

THE 21ST CENTURY STUDENT'S TOOLBOX

by

Aubrey Clark

An Abstract

of a research paper submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Library science and Information Services
in the Department of Educational Leadership and Human Development
University of Central Missouri

May, 2012

ABSTRACT

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The literature review will examine the research related to visual Web 2.0 tools and how they impact information literacy skills for students. In order to research this information, online databases from the James C. Kirkpatrick Library at the University of Central Missouri and online blogs on Web 2.0 tools were used. The research supports using a variety of applications to teach information literacy skills; but at this time, no evidence was found to show an increase in student achievement through the use of Web 2.0 tools.

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ACKNOWLEDGMENTS

I would like to thank Dr. Jennifer Robins for her unending support and assistance through this process. I would also like to thank the University of Central Missouri for creating a unique learning experience and for broadening my horizons.

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**CHAPTER 1:
NATURE AND SCOPE OF THE STUDY**

Statement of the Problem

The main problem this literature review explores is how to increase students' achievement with information literacy skills using Web 2.0 tools. The concern is, as schools and the world become digital, students' needs in schools change. This review surveys information literacy skills. In order to become lifelong learners and critical thinkers, students need to become masters of information literacy skills.

School leaders are using money each year to bring more technology into the classroom and into the hands of students (Sheneman 40). Administrators and leaders in schools believe that by giving students more opportunities with technology and Web 2.0 tools, they will make a difference in students' achievement. This literature review examines the information available to see if Web 2.0 tools impact student achievement with regards to information literacy skills.

Purpose of the Study

The purpose of this study is to review the literature available to see how Web 2.0 tools are impacting student achievement in the classroom. Literature was reviewed on what Web 2.0 tools were being used to teach information literacy skills. This literature review examines technology and whether it can help teach information literacy skills and support visual learners. Particular attention is paid to what tools are the most popular in schools now and how they are being used.

Based on the review of the literature available, no data shows that student achievement is increasing because of Web 2.0 tools. There was a great deal of information to show that schools are using these tools and having some degree of success, but more time is needed before schools will be able to fully report their successes across the board. The results of the study found that while there is not enough clear data to show gains in student achievement, it is clear that Web 2.0 tools have made a difference in classrooms and have helped prepare students for a digital world.

Research Questions

To begin the research, a set of questions was created to drive the information seeking process. These questions directed the research process. The questions all focused on Web 2.0 tools that impact students' information literacy skills. The main questions in the research are as follows:

1. How have information literacy skills changed?
2. How are information literacy skills taught?
3. How do visual learners learn?
4. What support do visual learners need when acquiring new information?
5. How are Web 2.0 tools impacting student's achievement?
6. What are some of the more popular tools and how are they being used in classrooms now?

Limitations of the Study

The review is limited to the topics presented in the research questions. The review does not go into all of the Web 2.0 tools available that schools are using, and it does not describe in detail other intelligences that are supported in web 2.0 tools besides visual learning. The review does examine Howard Gardner's theory on multiple intelligences and describe the nine that he distinguished but it does not cover Web 2.0 tools that are associated with the other eight.

This study is also limited by time since some of these tools are very new and schools have not had long to use them regularly nor have schools had time to analyze the impact of these tools. Information was collected from scholarly journals, online blogs, and national reports. The results of the literature review cannot be applied to all Web 2.0 tools in general. More study and information will be needed in order to gain a better understanding of the impact Web 2.0 tools are having on students' achievement.

Definition of Terms

Information literacy- Refers to the multiple kinds of literacies or ways to understand, read, and create information and also the ability to convey and recover meaning from a variety of different means (McPherson "Multiplying Literacies..." 60).

Mashups- Provide users with the possibility to combine information from two or more different sources (Liu 247).

Visual learning- Learning that involves using pictures to show information or locate information (Brewer 20).

Web 2.0 tool- An online application that is interactive, user-centered, and can not only be used to collect information but also to create it (Aqil 395).

Research Design

The research for the review began with guiding questions to focus the inquiry and to come up with searchable terms. No original research was conducted. Instead, a variety of databases from the University of Central Missouri were used to locate articles on the topic. Existing literature relating to information literacy skills and Web 2.0 tools were reviewed. Articles were retrieved from the following databases: *Academic Search Complete, Library, Information Science & Technology Abstracts, and Library Literature and Information Science Full Text*. Search terms included "information literacy," "visual learning," "Gardner," "multiple intell*," and "Web 2.0."

Conclusion

This literature review will investigate research about Web 2.0 tools and how they have had an impact on information literacy skills. The next chapter is the literature review itself, which summarizes the research that discusses information literacy skills, visual learning, and Web 2.0 tools. The last chapter brings all the information together concisely to reflect on the conclusions of the review and answer the research questions.

**CHAPTER 2:
REVIEW OF THE LITERATURE**

Introduction

This literature review investigates research related to how Web 2.0 tools that have a focus on visual skills will impact the school environment and student achievement. The material will first reflect on how students' information literacy skills have changed and developed into more specific and descriptive processes because of changes in the types of information that students read, analyze, and now create. The review examines the different types of information literacy skills that students use in school and outside of school, how these skills are different from previously thought, and how Gardner's multiple intelligences theory (as discussed in Brewer's article), particularly visual learning, connects to and supports these information literacy skills.

Next the research review will focus on learning through the visual process. This section will first describe what visual learning is and how it is a branch of the multiple intelligence theory. Next it will review how students learn through visual processes and how this learning differs from how students learn when teachers employ traditional educational practices. This section also reviews how visual learning relates to information literacy skills examined in the first section. The sections will also review how Web 2.0 tools can be used to help students who learn in a visual way do so.

This examination will continue with a look into the Web 2.0 world. It will describe the definition of Web 2.0 with a brief look into the history of the Web and where the idea of an

expanded Internet began. This section will also describe how Web 2.0 has impacted the educational environment and student learning and also take a look at the perceived future of Web 2.0. The section will end with a summary of how Web 2.0 tools support multiple literacies and visual learning.

The review will conclude with critiques on specific Web 2.0 tools and ideas for lessons that could be used in the middle school setting. The reviews of visual tools available to students are examined, and these critiques will explain the advantages and disadvantages to using the tools and the possibilities for classroom use. The section will describe how the tools will provide educators with a means to support students with this new perspective on information literacy and visual learning in mind.

Multiple Literacies

Students and teachers living in an era of abundant information are beginning to see some changes in how they seek, find, and evaluate information. The flow of information is now a two-way street and those who seek out information are not just consuming it but have become active participants in creating information (Rockenbach 26-27). The idea of literacy and what it means to read and understand information has begun to evolve with this change in the flow of information. There are five literacies defined in the next section: media literacy, digital literacy, visual literacy, cyberliteracy, and information fluency.

21st Century Literacy: Information Literacy Redefined

The definition of information literacy is changing as new types of literacies are

categorized. Before literacy skills and the definition of information literacy dealt solely with print information, but with the rise of the Internet, social media, and other collaborative online communities, the definition is expanded to include new ways of accessing and creating information (Mackey and Jacobson 63). Over 20 years ago, the American Library Association defined information literacy as “knowing, identifying, finding, evaluating, organizing, and using information” and though these actions apply to various situations, they do not deal with the fluidity of online environments (Mackey and Jacobson 63). Since information itself has become more collaborative and diverse, the way information literacy is perceived has changed. The new definition of information literacy “challenges the traditional assumption that reading and writing are the ultimate human-meaning making tools” (McPherson “Multiplying Literacies...” 61). Taking a multiple literacy perspective helps to broaden the view of reading and learning and opens the route to becoming literate for all learners (McPherson “Multiplying Literacies...” 61). This open-minded view of literacy is flexible for all learners and covers different ways to access and understand information.

The types of information that students seek do not fit easily into categories. When students look for an answer to something, it could be related to school, home, work, or their social life. Within each of those categories is a myriad of types of information. With information at students’ fingertips on their phones, tablets, and computers, they expect to be able to find immediate answers to questions. This is the wide-ranging scope of accessible information that information literacy covers. Thomas P. Mackey is Interim Dean in the Center

for Distance Learning at SUNY Empire State College and Trudi E. Jacobson is Head for User Education Programs for the University Libraries at the University at Albany, and they have defined five categories of information literacy with this broader scope of information in mind. Table 1 presents a summary of their categories of information literacy.

Table 1. Types of Information Literacy

| Type of Information Literacy | Definition | Main Change in Perspective to Literacy |
|------------------------------|--|---|
| Media Literacy | <p>Accessing, analyzing, evaluating, creating, and using messages in a variety of forms</p> <p>Where social media comes into play Collaborative space where users communicate with others in the digital realm.</p> | A stronger importance is given to creating information and participating in understanding with others |
| Digital Literacy | <p>Being able to read and understand various forms of media, to replicate data and pictures by changing them digitally, and to judge and apply the new information</p> <p>Involves critical thinking and making decisions about what is found online</p> | Focus on digital formats and completing tasks digitally Users can recreate and manipulate the information. |
| Visual Literacy | Organizing and inferring visual actions and symbols Individuals have an understanding of design and imagination which leads to ability to create, change, and replicate images | Focus on visual abilities and allows for interactive software online |

| | | |
|----------------------------|--|---|
| | Being able to communicate in a variety of ways and appreciate visual communication | |
| Table 1, continued. | | |
| Cyberliteracy | Stating an opinion about what technologies should be or become Being and active member of online world | Addresses ways to communicate and participate online More than just using online information |
| Information Fluency | When learners gain a deeper level of understanding and are highly engaged Skills and abilities associated with information technology Set of intellectual abilities, conceptual knowledge, and modern skills needed for using information technology | Understanding technology specifically as a common area |

Types of Information Literacy- (Mackey and Jacobson 64-66)

Information literacy connects to the broader spheres of health, work, and society (Andretta 1). As in Table 1, above, students seek out many different kinds of information and the perspective on information literacy has evolved to include different areas of information, both print and digital. These expanded information literacy skills connect students to all the spheres of their lives.

To encompass the various different types of information literacies that are now defined, information literacy is now seen as a “metaliteracy” which is a term to cover the multiple literacies that exist (Mackey and Jacobson 67). With the updated definition, all types of information seeking processes are covered. Metaliteracy has moved beyond just an emphasis

on skill development, focusing only on print, and the traditional limited view of information (Mackey and Jacobson 67). This redefinition of information literacy is key to understanding ways to help students be more successful not just in school but also in life. Another key is the understanding of the differences in how students learn.

Multiple Literacies and Gardner's Multiple Intelligence Theory

The broad view on reading and learning involved in developing information literacy can be seen in relationship to Howard Gardner's multiple intelligences theory. This learning theory explains how people learn and the variety ways a person can learn. Gardner believes that there are several different ways that people can learn and understand the world around them and that these different intelligences are each equipped with a set of skills that help people to solve problems (Brewer 19).

Researchers like Sally Brewer are finding ways to build on Gardner's theory and educators are discovering that each of the intelligences can be used to teach information literacy skills. Here is a summary of her explanation of Gardner's nine intelligences and how they can be used to teach information literacy skills.

Table 2. Multiple Intelligences

| Intelligence | Description/Definition | Questions to Consider | Relating to Information Literacy |
|--------------------------|---|---|--|
| Verbal/Linguistic | Thinking in words and language Being able to understand by writing or saying out loud Creative writing Formal speaking | How can I use the spoken or written word? Is there a poem or story that ties into the lesson or? | Students read factual information about a historical period and poetry, drama, and fiction from the same period. |

| | | | |
|----------------------------------|--|--|--|
| | Journaling Reading Storytelling Building vocabulary | What different ways can students listen to the information? | |
| Logical/ Mathematical | Problem solving, can be related to scientific thinking Thinking in terms of numbers and numerical relationships Outlining information Pattern games Number sequences Using graphic organizers | How can I bring in numbers, calculations, or critical thinking? How can students use problem solving to understand the concept? | Students search databases to find information about a particular historical period. Use graphic organizer to outline notes. |
| Visual/Spatial | Used in creating not just tangible art but also mental images or even digital images Using the imagination Focusing on color and texture Drawing Using imagery Mind Mapping Collage Pretend/fantasy | How can I use visual aids, color, art, or visual organizers? Is there a way to draw the information or find a picture to symbolize the content? | Students use maps to locate towns and cities mentioned. Students create mental image of life during this period of time. |
| Bodily/ Kinesthetic | Learning by doing Using hands-on activities for understanding Using drama, dance, or gestures Creating information with body as a group Sports or games Physical exercise Using body language | How can I get the students to move and use their whole body? Can students move to different parts of the room for different lessons? Is there a dance that would fit with the lesson? | Students create a diorama to illustrate a setting in a book or act out a particular scene as a group |
| Musical/ Rhythmic | Learning through music, rhythm, and tonal patterns Creating songs to explain learning Using percussion sounds | How can I add music or sounds to enhance the lesson? Is there a song about the | Students listen to music from the historical period being studied. Students could learn |

| | | | |
|---------------------------|--|--|--|
| | Singing or humming | information or could students create their own? Could rhythm be used? | words to songs from the period. |
| Table 2, continued | | | |
| Intrapersonal | Focusing on knowledge of feelings, emotions, and thinking processes Higher order reasoning Independence studies and projects Metacognition techniques Silent reflection practice Thinking strategies | How can I get students to empathize, reflect, or give them personal choices? Can students keep a record of their personal reflections and growth during the learning process? | Students write a reflection paper that describes how Martin Luther King Jr. developed his position Students track their own learning progress and goals |
| Interpersonal | Using collaboration and cooperation to learn Working with others Empathy practices Giving feedback Group projects Jigsaw activities Talking about concepts with others | How can students interact with each other during the lesson? How can students collaborate with each other to discuss ideas and share information? | Students work in groups to find information about this historical period and then share findings together |
| Naturalist | Thinking in terms of nature and the natural order of things Using classification Categorizing information Caring for plants and animals Hands on labs Conservation Nature observation Pattern recognition | How can I relate the information to the world and living animals? Is there a way to bring in observation or sensory stimulation? | Students study the plants and trees in the area being studied and then classify and categorize them. |
| Existential | Thinking in terms of the big picture and the larger context- could be on a large | How can I connect the information to the big picture? | Students reenact a scene from an incident that |

or small scale
Higher order thinking
Abstract thinking
Symbolism

Can I get students
thinking about
others?

occurred at the time,
such as the Boston
Tea Party

Multiple Intelligences- (Brewer 19-21)

Putting together Gardner's theory of multiple intelligences and information literacy is a way to not only increase student achievement but also a way to solidify learners as learners for life (Brewer 19). Using multiple intelligences will help teachers develop a broader understanding of the different ways a student can be smart and that everyone has all of the intelligences but not necessarily the same level of skill with each one (Brown and Meyers 5). Teachers know that their students are not always all on the same level, but keeping this idea in mind will help decrease frustration when trying to use the multiple intelligence theory with information literacy.

In an action research study, one teacher discusses how using co-operative learning along with the multiple intelligences theory helped students in Jamaican schools (Stewart 21). The students using co-operative, interpersonal learning strategies had two goals: to learn the material and to make sure the others in their group learned it as well (Stewart 22). This is different from intrapersonal learning because interpersonal learning has students working with one another, in this case cooperatively using learning structures but with interpersonal learning students work on their own. The study found that by using this teaching strategy, students were more engaged with one another and were able to improve their abilities to work together as a group (Stewart 26).

School librarians in Ohio decided to focus on using multiple intelligences to teach information literacy skills and found the results to be beneficial to both girls and boys in their library program (Brown and Meyers 4). They created lessons to get students physically and visually engaged with a book's characters, setting, and plot (Brown and Meyers 4). These teachers were successful at reaching more students when they expanded their perspective on learning and information literacy.

By combining information literacy with the multiple intelligence theory, teachers have created engaging lessons that are unique to the learners they have in their classroom and have also created ways to adapt instruction to their students' personal needs as learners. The next step is to examine how information literacy relates to visual learning specifically and how this is facilitated in a Web 2.0 world.

Visual Learning

Using Web 2.0 tools, visual learning can be a means by which information is analyzed, understood, represented, and created. As discussed in this section, visual learning is different from other, more traditional ways of learning. Visual learning is used to teach information literacy, particularly when visual media are used. As explained below, this incorporates Web 2.0 tools.

In one article, two media specialists describe how they are trying to make changes in their own teaching practices in order to better meet the needs of the visual learner. They explain that people who are more visually inclined learn better with pictures, maps, or graphs,

and by dealing with real objects (Brown 7). The visual learner needs more opportunities to see things rather than just hear or read about them. Visual learners see concepts differently and might not learn as well with traditional educational means. This learner will visualize most things very well and will use this strategy to help remember things (Brown 7).

Teachers help visual learners best by giving them more opportunities to rely on this strength. In a traditional classroom setting, students are expected to learn information by lecture (using their listening skills) and through drill and practice (repeating after the teacher and trying to memorize the lesson content). The visual learner needs more opportunities to see the information. With visual resources available on the Web, visual learners can be given this opportunity.

Information literacy skills can be taught to visual learners in a variety of ways. Some believe that using the multiple intelligences (like visual learning) is a natural way to teach information literacy skills because the learning is focused on the student, and he or she is actively participating in the learning (Brewer 21). For visual learners, a consideration is to think of ways to represent the information visually. Some different ways to do this include bringing in physical objects to represent information, looking for ways to use art, creating more hands-on opportunities, and even choosing graphic novels or picture books in place of traditional texts (Brown and Meyers 7).

Web 2.0 tools that rely on visual learning processes let learners create and manipulate information to incorporate images. Some of the tools or applications available in Web 2.0 are

considered “mashups” because they provide users with the possibility to combine information from two or more different sources (Liu 247). The information that “mashups” can combine includes text, created by user or taken from another source (digital or print); images from the Web or user created; and videos found on the Web or created by the user (Liu 247).

Web 2.0 World

Web 2.0 is connected with the changes in defining information literacy and with educational practices focusing more on visual learning. Educational technology expert Steve Hargadon sees that the Web is now a read/write Web and believes that this will have a greater impact in all aspects of society than the invention of the printing press. In his article, “Web 2.0 Is the Future of Education” Hargadon explains that he is one who has often thought about the future of education and how technology will impact it, but even he believes that everyone will be surprised by how much this two-way flow of information will change the world.

Web 2.0? So What Changed?

The phrase “Web 2.0” refers to “an online application that uses the World Wide Web as a platform and allows for participatory involvement, collaboration, and interactions among users” while also allowing “the creation and sharing of intellectual and social resources by end users” (Lemke 5). Web 2.0 has been growing more and more each year and now there are many applications that fall under this category. Some of the more common Web 2.0 applications include blogs; online diaries where the creator and readers can interact; wikis, which house a wide range of information that can be edited by readers; and social networking

sites (e.g. Facebook) where members build their personal page of information and interact with others (Lemke 5).

When the Internet first started, it was used as an extension of print resources. Most people who were using the Internet were just the audience and were using the Web content for a digital version of reading, receiving, and researching (Hargadon "Web 2.0 is..." 3). As users became participants, Web 2.0 was born. The idea of "Web 2.0" began with a conference brainstorming session between Tim O'Reilly, founder of O'Reilly Media, and MediaLive International. While they were brainstorming a way to define this concept, the following table was created to demonstrate how the Web has evolved.

| Web 1.0 | | Web 2.0 |
|----------------------------|-----|----------------------------|
| DoubleClick | --> | Google AdSense |
| Ofoto | --> | Flickr |
| Akamai | --> | BitTorrent |
| mp3.com | --> | Napster |
| Britannica Online | --> | Wikipedia |
| personal websites | --> | blogging |
| evite | --> | upcoming.org and EVDB |
| domain name speculation | --> | search engine optimization |
| page views | --> | cost per click |
| screen scraping | --> | web services |
| publishing | --> | participation |
| content management systems | --> | wikis |
| directories (taxonomy) | --> | tagging ("folksonomy") |
| stickiness | --> | syndication |

Web 1.0 and Web 2.0- O'Reilly "What is Web 2.0"

The main difference from how the Web started and Web 2.0 was that information became more collaborative. Users were not just online to read information. With Web 2.0 users add in their own information. For example, the table shows how Britannica Online was a source of

information in Web 1.0 but in 2.0 Wikipedia became a place where users sought information. With Britannica a person could only read about what they needed to know but with Wikipedia users could add their own information as well.

Supporting Literacy and Visual Learning

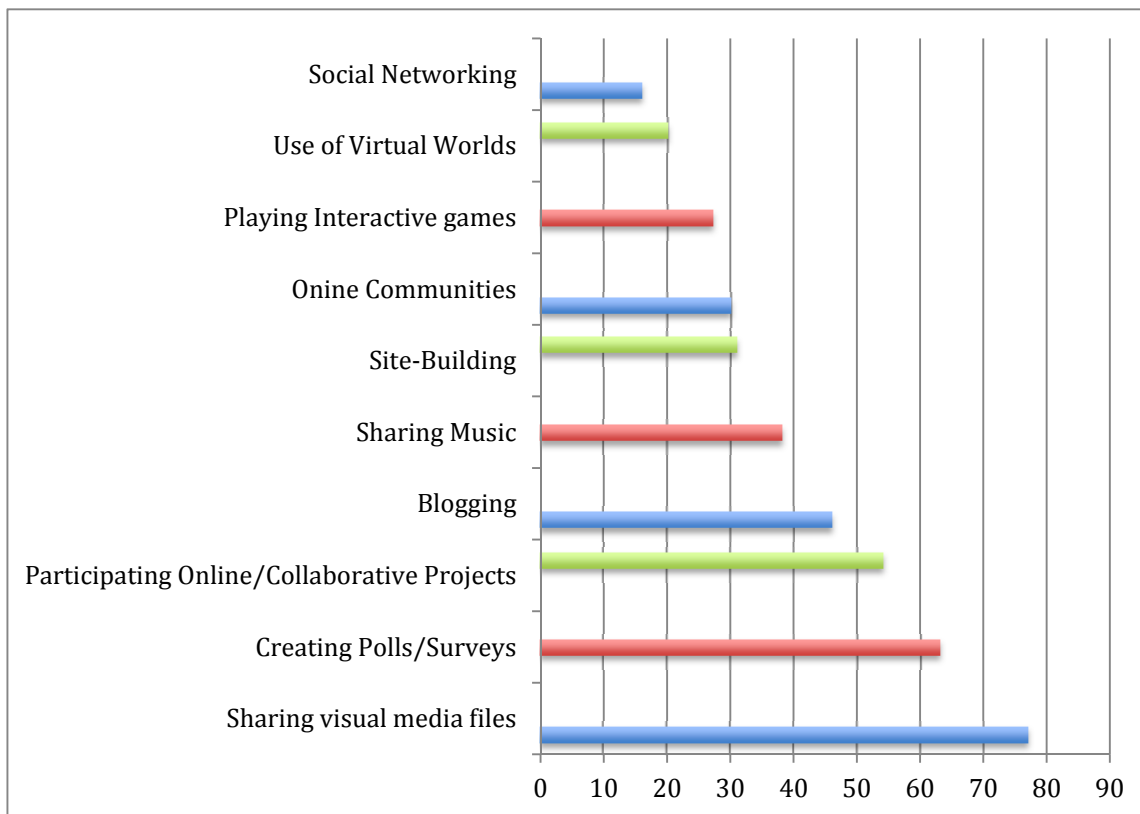
Web 2.0 supports information literacy and visual learning through various applications and projects; the change will be in moving from print to digital. Web 2.0 supports visual learning because it makes it easy and inexpensive to share visual media ranging from tables, figures, diagrams, drawings, and photos, to screencasts and videos. Since the Web has become a two-way flow of information, users are not just using the content with the Three R's (reading, receiving, and researching) but may now supplement these skills with the Three C's: contributing, collaborating, and creating (Hargadon "Educational Networking..." 3). With more that can be accomplished, more areas, including information literacy and visual learning, can be supported.

In order to support visual learners and build the various types of information literacy skills, teachers and students need resources to support their curriculum. One of the biggest challenges that teachers deal with is finding cost effective, easy-to-use programs that are at the same time engaging for students, but Web 2.0 applications satisfy this need (McPherson "Mashing Literacy" 73). Web 2.0 applications that support visual learning are not only cost-effective (some even free) and intuitive for users, but they also reach out to auditory and visual learners and help them to easily communicate and express themselves (McPherson 73).

Web 2.0 and Schools

In 2009 a MacArthur Foundation study was completed to document K-12 Web 2.0 policies, practices, and perspectives in American schools. The study was completed with input from 1200 district administrators: 389 superintendents, 441 technology directors, and 359 curriculum directors. The purpose of the study was to discover the perceptions of Web 2.0, educational policies and procedures, and teaching and learning associated with Web 2.0.

With regards to use of Web 2.0 in classrooms, in 2009 56% of schools reported that Web 2.0 applications have not been incorporated into curricula though they reported that Web 2.0 applications hold value for teaching and learning (Lemke 33). Though applications are not a set fixture in teachers' practices, curriculum directors reported that some applications are being used either by teachers or by the whole district. The following shows which applications are being used and what percentages of schools are using them.



Web 2.0 Tools in the Classroom (Lemke 35)

Based on the school staff that participated in this survey, most of the schools are using Web 2.0 tools to participate online and to work together on projects. The majority of the schools are focusing on using Web 2.0 tools for surveys and to share media files. Based on the information in this table, not many schools have found a use for social networking or for virtual worlds.

While schools are beginning to use Web 2.0 tools in the classroom, there is little to show what kind of impact this has had on student achievement since only a few have collected data to reflect any changes (Lemke 38). Administrators, superintendents, and curriculum directors in the study reported that there is value in teaching students to become proficient in Web 2.0

applications because they see this as the world in which the students will grow up (Lemke 43). When asked if the use of Web 2.0 requires instructional practices to change, 88% of curriculum directors said yes while 75% of superintendents agreed. Overall 83% of district administrators said there would need to be change (Lemke 43).

While there is no hard data to support how Web 2.0 has impacted students and schools so far, there is still the persistent belief that Web 2.0 has enough to offer to make it a useful learning tool for schools. Some see that Web 2.0 plays to the strengths of educators and that by combining curiosity and love of learning and tying that with collaboration and participation, Web 2.0 becomes a logical extension of what educators try to accomplish with bulletin boards and listserves (Hargadon "Educational Networking..." 2-3).

Visual Web 2.0 Tools for Information Literacy

The term "mashup tool" is a key term in the Web 2.0 world. It was created to describe the online applications that use two or more formats (like text and video) and mixes them up together to create a new product (Liu 247). Users of mashup tools can obtain their text and video from a variety of sources. They have the option of finding them online with copyright free items, or they can include their own created pictures and videos. Because these applications are able to combine so many different kinds of mediums they are visual tools as well. These tools provide students with unique learning opportunities that could help improve their achievement. Here are a few examples of tools available both online and as software applications for the computer that educational professionals may be interested in using for

teaching information literacy skills and supporting visual learning. This review will look at three applications: Animoto, Prezi, and iMovie/Moviemaker.

Animoto

Animoto is one online mashup tool that students can use to add pictures, text, music, and video to create an animated visual slideshow. Animoto takes all the elements that the user wants to see and mashes it all together to create a slideshow that moves like a video. One of the advantages to using Animoto, besides how easy it is to use, is that it allows visual, aural, and linguistic learners to easily generate and communicate compelling tales that can easily translate into all subject areas in school (McPherson "Mashing Literacy" 74). Animoto presents a unique option for students to translate what they have learned.

Not only does Animoto open up many creative opportunities for its users, but it also will hold their attention. It has the power to engage learners for a long period of time, increasing their motivation while still focusing on the objectives the teacher needs to cover (Perez 12). Educators know and understand how easily students are distracted during the learning process, so it is important to have a tool to pull students back in.

Animoto is simple enough that users do not have to be accomplished photographers or musicians in order to create something spectacular (McPherson "Mashing Literacy" 74). Animoto has a way of helping users to create a video that is unique to their topic but in a simple way so that not much technical knowledge is needed to create it (Sheneman 41).

There are some drawbacks to using Animoto. Users do not have complete control over

the final product (McPherson "Mashing Literacy" 74). Instead of the user creating the final product, Animoto finishes the video for the user (Perez 12). What this means is that the user makes the decisions on what images to use and what order they want to see them in and the chooses music to go with it, but Animoto will decide on the transitions and the movement of the images.

While some may find it useful to have Animoto do all the heavy lifting, others find it frustrating when they want to change a certain aspect of a video and are unable to do so because Animoto maintains that control over their video. It does not provide users with the means for fine-tuning the presentation (McPherson "Mashing Literacy" 75). Simply put Animoto will work well for those users who do not have wide technical knowledge of online programs but may be frustrating for those who want more control over their creation.

In 2009 Sheneman asked over a hundred librarians on the TLC (Texas Library Connection) and LM_NET (Library Media Network) listservs what teachers were using Animoto for in classrooms. The majority responded saying that they are using Animoto to create book trailers (digital advertisements for a book) and to also create digital versions of library tutorials of common library practices liking reserving books online and using digital databases (41). Teachers in the survey also reported that Animoto was a perfect visual tool for creating digital stories (41). Because Animoto allows users to add in different types of text, pictures, and video, the ways to use it in the classroom will probably become more numerous each year.

Prezi

In the Web 2.0 world of visual presentation tools, Prezi might end up in many students' toolbox. Like Animoto the creators of Prezi have taken things a step further. Prezi is a visual presentation tool, but it works more like a mind map to display information. Users of this application work on a digital canvas and can zoom in or out in order to display information in a hierarchical way (Schiller 34). Students could use this tool to show how concepts are related, how ideas tie into a larger theme, or to display information in categories.

Though the software may take some time to become comfortable with, Schiller asserts that it is not a tool to pass up. Prezi impresses all by allowing viewers to see the big picture at any point in the presentation or to zoom in and focus on an important detail (34). This is a useful tool for learners who need to display their information visually.

A variety of options are available for different accounts with Prezi. There is a free version, but the downside is that users are not allowed to store their presentations on their own device, but instead the user would have to log into the account online (Scott 49). This is a problem in cases where Internet use is not easily accessible. On the positive side, Prezi provides 500MB of free storage space for digital presentations for educators just for signing up (Scott 49).

Prezi is used to teach information literacy skills in a visual way. Users organize their information visually, which helps them to see what they are learning. These digital presentations are visual stories that are used in the classroom to explain, analyze, persuade, rouse, or motivate (Schiller 34). Students use Prezi to organize their research or map out a

story.

Uploading iMovie and MovieMaker to the Web

Apple iMovie and Microsoft MovieMaker are also tools to consider. The difference between these and Animoto or Prezi is that they are not Web 2.0 tools and are not available online, but instead are free applications with Mac and Windows machines. They use similar functions and create a similar product, in comparison to Animoto, but with both movie-making tools creators have more freedom with their final product (Howard 18). Though they are not Web 2.0 tools, they have still found their place in the world of Web 2.0. Teachers and students take their video creations and post them easily to the web. Videos can be shared on Facebook, blogs, school websites, YouTube, and TeacherTube. Since creators using these products have more control over their product than they do with Animoto or Prezi, they have become a widely used classroom teaching tool (Sheneman 40). More and more of the videos are making an appearance on the Web 2.0 scene.

Users manipulate their creation by clipping videos and adding in text and still images. They could obtain these from either the Web (if cited correctly) or by using products that they have created. If users do not mind dealing with the learning curve associated with these tools, then they can create a video that is completely their creation (Sheneman 41).

One way to use iMove or Moviemaker in the classroom is to have the students create their own documentary. This idea comes from Sarah Levin, a Californian librarian who often looks for ways to incorporate technology into her media center lessons. She explains how she

used student-produced documentaries to teach students about copyright law and media literacy. Levin's upper level high school students are asked to create a documentary in the style of Ken Burns using their research findings on Che Guevara (Levin 54). In this lesson, students rely on literacy skills, collaboration, and technology in order to create a video product rather than a research paper. Levin admits that the project is time-consuming, but it gives her the opportunity to cover many highly needed skills (Levin 54). This lesson idea works well with visual learners since the end product has visual components along with text. By letting students produce a video instead of a research paper, students get the opportunity to flex their creative muscles while still using information literacy skills.

Summary of Findings

The original definition of information literacy combined "knowing, identifying, finding, evaluating, organizing, and using information." However it was focused just on print sources and had not yet taken in to account what the Internet and Web 2.0 would bring (Mackey and Jacobson 63). Information literacy has since broadened the definition of what it means to be literate to incorporate all the kinds of information that can be accessed.

The definition of information literacy changes because of the opportunities Web 2.0 affords. Learning is becoming more visual, and Web 2.0 can support this style of learning with mashup tools and other visual applications. There are many options when it comes to mashup tools. Educators can investigate the available resources and see what would best fit into content needs. Once they find something suitable, they will begin practicing with these tools

and help students become successful using them as well.

Technology will continue to change and will require students to need new and different skills every year. The educational world will not remain a static environment. Teachers who look for new ways to keep up with the fast moving technological world can help students become successful.

By focusing on addressing visual learning styles, thinking of new lessons, and using new tools, educators will help students achieve more. Visual learning tools are an important way to help prepare students for what they will need outside of the classroom. They allow students to learn how to be a part of a culture of collaboration that opens up avenues for them to be the creators of information rather than just sitting back on the sidelines and watching.

**CHAPTER 3:
METHODOLOGY**

INTRODUCTION

The questions driving this literature review are based on the topics of Web 2.0 tools, information literacy skills, and visual learning. The purpose of the paper is to review the literature that reflects information on how Web 2.0 tools help student achievement. The review first examined how information literacy has changed and adapted in the 21st century. Then the information presented answers the question “How do visual learners learn? What support do visual learners need when acquiring new information?” The review finishes by investigating Web 2.0 tools that bring together information literacy and visual learning to increase student achievement.

Information Literacy

Information literacy has changed to adapt to the variety of ways students are accessing information. One of the ways it has changed is to expand the categories by which it can be defined. Instead of just reading and writing being the main forms of accessing information and using it, the digital world that students live in incorporates new categories. These include media literacy, digital literacy, visual literacy, cyber literacy, and information literacy (Mackey and Jacobson 64). Each of these categories addresses different aspects of using information, from seeking it to creating it.

Another change for information literacy is the role the learner has in the process. The original role of the learner in the information process was as a retriever. When someone

needed to find something it was their job to search for it, read about it, and the use the information largely for the purpose for which it was created. In the 21st century, information literacy has evolved to include a collaborative side. It puts users of information in a collaborative space where information is shared and the communication of ideas becomes a two-way street. Information seekers are a part of the information world by sharing and adding to the information themselves. This new dimension adds a creative part to information literacy.

Visual Learning

Multiple intelligences play an important role in information literacy. One of the multiple intelligences, visual learning, plays an important role in an environment with Web 2.0 tools. Because many of these tools rely heavily on visual skills, they appeal to the visual learner. Learning in a visual way is different from the traditional view of education where reading and writing were the main focus. Teachers see an impact on student achievement when information literacy is taught using the multiple intelligences theory.

Web 2.0 Tools

At this time it is unclear how much of an impact Web 2.0 tools are having on students. Teachers recommend students use a variety of Web tools or applications such as Animoto, Prezi, and other visual means of creating and sharing information. Mostly teachers are sharing these new tools and describing how they were able to use them in the classroom. However, little evidence is available on growth in student achievement due to enhanced opportunities for visual learning.

Web 2.0 tools are used for each subject area of school and these tools tie in with information literacy and multiple intelligences. With respect to information literacy, these tools provide a variety of ways for students to find, create, and share information. The selection of Web 2.0 tools support each of the intelligences and, in particular, they support visual learning.

The future of Web 2.0 tools and how they will be used in schools seems to be a welcoming one. More and more teachers incorporate technology to meet standards in education and to look for new ways to improve student achievement. Teachers see how much technology has become a part of people's lives and occupations and are trying to prepare students for what they may need outside of school. Educators continue to find new ways to support information literacy skills and visual learning through the use of Web 2.0 tools all in hope of increasing students' motivation to learn and their overall achievement.

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