the same digital museum exhibit in their lessons for two years, and on the third year the content is changed dramatically making it no longer a suitable resource for their audience or lesson without the teacher's knowledge of the change, this may throw the entire lesson into chaos.

For this reason, educators are advised to make sure that they periodically check the online resources in their lesson plan cache. Ideally, this check should be done early enough so that if the resource has been altered to make it no longer suitable for the intended purpose, the instructor will have ample time to revise their lesson plan and locate either a substation website, another type of resource which will suit their needs. The importance of planning means that the night before a teacher intends to have students complete a scavenger hunt through a digital museum may not be the ideal time to make sure the museum exhibit still exists in the state it once did.

Some online resources may offer users the option to subscribe to the website RSS feed; this is great way for teachers to stay up to date on changes to the website. RSS (Real Simple Syndication, or Rich Site Summary) does the work of checking websites for changes in content continually. When a teacher subscribes to a particular website's RSS feed, that teacher will be notified when the content on the site has been altered or supplemented. Teachers using many websites in their curriculum can save time by subscribing to their favorite sites' RSS feeds and

eliminating the task of checking these websites for changes manually. More information about the use of RSS feeds for educators can be found in Richardson's "The ABCs of RSS," which is a great introductory article.

Ensuring Grade and Skills Level Appropriateness: Books and other analog resources are often considered 'safer' when compared to internet resources. After all, ensuring that you know all the content of a book can be done by thoroughly reading the book, while ensuring one is familiar with all of the content of a web page can be much more difficult to discern. Additionally, at present, there are fewer resources for teachers to turn to when creating lessons around websites as compared to creating websites around books. There are numerable resources that tell teachers not only what activities they can pair with assigned reading from a book, and often sometimes decades of prior teachers' experience with these books and activities, suggestions from expert teachers, as well as modifications for advanced or special needs classrooms. Some websites come with instructional guides for teachers, but this is not always the case.

In this way, teachers who intend to make digital resources an integral part of their curriculum are embarking on a challenge which could be avoided by sticking to more traditional, 'tried and true' methods of instruction. For the daring teacher who does so, a few things to consider are:

Ensure reading level appropriateness: When using digital museums and libraries, often a large part of the draw is that these sources can provide pictures and videos of the subject being taught. Pictures are great! However, educators should not forget to read any information accompanying pictures. Is the written content engaging and rigorous enough for the students? Will students be able to use the verbiage to help inform their interpretation of the images, or will it be too challenging to read? If students cannot use the worded information to inform their knowledge of the pictures and help them contextualize any images, then a large part of learning stands to be lost. Teachers may choose to compensate for this by going over difficult readings as a class, or guiding students through the exhibit instead of allowing each student or group of students to peruse a resource at their own pace.

Straying too far into the 'too easy' or 'too hard' realms means students will lose a lot from the resource or lesson. Too easy, students may be bored, and too hard, students may become frustrated.

Check comment boards and user contributions: Due to anonymity and ease of use on the internet, there is unfortunately no shortage of mean-spirited or offensive material posted on the web, and comment boards or website forums are notorious locations for such negative content. A teacher should check any comment boards or forums on the digital resource they are using for offensive content, as students will likely be able to view this.

Negativity on a comment board or forum does not necessarily mean an educator cannot incorporate the resource into a lesson, but the teacher should know in advance and consider preparing students for encountering this type of content. Perhaps a teacher could use negative comments as a opportunity to teach students about the importance of web etiquette, or how to disagree respectfully.

Keep in mind that being diligent about comment boards and forums that are part of your digital resource can be extremely important if you are teaching a sensitive topic.

Look into bias and funding agencies: Just like a teacher would do for any book or article they are going to assign, a teacher should examine any web content they want to use for potential bias or conflict of interest. Again, an online resource that presents a bias isn't necessarily unusable, but a teacher should be ready to discuss with students potential biases and use them as a tool for teaching.

Final Advice – How to find the best Online Resources for a Lesson:

For educators who want to incorporate online resources into their classroom, finding such resources may be an overwhelming task, given the large number of websites available on any topic. (Mardis et al., 2012) Suggestions for finding an excellent resource for your class are much the same as how you find suitable teaching resources of any kind.

Surfing the web: The internet is the best and easiest place to find digital resources. Even beginning with a simple search on Google for " (desired subject here) digital museum" can yield some great results! If a teacher wants to view not just individual online museums, but lists of potential online resources for a topic, they can try searching "(desired subject) online resources for teachers" or "(desired subject) online museums for students." A teacher can also modify searches by grade level and content area.

Ask peers: Often, the best place to look for help is other educators. Many teachers are happy to give advice, resources, and even lesson plans to their colleagues. Many teachers contribute to forums or run their own blogs about their curriculum and to help other teachers by giving new ideas and advice. If an educator has not yet looked for any communities of teachers online, this is worth a shot. Websites that are helpful for lists of online museums, archives, and libraries can be found in appendix A.

It is worth remembering that when an educator takes ideas, resources, or lesson plans from another educator, that teacher should always be sure to check out the digital resources personally to ensure it will suit their student's needs. Use common sense too, even if another teacher says the lesson worked "perfectly!" educators should rely on their own interpretations of how the resource will play out in their particular class.

Talk to a librarian: Librarians are a great resource when it comes to looking for materials to put into lesson plans. Some schools have a librarians who can assist with locating materials for curriculum. Otherwise, educators can seek out a reference librarian at a local public library. Even if a librarian does not know a source that can helpful right away, they may be able to give insights on how to search for the right type of resource.

Museum, government agency, and library sites: A great place to start looking for digital resources are museum, government agency, university, and library websites. Websites like these often feature permanent or temporary online exhibits, often created as the result of grants, and this money may can increase the quality of the site. Another advantage of digital resources that

originate from the aforementioned sources is that the information found on these sites may be more reliable, or easier to verify.

Conclusion

The overall growth of internet and technology use, as well as the increasing amount of students who have access to the internet, suggests that teachers can strengthen their teaching by incorporating technology into their curriculum. Online, there are a wealth of digital museums, libraries, and archives which are great resources for teachers to incorporate into their teaching. The resources listed after this article may be consulted for more information about how to best incorporate digital resources into the classroom. Additionally, the appendix provides multiple sites that teachers can use as a portal to some great online educational resources. Like all teaching practices, planning and practice and central to success of both the teacher and the student. Best of luck!

Resources

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Appendix A: Suggested Websites for Finding Online Resources

Educational Technology and Mobile Learning: 20 Wonderful Online Museums and Sites for Virtual Field trips to Use in Class. http://www.educatorstechnology.com/2014/01/20-wonderful-online-museums-and-sites.html

Eduscapes: Digital and Virtual Museums http://eduscapes.com/tap/topic35a.htm

Free Tech 4 Teachers: 7 Good Virtual Tours for Students. http://www.freetech4teachers.com/2013/04/7-good-virtual-tours-for-students.html#.Vt5HoFKnllI

Literacy Net: Online Science Museums http://literacynet.org/science/museums.html

Making Teachers Nerdy: Best Online Interactive Museum Exhibits for Students. http://mrssmoke.onsugar.com/Best-Online-Interactive-Museum-Exhibits-Students-2871369

Open Education Database: 250+ Killer Digital Libraries and Archives. http://oedb.org/ilibrarian/250-plus-killer-digital-libraries-and-archives/

Teach Hub: Google for Teachers: Using Art Project for Virtual Field Trips. http://www.teachhub.com/google-art-project

The Teachers Guide: Virtual Field Trips, Virtual Tours http://www.theteachersguide.com/virtualtours.html