

The Effect of Wiki Usage  
on the  
Feelings of Engagement of High School Students

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## **Abstract**

This action research paper tests the impact of a class wiki on students' perception of engagement in the classroom. The null hypothesis for this study is that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki. Seniors taking an Advanced Placement English Literature and Composition course served as the subjects of this study, which took place during the second and third quarters of the school year. This study utilized a quasi-experimental design of a pre-measure, treatment, and post-measure with a control group that did not receive treatment. Both groups were evaluated using questionnaires written to assess feelings of engagement, which the participants completed at the beginning and end of the test. The survey results support the null hypothesis that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki.

# **CHAPTER I**

## **INTRODUCTION**

Anyone working in the field of education knows that the twenty-first century is a time of great change. Not only are teachers in states like Maryland working with new standards and, in many cases, new curriculums, they are doing so in a time of great technological innovation. While some view these new technologies as a boon to the standard classroom model of learning, others recognize the need for said technologies to support learning and not detract or distract from it. Users of these new technologies, “Web 2.0” technologies, participate actively and collaborate to create new content, using media such as photo-sharing programs, blogs, and wikis. The key to successfully incorporate these new methods is finding ways to support students to be reflective in their construction of new knowledge and to help teachers avoid using technology for the sake of just using technology (Pifarre & Staarman, 2011). It can be difficult to implement these new technologies while still keeping instruction meaningful and content-based.

The wiki is one tool from a long list of Web 2.0 tools that are currently being used in classrooms in Baltimore County, Maryland. Some educators utilize a class wiki as a resource tool for students at home and a means of helping students connect with each other over the summer. Although students engage with each other through summer reading groups, the question remains whether or not teachers who use a class wiki have students who are more engaged in instruction during the school day.

### **Statement of Problem**

The purpose of this research study was to determine whether or not the utilization of a classroom wiki helps to foster increased feelings of engagement in students.

## **Hypothesis**

The null hypothesis for this study is that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki.

## **Operational Definitions**

In this study the *dependent variable* is the feeling of engagement of the students. *Engagement* is used to mean that students are listening to the instructor, asking questions, taking notes, responding to questions, following directions, and actively trying to learn content. For the purposes of this study, a *wiki* is a website which allows all users to make changes, add content, and change content, but tracks all the contributions.

## **CHAPTER TWO**

### **REVIEW OF THE LITERATURE**

The field of education is one that is, almost paradoxically, characterized as both dynamic and outmoded. All too often, reformers depict classroom teachers as dogged adherents to the ways of bygone eras who stand, unflinchingly, in front of their chalkboards while the rest of the world enters the new digital era. While this view may be more than a little extreme in its depiction of teachers' resistance to new technologies, many educators believe that today's students are so tech-savvy that there exists a "digital disconnect" between the ways in which students utilize these technologies in and out of school (Engstrom & Jewett, 2005). Students use their computers and cell phones to update Facebook, Twitter, and Tumblr outside of school, but are often banned from using these social technologies in their classrooms. To address this issue, many researchers have called for new models of education to incorporate these communication tools into classrooms (Learning for the 21<sup>st</sup> Century, 2002). Where, at one time, these educators were considered the vanguards of the education field, teachers and administrators are incorporating technology into instruction in a much more integrated way. Unfortunately, the significance of this technology must be questioned; integrating technology without improving instruction or student achievement is of little value. This literature review will examine one such technology, the wiki, and the ways in which it has been utilized in high school and college classrooms to increase collaboration.

#### **Education in the Age of Technology**

Just as students have become much more reliant on the Internet, so has the rest of the world; the global marketplace has drastically changed in just the last decade. This reliance on the Internet for commerce and communication has created a need for students to develop digital

literacies in order to keep pace and be prepared for economic opportunities (Good, 2008). Schools, just like businesses, must adapt to meet the needs of students by bridging the gap between how students live and how they learn (Partnership for 21st Century, 2002).

The demands of this new literacy require that students must be able to comprehend and utilize a variety of media in the form of video, audio, and images (Ash, 2011). Many individuals believe that digital literacy can be achieved through the use of Web 2.0 technologies such as audio tools, presentation tools, and file sharing tools (Partnership for 21st Century, 2002). Web 2.0 refers to the supposed second generation of internet technologies and covers everything from Facebook to YouTube. With Web 2.0 tools, the direction of internet usage is shifting from “omnidirectional” to “multidirectional,” meaning that students are actually contributors to internet content, rather than just “passive” consumers (Good, 2008). Users of Web 2.0 technologies participate actively and collaborate to create new content using media such as photo sharing programs, blogs, and wikis. The key is to find ways to support students who are reflective in their construction of new knowledge and avoid using technology for the sake of using technology (Pifarre & Staarman, 2011).

Some researchers have indicated that, in the past, teachers have had a “just add technology and stir” mentality in the classroom. Either due to pressure to incorporate technology into their lessons or a lack of training in the various types of tools available to them, teachers have often used technology haphazardly, hoping that in so doing something will spark. Of course, there are many teachers who use technology in innovative and enriching ways, but studies have supported the fact that technology is simply not being integrated into the curriculum at all grade levels (Good, 2008). Many researchers cite teachers’ negative attitudes and beliefs as serious impediments to technology integration, despite the studies that indicate that these



technologies support collaboration among students. And, of course, many teachers feel as though they are not adequately trained to use these technologies and are not given adequate time to explore how these technologies are compatible with their classroom instruction; instructors are often hesitant to incorporate technology into their daily instruction (Capo & Orellana, 2011).

Several studies have found that increased technology usage in and out of the classroom fosters improved student attitudes and self-concepts toward learning. This positive change may be due to the simple fact that students enjoy working on computers and are more motivated to complete activities that involve technology because of the newness of the assignments (Good, 2008). Social Web 2.0 tools like wikis, podcasts, and digital storytelling help “empower students by giving them a chance to express their views” (Hazari, North, & Moreland, 2009, p. 188). Allowing students to complete collaborative work using social technologies can be a motivating force because the activities tend to “mirror the social networking sites they use all the time in their lives outside of school” (Gibbons, 2010, p. 37). This idea is reflected by the call to teach using real-world examples as students “understand and retain more when their learning is relevant, engaging, and meaningful to their lives” (Partnership for 21st Century, 2002, p. 6).

Students are now well-versed in several social technologies, making them much more connected with these tools than their parents or teachers. This leaves many schools and districts wondering what their policy should be on student access to these sites while in the school building. Facebook has long been the most popular of these social technologies, and in recent years it has been utilized by school districts in addressing issues of communication to parents and students. Sites like Facebook offer schools unprecedented access to graduates and parents, allowing users to be involved in decision-making and in keeping tabs on upcoming events. School clubs and organizations make use of Facebook and Twitter to promote activities and

encourage community participation in events (Roe, 2011). In this way, schools have found themselves utilizing technologies once thought questionable to make important connections to stakeholders and foster a true sense of community.

One of the most effective ways for schools to provide students a means to access various technologies is to provide them with computers. These one-to-one computer programs have a wide array of benefits for students and teachers alike, and have become increasingly popular due to the affordability of laptop and tablet computers. Many educators believe that one-to-one computing increases individualized learning. A study conducted by Oliver and Corn (2008) found that students in such programs reported higher levels of satisfaction with school technology, but also tended to collaborate on tasks more often and generate original internet content through posting to wikis or creating Web pages. Naturally, student competency with technology increases in correlation to their ease of access to computers. Unfortunately, many schools and districts simply cannot afford to make an investment of this size, despite the many benefits of providing students with direct access.

### **Fostering Collaboration with Wikis**

Wikis are web-based applications that allow for collaborative editing while monitoring and recording changes and contributions made to each section. Wikis allow for any user to edit content, but they also control changes by preserving older versions of the content and tracking edits. Wikis allow administrators to determine security levels for all members; therefore, some content is restricted. Finally, wikis allow for linked content and pages in order to categorize various types of subject matter and systemize the organization of content in a way that makes sense to the wiki members (Wei-Tsong & Zu-Hao, 2011; Pifare & Staarman, 2011).

Wikis provide an ideal means of sharing knowledge and building communities. A wiki

community is one that consists of multiple interactions among its members, who work to create benefits for the group (Wei-Tsong & Zu-Hao, 2011). The communal nature of a wiki application promotes the creation of a “wiki community” because it encourages individuals to collaborate and share knowledge. Such a community can be found by looking no further than Wikipedia, the online encyclopedia with community-generated and monitored content. Most wiki applications also provide users with space to store documents, images, and presentations; in this way, wikis are quickly becoming key tools for knowledge management. Raman, Ryan and Olfman (2005) were early proponents of wiki use for knowledge management and suggest that wikis provide students with the ability to effectively manage larger quantities of information, provided that “the desired outcome of the education process becomes the ability for students to construct coherent knowledge structures to support the learning process” (p. 32). Thus, student learning is tied to the ability of the instructor to motivate students to learn from one another through the utilization of the wiki. The important finding in Raman and Olfman’s study is that the presence or use of a wiki alone does not facilitate or motivate student learning. Nonetheless, many educators have found that allowing students control over the aspects of their learning helps to improve attitudes and can be a motivating force, especially for high-ability students who are able to make wise instructional choices (Good, 2008).

One of the many benefits of the wiki model is the collaborative nature of the wiki design. Wikis can support collaboration because they foster sharing ideas, discussion, and community involvement. It is the dynamic nature of the wiki that attracts many – they can be updated often, from anywhere, without prior knowledge of programming language required for websites (Carter, 2009). According to Pifarre and Staarman (2011), the introduction of a wiki into a middle school classroom created a space for students to develop relationships “in which they

expected challenges and alternatives,” which, in turn, allowed them to work together to achieve a common goal. Wikis have been utilized effectively in collaborative writing projects in which educators felt as though the “lack of structure and the social nature of the project” helped students in bringing meaning to the assignment (Tharp, 2010). The community-building potential of a wiki is ideal for a variety of collaborative activities, as Moreillon, Hunt and Ewing (2009) found when they asked students to complete literature circles using this media. Perhaps more importantly, they found that the wiki challenged students to remain open-minded and accountable for their work, an interesting by-product of the recorded history pages that can be viewed by anyone with access.

Hazari et al. (2009) found that the wiki environment addresses two major theories of learning: engagement theory and constructivism. Engagement theory, which is specific to technology-based teaching and learning, offers a “conceptual framework that encourages collaboration and student engagement by use of technology tools and systems” (p. 189). This theory, which has been shown to increase student motivation, is illustrated through the use of classroom wikis as they provide students with opportunities for problem solving in a group environment, thus, encouraging “shared ideas, dialog, interaction, decision-making, and presentation” (Hazari et al., 2009). Constructivism is inquiry-based learning in which students construct personal meaning and interpretations of new materials based on their prior knowledge and learning. Again, wiki applications provide students with the means of making these critical connections through their various design and organizational options.

### **Summary**

As the timeworn devotees to chalkboards and pencils disappear, some teachers struggle to maintain the balance between the tech-savvy classroom and the content-centered classroom. For

many, the wiki provides a means of keeping this balance while allowing for students to engage with each other in scholarly and creative ways. The literature supports the idea that wikis foster collaboration in the classroom, but whether or not they foster feelings of engagement in students is still in question.

## **CHAPTER III**

### **METHODS**

The purpose of this research study was to determine whether or not the utilization of a classroom wiki helps to foster increased feelings of engagement in students. The researcher hypothesized that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki.

#### **Design**

This study utilized a quasi-experimental design of a pre-measure, treatment, and post-measure. A control group was used which did not receive treatment. Both groups were evaluated using questionnaires written to assess feelings of engagement which the participants completed at various intervals throughout the semester.

#### **Participants**

The participants in this study attend a public school in Dundalk, Maryland, with a student body of approximately 1400. Roughly a quarter of those students participate in a performing arts and visual arts magnet, which requires student auditions. Although the magnet school draws some students from all over the county, most of the student population is from Dundalk itself, which has a total population of around 60,000 with a median income of just under \$40,000.

Advanced Placement English classes were chosen to participate in this study. Each class consisted of approximately 24 students. There was a total of 48 students who participated; 13 of whom were male and 35 of whom were female. Each class met for a total of 75 minutes, as the school is on block scheduling. The participants' GPAs ranged from 2.8 to 3.9 and their ages ranged from 16-18 years.

## **Instrument**

Questionnaires were used by the researcher to address three dimensions of student engagement in the classroom: behavioral engagement, emotional engagement, and cognitive engagement. Twice throughout the period students were asked to take a brief questionnaire and rank their own levels of engagement in the class. The questionnaire utilized a Likert scale in which students were given a statement and asked whether they agreed or disagreed. This instrument will be referenced as the Dimension of Engagement Survey.

Students were asked to complete initial questionnaires at the beginning of the semester at various intervals throughout a class period throughout one week. These questionnaires were designed to assess feelings of engagement before the treatment was applied to the experimental group. After this initial assessment, one group of students began utilizing a class wiki, occasionally during instruction, but often for homework purposes. Students were surveyed during this time in much the same way as before. The post survey focused on how students felt after working with the wiki in the course.

## **Procedure**

This study was carried out over the course of three months during the second and third quarter, from mid-October to mid-December of the 2013-2014 school year. The initial survey was distributed in the second week of the semester, after students had the opportunity to establish some work habits and formulate some opinions about the course. After students took the initial survey, students in the experimental group were introduced to the wiki and given various homework assignments to be completed on the wiki. Generally, students worked on the wiki at least twice a week for homework and at least once a week in class. Students were then reassessed at the end of the quarter.

## **CHAPTER IV**

### **RESULTS**

The purpose of this descriptive study was to determine whether or not the utilization of a classroom wiki helps to foster increased feelings of engagement in students. This study utilized a quasi-experimental design of a pre-measure, treatment, and post-measure. A control group was used which did not receive treatment. Both groups were evaluated using questionnaires written to assess feelings of engagement which the participants completed at various intervals throughout the semester. Questionnaires were used by the researcher to address three dimensions of student engagement in the classroom: behavioral engagement, emotional engagement, and cognitive engagement. Twice throughout the period students were asked to take a brief questionnaire and rank their own levels of engagement in the class. The questionnaire utilized a Likert scale in which students were given a statement and asked whether they agreed or disagreed. This study was carried out over the course of three months during the second and third quarter, from mid-October to mid-December of the 2013-2014 school year. The initial survey was distributed in the second week of the semester after students had the opportunity to establish some work habits and formulate some opinions about the course. After students took the initial survey, students in the experimental group were introduced to the wiki and given various homework assignments to be completed on the wiki. Students were then reassessed at the end of the quarter.

The null hypothesis for this study is that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki. The null hypothesis was supported. Table 1 below demonstrates this partial support by comparing the control and treatment group responses to the survey questions before and after the



usage of a classroom wiki for reading homework.

Table 1. Student Pretest and Posttest Responses to Survey Items by Group

Statement	Pretest	Post-test	Percentage Point Change
<b>1. My teacher makes this class enjoyable.</b>			
Treatment	90.9	63.1	-27.8
Control	100	90.4	-9.6
<b>4. My teacher knows how to make learning exciting for me.</b>			
Treatment	81.8	50	-31.8
Control	95.2	80.9	-14.3
<b>6. When the work is too difficult, my teacher helps me keep trying.</b>			
Treatment	77.3	81.9	4.6
Control	85.7	71.4	-14.3
<b>8. My teacher knows when we understand a lesson and when we do not.</b>			
Treatment	68.2	100	31.8
Control	85.7	90.5	4.8
<b>10. My teacher suggests my opinions and suggestions.</b>			
Treatment	95.5	86.3	-9.2
Control	85.7	90.5	4.8
<b>15. My teacher knows when we feel bored.</b>			
Treatment	77.3	68.2	-9.1
Control	95.2	100	4.8
<b>17. I ask for help when I need it.</b>			
Treatment	72.7	63.6	-9.1
Control	81	57.1	-23.9
<b>20. I feel like I do a good job in this class.</b>			
Treatment	81.8	54.5	-27.3
Control	85.7	80.9	-4.8

The survey results support the null hypothesis that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki. At the same time, students' feeling of engagement was altered as a result of the teacher utilizing a class wiki. Table 2 below demonstrates that, although students made some gains in feelings of engagement in response to some questions, the overall responses showed that treatment group students reported feeling less engaged in class as a result of the intervention.

Table 2. Average percentage point change between pre and post test results

Treatment	-8.6
Control	-6.4

These results and their implications will be discussed in the next chapter.

## **CHAPTER V**

### **DISCUSSION**

After examining a number of technological aids currently in use in classrooms, this researcher chose to test the impact that classroom wiki usage has on students' feelings of engagement in the classroom. The null hypothesis for this study is that a teacher who uses a classroom wiki does not foster more feelings of engagement in students in class than a teacher who does not use a classroom wiki. In this study, the results reported in Chapter IV indicate that both groups of students showed declines in the percentage point change between pre and post test in student reported feelings of engagement. The treatment group reported a change slightly higher than the control group. This result provides partial support for the null hypothesis, but certainly confirms that a teacher who utilizes a classroom wiki will not foster more feelings of engagement in the classroom than a teacher who does not.

#### **Threats to Validity**

A threat to the internal validity of this study was the selection of participants. Ideally, students would be assigned at random to the control or the treatment group. The test took place after students had been assigned to classes and, perhaps more importantly, after students had established a rapport with the teacher and with each other. The teacher reports that she feels as though the treatment group class has a very different atmosphere than the control group, which may have had an impact on the test results. In fact, the difference in average quarter grades between the two groups is substantial – the control group's average grade for the course was a 2.57 while the treatment group's average was 1.72.

One external threat to the validity of this study was a possible reactive effect to the pretest administered to both groups. The pretest may have made students more sensitive to their own

feelings of engagement, which could have impacted the results of the post test. This could explain the decline in feelings of engagement reported by both classes.

### **Connection to the Literature**

Other research studies have indicated that utilizing Web 2.0 tools like wikis helps to “empower students” (Hazari et al., 2009) and work collaboratively, motivating them to engage in the work they complete using this social technology. Even though the use of a class wiki should address engagement theory, according to Hazari, North, and Moreland (2009), this study does not bear evidence to support that the use of a class wiki led to increased feelings of engagement in the classroom. This study, unlike the studies examined in Chapter 2, tests engagement in the classroom as a result of collaboration on a wiki outside the classroom. For this reason, the model of this study and those examined in the Literature Review differ.

### **Implications for Future Research**

The findings of the study conclude that the use of a classroom wiki does not increase student feelings of engagement in the classroom. There was no substantive connection between students who used a wiki to complete homework and their reported perceptions of engagement in the class. In future, there are accommodations that can be made to improve the accuracy of the results in similar studies.

Although it may prove difficult, random assignment of students to one group or another would help to ensure that the results are reflective of the use of a wiki and not student schedules. A larger sample size might negate the effects of this issue as well. Additionally, a survey that is less obviously reflective of student participating may help to alleviate the impact of the reactive effect – future surveys should include a greater variety of questions on several topics in order to prevent students from focusing so intently on their own feelings of engagement in the time

between pre and post test. Finally, a variety of treatments could be used in order to determine if there are other means of collaboration on a wiki which do lead to increased feelings of engagement in the classroom.

### **Conclusion**

Although the results of this study did not support the belief that the use of a classroom wiki helps to foster feelings of engagement in students in the classroom, the results still retain value in that they provide insight into the use of technology in instruction. Although the class wiki utilized in this study provided a means of disseminating information to students from both classes, it did not lead to students feeling more engaged in the classroom. This researcher has become much more reflective in the value assigned to the class wiki and its use as a tool for student collaboration outside the classroom.

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