Using Paper Flashcards Versus iPod Touch Flashcards

in Learning Eighth Grade Spanish

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Abstract

This action research investigated whether using an iPod Touch flashcard application increased student motivation and achievement over using traditional paper flashcards in learning eighth grade Spanish. A total of 49 students participated in this study which lasted through two units of Spanish where students practice learning vocabulary with paper flashcards for one unit and iPod Touch flashcards for the second unit. Both quantitative data (quiz scores) and qualitative data (observation and student surveys) were collected to compare paper flashcard use to iPod Touch flashcard use. The quiz results showed that the students performed better after using paper flashcards for three days of practice rather than the iPod Touch flashcards. The difference of the means on the two quizzes was statistically significant, so the hypothesis that students would do better with iPod Touch flashcards was rejected. The qualitative data gleaned from the researcher’s observation notes of off-task behavior and student surveys revealed that students were more motivated to practice vocabulary when using the iPod Touch flashcards than when using the paper flashcards. Subsequent studies with a longer time frame and students studying with the iTouch at home are recommended to account for limitations. The information gained throughout the study will be shared with colleagues in order to determine how to best incorporate technology into the classroom to maximize student motivation and achievement.

Introduction

Studying a second language has become popular at a young age. Some schools even start teaching a second language as young as kindergarten in order to prepare students to be citizens in an increasingly global society. Often, students struggle to learn a second language because there are many steps to learning the language. First, students must learn and memorize the new vocabulary. Once students master the vocabulary, they have to learn how to use the vocabulary in grammatical structures correctly. After they learn the grammar portions, students must then practice manipulating the vocabulary and grammar in various situations. If students fail, however, to master the vocabulary, it is very difficult to take their language learning to the next level.

In order to learn vocabulary in another language, students frequently make flashcards with either a picture or the English word on one side and the word in the other language on the other side. Students make traditional paper flashcards in many classes as a study technique. However, as children are growing up in a world with technology, their study techniques need to change to incorporate that technology. There are many ways that students can study another language online, including using online flashcards. The iPod Touch also has educational applications that have flashcards that students can practice for their classes. My action research answered the question: Does using a flashcard application on an iTouch motivate 8th grade students and improve Spanish vocabulary acquisition more than traditional paper flashcards?

*Rationale*

My eighth grade students studying Spanish I needed to learn a large number of vocabulary words in each unit. Since they were taking a high school level course, the class moved very quickly and they had very little time to learn the vocabulary words so they could move on to the grammatical structures in each unit. The students made flashcards, sometimes in class and sometimes for homework, for each unit. However, when I assigned flashcards for homework, often students did not complete them. Also, students tended to lose their flashcards or leave them in their locker, another class, or at home. Since students made flashcards for many of their classes, they did not always use them or were unmotivated to use them as a study technique over and over. I knew that flashcards were a great study technique, but I also knew that if students were not using them, they were a waste of time. Faced with this challenge, my philosophy, following the praxis paradigm, was to do something about it to change the situation. In order to cater to the interest of students who love using technology, my action research had students using flashcards on an iPod Touch.

I expected to see that students were more motivated and therefore would have higher quiz scores when using an iPod Touch flashcard application than when using their traditional paper flashcards. Since students were so used to using technology outside of school, I thought they would be more motivated to use it in school, as well. It was crucial to see the results from this study as knowing how to keep students motivated and increase student learning are important factors for student success. I needed to know which method was more beneficial to my students and then decided how to teach future units based on the results of this action research. Most importantly, the study benefited students as I tried to motivate them and increase their level of achievement and determine how to do that in the future.

Review of Literature

Using technology has become a daily part of children’s lives. They watch television, surf the web, tweet on Twitter, check in on their favorite social network, and watch their friends on YouTube. According to Jones and Fox (2009), 93% of teens between the ages of 12-17 go online for a variety of reasons, compared to only 74% of adults. To keep up with this technological trend in teens, schools have been trying to incorporate technology into lessons to engage and motivate students and to increase student learning. Although my focus was to use iPod Touches into the classroom, it was important to view other studies using technology to see how they compared in student achievement and motivation.

*Student Achievement*

School districts and teachers are always trying to improve student learning. A variety of studies showed that student learning increased through the use of technology. Many studies found that using laptops in the classroom or a computer lab have increased student learning. Gulek and Demirtas (2005) conducted a study over three years with middle school students who used laptops in class on a daily basis for note taking, research, and practice. The control group did not use laptops on a daily basis. They found that the group that used laptops had higher grade point averages and higher grades in math and English than the group without laptops. It was interesting to see the trend over a three year term.

Instead of focusing on the core subjects, my study focused on Spanish vocabulary. A study found that going to a computer lab for Spanish I practice at the high school level increased fluency, proficiency, and pronunciation of words as students were able to communicate with other students around the world to practice (Frigaard, 2002). This same study, however, found that using the lab to practice Spanish vocabulary did not impact student learning enough to utilize lab time for this purpose. With the contrast in results between Spanish vocabulary and grammar practice, additional research with vocabulary was necessary.

Instead of using laptops and computer labs, some schools have tried to move to a more compact technology by using Apple’s iPod Touch in the classroom to increase student achievement. For example, eighth grade students at Dogan Middle School have been using iPod Touches as part of a school improvement plan (Middleton, 2009). Teachers created PowerPoints, podcasts, and other materials that students uploaded to iPod Touches each afternoon and took home to review at night. The school has seen an increase in benchmark scores in the four core subject areas since beginning the use of iPod Touches. My students were unable to take the iPod Touch home with them at night so I was interested to see if my results were similar if students used the technology exclusively in class.

*Student Engagement and Motivation*

A variety of studies have shown that using technology engages students and motivates them to be active learners. For example, in the iPod Touch Project, teachers tried to incorporate using the iPod Touch in three different elementary schools to improve literacy (Murray, 2010). The schools varied in their demographics, with one large school, one smaller rural school, and the third being a school with a large population of English Language Learners. In each school, students were engaged and motivated and even described the class as “awesome” (p.51). Teachers found that although it took a significant amount of planning time to prepare for the iPod Touch lessons, there was a real value in using the technology in the classroom in order to motivate students.

My study focused on middle school students, specifically eighth graders and how they were motivated by using technology. According to Young (2009), middle school students in Chapel Hill, North Carolina stated that doing work is faster and more convenient when using the iPod Touch in school. The students at Culbreth Middle School used the technology in all four core subject areas and believed their grades rose as a result, supporting the idea that motivated students earn better grades. Teachers stated that not only was the use of the iPod Touch good for students, but that it fostered collaboration between colleagues. Teachers in Wight County, Virginia found similar results after using iPod Touches in their middle school classrooms; the students talked to each other less and were more on task (Brown Garrow, 2009). The school district bought a classroom set of iPod Touches for each of their schools. Not only were students more engaged than in the traditional classroom, but teachers stated that they were more engaged and active when using the iPod Touch than when they were using laptops, as well.

My study had students using traditional paper flashcards and iPod Touch flashcards. The results of Browne and Culligan’s (2008) study using electronic flashcards on a computer showed results similar to those that I expected to find in my study. The traditional paper flashcards provided many issues to students; they struggled to keep track of packs of flashcards and were unable to know which words they need to study more. By using electronic flashcards, those issues were eliminated, motivating students to use the electronic flashcards as a way to acquire vocabulary. The study indicated that student motivation did decrease if flashcards were the sole means of reviewing vocabulary. I was interested to see how my results with electronic (iPod Touch) flashcards compared with this study.

Although a number of studies have shown that using iPod Touches in the classroom increased students’ grades and motivation, the studies usually showed results from the four core subjects: math, social studies, science, and English. There was a gap in research when it came to other subjects, such as Spanish. Also, in many of the studies, the iPod Touches were used for research, note taking, or math practice, but did not specify the applications that were used in class. I did not find any study that focused specifically on a flashcard application for an iPod Touch. There were also varying results for the use of lab time or technology use for learning Spanish vocabulary. One study showed that studying Spanish vocabulary in a computer lab was not a good use of lab time, while other studies showed that learning vocabulary with technology raised grades. My research of flashcards on an iPod Touch was a great addition to other studies with students using the technology in the classroom.

Methodology

Since I frequently saw my students using their personal iPod Touches before and after school, I decided to investigate the use of iPod Touches in a Spanish classroom to learn vocabulary. Specifically, I had students use paper flashcards and an iPod Touch flashcard application to practice vocabulary in class to determine which improved student learning and motivated students more. The research was a mixed qualitative and quantitative experimental design as I compared the iPod Touch flashcard use with paper flashcard use using observations, surveys, and test scores.

*Setting*

I conducted this research with eighth graders at J.R. Gerritts Middle School in Kimberly, Wisconsin. Eighth grade students enrolled in a semester of Spanish will receive credit for Spanish I at Kimberly High School and if they wish to continue, will enroll in Spanish II during their freshman year. They previously took one semester of Spanish in seventh grade. Eighth grade students have Spanish in forty-five minute periods in the morning and early afternoon, at 8:25 a.m. and 12:10 p.m.

Our World Language department goal at the middle school for two years was to incorporate technology into our curriculum. We tried to use more PowerPoints and blogs in class, while also having students create Wikis and podcasts. Our district was in the process of discovering in which classes technology is used and where else we could incorporate technology into the classroom to align with Wisconsin's Model Academic Standards for information and technology literacy. We will be spending more professional development time on technology throughout the year and in coming years.

*Participants*

The students in my study were eighth grade Spanish students at J.R. Gerritts Middle School that had Spanish in the first semester. All students in these two classes had the opportunity to participate in the study. These classes included 21 boys and 27 girls. The students in the study were 93% Caucasian, 4% Hispanic, and 2% Asian. Also, one student was identified as a child with autism and one student was identified as learning disabled. There was no sampling, as the study was all-inclusive.

To ensure that all participants were treated fairly and ethically, I completed the CITI training and had the research protocol approved by the Institutional Review Board (IRB) of Marian University (Appendix A). I also sought approval for this research from my building assistant principal (Appendix B). Since my students were under the age of 18, I sent home details of the research and a permission slip for parents to sign to allow their child to participate (Appendix C). Even if parents signed the permission slip to have their student be part of the study, the students were given the opportunity to opt out of the research if they did not sign the student assent form (Appendix D). Students were also able to decide not to participate in the study at any time if they wished.

*Instruments*

I used a variety of instruments to collect data in my study. I wanted to find out which is a more effective tool in increasing motivation and test: paper flashcards or flashcards on an iPod Touch. The first set of flashcards, the paper flashcards, were used during unit 3A, “¿Desayuno o Almuerzo?” (Breakfast or Lunch?). Students made these flashcards within the first few days of school at the beginning of the year. The students were in their normal classroom during the research time. The second set of flashcards, used on the iPod Touch, were during unit 3B, “Para Mantener La Salud” (To Maintain Your Health). Students used these flashcards at the end of September.

Since I was determining if using an iPod Touch increases student learning, I looked at vocabulary quiz scores for unit 3A and unit 3B (Appendix E). In our district world language program, all teachers use common assessments. Therefore, I used the common quiz that all level I teachers use, which comes from the Realidades 1 book series (Palo Boyles, Met, Sayers, & Eubanks Wargin, 2004). The unit quizzes were in the same format and were given after three days of vocabulary practice. I used a quiz tracker (Appendix F) to track student scores and unit averages.

I also determined if using an iPod Touch motivated students. In order to track this, I observed students in the classroom as they used the paper flashcards and as they used the iPod Touch flashcards. I observed students for negative behavior, such as getting out of their desks, staring into space, and working on other work on my observation log (Appendix G). I also surveyed students twice with a self completion questionnaire (Appendix H), the first time after using the paper flashcards and the second time after using the iPod Touch flashcards. Students had the option of skipping any question that made them uncomfortable.

*Procedure*

All classes and students had the same treatment in the study. Each student created and used paper flashcards during unit 3A and practiced with the flashcards in class for 5 minutes each day for three days. For unit 3B, each student used an iPod Touch provided by the school and practiced using a flashcard application for 5 minutes each day for three days. After the three days of vocabulary study in each unit, students took a vocabulary quiz and completed a survey about the flashcards.

Unit 3A: Day 1

On the first day of the unit, I introduced students to the new vocabulary. Students listened to the pronunciation of the words, practiced pronouncing the words, and read short sentences that used the new words.

Unit 3A: Day 2

On the second day of vocabulary introduction for unit 3A, I instructed students to take two sheets of paper flashcards. They cut the flashcards apart and wrote the Spanish word on the back of the picture that matched the food item. Since this was toward the end of the class period, I instructed students to have the flashcards cut and written on by the following class period and to bring them to use in class.

Unit 3A: Day 3

I began class by telling students to take out their flashcards. They started practicing with the Spanish side facing up and guessing the English word. I instructed them to keep two piles, one for the words that they were able to guess and one for the words that they needed to continue to practice. If they were able to guess all of the words in the pile before the end of the five minutes, I instructed them to challenge themselves to go through the whole pile without missing any. For the following five minutes, I observed students as they practiced the words individually with the flashcards using my observation log. For all of the observations, I walked around the classroom, beginning on the right hand side and moved around to observe all students. After five minutes, I instructed students to put their cards away and we continued practicing the words in class with other activities.

Unit 3A: Day 4

I instructed students to again take out their flashcards and practice individually in the same way they did the previous day. However, they started by looking at the picture and needed to guess the Spanish word. Again, I observed students as they practiced.

Unit 3A: Day 5

I instructed students to practice with their partner. One partner held up the picture of the word while the other student guessed the word in Spanish. I again observed partner work with my observation log. Class continued with the 3A vocabulary quiz. I instructed students to do the best they could on the quiz. After the quiz, I instructed students to turn their quizzes in and take the survey about using flashcards. I instructed not to put their names on it, as the survey was anonymous, and also to answer as many questions as they felt comfortable answering. I collected the surveys. We then continued the unit with grammar instruction that incorporated the vocabulary.

Unit 3B: Day 1

During the first day of unit 3B, my substitute teacher introduced vocabulary words with the list and book practice with students. Students also practiced pronunciation of the new vocabulary words and practiced listening with activities on a compact disc.

Unit 3B: Day 2

On the second day of the unit, the iPod Touch practice began. I instructed students to check out one of the classroom set of iPod Touches according to our check-out procedures. I then instructed students to turn the iPod Touch on, log on to the school wireless internet, and open the flashcard application. They then needed to browse for our list of words. I instructed them to search for our list, titled “Spanish I 3B.” Students downloaded the list of words. They then began reviewing them beginning with the Spanish word and guessing the English word. If they guessed it correctly, they tapped the checkmark in the upper right hand corner of the card. I observed students while they practiced these cards for five minutes.

Unit 3B: Day 3

Students again checked out an iPod and opened the flashcard application. The list was already downloaded, so students began practicing right away, practicing the words from English to Spanish and again using the green checkmark to keep track of the words they knew. Again, I observed students as they practiced.

Unit 3B: Day 4

I instructed students to check out one iPod Touch per pair of students. With the same set of cards as the previous days, one student read the English word while their partner said the Spanish word to practice pronunciation. The person with the iPod Touch kept track of their partner’s correct answers with the green checkmark. I again observed students for the five minutes and kept track of their behavior on my observation log. I continued class with the 3B vocabulary quiz. As students finished their quiz, I instructed them to complete the survey and answer as many questions as they felt comfortable about using the iPod Touch flashcards. We then continued the unit with grammar instruction.

Results

I used both quantitative and qualitative data to determine if using a flashcard application on an iTouch motivated 8th grade students and improve Spanish vocabulary acquisition more than traditional paper flashcards. The quiz scores from chapters 3A and 3B were the quantitative data that determined if the iTouch flashcards improved vocabulary acquisition. The student surveys and classroom observations were the qualitative data used to determine student motivation.

*Vocabulary Acquisition*

Students took a vocabulary quiz after using paper flashcards for three days of practice in class. As seen in Table 1, out of 20 questions, the average score was 19.2 correct, which is a 96% or a grade of an A. The students took a similar quiz after using the iTouch flashcards. Out of 26 questions, the average score was 23 correct, which is an 88.5%, or the grade of a B. To determine whether the difference in paper and iTouch scores is significant, I performed a paired t-test with the data, using GraphPad Software (<http://www.graphpad.com/quickcalcs/ttest1.cfm>).   The two-tailed p value is less than 0.0001 which means that by conventional criteria, the difference is considered to be extremely statistically significant.

Table 1

*Quiz Score Comparison*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 3A Quiz  (Maximum Score 20) | Percentage | Grade | 3B Quiz (Maximum Score 26) | Percentage | Grade |
| Mean | 19.2 | 96% | A | 23 | 88.5% | B |

*p*<0.0001

# When looking at a breakdown of the number of students who received a particular grade on the test (see Figure 1), the 3A quiz had many more students who earned a grade in the “A” range (A+, A, A-). In fact, every student earned a grade in the “A” range on the 3A test, while the students received a larger range of grades, including one student with an “F” on the 3B quiz. Appendix F contains the raw scores for the quizzes.

*Figure 1.*  Quiz scores.

*Student Motivation*

After each quiz, students completed a survey about the use of flashcards. The number of responses, categorized by strongly agree, agree, disagree, and strongly disagree, are listed in Appendix H. The questions from each survey are the same, so I compared the results from each question (Fig. 2). Questions 2, 3, and 4 had very similar results on the surveys, which did not indicate that students were more or less motivated by using one set of flashcards over the other. However, questions 1 and 5 had results that indicated that students were more motivated using the iTouch flashcards.

*Figure 2.* Comparison of question 1 survey answers.

As Figure 2 shows, more students (93%) agreed that they enjoyed using the iTouch flashcards, while only 81% agreed that they enjoyed learning vocabulary by use of paper flashcards. When asked if they were prepared for the quiz by using each type of vocabulary, survey results were very similar, with 83% and 88% respectively, agreeing that they felt prepared. Figure 3 on the following page shows that students are more motivated to study on their own if they use an iTouch, with 61% agreeing that they would study vocabulary on their own. Only 46% agreed that they would study with flashcards on their own. The results of the survey showed that the students were more motivated to learn vocabulary using the iTouch flashcards.

*Figure 3.* Comparison of question 5 survey answers.

I also collected qualitative data for my study through the use of classroom observation forms. By filling out one of these forms while students used flashcards each day, I was able to compare student behavior when using paper flashcards and iTouch flashcards. Each instance of off-task behavior was recorded using the code number for the student. These off-task behaviors included, but were not limited to: talking to others, doing work for another class, talking to their partner, staring into space, and so forth. The students were unaware that their behavior was being monitored and recorded in order to keep my data as accurate as possible. For the sake of demonstrating student behavior during paper flashcard use and iTouch flashcard use, I have included a sample (Appendix G).

The results gathered from the classroom observation form can be found in Figure 4. When comparing the instances of off-task behavior occurring during use of paper and iTouch flashcards, I noticed that there seemed to be a trend.

*Figure 4.* Off-task behavior.

According to my observations, there were many more instances of off-task behavior during paper flashcard use. In fact, on day 3 of the iTouch flashcard use, I did not see any off-task behaviors. The classroom was silent as students worked diligently to learn the vocabulary. Another trend that the results show is that for each type of flashcards, day 3 had the least amount of off-task behaviors. For each unit, day 3 was also when students took the quiz after practicing with the flashcards, which could be the reason behind less numbers of off-task behaviors observed.

Discussion

Prior to conducting the study, I believed that students would improve quiz scores and would be more motivated using the iTouch flashcards to practice vocabulary. However, my results showed that only half of my hypothesis was true. The latter half, that students would more motivated, was correct. Classroom observations clearly showed that students were engrossed in the iTouch technology, which kept off task behavior to a minimum. Also, according to the student surveys, they enjoyed using the iTouch flashcards and would even download them to their own personal iPod if they had one available.

For the student motivation, I found numerous correlations between other studies and my own. I saw the same results as the teachers in the Wight County study who stated that students were more on task and talked less while using the technology (Brown Garrow, 2009). I also observed results similar to the study of Browne and Culligan (2008) who stated that traditional paper flashcards provided many issues to students, including struggling to keep track of packs of flashcards. This was true in my study as well, where over the three days of paper flashcard use, an average of 13.6% percent of students were unable to practice because they did not have their flashcards with them in class.

The first half of my hypothesis, that student quiz scores would improve with iTouch flashcards, was proven untrue. The average scores on the quiz after students used the iTouch, was an entire grade lower than when they used the paper flashcards. I was very surprised to find this, although it did correlate with the study from Frigaard (2002) who found that using the lab to practice Spanish vocabulary did not impact student learning enough to utilize lab time for this purpose. In my study, using the iTouch negatively impacted student learning, so using extra time in class to get set up and explain how to use them was not a wise use of time.

*Limitations*

My study did have some limitations that may have affected quiz scores. The iTouches used in the study were a classroom set provided by the school for in class use only. Students were unable to take these home to practice their vocabulary. With the paper flashcards, students were able to take them home to practice, perhaps increasing their quiz scores.

Another limitation of this study was the teaching that followed the use of the flashcards. During the 3A unit, I was in the classroom using the flashcards with the students and followed flashcard use with more vocabulary practice. However, due to a medical leave during the 3B unit, it was a substitute, instead of me, who was in the classroom with the students before their quiz. The substitute may have followed flashcard use each day with different vocabulary activities, which may have affected quiz scores. I would like to try this study again in the spring semester when I will be in the classroom for both units.

Time is always a limitation in the classroom, as it was in my study. I was only able to compare results over two units. Continuing the study and using iTouch flashcards and paper flashcards for more units may provide more extensive results. I do believe the results of my study are significant, however, to show that even though students may be more motivated to use technology, their learning may not necessarily improve because of it. The study also only included 48 students from the fall semester of Spanish. Continuing the study into the spring semester and widening it to more Spanish I students may render different results.

Reflection

Overall, the action research process went smoothly for me. Since the beginning of the research corresponded with the beginning of the school year, it was very easy to get parent and student signatures and approval for the study. I received 100% of signatures back with very little extra effort.

One obstacle I did have was collaborating with my substitute in order to determine the days to use the iPod Touch in the classroom. In the future, I would prefer to do all of the teaching and planning for these units. Another obstacle that I needed to work out was using the iTouches in the classroom for the first time. The classroom set of iTouches were new to our school, so I needed to have a good check out procedure for students so I knew they would use their iPod responsibly and not take pictures, change settings, and so forth. This was also the first year that our school had WiFi, so having students log in on the first day of iPod use was a little tricky, since some logins did not work for students. Luckily, they were able to log on to the school network as guests, so they were still able to download the flashcards on the iTouches.

I was very surprised at the results of my study. I always assumed that if students were more motivated to study, they would perform better on the test. The results that students were more motivated with technology confirms my belief that technology is on the rise and students are more engaged and like using technology whenever they can get their hands on it. However, I assumed that motivation would equate to higher grades on the quizzes. I knew that students were unable to take home the iTouch to practice their flashcards, but I did not expect that to make a huge difference. A further question that I would add to the survey is “Did you use the paper flashcards to study at home?” As much as students hated making flashcards in class, their quiz results showed that they were useful and improved achievement. This really supports me having students create flashcards in class in the future.

Even though my students did not have improved quiz scores with the technology in class, I succeeded in that I used the iTouches for the first time with the students. I knew that many students have personal iTouches, but I believe using them in school gave them an awareness of the capabilities of the technology. There are many educational applications that can help students with school, but I feel that very few students use their iTouches for educational purposes. By bringing the iTouches into the classroom, I exposed students to another use of their iTouch and sparked their curiosity to see how else they can use the iTouch to further their education.

*Recommendations*

If I were to try this study again, I would use two classes; one to use the paper flashcards and one to use the iTouch flashcards, and I would track their quiz scores throughout the semester. Such a study may offer more generalizable results over a longer period of time. I would also make sure to be in the classroom teaching for both units, so I can confirm that students received the same instruction after flashcard use and before the quiz.

A further question that I have as a result of my study is if students writing the words on their paper flashcards made a difference to the learning of the words. On the paper flashcards, students had practice when they wrote the words to create the flashcards. However, the iTouch flashcards were already made and available for quick download, so students did not write those words to practice. As further research, I would design a study to see if writing the words affects quiz scores.

*Future Plan of Action*

This study has affected how I prepare students with vocabulary. My results showed that paper flashcards work. I usually had students who complained about making them, but I am glad to have support for them. To increase motivation, I plan to use a mixture of paper and iTouch flashcards within the same unit. If they make the flashcards to use at home, we can still use the iTouch in class and hopefully have good quiz scores and good motivation. I also want to continue using technology in the classroom, but now realize that vocabulary memorization may not be the best way to do so. I may be able to use technology in situations that affect students more, like communicating with other cultures or having students create movies about culture. Instead of spending valuable time with technology on vocabulary, I plan to focus on other parts of the curriculum.

I plan to share this study with my colleagues. As colleagues try to incorporate technology into their classrooms, especially the iTouch flashcards that are fairly easy to use in class, after seeing the results of my study, I believe there are better ways to use the iTouch rather than to learn vocabulary from flashcards. The iTouch has many educational applications that teachers can use and I would advise my colleagues to find uses other than flashcards since they do not seem to improve student achievement.

I also plan to share this study with my students. I want them to see the results of their quiz scores with paper flashcards and see what their insight is into why the quiz scores were lower after using the iTouch.

I do not plan to publish this report, but I would like to continue the research into the spring semester with more students using the recommendations that I have after doing this study. When I have more results that include more students and fewer limitations, I will think about publishing the study for others to compare their research to mine.

With technology use increasing in the world, it is important that our students are exposed to a wide range of educational experiences with technology. Even if students are more motivated by the technology use like they are with the iPod Touches, we, as educators, need to make sure we are providing students with experiences that will also increase student achievement.

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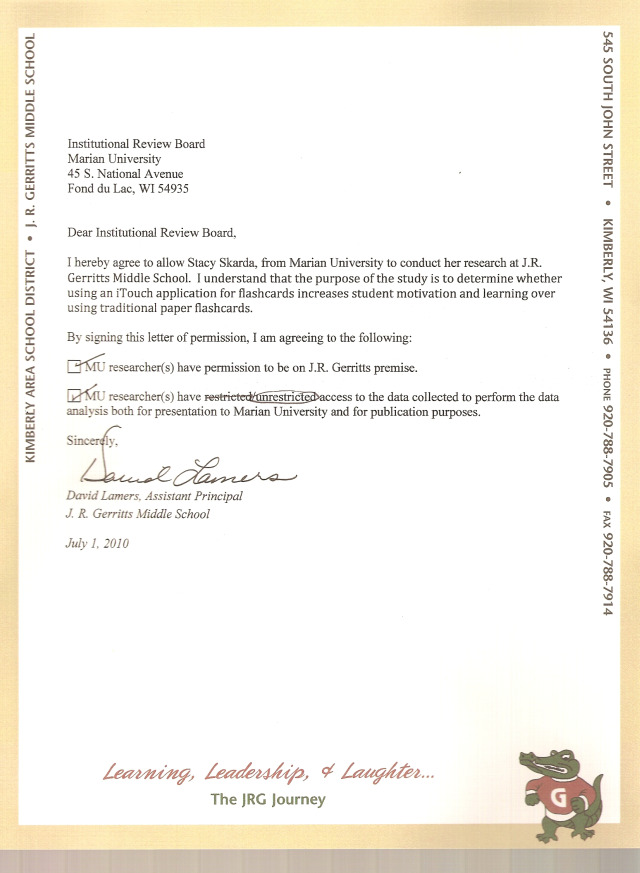
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Young, L. (2009, February 19). Just the right touch: Culbreth students show off their iPod Touch capabilities. *The Herald-Sun (NC).* Retrieved from [http://web.ebscohost.com/ehost/detail?vid=8&hid=12&sid=a45e848f-b634-4ab4-96ac-6efcfb69a62b%40sessionmgr13&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=n5h&AN=2W62W63235657288](http://web.ebscohost.com/ehost/detail?vid=8&hid=12&sid=a45e848f-b634-4ab4-96ac-6efcfb69a62b%40sessionmgr13&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d%23db=n5h&AN=2W62W63235657288%20)

APPENDIX A*.* IRB Approval

|  |  |  |
| --- | --- | --- |
| Researcher Name: Stacy Skarda   Your project titled *“Using iTouch Flashcards Versus Traditional Flashcards in Learning Eighth Grade Spanish”* has been reviewed by the Marian University Institutional Review Board for the Protection of Human Subjects (IRB).  It has been determined that under rules governing protocol review, the project qualifies for expedited review and is approved for one year without modification.   1. If you should make any future changes in the protocol involving 1) method, 2) subjects, 3) informed consent, and/or 4) subject identification, you must submit a protocol modification. Contact the Office of Research and Sponsored Programs for instructions regarding protocol modification. 2. The case number assigned to this protocol is **M101107001Q**; please reference this number in all future correspondence.  You are responsible for maintaining all records related to this project for at least three years after completion of the research project. 3. Your protocol approval is valid from 07/07/2010 to 07/06/2011.  You will be required to submit an Annual Progress Report (APR) to the IRB at the completion of your project. Before your proposed end date, you will be sent a reminder to complete this form and return it to the Office of Research and Sponsored Programs to disclose the status of the research, which can be found on the [Marian University IRB website.](http://www.marianuniversity.edu/irb) You may also request an extension of IRB approval for another year beyond the approved end date by completing this form.     Please do not hesitate to contact the ORSP ([orsp@marianuniversity.edu](mailto:orsp@marianuniversity.edu) or 920-923-8976) if you have questions or require additional information.    MARC HEIMERL, IRB Secretary Office of Research and Sponsored Programs Marian University 45 S. National Avenue; Room R006 Fond du Lac, WI 54935    Telephone: 920-923-8796 Fax: 920-926-2114 [www.marianuniversity.edu/irb](http://www.marianuniversity.edu/irb) |  | https://mail.google.com/mail/images/cleardot.gif |

# APPENDIX B. Signed Site Permission

**

APPENDIX C. Parent Consent Form

**Study Title:** Using iTouch Flashcards Versus Traditional Flashcards in Learning Eighth Grade Spanish

**IRB Approval File Code:** **M101107001Q**

**Researchers:**

* *Principal Investigator – Stacy Skarda, (920) 788-7905 x2229,* [*sskarda@kimberly.k12.wi.us*](mailto:sskarda@kimberly.k12.wi.us)
* *Research Advisor – Dr. Aïda Michlowski, Marian Professor (920) 923-8749* [*amichlowski@marianuniversity.edu*](mailto:amichlowski@marianuniversity.edu)

You are being asked to allow your child to take part in a research study carried out by me, Stacy Skarda. Please read this form carefully, taking as much time as you need. Ask me, the researcher, to explain anything you don’t understand. This study has been approved for human subject participation by the Marian University Institutional Review Board (IRB).

You may refuse to give permission, or you may withdraw your permission for your child to be in the study, for any reason. Your child will also be asked if he or she would like to take part in this study. Even if you give your permission, your child can decide not to be in the study or to leave the study at any time.

**What is this research study about?**

This research study is being done to *determine if using iTouch flashcards motivates students and increases Spanish vocabulary learning over traditional paper flashcards.* We are asking your permission for your child to be in the study because he or she is in my eighth grade Spanish class.

**What will my child be asked to do if he or she is in this research study?**

If your child takes part in the study, he or she will be asked to:

* Use paper flashcards in three class periods to practice vocabulary for unit 3A
* Take a vocabulary quiz on unit 3A
* Answer a survey at the end of unit 3A about using the paper flashcards
* Use an iTouch flashcard application in class during three periods to practice vocabulary for unit 3B
* Take a vocabulary quiz on unit 3B
* Answer a survey at the end of unit 3B about using the iTouch flashcards

The study will take approximately 6 weeks to complete, which corresponds to the completion time of two units in class. Your child may refuse to answer any or all question/s in either survey.

**Are there any benefits to my child if he or she is in this research study?**

The potential benefit to your child in participating in this study is the opportunity use an iTouch in an educational setting, and perhaps acquire a new technique in learning Spanish.

**Are there any risks to my child if he or she is in this research study?**

The potential risks to your child from taking part in this study are loss of time or inconvenience, emotional distress, although unlikely, and a breach of confidentiality, although unlikely.To minimize the potential risk of loss of time and inconvenience, the researcher will be well-prepared, follow the usual classroom routines, and conduct quick and brief quizzes or surveys that will only take 5-10 minutes.To minimize the potential risk of emotional discomfort or distress, the participants will be told that they may choose to skip any question that causes them discomfort or withdraw from the study at any time.

**Will information about my child be kept private?**

The data for this study will be kept private and confidential to the extent allowed by federal and state law. The quiz data will be coded and a key will be kept separate from the findings. Only I, the researcher, will have access to the key, which will be kept in a locked file drawer. The survey will be collected anonymously so your child will not be associated with the findings. The results of this study may be published or presented at professional meetings, but your child’s name will not be used or associated with the findings. The data for this study will be kept for three years and destroyed after that.

**Are there any costs or payments for your child being in this research study?**

There will be no costs to you or your child for taking part in this study and you will not receive money or any other form of compensation for taking part in this study.

**What are my child’s rights as a research study volunteer?**

Your child’s participation in this study is completely voluntary. Your child may choose not to take part in this study, choose not to answer specific questions, or leave the study at any time. If your child chooses not to participate, he or she will still take part in the regular classroom activities, but the information will not be used in the study. There will be no penalty or loss of benefits to which you or your child are entitled if you choose not to give your permission for your child to take part or your child withdraws from the study.

**Who can I talk to if I have questions?**

If you have questions about this study or the information in this form, please contact the researcher:

Stacy Skarda

545 S. John Street

Kimberly, WI 54136

[sskarda@kimberly.k12.wi.us](mailto:sskarda@kimberly.k12.wi.us)

920-788-7905 x2229

If you have questions about your rights or your child’s rights as a research participant, or would like to report a concern or complaint about this study, please contact the Marian University IRB Administrator at (920) 923-8796, or e-mail orsp@marianuniversity.edu, or regular mail at: Marian University ORSP, 45 S. National Avenue, Fond du Lac, WI 54935.

**What does my signature on this consent form mean?**

Your signature on this form means that:

* You understand the information given to you in this form
* You have been able to ask the researcher questions and state any concerns
* The researcher has responded to your questions and concerns
* You believe you understand the research study and the potential benefits and risks that are involved for your child.
* You understand that even if you give your permission, you child may choose not to take part in the study.

**Study Title:** Using iTouch Flashcards Versus Traditional Flashcards in Learning Eighth Grade Spanish

**Researchers:**

* *Principal Investigator – Stacy Skarda,* [*sskarda@kimberly.k12.wi.us*](mailto:sskarda@kimberly.k12.wi.us)*, 788-7905*
* *Research Advisor – Dr. Aïda Michlowski, Marian Professor*

**Statement of Consent**

I give my voluntary permission for my child to take part in this study. I will be given a copy of this consent document for my records.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of Parent or Guardian Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Printed Name of Parent or Guardian

**Statement of Person Obtaining Informed Consent**

I have carefully explained to the parent of the child being asked to take part in the study what will happen to their child.

I certify that when this person signs this form, to the best of my knowledge, he or she understands the purpose, procedures, potential benefits, and potential risks of his or her child’s participation.

I also certify that he or she:

* Speaks the language used to explain this research
* Reads well enough to understand this form or, if not, this person is able to hear and understand when the form is read to him or her
* Does not have any problems that could make it hard to understand what it means for his or her child to take part in this research.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of Person Obtaining Consent Date

\_\_\_\_\_Stacy Skarda \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_Principal Investigator\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Printed Name of Person Obtaining Consent Person’s Role in Research Study

APPENDIX D. Child Assent Form

**Study Title:** Using iTouch Flashcards Versus Traditional Flashcards in Learning Eighth Grade Spanish

**IRB Approval File Code:** **M101107001Q**

**Researchers:**

Principal Investigator: *Stacy Skarda, 920-788-7905 x2229, sskarda@kimberly.k12.wi.us*

Research Advisor*: Dr. Aïda Michlowski, Marian Professor 920-923-8749*

My name is *Stacy Skarda*. As part of my master’s studies at Marian University, I am doing a classroom action research project*.* I am inviting you to take part in my research study. Your parent(s) know I am talking with you about this project, but it is up to you to decide if you want to be in the study. This form will tell you more about it to help you decide whether or not you want to take part in it.

**Why is this study being done?**

The purpose of the study is to help us learn about *using iTouch flashcards versus paper flashcards in learning Spanish vocabulary.* You are being asked to take part because you are a student in my class.

**What am I being asked to do?**

If you decide to be in the study, I will ask you to:

* Use paper flashcards to learn vocabulary for unit 3A
* Use iTouch flashcards to learn vocabulary for unit 3B
* Take vocabulary quizzes for each unit
* Take a survey after each unit on your motivation and the usefulness of flashcards

At any time, you may decide not to participate in the study or not to answer any question on the surveys. You will receive vocabulary quiz results which I will also share with my research advisor without your name attached.

**What are the benefits to me for taking part in the study?**

Taking part in this research study may not help you get straight A’s, but it might help me learn how to help you and other students get more information using technology.

**Are there any risks to me if I am in this study?**

The potential risks of taking part in this study are no greater than minimal. For example you may undergo some physical discomfort, emotional stress, inconvenience, loss of time and breach of confidentiality. I will take every precaution to minimize these risks from happening, but should they occur, I will refer you to the guidance counselor, give you extra time to make up for work

**Will my information be kept private?**

The data for this study are coded and anonymous. The master list and the key will be kept separately in a restricted computer and a locked cabinet. Neither the researcher(s) nor anyone else will know which data is yours. The data for this study will be kept private and confidential to the extent allowed by federal and state law. The aggregate data and summary results will be shared with my research advisor, the school principal and parents who may ask for the results. Under rare circumstances, your data you may be reviewed by MU officials or people from the organization or agency that funded the study. When we tell other people or write articles about what we learned in the study, we won’t include your name or that of anyone else who took part in the study. The data for this study will be kept for 3 years*.*

**Are there any costs or payments for being in this study?**

There will be no costs to you for taking part in this study and you will not receive money or any other form of compensation for taking part in this study.

**What are my rights as a research study volunteer?**

Your participation in this research study is completely voluntary. You do not have to be a part of this study if you don’t want to. There will be no penalty to you if you choose not to take part and no one will be upset or angry at you. You may choose not to answer any questions you don’t want to answer, and you can change your mind and not be in the study at any time. If you decide to not be in the study, you will still take part in the activity but your data will not be used in the analysis.

**Who can I talk to if I have questions?**

If you have questions at any time, you can ask the researchers and you can talk to your parent about the study. We will give you a copy of this form to keep. If you have questions about the study, call Dr. Aïda Michlowski (920) 923-8749 or email her at [amichlowski@marianuniversity.edu](mailto:amichlowski@marianuniversity.edu).

The Marian University Institutional Review Board has reviewed this study to make sure that the rights and safety of people who take part in the study are protected. If you have questions about your rights in the study, or if you are unhappy about something that happens to you in the study, you can contact them at (920) 923-8796 or [orsp@marianuniversity.edu](mailto:orsp@marianuniversity.edu).

**What does my signature on this consent form mean?**

Your signature on this form means that:

* You understand the information given to you in this form
* You have been able to ask the researcher questions and state any concerns
* The researcher has answered your questions and concerns
* You believe you understand the research study and the potential benefits and risks that are involved.

**Study Title: Using iTouch Flashcards Versus Traditional Flashcards in Learning Eighth Grade Spanish**

**Researchers:**

*Principal Investigator: Stacy Skarda, 920-788-7905 x2229, sskarda@kimberly.k12.wi.us*

*Research Advisor: Dr. Aïda Michlowski, Marian Professor*

**Statement of Consent**

I give my voluntary consent to take part in this study. I will be given a copy of this consent document for my records.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of Participant Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Printed Name of Participant

**Statement of Person Obtaining Informed Consent**

I have carefully explained to the person taking part in the study what he or she can expect.

I certify that when this person signs this form, to the best of my knowledge, he or she understands the purpose, procedures, potential benefits, and potential risks of participation.

I also certify that he or she:

* Speaks the language used to explain this research
* Reads well enough to understand this form or, if not, this person is able to hear and understand when the form is read to him or her
* Does not have any problems that could make it hard to understand what it means to take part in this research.

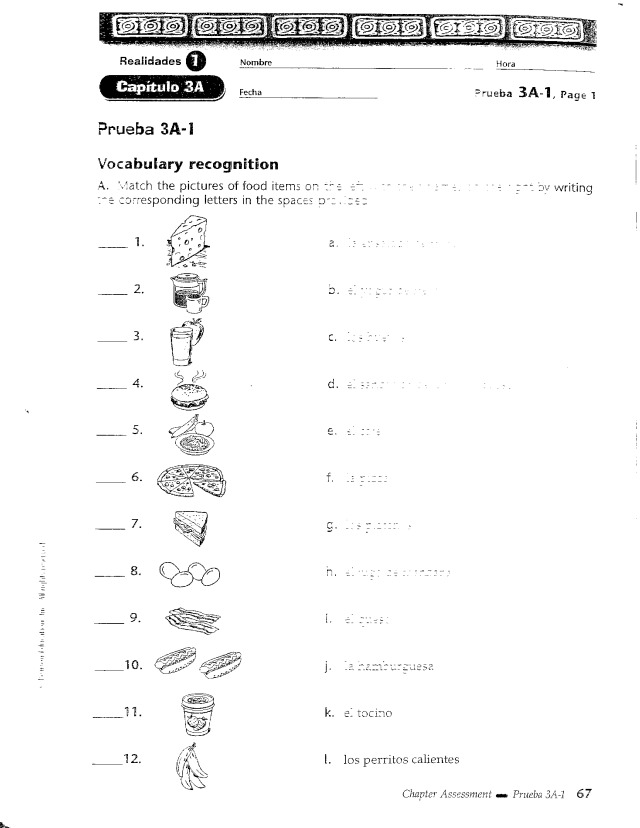
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

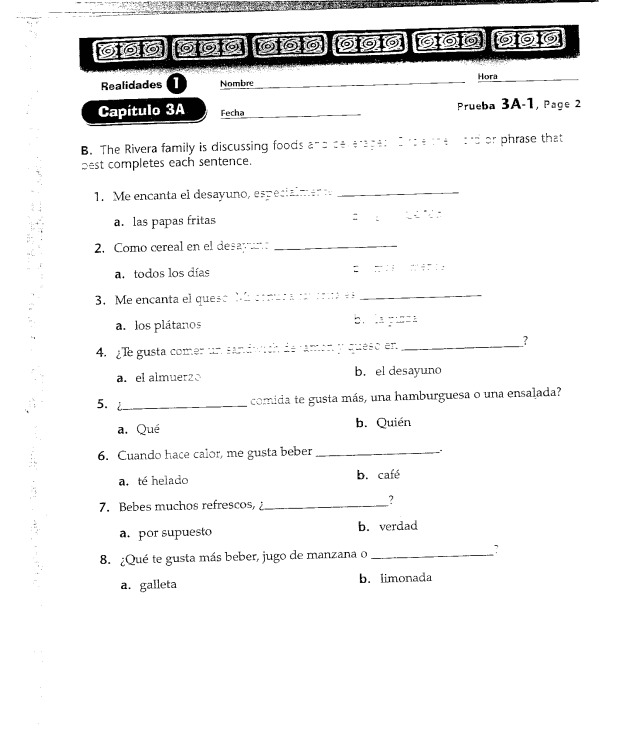
Signature of Person Obtaining Consent Date

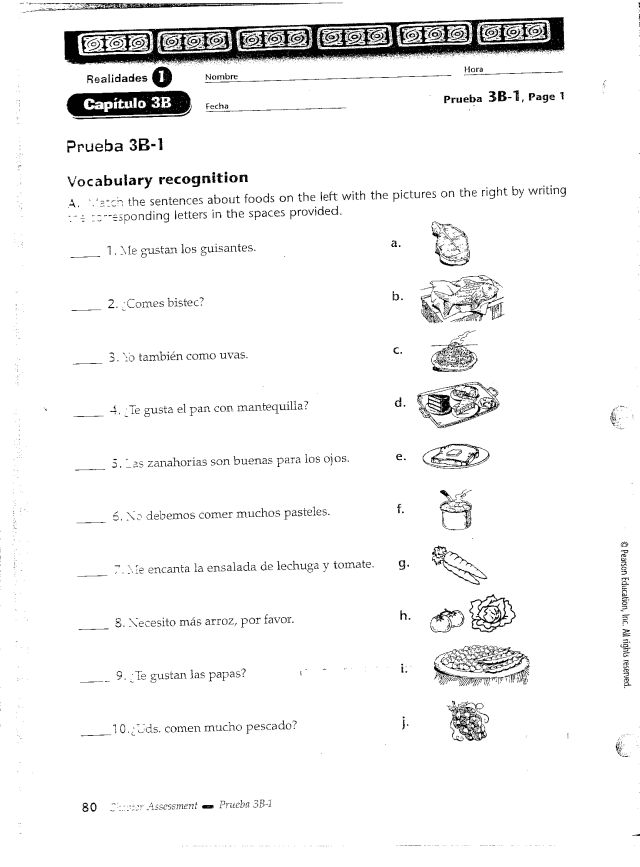
\_\_\_\_\_\_\_Stacy Skarda \_\_\_\_\_\_\_\_\_\_\_ \_\_Principal Investigator\_\_\_\_\_\_

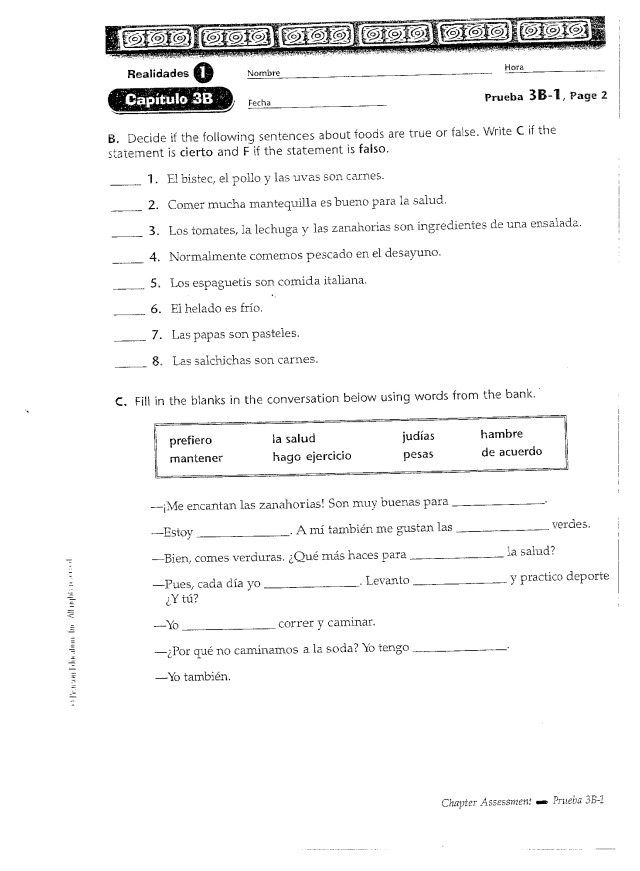
Printed Name of Person Obtaining Consent Role in the Research Study

Appendix E. 3A and 3B Quizzes









Appendix F. Quiz Score Raw Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Student** | **3A Quiz Score**  **(Max. 20)** | **Quiz**  **Percentage** | **3B Quiz Score**  **(Max. 26)** | **Quiz Percentage** |
| 1 | 20 | 100 | 24 | 92.3 |
| 2 | 20 | 100 | 26 | 100.0 |
| 3 | 20 | 100 | 20 | 76.9 |
| 4 | 20 | 100 | 26 | 100.0 |
| 5 | 18 | 90 | 17 | 65.4 |
| 6 | 19 | 95 | 24 | 92.3 |
| 7 | 20 | 100 | 24 | 92.3 |
| 8 | 18 | 90 | 24 | 92.3 |
| 9 | 20 | 100 | 26 | 100.0 |
| 10 | 20 | 100 | 23 | 88.5 |
| 11 | 19 | 95 | 22 | 84.6 |
| 12 | 19 | 95 | 24 | 92.3 |
| 13 | 18 | 90 | 23 | 88.5 |
| 14 | 20 | 100 | 25 | 96.2 |
| 15 | 19 | 95 | 22 | 84.6 |
| 16 | 19 | 95 | 15 | 57.7 |
| 17 | 19 | 95 | 24 | 92.3 |
| 18 | 19 | 95 | 23 | 88.5 |
| 19 | 18 | 90 | 26 | 100.0 |
| 20 | 20 | 100 | 26 | 100.0 |
| 21 | 18 | 90 | 21 | 80.8 |
| 22 | 18 | 90 | 23 | 88.5 |
| 23 | 20 | 100 | 26 | 100.0 |
| 24 | 19 | 95 | 24 | 92.3 |
| 25 | 20 | 100 | 19 | 73.1 |
| 26 | 20 | 100 | 23 | 88.5 |
| 27 | 19 | 95 | 21 | 80.8 |
| 28 | 19 | 95 | 21 | 80.8 |
| 29 | 19 | 95 | 22 | 84.6 |
| 30 | 20 | 100 | 25 | 96.2 |
| 31 | 20 | 100 | 24 | 92.3 |
| 32 | 19 | 95 | 21 | 80.8 |
| 33 | 18 | 90 | 17 | 65.4 |
| 34 | 18 | 90 | 22 | 84.6 |
| 35 | 20 | 100 | 26 | 100.0 |
| 36 | 19 | 95 | 25 | 96.2 |
| 37 | 20 | 100 | 26 | 100.0 |
| 38 | 20 | 100 | 26 | 100.0 |
| 39 | 18 | 90 | 22 | 84.6 |
| 40 | 20 | 100 | 26 | 100.0 |
| 41 | 19 | 95 | 22 | 84.6 |
| 42 | 20 | 100 | 18 | 69.2 |
| 43 | 19 | 95 | 22 | 84.6 |
| 44 | 18 | 90 | 22 | 84.6 |
| 45 | 19 | 95 | 24 | 92.3 |
| 46 | 18 | 90 | 24 | 92.3 |
| 47 | 20 | 100 | 24 | 92.3 |
| 48 | 20 | 100 | 25 | 96.2 |
| **Averages:** | 19.2 | **96** | 23.0 | **88.5** |

|  |  |
| --- | --- |
|  | improvement on 3B (with iPod) |
|  | 3A and 3B scores same |
|  | 3B score less than 3A score |

Appendix G. Observation Notes

|  |  |  |
| --- | --- | --- |
|  | Student Number | Legend-  1 = getting out of desk  2 = speaking English  3 = talking to partner  4 = writing/sharpening pencil  5 = working on other work  6 = looking around classroom  7 = staring at space |
| Paper Flashcards  Day 1 | 14, 9, 13, 19, 37 | Missing Flashcards |
|  | 22, 48 | 6 |
|  | 10, 26 | 5 |
|  | 19, 22, 11, 37 | 4 |
|  | 13, 9, 1, 3, 29, 22, 38, 49, 47, 35, 35 | 2 |
| Day 2 | 30, 16, 9, 15, 24, 37, 49 | Missing Flashcards |
|  | 10, 43, 46, 32 | 2 |
|  | 34, 17 | 4 |
| Day 3 | 13, 9, 30, 10, 37, 49, 34, 32 | Missing flashcards |
|  | 12, 17 | 2 |
|  | 40, 49 | 6 |
|  | 40 | 7 |
| iTouch Flashcards  Day 1 | 32, 22, 49 | 6 |
|  | 7, 32 | 5 |
| Day 2 | 11, 39, 32 | 7 |
| Day 3 | --- | ---- |

Appendix H. Survey Raw Data

Survey After Paper Flashcard Use:

|  |  |
| --- | --- |
| Please rate each statement below based on the following scale:  1-Strongly disagree  2-Disagree  3-Agree  4-Strongly Agree | Rating |
| 1. I enjoyed learning vocabulary using paper flashcards. | 1-1  2-8  3-32  4-7 |
| 2. I felt prepared for the quiz because I practiced with paper flashcards. | 1-1  2-5  3-23  4-19 |
| 3. I think paper flashcards helped me to learn the vocabulary. | 1-1  2-6  3-29  4-12 |
| 4. I used my time wisely when practicing flashcards in class. | 1-0  2-2  3-27  4-19 |
| 5. Even if I didn’t have time in class to make paper flashcards, I would make them on my own to help me study. | 1-9  2-17  3-17  4-5 |

Survey After iTouch Flashcard Use:

|  |  |
| --- | --- |
| Please rate each statement below based on the following scale:  1-Strongly disagree  2-Disagree  3-Agree  4-Strongly Agree | Rating |
| 1. I enjoyed learning vocabulary using iTouch flashcards. | 1-2  2-1  3-17  4-21 |
| 2. I felt prepared for the quiz because I practiced with iTouch flashcards. | 1-1  2-6  3-21  4-13 |
| 3. I think iTouch flashcards helped me to learn the vocabulary. | 1-3  2-4  3-17  4-18 |
| 4. I used my time wisely when practicing flashcards in class. | 1-2  2-1  3-12  4-26 |
| 5. If I had my own iTouch, I would practice flashcards on my own. | 1-8  2-8  3-21  4-4 |