WIKIS IN EDUCATION

by

Dixie Kirkham

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
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ABSTRACT

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Several years ago wikis became a tool used to facilitate the learning of students across the world and have changed the way the educational system looks at social learning. This paper explores how since their inception several years ago the use of wikis has influenced the educational realm. Currently, wikis are being used in a multitude of ways at all levels of education. Research of peer reviewed journals, articles, books, and web pages were used to review the literature on the impact of wikis in education. This review shows that wikis have had a lasting impact on the educational system.
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CHAPTER 1    INTRODUCTION

Jimmy D. Wells and Larry Sanger, founders of Wikipedia, completed the development of the wiki concept in 1995 (Borja 5). Wikis are web pages that many educational institutions have incorporated into their curriculum, web pages can be edited by one or multiple authors throughout the life of the web page. The instructional benefits related to using wikis include increasing reading and writing skills, introducing students to the participatory culture for collaborative learning, and integrating wikis into personal learning networks. Teachers from elementary school through college are incorporating wikis into their classrooms to further guide students to mastery of the new Common Core State Standards. In the educational realm, wikis are a means to help students with their reading and writing, to develop their own personal learning networks, and to learn collaboration skills.

The Common Core State Standards call for a much more collaborative environment in all learning levels. It also calls for teachers to allow students to be more in charge and allow ownership of their own learning. This includes social media in which most students are involved in, at some level in their personal lives. It also calls for a more online project based learning at all levels of education.

Technology has globally transformed the way people live, communicate, and learn. Advances in technology have also transformed education over the last several years. The Internet and all of its resources have become commonplace in schools, requiring the need for new standards of learning and a means of meeting those learning standards. A classroom wiki helps serve the new standards that education needs to meet.

Students have to be educated in skills that were not even around 30 years ago in order to be able to compete for the best jobs. The international need for a technology-based skill set
makes it paramount that students be taught not only how to use the available technology, but also how to work in a collaborative culture. Collaborative learning is another benefit of using a wiki. Students working together provide different perspectives on information. Teaching students via a wiki page will help them cultivate their own personal learning network in an efficient, safe, educational environment.

Many teachers have seen students improve their reading and writing skills through the use of wikis in their classrooms. Teachers help students increase their reading levels by having different types of reading links in their classroom wiki. Critical reading skills are crucial in allowing learners of all ages to continue to build on their prior schema. Teachers can add videos, art, and presentations, as well as the normal written words within their wiki pages to reinforce the information and new terminology. Educators know that in order for writing to reach a higher level, multiple styles of writing need to be included in the class wiki assignments. Part of the appeal of using a wiki is for the students to have ownership of their writing; organization of the resources for student’s needs via the wiki is a benefit for teachers as well as the students.

Wikis help students become better critical thinkers. Critical thinking skills are metacognitive skills that help students understand how to analyze and synthesize information from content. Wikis are a tool that can help students of all ages with the processes of exchanging information and building new knowledge through collaboration. By using a wiki, teachers can build social cognition and communities of inquiry. Adding outside links within the wiki will help students make connections to real life.

**Statement of the Problem**

Twenty-first century students have to have the skills needed for college and career readiness and which are now expected by businesses, and wikis can help teach them these skills.
Students have to learn how to read and write at a higher level as well as employ critical thinking skills. All of this comes with the additional burden of needing to provide students with a safe and secure venue in which to work while developing these skills. This must be addressed throughout their education and this learning is facilitated by using wikis.

**Purpose of the Study**

The purpose of this study is to review literature to understand how wikis are used in the education of the twenty-first century learner. A review of literature was conducted to analyze the current needs of students and teachers throughout all grade levels to determine which skill sets wikis help students develop. Further research explored means of maintaining student safety and privacy while broadening their horizons through the use of technology. This research focuses on the effects of wiki use in classrooms throughout all levels of education and its ease of implementation.

**Research Questions**

The following questions were used to shape the research presented in chapter two. Answers to these three main questions can be found in chapter three.

1. How easy is it to set up a classroom wiki while adhering to school technology guidelines, maintaining student privacy, and ensuring appropriateness of content?
2. What are the instructional benefits of using wikis in the classroom?
3. How can wikis be integrated at various grade levels to enhance learning?

**Limitations of the Study**

This research paper was limited by the timeframe allowed to collect and organize the information needed and to analyze the evidence regarding how wikis are used in education.
Other considerations were the access to different types of information as well as the research available on this topic. Access to information was limited to electronic materials available through James C. Kirkpatrick Library and other web-based resources. The research collected and used in the study of how wikis can be used in education at all age levels is closely limited to the topics delimited by the research questions.

**Definition of Terms**

Assimilation: to learn something so that it is fully understood and can be used (Kimmerle et. al. 4).

Asynchronously: not occurring at the same time (Kennedy 18-19).

Cognitive: involving conscious intellectual activity such as thinking, reasoning, or remembering (Higdon and Topaz 5).

Digital literacy: the ability to use computerized technology to read and write.

Flipped classroom: a reversed classroom in which the student is responsible for completing the instructional portion of a lesson on his or her own time while traditional homework is completed during class time with the teacher present to lend a hand.

Intrinsic motivation: naturally occurring condition in which one is eager to act or work (Hadjerrouit 49).

Introvert: to turn inward upon itself.

Iterative: involving repetition (Hsu 8).

Metacognition: awareness or analysis of one's own learning or thinking processes.

Paradigm: a model or pattern for something that is copied.

Participatory culture: working and learning together as a group.
Personal learning networks: informal learning networks that consist of the people learners interact with and derive knowledge from (Cress and Kimmerle 154).

Schema: organization of cognitive learning in the mind.

Self-efficacy: the measure of the belief in one's own ability to complete tasks and reach goals (Chen 28).

Synchronously: happening at precisely the same time (Kennedy 18-19).

Wiki: a website that allows visitors to make changes, contributions, or corrections.

**Research Design**

The research study collected previously published information relating to how wikis can be used in education. No original research was conducted as part of this study. Rather, existing literature articles and case studies pertaining to this topic were reviewed. Articles and case studies were retrieved from the following databases through the James C. Kirkpatrick Library: *Academic Search Elite, ProQuest Central, ProQuest Entrepreneur*, and *ProQuest Dissertations & Theses Full Text*. Other source used: *Informatics in Education*.

**Conclusion**

This study includes three chapters related to the use of wikis in education. The first chapter poses questions about the benefits of using wikis while defining key terms used throughout the research. The second chapter is a review of the literature that explores the different uses and issues arising from incorporating a wiki into the educational environment. The third chapter consists of answers to the research questions that were posed in the first chapter and is followed by a list of references.
CHAPTER 2
REVIEW OF LITERATURE

Introduction

The wiki concept came from Howard G. Cunningham in 1992. His initial intent was for it to be used by companies for their workers to be able to better collaborate on projects halfway around the world. However, it was popularized in 2001 by Jimmy D. Wells and Larry Sanger, who created *Wikipedia*, an online encyclopedia that everyone can contribute to the expansion of knowledge for one and all (Borja 10). They wanted to create a free encyclopedia that evolved with every contribution. *Wikipedia* is a free and open project where any person can add or edit public content. In the educational realm, wikis are a means to help students with their reading and writing, to develop their own personal learning networks, and to learn collaboration skills.

Three aspects to incorporating wikis into a classroom setting are considered in this paper. The first is the technical knowledge needed to set up a school wiki. This section includes information about the ease of using wikis, addresses the concerns for keeping students and their information safe, and explains how to ensure written information is appropriate for the school wiki because the information that the teacher includes in the classroom wiki can come from a variety of sources (Chen 15). The second section presents instructional benefits related to using wikis. These include increasing reading and writing skills, introducing students to the participatory culture for collaborative learning, and integrating wikis into personal learning networks. The third section addresses how students at various grade levels are taught how to use a wiki. Teachers from grade school through college are incorporating wikis into their classrooms to offer students new ways to experience collaborative learning (Hadjerrouit 47). Those who want to incorporate the use of wikis in schools for this purpose include students, teachers, school librarians, and administrators.
Technical-Components of a Wiki

A Wiki program is a computer based knowledge sharing system with a set of web pages that can be created and updated on an iterative and collaborative basis (Hsu 8). A wiki is a flexible Web 2.0 information distribution tool that has classroom, professional development, and administrative uses (Jakes 6). Wiki programs have different types of features, and normally a basic list of these is produced by the wiki provider. In a wiki’s simplest form, any authorized user can add, revise, or delete content (Clyde 55-56). The framework of most educational wikis is a read-write webpage that promotes peer interaction, collaboration, and critical thinking (Maushak 317; Robinson 1). There are several types of programs that meet the expectations for a class wiki, need little knowledge to use, and offer easy to follow directions (Clyde 57). For example, Wiki Farms is a service offered for a free or nominal charge that enables “people who have limited ‘server-side’ skills to create and manage a wiki” (57).

Ease of Setup

Wikis are not technically difficult to use because they allow users the ability to have a website that works like a word processor (Flierl and Fowler 3). Wiki pages are easily developed and published by ordinary people who have no computer programming skills (Allwardt 2). One does not have to have a mastery of HTML or other World Wide Web computer language. It only takes a few clicks of a computer mouse to create a wiki (Borja 10). However, wikis can be conceptually hard for educators to use since information is created and shared in a different format than that which most teachers are accustomed to using. By integrating scaffolding specific to a given learning activity, a wide range of learning paradigms can be supported using a wiki (Larusszen 373).
Technical usability involves techniques for ensuring a trouble-free interaction with the software, while pedagogical usability aims at supporting the processes of learning (Hadjerriout 49). Many teachers would like to use this new technology but cannot get beyond the shift in paradigm that is required of them. Although many cannot make that shift, some teachers have been trailblazers and taken it upon themselves to make wikis a part of their everyday instruction. Activities on a wiki need to be aligned to the curriculum to facilitate students’ overall learning (Chandana and Chamila 15). Many teachers have found it rewarding to see their students working collaboratively in and out of the classroom.

**Safety Issues for Students**

Teachers, librarians, and administrators always have the safety of the students in mind when merging technology such as a wiki into the classroom setting. Because of safety concerns for the students, many school administrators and teachers have concerns about incorporating wikis. According to David Jakes, “Because they can be edited by anyone, wikis are subject to vandals - individuals posting inappropriate content that distracts from the purpose of the wiki” (6). However, although most public wikis are open, those in the educational realm do not have to be. Instructional technology (IT) departments within the school can download a wiki into the school district intranet and have it completely housed within the district’s own system (Borja 10). Furthermore, online wikis like *Wetpaint* have settings that will keep privacy to a moderate or strict level, depending on school policies and the teachers’ wishes. Two other similar wiki programs are *Gaggle* and *21Classes*. These programs do not require the use of student e-mail accounts to set up their passwords. This helps ensure student privacy. However, these do cost a nominal fee for accounts serving more than 50 students (Imperatore 31). Depending on how the wiki has been setup and who is to use it, it can be made public, protected, or private. If a teacher
sets the wiki to private, this will prevent hackers from making posts and keep students’ privacy protected (Carney-Strahler 78).

There are different options for teachers to set up students’ wiki pages. They can invite students to join, or the student can sign in and ask permission to be allowed access to the class wiki. Either way, security can be put into place to keep students’ information safe and secure, from the use of passwords to emphasizing acceptable use policies (Borja 10). For example, David Jakes states, “Teachers wanting to use a free wiki solution should be aware of district policies concerning ads and school related uses of the web” (6). Some school administrators will not allow teachers to set up their own Internet sites, requiring them to go through the IT department.

**Keep Content School Appropriate**

Another security issue that may be caused by wiki use is keeping students’ posted content on the school wiki appropriate. It takes time to instruct students about how to use a class wiki. One of the first things to explain is what teachers’ expectations are for students as contributors on their class pages. Teachers cover what is and is not school appropriate for students in their class. By utilizing social media such as wikis in classrooms and learning resource centers, teachers and librarians show their knowledge of information and communication technologies as they work to promote digital literacy for their students (Naslund and Giustini 4).

One way to ensure content posted by students is appropriate is for teachers to make themselves moderators when they set up the wiki. As a moderator, the teacher will have control over who has made a change to the wiki, what kinds of changes were made, and when these changes occur. By being able to supervise what is being added or revised, the teacher can delete or change a wiki page back to its previous version when necessary.
Wikis provide functionality to carry out collaborative writing activities, edit content, track students’ contributions, and compare these contributions in real time (Hadjerrouit 48). Providing an interactive environment can help students become more open and motivated to use a wiki as part of their classroom experience (Chen 19). A moderated wiki program such as PBWiki helps the teacher control who can read as well as edit the wiki, and this builds a safe and collaborative classroom atmosphere (Carney-Strahler 78; Imperator 31).

**Instructional Goals for Wiki Use**

Wikis have useful purposes in the educational system such as sharing information and readings for lessons, creating a forum for projects, incorporating writing into instruction, and providing a personal learning network. Collaborative learning is another of the benefits of using a wiki. Most students need some type of real world problem to insure they thoroughly learn a lesson; they need to use logical structures to piece together information even as they filter it through their own life experiences, and this can be simulated in a classroom wiki (Glassman and Ju Kang 4). Students creating and learning from each other helps them adopt and view different perspectives on information. This is part of the process of collaborating, forming new opinions and accepting others’ ideas (Chen 22). Research shows that through collaboration and peer feedback, wikis and blogs provide for learning by creating an environment that promotes knowledge building (Kennedy 144). The research suggests that people learn from each other in all types of environments, especially in the classroom. Furthermore, the workflow on a wiki is flexible and adaptable, open to whatever approaches students’ develop (Manion and Selfe 2).

In order to help students stay on task, teacher presence on a wiki is important (Aranda 6). Students who do not have the presence of a teacher will get off track. Reasons for a teacher to be present are to ensure that someone is there to answer questions and to help facilitate learning in
an atmosphere conducive to growing and expanding students’ knowledge base. Having a teacher become a facilitator and moderator instead of the knowledge expert gives the students more personal ownership of the finished product. This section describes the advantages of using wikis for improving students’ reading and writing skills, explains how wikis create a collaborative culture for students, and offers suggestions for how wikis can be used by teachers to create personal learning networks.

**Using Wikis to Strengthen Reading And Writing Skills**

Many teachers have seen students improve their reading and writing skills because of the use of wikis in their classrooms. One way to do this is to allow students to become the instructors. For example students can construct a wiki page presenting a reading strategy, explaining how to write a descriptive essay, or describing how management lists can help other students learn to manage their time (Caverly and Ward 4).

Another way teachers help students increase their reading levels is to have different types of links in their classroom wiki. For example, if a page were made about Anne Frank, links to wikis and web pages about the Holocaust, Hitler, warfare in WWII, and genocide could be inserted (Kissel, et. al. 59). In addition, students could be invited to add additional links to resources they find on the Internet.

Collaborative writing also offers opportunities to practice literature reviewing, academic reading, and scholarly writing (Hadjerrouit 48). According to Yu-Ching Chen, “Results showed that there existed statistically significant difference between [a] group with and without wikis, which means the group applying wikis performed better in listening and reading abilities” (3). Manion and Selfe’s research showed that students learned how to modify their technical writing in the class wiki with the help of instructors who analyzed their writing throughout the class (13).
Critical reading allows learners to construct knowledge and understand what they are reading, which is paramount to student success in subjects across the board (Cabiness et. al. 39). “Wikis and blogs can strengthen reading and writing skills and teach students about the new literacy of the Internet age such as evaluating sources and synthesizing information” (Will Richardson qtd. in Imperatore 30). Reading has many avenues and includes more than the written word. Small children begin learning to read by memorizing as their parents read bedtime stories to them. Only later do children begin to read words, and that usually starts with recognizing sight words and sounding them out. With a wiki, many new words can be added to students’ vocabulary as they encounter new terminology in their classes. Many teachers add videos, art, and presentations, as well as the normal written words within their wiki pages to reinforce the information and new terminology. In addition, assignment instructions and resources can be uploaded onto a wiki page so that students do not have to carry around loose papers or heavy textbooks, thus increasing the likelihood that they will more willingly participate in the assignment (Nielson 2). Another way that reading can be increased is for some assignments to include a close reading of texts within the wiki, followed by written student discussion, which also takes place on the wiki. In the discussion section of the wiki page, students can respond to each other with their own thoughts and analysis of the text, which creates an online discussion fueling the dialogue between classmates.

Writing in a wiki may be of greater interest for students than writing a traditional research paper. Most students find essays of any type daunting. As they write essays on a wiki, input from their peers can make the difference between a good essay and an extraordinary essay while helping struggling writers to feel supported (Kennedy 93). The use of wikis is collaborative in that there can be more than one author of the wiki. In addition, students can
work together to create stories, essays, and other information items. This contributes to a participatory culture, which is discussed in the next section.

Using technology can help students enjoy lessons more than working with a pen and pencil (source?). Using technology is part of students’ everyday lives, both inside and outside of school. Engagement is a priority for classrooms and wikis help with this. Teachers who incorporate wikis use them as a collaborative tool within their subject areas to maximize student engagement. According to a study conducted by Edith Kennedy, students made advances in their writing ability as well as their collaboration with each other with the use of technology (158). Her research was conducted over several semesters and she used blogs as well as wikis to help students create e-portfolios of their work. These students also became much more advanced in their critiquing skills with their peers than in traditional face-to-face classes.

Organization of the resources students need via the wiki is a benefit for teachers. Once teachers have their wikis set up, adding new multi-media and documents is a simple process. This frees up teachers’ time so they can use just-in-time teaching methods during their class periods (Higdon and Topaz 105). This method uses student responses to questions posed over a pre-reading assignment on the wiki class page, and lets teachers know whether the students understand the lesson objectives (Higdon and Topaz 105). Teachers can also include videos and other types of multi-media on the wiki to enhance the learning of their students.

Creating a Collaborative Culture

Academic changes that enhance the level of engagement of students, such as incorporating wikis in a class, produce positive learning outcomes (Chandana and Chamila 2). “Wikis provide new opportunities for learning and for collaborative knowledge building as well as for understanding these processes” (Cress and Kimmerle 153). Students connecting through
this type of communication tool are more versed in collaborating because wiki use affects the students’ learning on a social level (Chen 15).

In order for the students to master some lesson objectives, they will require scaffolding. Students who have an individualized education plan and are mainstreamed may require more scaffolding to master objectives than other students require. The ability to create a hierarchal approach based on skill level makes wikis a convenient Web 2.0 tool to use to increase participation of all students within classrooms (Manion and Selfe 25). Wikis also provide a cooperative learning environment where lower-level readers can be partnered with higher-level readers for collaborative work.

The result of using a wiki can be two-fold; first, it helps with cooperative learning; second, their writing skills are improved. Wikis create a unique situation in that learners are writing more to their peers rather than for the instructor (Laughton 228). By writing to their peers as their audience instead of writing for the teacher, they learn to be more thorough in their explanations and are more willing to go into more steps to make their point. This helps them learn to write more expressively and makes it easier for their audience to learn from their knowledge.

Wikis have been used successfully in English classes for literature circles where students use a wiki to discuss each chapter of a book (source?). Some students are more than happy to talk about their thoughts on the chapter, but others who are more introverted may find that it is easier to share their thoughts and feelings about what they have read with the group in a wiki page, where there can be conversation back and forth. Cooperative learning groups work well for wikis in this manner because students who would be too shy in a face-to-face class feel safer when writing on a wiki.
Wikis are known as one of the best Web 2.0 tools to help students collaborate on writing projects (Schweder 59). Collaborative teams can work together in small groups to write, revise, and update their wiki pages on a weekly or bi-weekly basis. This way they learn to work together, to analyze each other’s writing, and to learn from what they are doing (Schweder 60). Another positive aspect for students engaged in collaborative writing on the class wiki is having their classmates critique their writing. The wiki is a learning tool, incorporating both learning how to peer review as well as how to be critiqued by a peer.

**Personal Learning Networks**

Wikis contribute not only to reading and writing, but also to helping students form personal learning networks. According to research, strong schema (organization of cognitive learning in the mind) is built when people of like minds come together to share their knowledge. When this happens on a wiki, it can produce a personal learning network (PLN) (Cress and Kimmerle 154). A PLN provides access for those seeking experts who are willing to teach and share their knowledge. Teachers can make a wiki class page so that students can construct knowledge about the content that they have learned in class. This is a way students build their own PLN as they gain new knowledge.

Teachers who understand that students are more successful when developing literacy skills together will be able to create a PLN for their content area. Students have deeper learning when classroom instruction is coupled with wikis. Research shows that the wiki extends student learning beyond classroom activity (Naslund and Giustini 2).

Wikis help students become better critical thinkers; this self-efficacy is a skill that all students ideally develop throughout their education (Chen 28). Critical thinking skills are metacognitive skills that help students understand how to analyze and synthesize information
from content. It can also help them to connect what they are learning with the real world. With a wiki, this learning happens as part of an internal process of assimilation and accommodation while an external assimilation and accommodation occurs as changes are made to the wiki (Kimmerle et. al. 4).

Intrinsic motivation increases when the wiki is inherently enjoyable and contains information that has a high value for the student (Hadjerrouit 49). Knowing that there might be an audience for their wiki motivates students to develop well-structured wiki pages using clear and understandable language (Hadjerrouit 49). Students themselves are building new knowledge and adding it to their prior knowledge each time a change is made (Cress and Kimmerle 154). As these individuals learn, they begin asking other questions, which take them on a new journey to find the answers. All of this can be captured on the wiki. This begins a cycle of being a critical and analytical seeker of knowledge. These skills will afford the students more chances for employment in their future careers as most businesses are looking for these skill sets (Chandana and Chamila 5). The process of seeking answers to questions raised on a wiki begins a new journey to find the answers and seek others who have the knowledge in an area of interest.

Wikis throughout Education

People of all ages are interacting with their peers through social media more than any other time in history. This can play a vital part in being more motivated to work in collaborative groups than working alone. A decisive benefit for working online for all students is that wikis offer convenience by allowing students to work together from different locations, build upon each other’s work, and work at different times (Campbell and Ellingson 4). “We are aware that, in the strict sense, the motivational aspects are intrinsically tied to the processes of knowledge
building, and that the cognitive and socio-cognitive processes cannot be separated from the motivational ones” (Cress and Kimmerle 156).

As people grow, so does their schema as well as their ability to use metacognition. Their internalization and externalization of ideas becomes intertwined as they add more knowledge to their prior schema (Hadjerrouit 5). Class wikis can keep pace with this growth. Students increase their critical thinking skills and communication skills using wikis in all types of classes while developing a sense of community with their peers (Campbell and Ellingson 1). By utilizing various components in a wiki page, such as readings, videos, and open discussions, different age groups within an educational system can build knowledge (Narasimhan 30). Wikis are a tool to help with the processes of exchanging knowledge and building new knowledge by collaboration, even for the youngest of students. In this section ideas for using wikis are presented for elementary age students and for those in middle school and high school. Wiki use in college is also explored.

**Elementary School**

Elementary school teachers use wiki pages in a variety of ways. These include having students read, write, and form collaborative groups who work together in ways such as creating a blog or writing a short story (Wake and Modla 3). Young students learn by mimicking others. This helps them to build schema at a faster rate than learning alone. By using a wiki, a teacher can build social cognition and communities of inquiry that will provide support in a cooperative learning group. This creates a benefit to learners because of the greater sharing of contributions.

Some elementary teachers are using their wikis to have the students create a vocabulary list with examples from a weekly list provided by the teacher. Students can continue to build on
the list throughout the school year. With a wiki, the vocabulary list is searchable, so it can be used as a class dictionary (Wake).

Another example of collaborative knowledge building occurs when a class is doing a themed unit on government. Students can work collaboratively and illustrate how a bill becomes a law, or they can create a timeline on the wiki page of the steps that it takes a bill to become law. The wiki encourages students to use technology as they learn and work together.

Students can incorporate media in the class wiki. In science classes students can write and illustrate lesson units about erosion of mountains using a pictorial page of different types of erosion. Studying weather cycles builds science schema through collaboration on a wiki. Students can show different types of clouds that go with the different types of weather and label them in their wiki science pages. They can build their own encyclopedias using their unit terminology and definitions in their own words.

Writing stories together is one of the simpler ways for younger students to create and share ideas (Kleinsasser 105). By allowing them to work collaboratively in creating a short story in the class wiki, students learn about collaborative writing. The teacher can use the wiki to teach them about the literary elements of writing. Wikis are a way to allow students who are too shy to talk in class discussions to have an opportunity to have a voice through online contributions. Short narrative stories can be an opening to more meaningful learning when the students are allowed to share something from their own lives that connects to a story or something they made in a wiki. Collaborative work on a wiki also provides the teacher with something tangible to grade for each contributor (Campbell and Ellingson 7).

As students get more familiar with using a wiki, they will be able to accomplish tasks that are more difficult. As their skills develop and grow, the process of creating more intense
collaborative lessons will help them master each new skill. By starting the use of wikis at a young age, students take responsibility for their own learning. Having students create wiki pages at multiple times throughout the school year enables them to learn how to collaborate in a wide variety of lessons (Larussen 372). This will also help them develop self-confidence for use in their future classes.

**Middle and High School**

In many middle and high school classes around the world, wikis are being used to help students with their metacognitive skills. This helps the students engage in higher-order thinking that enables them to understand, analyze, and learn about their mental processes related to synthesizing information. Metacognition includes the act of asking questions and finding the answers as they move through a text or document. “While there are many dimensions of metacognitive knowledge, one aspect is the idea of ‘sense-making’ that is; stopping to determine if what you are learning actually makes sense, and, if not, strategizing for remediation” (Higdon and Topaz 5). This type of thinking can be hard for students, but introducing the skills in a playful way can ease the process.

A fun way to introduce collaboration with a wiki to older students is to open new unit of study by using picture books that will set the tone for a specific theme. The teacher or a student can read a book in class and then pose questions on the wiki so that the other students work collaboratively to answer them (Kissel et. al. 59). In a highly technical world, traditional group activities take place through blogging, texting, and chatting. They occur both synchronously and asynchronously, as students share what they are thinking (Kennedy 18-19). Wikis take that one step further by having students work together on a project like a class discussion about a picture book.
Some teachers are using wikis to help create a flipped classroom. A flipped classroom is one in which the student is responsible for completing the instructional portion of a lesson by reading a section of the text, viewing a video, or listening to a podcast on their own time. When students come to class, they work through activities on the topic itself. The idea behind this teaching method is to allow the teacher to be more involved with helping students to successfully understand what they are learning. Instead of the students listening to a lecture or reading in class and then being sent home with a worksheet to do on their own, they access the material on the wiki and have the teacher answer questions that may arise as they do activities in class.

There are many examples of how wikis can be used in different subject areas. For example, middle and high school science teachers use wikis not only to help their students learn new terminology but also to share their learning by writing collaboratively with classmates. Both teachers and students find the malleability of wikis to be a strong selling point in giving students the ability to control and better align requirements that are expected for a specific class activity (Larussen 3). Through wiki entries, students can pose thoughtful open-ended questions that show their newly formed schema and then have other students respond to these entries (Imperatore 30). Middle and high school science teachers have incorporated wikis with many types of videos as well as external links to science websites, such as NASA and Discovery Education. English teachers can include many types of readings on their wikis to help their students study literature. They have found it productive to put the vocabulary or the literature terms on the wiki and then have the students build a dictionary that they all have access to throughout the term. When the students are in class they are given activities on the wiki related to the readings that they have been assigned. What is included within a class wiki will depend on what the teacher is trying to accomplish with the students. Although the possibilities are
endless, many teachers have started small and worked on building their classroom wiki into an instrumental part of their daily routines.

In order to know if what students are learning makes sense, they have to be able to reflect on the newly formed schema. If they are questioning information they may need to learn strategies to help them understand the concepts more completely (Higdon and Topaz 109). “A common assumption among instructors is that the connections that they themselves make (and see as obvious) between the course content and applications in the ‘real world’ are being made by students as well, even without overt curricular guidance” (109). One way connections could be enhanced is for the teacher to give a list of outside sites on the wiki page to help students with the assignment. The additional material will, in turn, help students make connections to real life. With the wiki they can also add their comments or questions on the wiki page to show the instructor that they understand the material or need further help.

Social applications like wikis promote self-determining with a variety of social skills that enable students to connect, network, and collaborate successfully with a variety of people on different assignments and in varied environments (Gomes and Sousa 627). Students learn through social media; they are immersed in complex technologies on a daily basis through the use of iPads, iPods, Snapchat, the Internet, Facebook, and texting applications. They are constantly interacting with their peers, sharing information, multi-media, and chatting with each other (Carney-Strahler 1). These practices emphasize how teaching and learning can go beyond the printed word and move toward a greater sense of student community as it also connects students with their world outside of the classroom.
College

At the collegiate level, wikis have been used for several years as a back up to the online learning management systems such as *BlackBoard* (Laughton 3). For example, just-in-time teaching was integrated using a wiki in a college physics class to help students with deeper conceptual understanding of the physical laws that are the basis for the class (Higdon and Topaz 105). The pre-lesson readings on the wiki helped to cement the information for the students, who then came prepared for a full discussion in a face-to-face classroom setting. Research shows that some older students can be very resistant to this type of collaborative environment in their education, but if given the right training, this can be overcome as they learn to work together to build higher schema with their peers. Using social media can dislodge their feelings of alienation (Chen 30).

Even college students might need some type of training to know what is expected of them when the readings become more in depth and they are required to create projects or answer specific questions on a wiki. Many professors have incorporated a question and answer page, so that the students can ask their professor and peers for help as needed. Research shows that students using wikis connect with each other and interact about class information outside of the formal prepared classroom (Kennedy 105).

Collaborative groups learn at a deeper level when they assign different group members to head certain parts of a lesson product. This helps everyone to stay in a tightly knit group that works together for the common good and keep all participants in a positive relationship with the other team members (Chen 31). This community-centered approach gives the students opportunities to learn in a social context with collaboration occurring with their peers, faculty, and the real world outside of the classroom (Higdon and Topaz 108).
Conclusion

Technology changes the way people communicate every day (Flier 1). A wiki is an easy-to-use Web 2.0 tool that can be utilized in all classrooms at every educational level. Wikis offer the ability for students to be reflective thinkers and writers, contributing to the construction of new knowledge (Chandana and Chamila 15). Wikis offer readers and writers opportunities to connect and weave together comments, themes, and concepts for group inquiry into real world experiences. Some instructors link their wiki pages to websites that focus on corresponding information. By utilizing Web 2.0 tools like a wiki, teachers can help their students not only learn, but also develop into well-rounded citizens and life-long learners (Kennedy 155).

The goal of using wikis in education is to help all students develop their interpersonal and social skills as well as cognitive abilities as they learn content. Wikis help students think of ideas as multi-faceted and lessons to learn as a way to expand skill sets. Many educators have found that wikis are one of the best Web 2.0 tools because of their impact on critical thinking, learning, and creative expression, particularly if they are focused so that students not only learn vicariously but also collaboratively (Naslund and Giustini 55). Through collaborative literacy, whether students are in elementary school, secondary school, or in college, they develop awareness and deepening connections to lessons that build knowledge.
CHAPTER 3
CONCLUSIONS

The research on how to use wikis in education continues to evolve as more research is completed and teachers incorporate wikis into their curriculum. Among the many questions posed about wikis, the following are the ones this research addresses. First, why are wikis a better choice than other types of Web 2.0 tools? The answer to this question includes the ease of setting up a wiki, safety issues, and keeping content school appropriate. Second, what type of educational goals can a wiki help students master? This data includes information on reading and writing, learning how to be a part of a collaborative culture, and creating a personal learning network that encourages learning. Third, can wikis be used with students of varying grade levels? This chapter focuses on all these questions as they relate to students from kindergarten through college.

Technical Knowledge Needed to Setup a School Wiki

One benefit to setting up a wiki is that the creator does not need a degree specializing in computer technology, have background knowledge of hyper-terminology, or be very technology savvy. Hyper-terminology is a computer language used to create and build web pages and programs. The lack of web skill requirements combined with the freedom of not needing to purchase any new software makes wikis an attractive teaching tool. Creating a wiki requires very few steps. Step one is to click on and download a wiki program or signup with one of several offered on the Internet. Step two involves learning how to set up pages within the wiki itself. Step three requires the creator to decide what type of access he or she wants others to have on the wiki, such as public versus posting by private invitation only. Whichever way the creator decides to go, making the pages and creating links within the wiki pages themselves is not difficult.
Safety Issues for Students

Once the creator has made the choice about privacy settings for the wiki, safety needs to be addressed as it relates to student information, keeping the rules of the individual school district in mind. There are two ways to address these concerns. By using the invitation only setting, the wiki will only be accessible to those who have been invited, thus eliminating many safety issues created by activity of strangers. Another way to ensure the safety of student information is by housing the wiki on the school’s server. This prevents hacking and problems caused by anonymous or outside posters.

Keep Content School Appropriate

Keeping the content appropriate for school is a key factor in introducing a wiki into a classroom setting. Teachers and administrators are sometimes apprehensive about using this type of tool because of the fear that some of the students will use the site inappropriately. A diligent teacher keeps up with what is added to the wiki. Content issues and concerns can be handled in a classroom discussion introducing the wiki. Providing precise instructions about what is expected of students eliminates many of the concerns about content.

Different Ways Wikis Can Help with Educational Goals

One of the main reasons that teachers use wikis is to help students improve their reading and writing skills. Many case studies show that wikis promote better reading and writing skills. As a collaborative tool, a wiki can help a teacher see problems that students may be having and respond with a specifically tailored help for these students. In this way the teacher can differentiate instruction for members of the class without making any noticeable changes to the assignments. The teacher’s comments about specific student contributions benefits students
working in a collaborative team because the wiki will show all of the versions of the document
and the changes that have occurred with each update. This helps students to learn from each
other’s correct responses and mistakes throughout the process.

Researchers have evidence that wikis help strengthen reading and writing skills. Many of
these studies compared face-to-face conferences and assignments with collaborative wiki
assignments. By having the writing assignments in the wiki where all can view what is written,
the writer can get helpful feedback from peers. A peer can pose a question about something that
is written in the wiki so the writer can be invited to elaborate.

Another benefit of this type of interaction between students is that it can strengthen their
ability to write in a more concise and clear manner. Students feel empowered by the lead role of
influencing others with what they write. Another direction this can take is for the peer to give
pertinent information to the writer by sharing his or her knowledge; this helps build the
knowledge of the whole group. Each person in the group brings different life experiences, which
builds common knowledge within the group. The group’s overall dynamics strengthens the
whole group’s learning outcomes in a wiki environment if collaboration and discussion are part
of the experience.

Another goal a wiki helps with is introducing the students to a collaborative culture in the
classroom as well as the school itself. Wikis are progressively being used to teach students how
to be a part of the culture in which they live. Wikis provide a way to collaborate on tasks,
projects, brainstorming, writing, and editing in an online format with their peers. They learn to
work together and learn from critiquing each other’s work. They can leave comments to each
other or explain changes they have made to the assignment within the wiki. Students experience
deeper learning when classroom instruction is coupled with wikis.
After students learn about becoming part of a collaborative culture, they will understand more about how to form their own personal learning networks. As they grow older and have the need to complete more demanding research and assignments, these networks can help them. Wikis support students’ acquisition of higher order thinking skills and the ability to work together to evaluate and justify their opinions to their peers as well as their teachers. Wikis used as a social tool provide opportunities for students to make personal connections in their learning experiences with individual and group projects. These skills are needed in school and as students go into the real world.

**Goals of Wikis with Different Age Groups**

Wikis are used for all age groups in classrooms across the country. Wikis support various learning styles in a classroom by allowing collaboration beyond the walls of the classroom, which creates authentic learning for each group member. A teacher of younger students may start out using a wiki for small assignments where a middle school or high school teacher may use them for bigger projects. College professors use them frequently for more than just projects; they also use them for collaboration that mimics a professional workplace environment.

For elementary school students their wiki may be very limited in scope; however, it is still a learning tool used in a variety of ways. These wikis can include reading, writing, and forming collaborative teams to create different types of projects inside the wiki. Students learn new schema by sharing what they learn with their peer groups. Wikis can also be used by teachers to model and help students build social cognition with the support of their peer groups. This benefits learners because of the sharing of contributions of all group members. Another way that wikis are used by teachers is to teach students new vocabulary. This can be done by
building individualized dictionaries or encyclopedias of new information that students can access at any time. At early ages, teachers create pictographic pages with a few words of explanation to accomplish this same goal. Having students collaboratively write short stories on a wiki is a way for young students to learn the elements of writing. One of the best benefits for students is that as they learn how to work together on projects, this learning will be carried over into other areas of their lives.

Students in middle and high schools increase their metacognitive skills in classes that incorporate a wiki. Wikis engage their higher-order thinking and their collaborative skills at the same time. Some teachers open a specific theme using a wiki; for example, opening a unit on war with a picture book or a recording to open a unit on poetry. The wiki increases collaboration, and when the students collaborate and discuss the lesson, they are building schema that they will put in their long-term memory. Wikis are a tool for teachers to use to flip their classrooms. Teachers decide what they want to accomplish with the wiki. For middle and high school students wikis can be a way to work together as a group and not have to be in the same classroom while working on assigned projects.

Wikis have been used at the collegiate level for several years, promoting collaborative lessons and projects. Some professors house their pre-readings on their wikis to help students strengthen their understanding of a new concept. While some students may be resistant, research shows that with the right guidance, they too can collaborate and learn with their peers using a wiki. Studies show that training makes these students feel more at ease with the transformation of the traditional learning classroom into one that is using wiki technology. This type of classroom can also cement working relationships with group members long after the class is over.
As more research is conducted on wikis, the positive outcomes will become more publicized. It will show the positive effects that wikis can have in an educational setting. The collaboration skills that the new Common Core State Standards require will be mastered quicker when more teachers incorporate wikis into their classrooms. The groups will also become more cohesive as they work closely together on projects for their classes. Wikis are a good Web 2.0 tool that is effective at all levels of education.
WORKS CITED


