Use of KWLs in the Online Classroom as it Correlates to Increased Participation

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Measuring student success is a top priority to ensure the best possible student outcomes. The objective of this present study was to investigate whether classroom assessment techniques (CATs), specifically KWLs, which is the acronym for "what you know," "what you want to know," and "what you learned," increase student participation in online classrooms. The potential of increased participation may result in higher student outcome levels and retention. The study was conducted by comparing classes that used KWLs with those that did not use KWLs to gauge if participation increased in a classroom with KWLs. The results displayed that there was a significant increase in participation in the online classrooms that used KWLs. Further research would need to be conducted regarding the extent of the increased participation as it relates to student learning, student outcomes, and student retention.

Through the years, instructors have implemented new and creative strategies to assess student learning. There are many types of assessments in both traditional and online higher education classrooms. Assessments can range from formative assessments, which are quick, efficient, and readily given daily, to summative assessments, such as "high stakes" testing in which learning of a larger body of knowledge is evaluated. This study investigated the ability of formative classroom assessment techniques to increase participation in online classrooms.

INTRODUCTION

The purpose of this study was to analyze whether KWLs lead to a higher level of participation in the online classroom. Measuring student learning is always a challenge whether in a traditional or online classroom. KWLs are one way to measure student learning quickly and efficiently. Time, resources, and course flexibility limit an online instructor's informal assessments. This population of students tends to be working adults who may be returning to school after a several year hiatus. Online courses generally run five to eight weeks, while traditional courses may be twice as long. Time constraints may limit an instructor's options regarding formative and summative assessments, the quality of the assessments, and the quantity of assessments provided to online learners.

Online learning has grown in popularity in recent years with the growth rate far exceeding that of the total for higher education (Allen & Seaman, 2011). While online learning has advanced over the years, assessment techniques have struggled to follow suit (Crippen, 2003). This evolution has caused instructors and researchers in higher education to re-think assessment methods and their usefulness to overall student learning and retention. Formative online assessments can deliver improvement in student learning results, which can lead to positive student attitudes regarding online education and learning (Clariana, 1993).

One type of assessment being evaluated for reform is the formative assessment. Formative assessments provide feedback to students on their learning throughout the course. This type of feedback is done through Angelo and Cross's (1993) Classroom Assessment Techniques (CATs). According to the authors, "Classroom Assessment is an approach designed to help teachers find out what students are learning in the classroom and how well they are learning it" (Angelo & Cross, 1993, p. 4).

The results of this type of assessment should lead instructors to modify instruction and validate student learning, which may be more challenging in the online classroom but not unattainable.

BACKGROUND

The discussion forum is one of the most crucial elements in the online classroom. Frequent participation in the discussion forum is a necessity for students to be successful as this is where the formative assessments can take place. According to Nagel, Blignaut, and Cronje (2009), frequent participation by the instructor as well as students can prevent students from losing hope in the course. The study also noted that there were more positive student outcomes because students are more invested and engaged in the discussion. An instructor can actually facilitate the online discussion board to be more inclusive than the traditional classrooms of introverted students who may not engage in discussion. This provides introverted students with a prime opportunity to take part in quality interaction. Nagel et al. (2009) stated that failing students usually had less interaction than their peers who would often participate in dynamic discussions that resulted in higher achievement levels. Collaboration via the discussion forum can also have a positive impact on developing one's critical thinking skills and long-term retention (Nagel et al., 2009).

Furthermore, frequent participation in the discussion forum is necessary for students to be successful. Research has clearly demonstrated that online participation is not only necessary but mandatory when ensuring student success in the online environment. The importance of the instructor's participation is also a key factor in the success of the student (Nagel et al., 2009). It has been well documented that students become more involved when the instructor is engaging by offering encouragement and feedback, guiding the student, and giving the students in-depth critiques (Nagel et al., 2009).

Additionally, there is significance to building an online community where students feel comfortable sharing and communicating with other students or the instructor. According to Maddix (2010), forming this community cannot be any more guaranteed than a traditional classroom where students can sit in the back of the classroom and not participate. There is no question that the online learning environment can foster meaningful relationships between all parties involved. This can help introverted students shed inhibitions in group settings. The goal of increasing participation is two-fold. By building an engaging online community of learners, it helps students stay engaged in the discussion while leading to more participation with the formation of positive relationships. Maddix (2010) notes that the more frequently students participate the more likely it is that community and learning are enhanced.

According to Maddix (2010), one of the biggest advantages of getting a degree online is the sense of community that can stem from the experience. This has been noted as one of the best aspects to online learning. Consequently, the students are immersed into the classroom with many other students with diverse backgrounds allowing students to get the viewpoints of others on a particular topic. An increase in student success can only be expected from an increase in class participation, as a student's participation is part of the student's grade. Thus, increased participation is beneficial to everyone involved and can lead to enhanced learning experiences with better student outcomes (Maddix, 2010).

The KWLs fall into a category of formative assessment. Clariana and Koul (2005) categorize this as "multiple try feedback." As students respond to the KWLs within the week, instructors have the opportunity to redirect responses that may be off task or incorrect. This allows students the opportunity to post additional questions under the "what they want to know" post. This type of formative assessment also allows the instructor to lead students through the inquiry process. As students respond to "what they know" about a particular topic such as a thesis statement as outlined in the example, instructors can pose real questions in response, such as "how do you know you know it." The inquiry process in conjunction with KWLs encourages self-directed learning and communication between students and instructor. This process does not end once students respond to "what did you learn." Instructors have the opportunity to continue to ask questions such as "how does it connect" to the overall objective of the week and ultimately the course (Kuhlthau & Maniotes, 2010). It is hypothesized that KWLs lead to higher participation in the online classroom.

METHODS

In the traditional classroom, a KWL can be a chart or graphic organizer designed to gauge student learning. KWL charts were originally created by Donna Ogle (1986) for the traditional classroom. The letters KWL are an acronym for "what we know," "what we want to know," and "what we learned" (Ogle, 1986). A KWL can be a great way to check for understanding in a traditional classroom. This causes one to wonder about the online classroom. KWLs can be an effective way to assess students' prior learning while engaging them in the content through three distinct online posts. This strategy is an attractive formative assessment that may elevate motivation and awareness by triggering students' prior knowledge. The result allows instructors to understand what type of information students come in with and the areas that instructors may need to re-teach. From this knowledge, instructors can create strategies to lead students to areas of improvement. A KWL is a useful way to assess one student or the whole class to gain an understanding of students' perspectives regarding thinking and learning (Struble, 2007).

Below is an example on how to utilize KWL learning strategies in an online classroom by constructing additional participation discussions and a timeline for when to initiate these additional strategies. At this particular university, each class has two discussion questions (DQs) each week that students are required to answer as part of the student's participation grade.

Timeline: One week or module

- **Monday:** Create and post additional question, "What we know," under DQ 1.
  - Example: "What do you know about a thesis statement?"
- **Wednesday:** Create and post additional question, "What we want to know," under DQ 1.
  - Example: "What do you want to know about a thesis statement?"
- **Friday:** Create and post additional question, "What we learned," under DQ 1.
  - Example: "What did you learn about a thesis statement?"
- **Wrap-Up:** On Monday of the following module, copy and paste a list of responses students shared relating to what they learned regarding the topic and objective. This is a choice opportunity to validate student learning and understanding regarding all of the ideas they discovered. This type of positive feedback will help students continue to engage in future weeks and create a personal accountability for learning. This can also be an opportunity for instructors to re-teach key points that the students did not pick up on or indicate in their "what we learned" post.

The study analyzed eight classes from two different courses to gauge the impact of the KWL classroom assessment technique to determine if it would cause an increase in participation. The courses compared had the same instructors with the two variables being different students and the use of the KWLs. The total numbers of posts were collected from four University 104 classes and four Philosophy 105 classes. These courses are introductory courses at the university in which this study took place. All eight classes were analyzed for the total amount of posts as well as the total average amount of posts per student as some classes have more or less students. The analysis was more in-depth for the Philosophy 105 class as the instructor wanted to get an indication of differences in participation during the three most crucial weeks of the class. These three weeks were deemed to present the most challenging coursework to students. Within these three weeks, students were expected to learn fallacious reasoning and write a persuasive essay, which was the culminating assignment of the course. Data was compiled by collecting the total amount of posts from each week and dividing by the number of students for each class.

RESULTS

Table 1 pictured below displays the increase in participation with the implementation of KWLs. The student posts for this portion of the study came from the University 104 Twenty-First Century Skills introduction course. All four sections completed the same course work and discussion questions. The only difference was the implementation of the classroom assessment technique, KWL. In the first two classes where the KWLs were not used, student participation only averaged 66.08 posts per student per class per term. For maximum participation points, students needed to have a minimum of ten posts a week including the two discussion

question forum initial responses. In the two classes where the KWLs were implemented, there was an increase in average posts for the entire class to 75.09. This represents an average of approximately nine more posts per student. Finally, the KWLs brought the class average to meeting participation from failing to meeting participation, considering that a student needed a minimum of 70 total posts for the course to meet participation.

Table 1: Summary of Participation Increase with CATs in University 104

No KWLs	Total Posts	Number of Students	Average Posts per Student
Course #1	1429	22	64.95
Course #2	1545	23	67.17
Total for No KWLs Sample	2974	45	66.08

KWLs	Total Posts	Number of Students	Average Posts per Student
Course #1	1500	19	78.94
Course #2	1578	22	71.72
Total for KWLs Sample	3078	41	75.09

Figure 1: Bar graph displaying the increase in participation in University 104

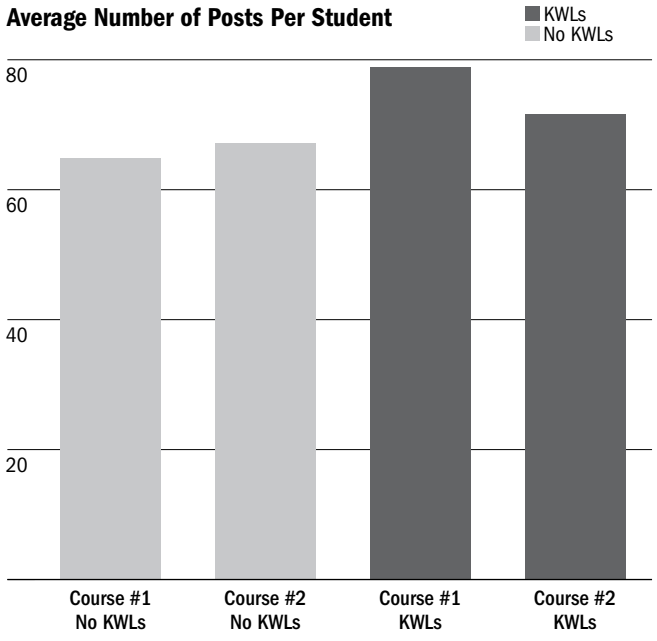

Figure 1 illustrates the difference in the average number of posts per student. It appeared that KWLs became a valuable option to engage students by leading to an increase in class discussions. KWLs improved student outcomes by providing the students more options for earning participation. Both of the University 104 courses where KWLs were implemented averaged over 70 posts per student per class, which paralleled to a student meeting participation requirement for the class with 10 posts per week. While the two courses where KWLs were not used only averaged in the 60s per week.

In addition to improving class participation, KWLs allowed for an ongoing weekly formative assessment of student learning. KWLs offered students the opportunity to demonstrate the background knowledge that they possess, ask further questions, and display an understanding of the weekly objectives. Another important advantage of KWLs was that it allowed students extra opportunities to earn participation points, expand on the subject matter, increase learning, and meet participation requirements while being involved in the weekly content. KWLs allowed the instructor and students to go deeper into the subject matter. As noted by Nagel et al., (2009) students with more participation in dynamic discussions have higher student outcomes than students who participate less regularly. Thus, participating in a lively discussion forum can have a profound impact on a student's critical thinking skills, build student's self-motivation, and increase the odds of long-term retention (Nagel et al., 2009).

While the data indicated a substantial increase in participation in University 104, there was also a significant increase in participation found in Philosophy 105. As noted in University 104, students who were in courses with no KWLs were not meeting the participation requirements of 10 posts per week. Students in the Philosophy 105 course were meeting the participation requirements for the course even without the use of KWLs. However, the data showed an increase in participation in courses where KWLs were implemented. The data showed that not only do KWLs help increase participation and meet participation requirements, but they also lead to exceeding participation requirements in the Philosophy 105 classroom. The data demonstrated an increase in participation as students moved from one class to the next. However, there was no follow-up in the next class as with a cohort.

In Table 2 (below), in the two Philosophy 105 classrooms that did not use KWLs, students averaged 72.94 posts per student per class. In the two

classes where KWLs were implemented, students averaged 98.52 posts per student per class. This represented an increase of over 25 more posts per student per class, suggesting that students were more engaged in the classrooms that implemented KWLs and exceeded participation requirements for the course. Table 3 provides a more in-depth look at the Philosophy 105 course. This course demonstrated that KWLs increased participation. The data indicated a breakdown of participation per module. Each module was one week and each course was seven weeks in length. Each module showed an increase of participation by over 40% between those courses that did and did not implement KWLs in the classroom. It is important to note that within this course weeks three, four, and five are the most critical to a student's overall success in the course. The data showed the largest increase in participation within module three, four, and five with the greatest increase in module three with a 77% increase in participation posts. Module four, which tends to be the most difficult week for students as they breakdown the concept of fallacies and reasoning errors, demonstrated an increase of 73% more posts. There appeared to be a greater amount of discussion on these key topics due to the implementation of KWLs.

Table 2: Summary of Participation Increase with KWLs in Philosophy 105

No KWLs	Total Posts	Number of Students	Average Posts per Student
Course #1	1252	17	73.64
Course #2	1593	22	72.40
Total for No KWLs Sample	**2845**	**39**	**72.94**

KWLs	Total Posts	Number of Students	Average Posts per Student
Course #1	1907	23	82.91
Course #2	2625	23	114.13
Total for KWLs Sample	**4532**	**46**	**98.52**

Figure 2: Bar graph displaying the increase in participation in Philosophy 105

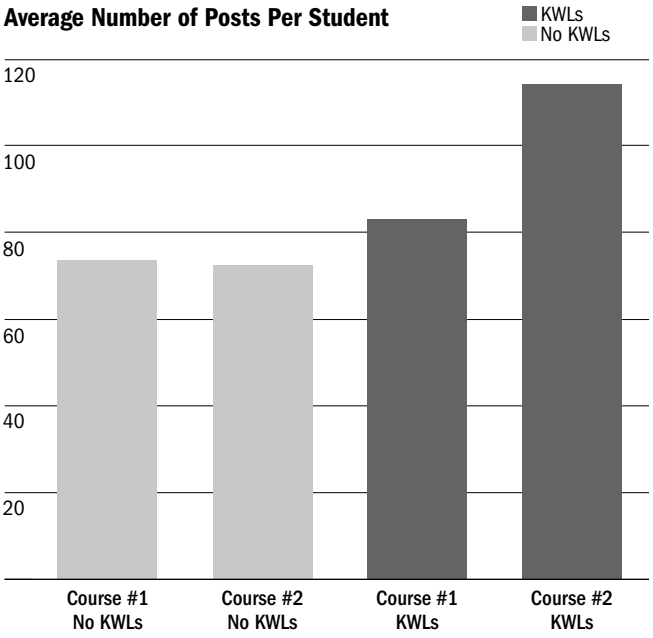

Table 3: Summary of Participation Increase Per Module in Philosophy 105

Week	Course #1 *(17 students)* No KWL Posts	Course #1 *(22 students)* No KWL Posts	Total Posts	Course #1 *(23 students)* KWL Posts	Course #2 *(23 students)* KWL Posts	Total Posts	Student Participation Increase
1	213	266	479	314	383	697	45%
2	201	250	451	272	403	675	49%
3	185	195	380	312	363	675	77%
4	132	220	352	234	352	586	73%
5	164	213	377	244	367	611	61%
6	190	244	434	300	399	699	57%
7	167	205	372	231	358	589	58%
Total	**1252**	**1593**	**2845**	**1907**	**2625**	**4532**	**59%**

DISCUSSION

The hypothesis KWLs lead to higher participation in the online classroom was accepted as the average number of posts per student for the selected University 104 and Philosophy 105 courses increased. The amount of posts in the four University 104 courses compared resulted in almost 14% increase in participation. While this may seem like a nominal increase, it brought the course average to over 70 posts for the course per student. The data suggests that students went from falling below the university standard requirement of participation to meeting the participation requirement due to increased participation grades. The amount of posts in the four Philosophy 105 courses increased over 36%. This data shows that students have gone from simply meeting the university participation requirement to exceeding the university participation requirement with nearly 14 posts per week per student in which the requirement would be 10 posts per week per student in the Philosophy 105 course. Consequently, this can be considered a success from many different angles. In this study, KWLs boost participation to what would be considered a passing level of participation. A higher level of student participation equates to a higher level of student achievement since participation is counted as a large portion of a student's grade. In fact, participation is counted as 14% of the overall course grade. However, not only can this be considered a success from increasing a student's participation and overall grade, but KWLs also allow for greater student involvement and engagement.

LIMITATIONS

The data was limited due to having only a small sample of classes in the new learning system Loud Cloud where KWLs were not used. Seasonality should also be noted as another possible limitation as sometimes there can be a difference in the amount of posts based on the season due to holidays and breaks where class is still in session. The authors were also the instructors, which could be a limitation of natural bias or an advantage by maintaining consistency between both groups and facilitating the class in a similar way. Instructor posts were not eliminated from the total number of posts, which could also be a confounding variable or advantage as more instructor posts usually lead to more student participation. There was no statistical analysis performed. The curriculum has also changed for one of the courses limiting the new data that could be collected and compared with the courses before the implementation of KWLs.

Further research should be conducted to examine the effect of increased participation on student outcomes by taking the study further and analyzing student participation grades or individual student posts to see if they correlate to the increase in participation. This could potentially lead to better student outcomes and retention. Future studies can also analyze each student's individual participation rather than the average course participation. Future studies could also allow an opportunity to expand on higher level questioning through inquiry-based learning within the KWLs.

CONCLUSION

Classroom assessment techniques like KWLs can directly affect the participation level of students. The evidence supports a higher level of student engagement moving students from falling below participation requirements to meeting participation requirements and in one of the two courses examined exceeding participation requirements. Nevertheless, further data could be collected in a future study for statistical analysis on a student-by-student basis to be compared for statistical significance with regards to individual student participation increase. This can translate to elevated student outcomes and improved understanding of classroom material as well as retention. This increased participation may also lead to higher overall grades as participation is counted as 14% of the overall course grade, which may lead to higher student achievement.

References

Allen, I. E., & Seaman, J. (2011). *Going the distance: Online education in the United States, 2011.* Retrieved from www.onlinelearningsurvey.com/reports/goingthedistance.pdf

Angelo, T. A., & Cross, P. H. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.) San Francisco: Jossey-Bass.

Clariana, R. B. (1993). A review of multiple-try feedback in traditional and computer based instruction. *Journal of Computer Based Instruction 20*(3), 74-76.

Clariana, R. B., & Koul, R. (2005). Multiple-try feedback and higher-order learning outcomes. *International Journal of Instructional Media, 32*(3), 239-245.

Crippen, K. J. (2003). Rethinking course assessment: Creating accountability with web-based tools. *Journal of Science Education & Technology, 12*(4), 431-438.

Kuhlthau, C. C., & Maniotes, L. K. (2010). Building guided inquiry teams for 21st-century learners. *School Library Monthly, 26*(5), 18-21.

Maddix, M. A. (2010). Online learning communities: The heart of online learning. *Common Ground Journal, 7*(2), 10-15.

Nagel, L., Blignaut, A. S., and Cronjé, J. C. (2009). Read-only participants: a case for student participation in online classes. *Interactive Learning Environments, 17*(1), 37-51. doi: 10.1080/10494820701501028

Ogle, D. M. (1986). K-W-L: A teaching model that develops active reading of expository text. *Reading Teacher, 39,* 564-570.

Struble, J. (2007). Using graphic organizers as formative assessment. *Science Scope, 30*(5), 69-71.

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