

COMMUNICATION TECHNOLOGIES IN THE SCIENCE CLASSROOM AND
THEIR EFFECT ON STUDENT AND PARENT ENGAGEMENT
IN THE LEARNING PROCESS

by

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ABSTRACT

This research utilized a variety of technologies to supplement instruction in the classroom and analyzed their effects on student learning and motivation as well as parent involvement. Students were given access to a website that allowed them to discuss the class content with their peers, turn in assignments online, and have access to online test preparation material and supplemental science information. Class reminders were sent using communication technology via texts and email and were sent to both parents and students. Updates on grades and missing assignments were sent to parents via e-mail through the online gradebook, Infinite Campus. In addition, students participated in technology focused and non-technology focused lessons to compare engagement behaviors in both settings. Overall, student and parent engagement increased with technology and a possible increase in student performance was noted.

INTRODUCTION AND BACKGROUND

Project Background

School Demographics

I teach at Silver Hills Middle School, a fairly diverse middle school in Westminster, Colorado. The demographics of my school's 1,100 students include 63% white, 32% Hispanic, and 5% of other ethnicities. The students come from a variety of socio-economic backgrounds and 42.2% of the students are on free or reduced lunch (Adams 12 Five Star School District, 2012).

Teaching and Classroom Environment

I teach four sections of seventh grade life science and 124 of my students studied cells, disease, genetics, and evolution during the treatment for this project. This project addressed the effect of technology on engagement and learning in the science classroom. Disengagement among middle year students can lead to behavior problems as well as a lack of understanding of concepts and content in the classroom (Spires, Lee, & Turner, 2008).

In my teaching career, I believe there should be a focus on best practices in education that support student learning and growth and one key component is improved access to technology for our students because of the future they face. The National Education Association states, "students must be able to use technology to help them learn

content and skills -- so that they know how to learn, think critically, solve problems, use information, communicate, innovate and collaborate,” (National Education Association, 2012). In order to address these needs, I took a web tools class during the summer of 2010 through Montana State University. I created a webpage as my final project for this class and decided to introduce the webpage to my students the following fall. I was surprised by the positive reactions from students and parents alike. Several parents mentioned how engaged their children were in the website and how they were happy their children were getting this type of exposure to technology. This reaction led to the development of a project focused on the impacts of communication technologies on student learning. For the months of February, March, and April 2012, I made an interactive class website at www.edmodo.com available to my students. On this site, they were required to participate in online discussions and activities and submit assignments. Students were encouraged to utilize study tools on the class website and to use all other aspects of the website such as homework help, class updates, and additional science resources.

This project also aligns with the movement toward technology implementation in my district and more specifically at my school. Several teachers at my school have implemented technology into their classrooms through the use of websites, cell phones, and interactive whiteboards, and in August of 2012, the school district I work for plans to roll out a district-wide implementation of www.edmodo.com, which is the website used in this project.

Focus Question

What impact does the use of communication technologies such as webpages with content-related videos and activities, online gradebooks, homework pages, text notifications, and listserves have on student learning? More specifically, does student and parent engagement increase with the use of technology and does student performance increase when they use online tools for science class?

CONCEPTUAL FRAMEWORK

Examples of the integration of technology being explored in schools today are smart classrooms, blended learning, distance-learning, discussion boards, hybrid learning, classroom web sites, interactive whiteboards, clickers, netbooks, and the use cell phones. Teachers are expected to provide instruction and demonstrate expertise with these technological tools to best prepare students for the future. Norris and Soloway (2010) concluded that school districts allocate large amounts of their budget to technology in the classroom. Therefore, educators need to ensure the technology they use positively impacts student learning.

Research has revealed improved student achievement with the use of technology. Bartini (2008) noted an increase in exam scores for students in a web-enhanced class when compared to the same class that was taught without web-enhancement materials. Also, there was an increase in performance on the unit exam as the number of web-based practice quizzes the students took increased. Middle school students have been able to

grasp science concepts more readily as technology brings authentic problems into the science classroom (Hsieh, Cho, Liu, & Schallert, 2008). Research has also indicated that interactive videos were effective when the concept had a visual component (Kemp, 1997). These videos could be downloaded for students to view as a supplement to instruction or used as a tutorial on a classroom website. In Oklahoma, some schools implemented a K20 program which utilized professional development and innovation in technology to build leadership in a school (Williams, Atkinson, Cate, & O-Hair, 2008). The K20 partner schools that implemented a whole-school technology initiative saw an increase in student engagement. In addition, these schools saw a 74% increase in the state's Academic Performance Index over other schools not involved in the initiative (Williams et al., 2008).

Technology can improve communication between teachers, students, and parents, thereby improving classwork completion rates and comprehension. Increased communication between teachers and parents specifically contributes to student success (Lewis, 2003). An increase in communication between parents and teachers promotes homework completion and when parents feel they are more involved, their children are more motivated (Callahan, Rademacher, & Hildreth, 1998). In fact, Lewis (2003) stated that parental involvement was a better indicator of academic success than household income. Teachers can communicate assignment expectations clearly so that parents are equipped to help their children with schoolwork (Harniss, Epstein, Bursuck, Nelson, & Jayanthi, 2001). Classroom and school websites offer a wonderful platform for successful parent-teacher communication. School websites often have homework pages

where parents and students can check for the day's work and download worksheets and class activities that they missed or misplaced. Class websites can offer supplemental materials to the class content, allow students to turn in paperless assignments online, provide opportunities to discuss information and issues related to the current topic, and even get help from the teacher or classmates. Additionally, online gradebooks allow parents and students to access current grades and missing work so there are no surprises. Other communication tools are group emails and text messaging and afford yet another avenue to inform parents of student progress. Teachers can also generate a "listserve", which is a "computer system that automatically routes email messages to a list of subscribers" (Trotter, 1997, p.2), to send important information about assignments and class activities to parents of their students. In one teacher's high school chemistry and physics classes, missing assignments decreased by 1.5% and the average scores on assignments increased by 6.4% after a classroom website was created (Washenberger, 2001). Teachers have also utilized phone text messages to communicate important information to students and parents. Thomas and Orthober (2011) reported that students saw benefits of receiving reminder texts from their teachers because it helped ensure they came to class prepared and the students "often forgot to complete assignments or study for tests" and "the instructor's texts were valuable reminders that contributed to their overall success in the class" (p. 65). It was also reported that reminder texts improved community and rapport between the students and instructors (Thomas and Orthober, 2011).

Student engagement during the middle school years remains a major concern for educators because academic achievement seems to slow during those years (Keddie, 2010). In their paper “Examining the Interplay Between Middle School Students' Achievement Goals and Self-efficacy in a Technology-enhanced Learning Environment” Hsieh et al. (2008) claim that student motivation affects behavior and academic success. Middle school teachers constantly explore ways to increase motivation, engagement, and positive attitudes toward learning. New technology provides a possible means of increasing motivation. Students have access to far more technology today than they have ever had; this offers them alternative learning methods (Spires, Lee, & Turner, 2008). Some researchers have found an increase in self-efficacy with the use of technology. Other researchers identified student approval for the possibility of submitting homework, getting grades, accessing course materials, and communicating with the teacher online (Alghazo, 2006). Jason (2001) reported a positive feeling from students regarding the introduction of web-based course materials and visual displays that accompanied lectures.

Middle school students themselves have rated computer use and internet research among their favorite learning activities in school (Spires, Lee, & Johnson, 2008). Students who have a say in their learning are more likely to be engaged, and they have opinions on how technology should be incorporated. Students feel learning is more fun with the use of technology and want educators to prepare them for future careers involving technology and the media (Spires et al., 2008).

Use of technology outside of class impacts student learning as well. Many classroom teachers implement blogs or discussion boards to enhance student participation in class. These discussion boards are related to the material and enable students to actively work through topics discussed in class (Goldman, Cohen, & Sheahan, 2008). Many students may not feel comfortable speaking up in class or are not heard during discussions, but online blogs offer a platform for all students to participate (Alghazo, 2006). Alghazo (2006) also found that students preferred to ask questions through the web over asking them in class. In a Public Health class, nonnative English speakers found a blog more helpful with class material and most students found it more difficult to speak up in class than post a comment (Goldman et al., 2008).

METHODOLOGY

My action research was conducted over a three month period from February through April of 2012. The first week of February, I implemented a technology-focused approach to my classroom for my 124 students and included access to an interactive 7th grade science website with implementation of increased communication to parents and students through technological means. I created an Edmodo webpage (www.edmodo.com) that allowed students to view and submit assignments online, respond to discussion questions, discuss assignments and projects with classmates and with me, and access other online science resources. Daily updates to the website included handouts, lectures, class activities and additional resources used for lessons.

Study tools such as interactive quizzes and review activities were also included on the website. In addition, assignments were posted to the website so they could be downloaded, completed and turned in either online or in class. The website also provided pictures, examples of student work, and descriptions of activities and lessons as they occurred.

In addition to the website, I communicated with parents and students through three other means: 1) I sent information regarding upcoming assignments, test dates, and general classroom reminders through texts, 2) I utilized the message system embedded in the school's online gradebook, Infinite Campus, to notify parents of any missing work or failing grades, as well as to inform them about other class activities, 3) All parents and students continued to have access to Silver Hills Middle School's Homework Pages (www.silverhillsmiddle.org), a website where each day teachers upload information on what was done in class and what homework is required. Parents and students have had access to this website since the beginning of the 2011-2012 school year.

Student and Parent Surveys

Students and parents were given a Pre-semantic Survey (Appendices A and B) to begin the research process and were given a Post-semantic Survey following the treatment period (Appendices C and D). There were 104 of my seventh grade science students who completed a paper copy of the survey in class. The parent survey was distributed as a paper copy and sent home with students as well as was sent through e-

mail. Sixty parent surveys were returned and descriptive statistics were analyzed to compare averages for each question including mean, median, and mode. I compared student data for those who took both surveys and compared all parent survey results that were returned to me to increase the amount of data. I used ordinal data points through a Likert rating scale which included responses to questions with a fixed zero point. Numbers were assigned to each response where *strongly agree* received a five, *agree* received a four, *undecided* received a three, *disagree* received a two and *strongly disagree* received a one. The class average of each question for the Pre-survey (Appendix C) was compared to the average score for each question for the Post-survey (Appendix D) and questions were grouped into common themes to be analyzed. For the open-ended portion of the survey, I used the technique of transcription coding to organize the response information into specific themes and sub-themes (Hendricks, 2009). For organizational purposes, each theme and sub-theme was given a specific code. In order to answer the research questions, these themes were analyzed as they related to communication technology use between schools, students and parents.

Technology Preparation

Prior to the treatment, parent e-mails were confirmed and updated in Infinite Campus on the Technology Communication Form (Appendix E) or by phone. Parents were also given a form with instructions on how to access Infinite Campus and the Silver Hills Middle School Homework Page. I also obtained phone numbers from consenting

parents and students in order to send short reminders about class activities and assessments. I developed a parent and student listserv for this purpose in my personal email account.

Some of the technology-focused lessons I used involved the use of cell phones and smart phones as learning tools; therefore, the Silver Hills Middle School cell phone technology use letter consent form was sent home to parents to be signed. The letter gave the students permission to use cell phones in class for educational purposes when given permission by a teacher. One parent did not want her child to use cell phone or netbooks so she submitted answers either on paper or with use of a desktop computer.

Interactive Website Analysis

After initial preparations were complete and the Pre-semantic Surveys were conducted, the students were introduced to the website, Edmodo. Students viewed a tutorial (<http://prezi.com/2etfwahkqzny/7th-grade-science-websites-for-success/>) on how to sign up for the website and completed a Scavenger Hunt (Appendix F).

Test preparation materials and science enrichment websites were added to the Edmodo library such as the Evolution Practice Quiz (<http://reviewgamezone.com/game.php?id=9250&button=Find>). The effect of online study resources on test readiness was examined on the Pre and Post-semantic Student Surveys (Appendices C and D). Following the treatment period, a study group of 60

students who used this review material for at least one assessment was created and their test scores were analyzed.

Communication Tool Analysis

In an effort to increase communication among myself, my students and their parents, several technological tools were used during the treatment period. Infinite Campus is the online gradebook Silver Hills Middle School uses, and it allows teachers to send automated messages to specific recipients. I used the message center of Infinite Campus and selected for e-mails to be sent to parents of students with missing assignments only. First, I sent bi-weekly missing assignment and failing grade e-mail notifications to parents. I then selected for e-mails to be sent to parents of students with D's and F's at the time. I recorded the number of students and parents that followed up with a message as an attempt to resolve the issue. I compared this to the number of students and parents that attempted to resolve a grade issue on weeks where I did not send out an automated message. Additionally, text messages and emails were sent to parents and students throughout the treatment period that addressed the following: upcoming tests, projects and assignment due dates and reminders about supplies needed for class.

Parents were contacted regarding their students' progress and given general science class updates through many different forms of technology to determine which was most effective. In the Post-semantic parent survey, I asked for their opinions on the various methods in order to streamline my efforts in subsequent years. Attitudes and

responsiveness to these communication efforts were examined in the Post-semantic Surveys.

Student Motivation Analysis

Throughout the treatment period, I taught concepts with varied approaches. Some of the lessons were considered “technology focused” where students were using netbooks, iPod Touches, and computers to complete an activity. To examine student motivation during different types of lessons, I took observational data using the School Achievement Motivation Scale Survey (Appendix G) created by Lian-Hwang Chiu in 1997 and gave each behavior a number for graphing purposes. Observations of ten students in a Motivation Survey Focus Group were made for three technology-focused lessons and three non-technology focused lessons. This focus group included gifted and talented students, special education students, English language learners and students with no specific learning profile. I asked teachers and administrators at my school to assist with the observations. The students included were of varying levels of learning abilities and the focus group was developed to better observe specific student responses. The survey was administered for six total lessons including three technology focused lessons and three non-technology focused lessons. Students were watched for “incidents” of either positive or negative behaviors. Observers marked whenever they observed a behavior “incident” on the Student Motivation Survey (Appendix G). I added up these incidents to look for patterns in behavior during these lessons. Motivation scores were compared between the two types of lessons and for different times during the treatment.

In addition, students were given Pre- and Post-semantic differential surveys to determine if their positive or negative attitudes about science class were affected by use of technology in lessons (Mills, 2011).

Data were collected using multiple methods to address each research question, providing triangulation to increase reliability and validity of the findings. These data were compiled into three main categories: Student Engagement, Student Achievement, and Parent Engagement. The data sources used are described in the Triangulation Matrix (Table 1).

Table 1.
Data Collection Methods and Triangulation Matrix

Research questions	Data Source 1	Data Source 2	Data Source 3
Does student use of online test preparation resources increase student performance?	Infinite Campus Gradebook results	Test scores	Pre and Post-semantic Surveys
Does use of technology increase student engagement?	Pre and Post-semantic Parent Surveys	Pre and Post-semantic Student Surveys	Observational Data: School Achievement Motivation Scale (Chiu, 1997)
Does use of communication technology increase parent engagement in their child's science learning process?	Parent and student teacher contact time	Pre and Post semantic Parent Surveys	Pre and Post-semantic Student Surveys

DATA AND ANALYSIS

For the treatment period, the 124 7th grade students of were provided with increased opportunities to use of various forms of communication technology and web tools. Results from data collection were separated into three categories: Student Engagement (Pre and Post-semantic Student Surveys and Student Achievement Motivation Surveys), Student Performance (online gradebook data), and Parent Engagement (Pre and Post-semantic Student and Parent Surveys).

Student Engagement

To investigate the relationship between motivation and technology, motivation surveys were conducted for six different lessons and the number of incidents of various behaviors was recorded. Three of the lessons involved the use of technology while three of them did not. Positive and negative behavior incidents were marked for students in the Motivaton Survey Focus Group and recorded on the Student Achievement Motivation Scale (Tables 2 and 3). Results indicated that both forms of presentation of lessons have benefits (Table 3). More students were able to participate in discussions with other students (37 incidences) in non-technology focused lessons while 21 of the behaviors noted during technology lessons were that of students helping each other. Overall, both types of lessons saw identical incidences of positive behavior (Figure 3).

Technology Lessons

Technology Lessons included the use of a Mimio board where the entire class worked together to assemble the body systems of a man, individual Google chrome book use to identify processes in cell division through website exploration, and website research using various technology devices to research an organ in the human body.

Non-technology lessons

Non-technology lessons included the creation of written resources called “foldables” of vocabulary for the cell unit, creation of a 3-dimensional “lung” that demonstrated the role of the diaphragm in breathing, and research without computers on an organ in the human body.

Positive Behaviors

Observations of students found that on average, the two forms of lesson presentation showed identical numbers of positive behaviors from students (Figure 3). For technology lessons, the behaviors with the most frequent incidences were: 1) helped other students with task, 2) asks questions to better understand materials being studied or to aid in solving assignments, and 3) participates in class discussion or activities. For non-technology lessons, the behaviors were: 1) participates in class discussion or activities, 2) starts work promptly, and 3) asks questions to better understand materials being studied or to aid in solving assignments.

More specifically, behaviors related to whole class involvement were increased for non-technology lessons. For example incidents where students “participate in class discussions” (37 incidents versus 16) or volunteers to answer questions (13 incidents versus 7) had a higher occurrence with non-technology lessons (Table 2). Observers noticed that students “discussed material with their group” or stated “I know this!” when they raised their hand to answer questions I posed. Students also “promptly began work” more than two times more often with non-technology lessons. Contrasting these data, during technology lessons, students helped each other with lessons more often (21 incidents versus 11) (Table 2). During the group anatomy activity, students were heard stating, “go, go, go!” and had a “discussion about what the nervous system was.” They also assisted others with technology difficulties during the lessons where each student had access to a technology device (Figure 1).

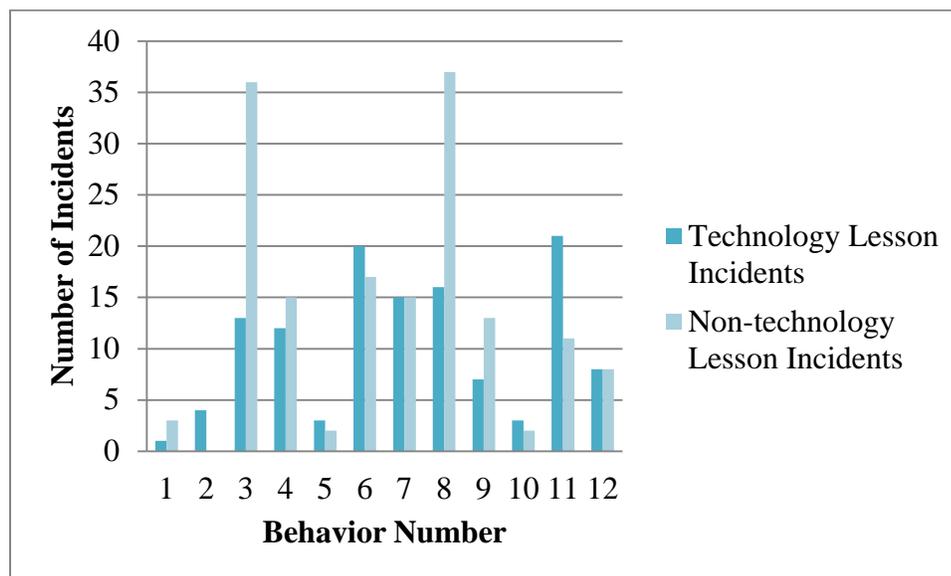


Figure 1. Number of students demonstrating positive engagement behaviors during technology focused versus non-technology focused lessons, ($n = 10$).

Table 2
Student Motivation Achievement Survey Chart of incident numbers by positive behavior type (n = 10)

Positive Engagement Behavior		Technology Lesson Incidents	Non-technology Lesson Incidents
Chooses to work above and beyond what is expected (extra credit, special project, etc.)	1	1	3
Brings in materials (pictures, newspaper clippings, old coins, related notes and materials, etc.) for classroom activities	2	4	0
Starts work promptly	3	13	36
Sticks with task until it is completed	4	12	15
Attempts to solve problems others have difficulty with	5	3	2
Asks questions to better understand materials being studied or to aid in solving assignments	6	20	17
Finds the answers to the assigned questions	7	15	15
Participates in class discussion or activities	8	16	37
Volunteers to answer questions	9	7	13
Does something over again just to get it right	10	3	2
Helps other students with task	11	21	11
Makes positive comments about the activity	12	8	8

Negative Behaviors

Examination of negative behavior results indicates a decrease in incident number for five out of the six behavior types during technology lessons (Figure 2). Students made a negative comment about the lesson 12 times more when technology was not available and had to be redirected for behavior more than three times more often. Students also “carelessly hurried through assignments, did not do assignment, and hesitated to undertake something they may fail at” more often with non-technology lessons. There was a similar incident number with work avoidance behavior (asking to leave class) with three incidents during technology lessons and two during non-technology lessons (Table 3).

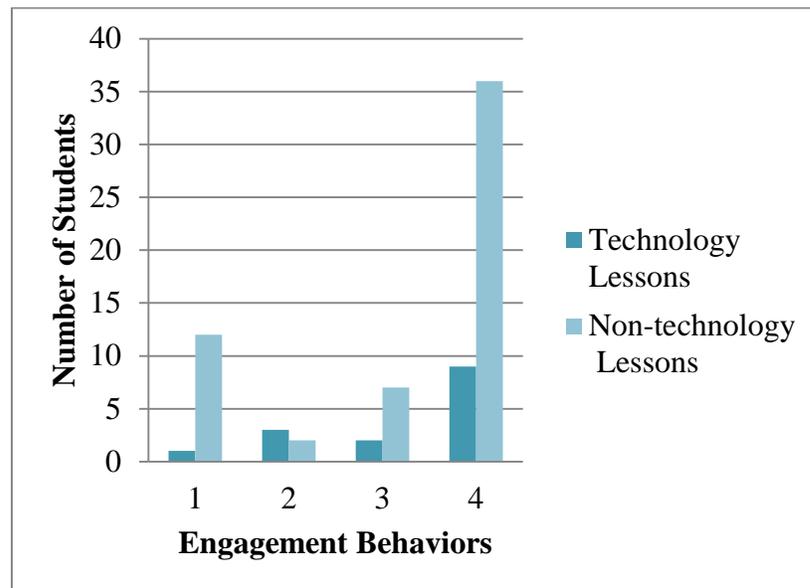


Figure 2. Number of students demonstrating negative engagement behaviors during technology focused versus non-technology focused lessons, ($n = 10$).

Table 3
Student Motivation Achievement Survey Chart of incident numbers by negative behavior type (n = 10)

Negative Engagement Behavior	Behavior Number	Technology Lesson Incidents	Non-technology Lesson Incidents
Makes negative comments about the activity	1	1	12
Asks to leave class (bathroom, drink, nurse, avoidance behavior)	2	3	2
Carelessly hurries through assignments	3	2	7
Has to be redirected for behavior	4	9	36
Does not do assignment or task	5	4	14
Hesitates to undertake something that might lead to failing	6	3	6

For further comparison, behaviors were divided into positive and negative in characteristics and averaged in order to compare. Based on these comparisons, I concluded that the students demonstrated similar overall average incidents of positive behaviors with an average of 10.3 incidents during non-technology lessons and technology lessons (Figure 3). These noted positive behaviors included participating in class discussion and starting the work promptly. On the other hand, students showed fewer incidences of negative behavior such as students having to be redirected while using technology with only 3.7 average negative behaviors compared to the 10.5 behaviors without the use of technology (Figure 3). One student made several off-task remarks such as “I’m a hoodrat” during the non-technology lessons but made more positive remarks such as, “this is cool!” during technology lessons.

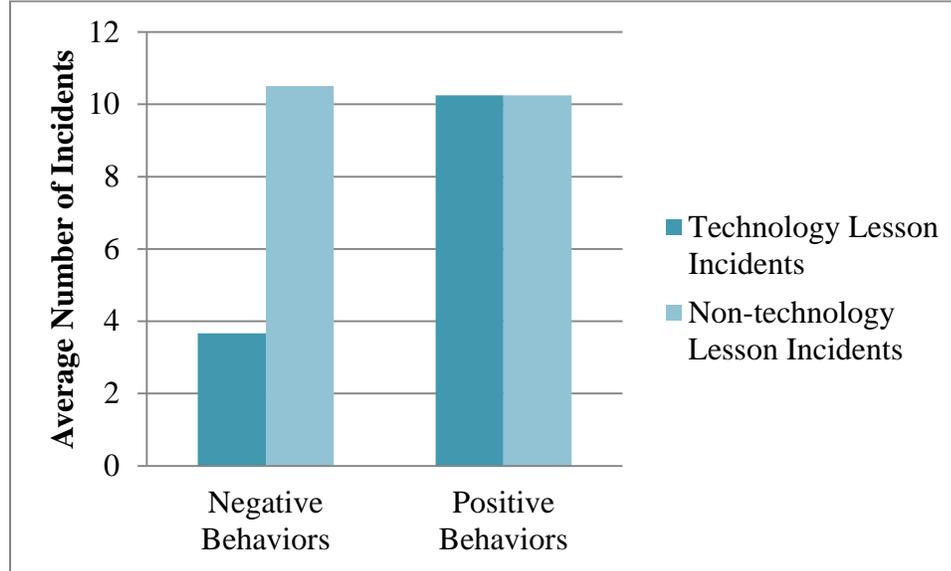


Figure 3. Student behavior during technology and non-technology focused lessons as observed by teacher visitors for the Motivation Survey Focus Group, ($n = 10$).

Attitudes Toward Technology

Students' attitudes toward technology was examined in the Pre and Post-treatment Semantic Surveys and increased after the treatment period as seen in Figure 4. Modes from the student responses did change from *strongly agree* for the statements, "I like using computers and technology to learn" and "I prefer learning with technology" but there was a decrease from *strongly agree* to *agree* was seen for the statement, "I believe technology skills will be important in my career. Examination of Likert scale average showed a more clear increase in positive attitudes toward technology. The greatest increase seen from the Pre- to Post-treatment Survey was for the statement, "I like using computers and technology to learn" with a 0.3 increase in average Likert scale response."

Positive reactions to technology were also evident when they stated “technology makes me feel at home” and “I’m good with technology and the games are fun so it’s fun to learn.”

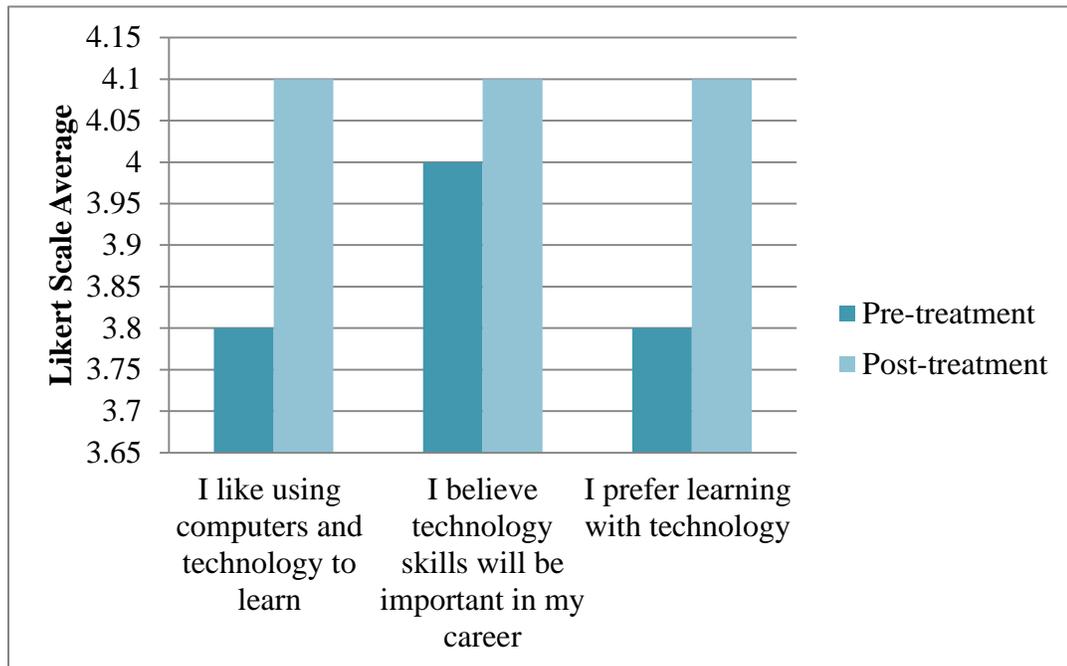


Figure 4. Student attitude shift data following treatment period taken from Pre and Post-treatment Survey's, ($N = 104$).

There were 104 students who took the Pre and Post-semantic student technology surveys to track changes before and after the treatment period. Online tool use and study habits emerged as topics of importance concerning student engagement.

Online tool use

Through the Post-semantic survey, students indicated a preference for the Edmodo online tool over the Silver Hills Middle School Homework Page (Figure 5 and 6). For three out of the four statements that addressed student usage, the average Likert

scale response was higher for Edmodo. The difference in average Likert scale responses for the two tools varied most for the statement “I use this online tool” with an average response of 3.6 for Edmodo and 2.6 for the Homework Page. Upon closer examination, the mode for this statement was *strongly disagree* for Homework Page use and was *strongly agree* for Edmodo use. The preference for Edmodo was also heard when a student mentioned, “I don’t like Khan Academy (an online tool being used by our math department), I only like Edmodo.”

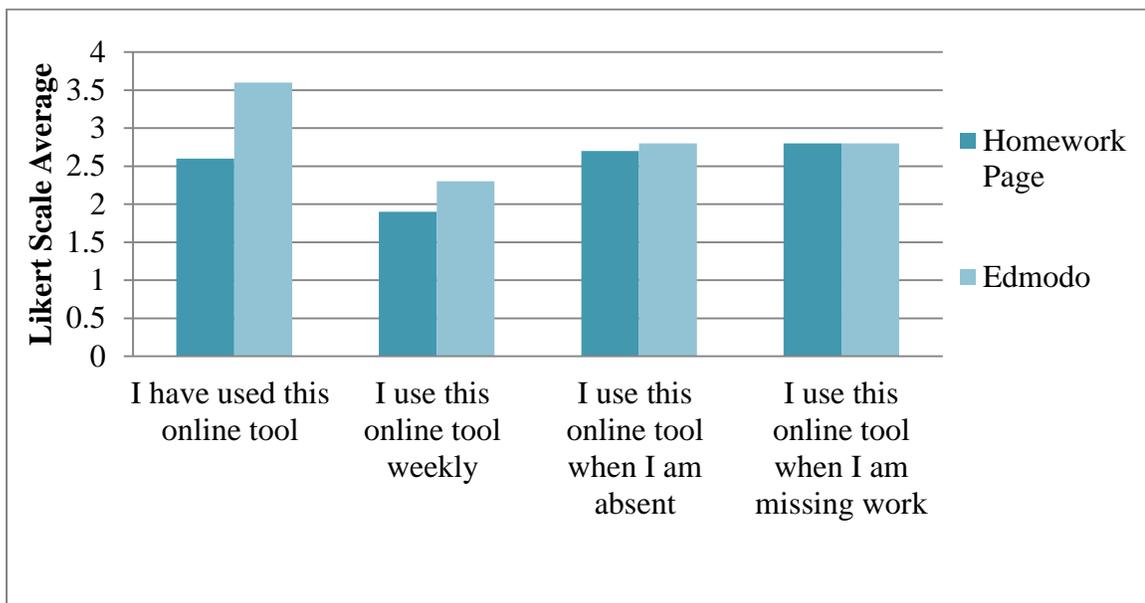


Figure 5. Edmodo use versus Homework Page use from Post-semantic Survey Results, (N=104).

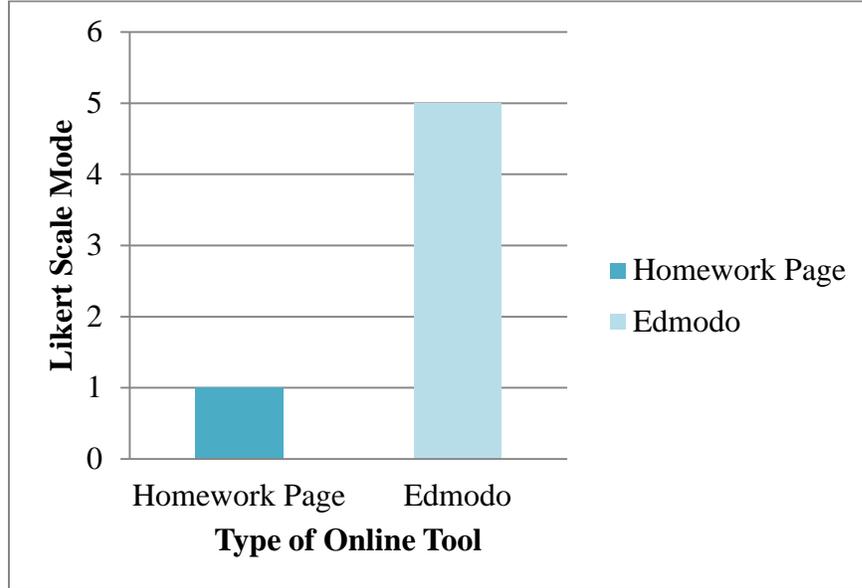


Figure 6. Edmodo use versus other online tool use Post-semantic Survey Results, (N=104).

A closer examination of specific uses of Edmodo was done to reveal how students are using the webpage. None of the responses had an average Likert scale response higher than 3.2 but the response with the highest rating (3.2) was for the statement, “I use Edmodo to study for tests and prepare for class” indicating how students use the website most (Figure 7). For example, one student responded, “the library (a location for resources within www.edmodo.com) always had sites I could use to study for quizzes and tests” and another student shared, “I liked to play the review games and small quizzes.” Analysis also revealed that the mode for all the statements regarding Edmodo use was *strongly disagree*. Edmodo was used the least to get help from other students with an average Likert scale response of 1.9 even though some mentioned that “getting help from classmates on Edmodo helped me learn in science class.” Students also used the website

when they were absent from school because they could “learn the lesson from that day by watching a video clip.”

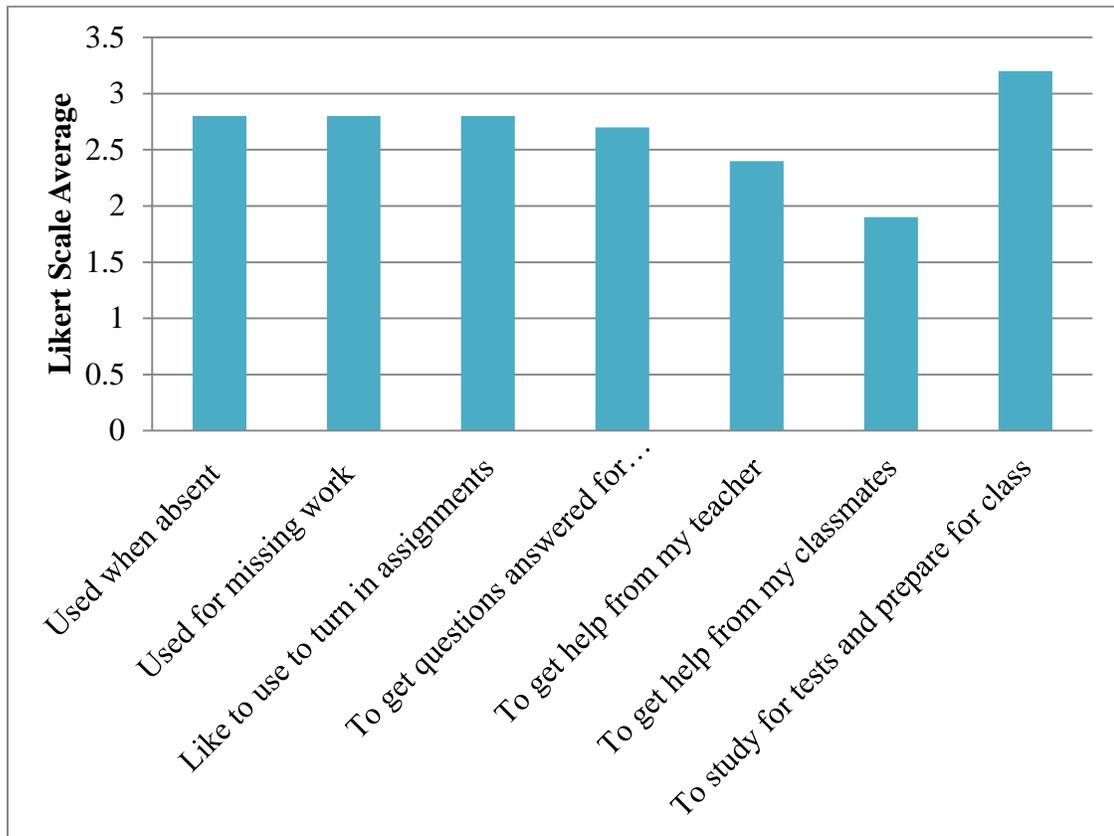


Figure 7. Trends in student use of Edmodo from Post-semantic Survey Results, (N=104).

Study Habits

Student engagement in the learning process was assumed when study habits increased as portrayed in Figures 7 and 8. Student study habits were separated into two categories and analyzed: 1) online tool use and 2) student responsibility for learning.

Average Likert scale scores for online tool use improved throughout the treatment period with the statement “use online tools to study for science” that demonstrated the greatest difference of a 0.8 point change and a modal change from *agree* to *strongly*

agree (Figure 8). There was also an increase in mode for use of online tools for comprehension but a decrease for use of the tools for extension topics dropped.

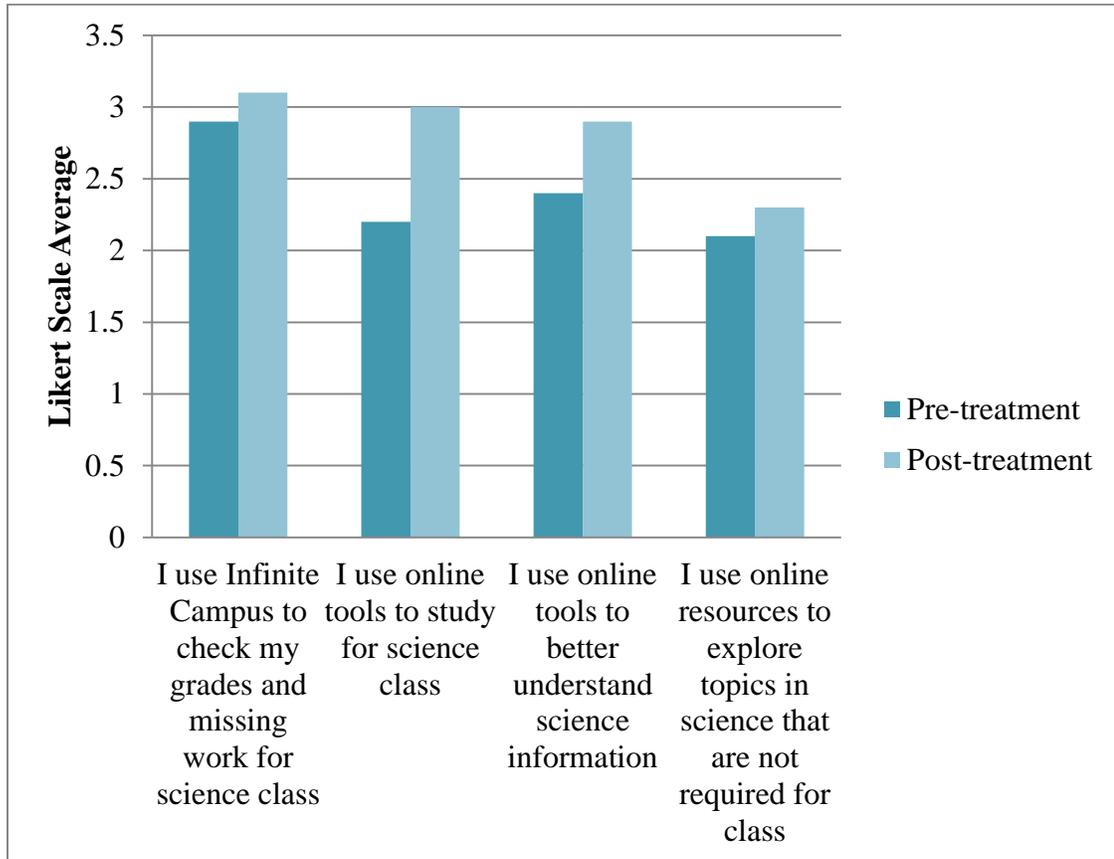


Figure 8. Responses to study habit statements from student Pre and Post-semantic surveys regarding online tool use, ($N=104$).

In terms of online tool use where it related to student responsibility, data shows students did not show that the implementation of technology aided in their ability to take more personal responsibility for their study habits (Figure 9). The average response to such statements either decreased or remained the same. There were also decreases in mode for 50% of the student responsibility statements. Students forgot assignment more

often and felt they had more missing work. Modes did, however, indicate an increase response in science understanding.

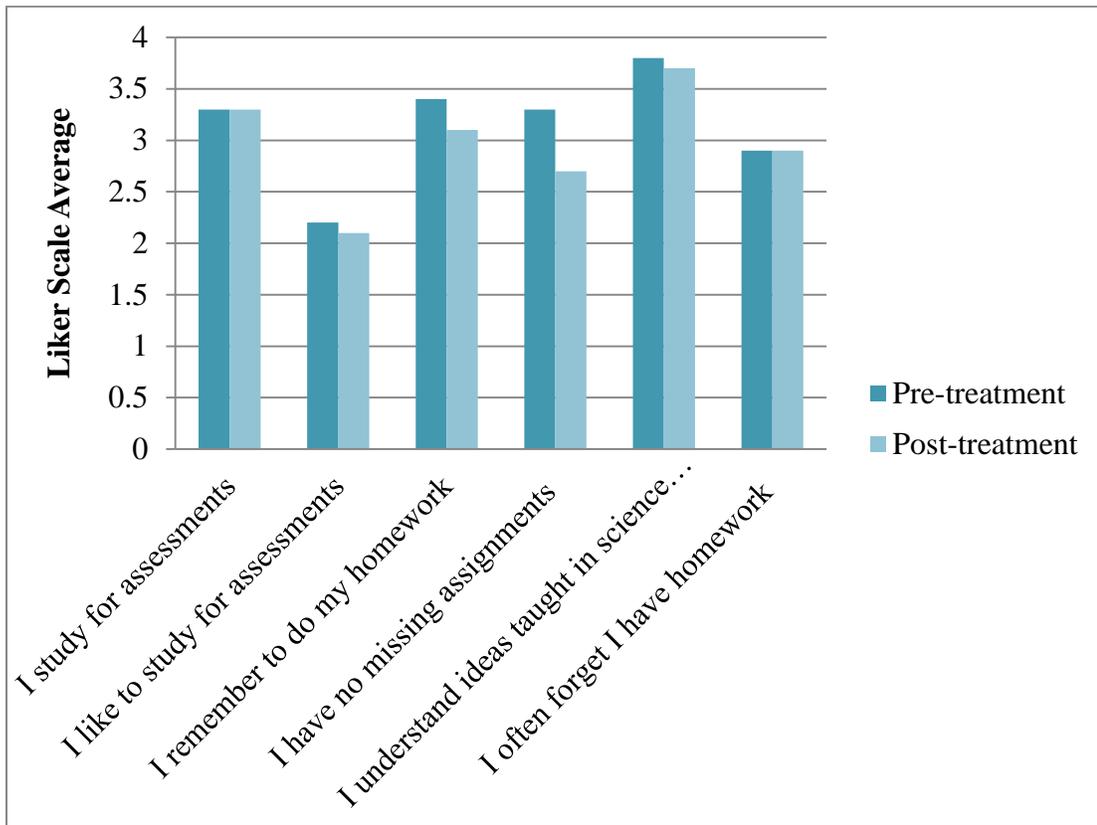


Figure 9. Responses to study habit statements from student Pre and Post-semantic surveys regarding student responsibility, ($N=104$).

Use of Edmodo for test preparation was reported by students. During the treatment period, all students were given paper test reviews and the option to access online test preparation materials for four different assessments. Results revealed an increase in use of these tools throughout the treatment period. The data shows that 14 students used tools to prepare for the 1st assessment and a total of 40 students used them for the last assessment which is a 185.7% increase (Figure 10). One student reported that

the online resources on Edmodo were “like a fun environment, so studying wasn’t boring.”

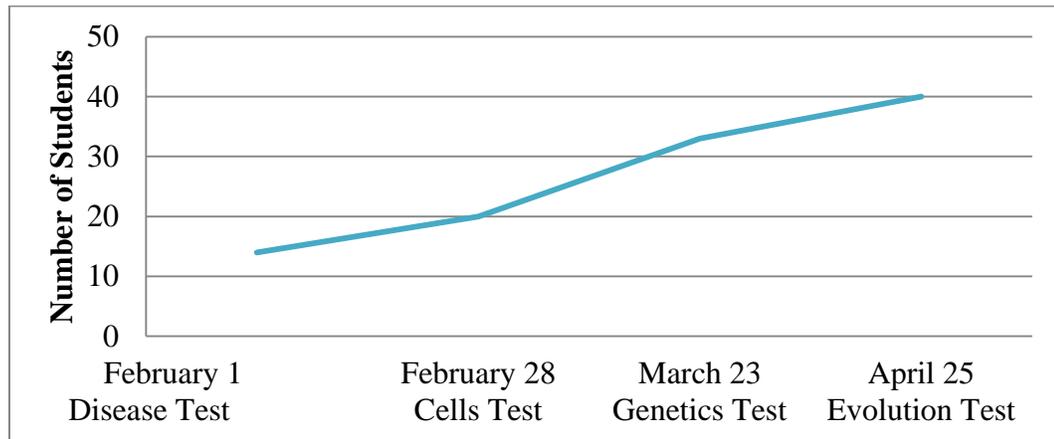


Figure 10. Trends in student use of online test preparation resources, ($N=104$).

Student Performance

For all four assessments in which the review material was made available to the students, students who used the resources performed better on average than the two other groups of students (Figure 7). The groups compared included average test scores for: 1) all students ($N = 104$), 2) students who used Edmodo at least once during the treatment period but did NOT for the test being compared, and 3) students who used Edmodo to prepare for the test in questions. Test percentages for the sample group of 60 students who accessed the review material for at least one assessment were compared. For the initial Disease Assessment, students scored 15 percentage points better (average of 3 points better) than the rest of the sample group if they had used Edmodo to study. When compared to the entire class average, the Edmodo users showed an 11.7 percentage point

advantage (average of 2.5 points better). Over time, the performance was not as great with a 0.7% better on average for the final assessment on evolution (0.3 points better). This last assessment also corresponded with the greatest amount of students ($n = 40$) who used the online study tools. Upon further examination, test score advantages of the Edmodo use group compared to the rest of the sample group were found to be as follows: 15 percentage points higher for the disease quiz ($n = 7$), 6.2 percentage points higher for the cells test ($n = 19$), 4.1 percentage points higher for the genetics test ($n = 34$) and 0.6 percentage points higher for the evolution test ($n = 40$). While the group still had higher percentages on tests, the advantage was not as great as the number of users of the online study tools increased (Figure 11).

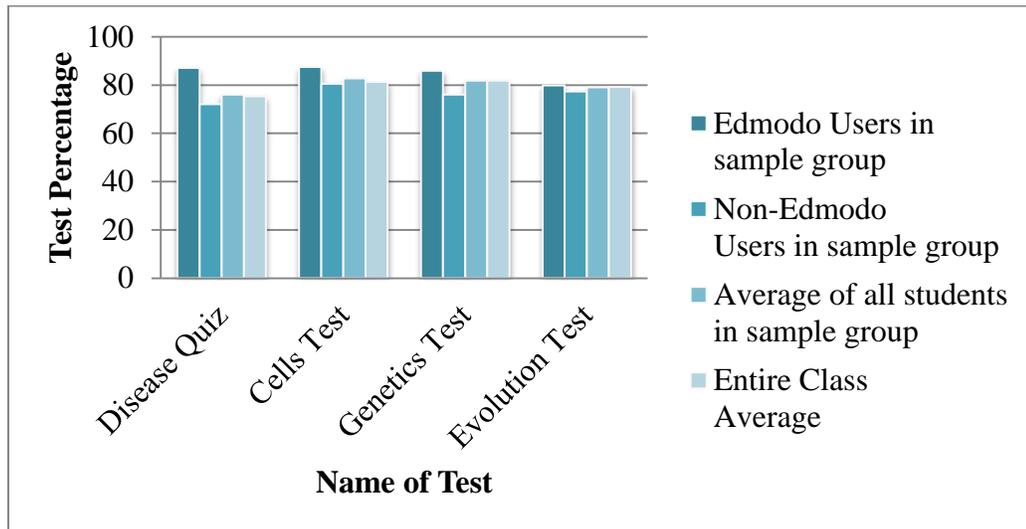


Figure 11. Average test scores based on use of Edmodo test preparation resources, ($n=60$). *Note.* the larger difference between Edmodo users and the entire class average.

Using the test score data, it was also noted that 66.7% of students received their highest test score after using Edmodo (Figure 12). Upon closer examination, the students were broken down into categories based on educational needs including students

on a Literary Plan ($n = 4$), in the Special Education (SPED) ($n = 3$) or Gifted and Talented program (GT) ($n = 4$), English Language Learners (ELL) ($n = 5$), and Fully English Proficient (FEP, exited from ELL program) ($n = 3$). For the students on a Literary Plan that used Edmodo to review, ($n=4$) 75% received their highest test scores after using Edmodo review material.

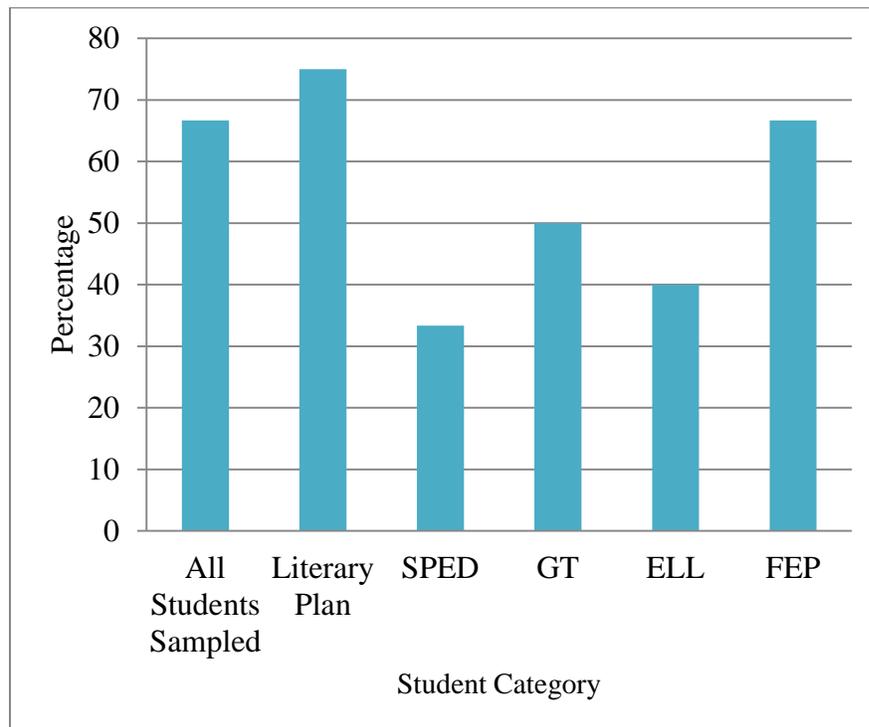


Figure 12. Percentage of students who received highest test score with use of Edmodo test preparation resources, ($n = 60$).

Parent Engagement

Parent engagement in the learning process was explored through both student and parent Pre- and Post-semantic surveys. Parents were asked to reflect on technology as it

related to their child's learning and its role in their engagement with their child's progress (Figure 13). Responses to statements about their engagement were compared for the Pre-semantic and Post-semantic surveys for the nine parents that took both surveys. An increased Likert scale average score indicated an increase in engagement. Parents demonstrated an increase in engagement for all statements except for "I know when assignments are due" which saw a decreased average Likert scale score of 0.3. The greatest increases (0.9) were for the statements "I know when there is missing work" and "I have access to tools to help my child study." Modes remained fairly static and changed for two statements. There was a decrease from *agree* to *neutral* for "I know what activities are happening in class" and an increase from *neutral* to *agree* for "I have access to tools to help my child study."

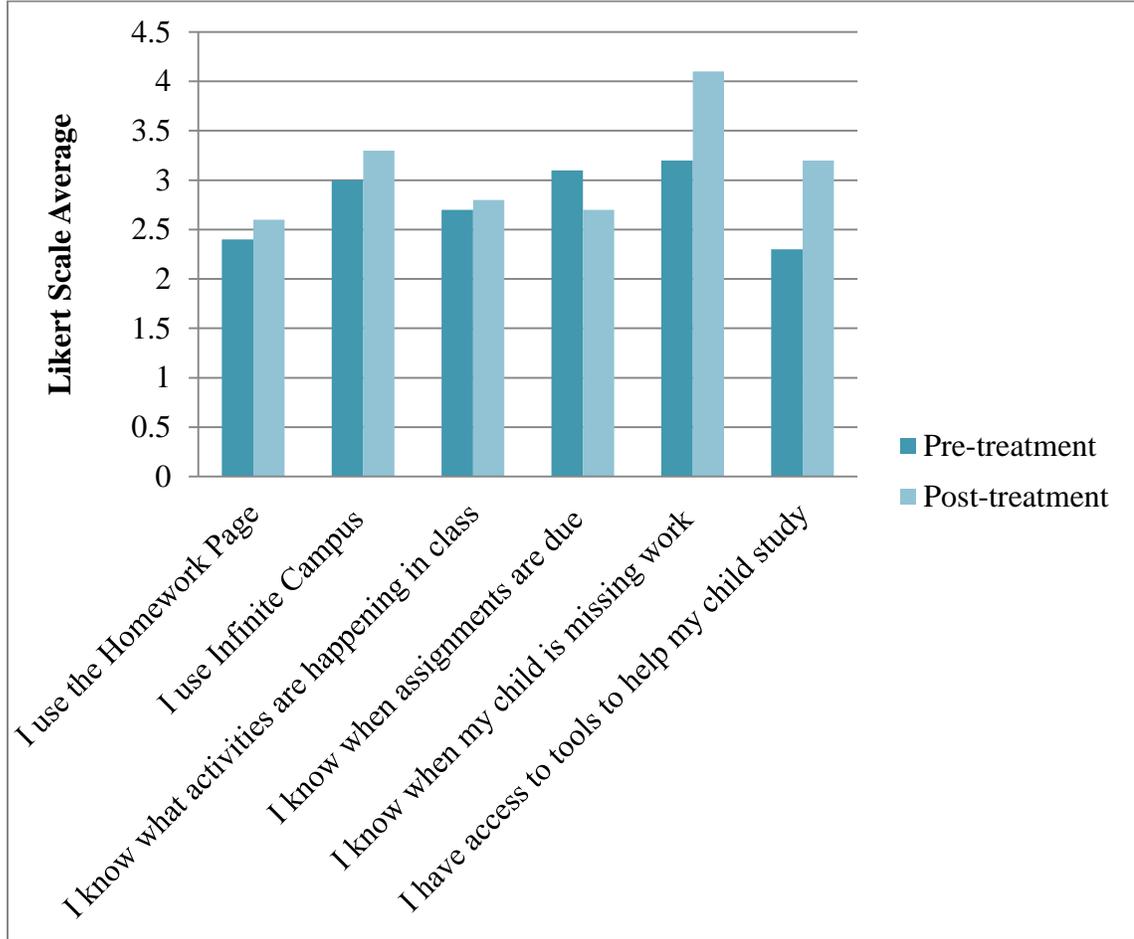


Figure 13. Parent responses regarding their engagement due to implemented technology, ($n = 8$).

Students were also asked about their parents' engagement on the Pre- and Post-treatment Surveys. Trends in parent engagement were tracked through statements that about student perception of parent involvement in their learning process as it relates to science. Statements in this category included: 1) my parents talk to me about my grade in science, 2) my parents know what I am doing in science class, 3) my parents remind me to do assignments for science class, 4) my parents remind me to study for tests and quizzes, and 5) my parents talk to me about missing assignments in science class. The

questions were compiled and the results are reported below (Figure 14). Average Likert responses increased for all statements which indicated the students felt there was an increase in parent involvement after the treatment period. Students reported that the communication “helped by my parents being able to remind me what I am missing and what I need to study for” and “my parents were constantly talking to me about my grade.” The largest increase of 0.5 was seen for the comments related to parent reminders about homework and the need to study for upcoming assessments. Comments about their involvement included “they remind me and ask if I need help” or “all I can say is that I love to know my mom is able to remember.” While an increased average Likert scale was observed for these statements, the mode decreased from *strongly agree* to *strongly disagree* in both cases.

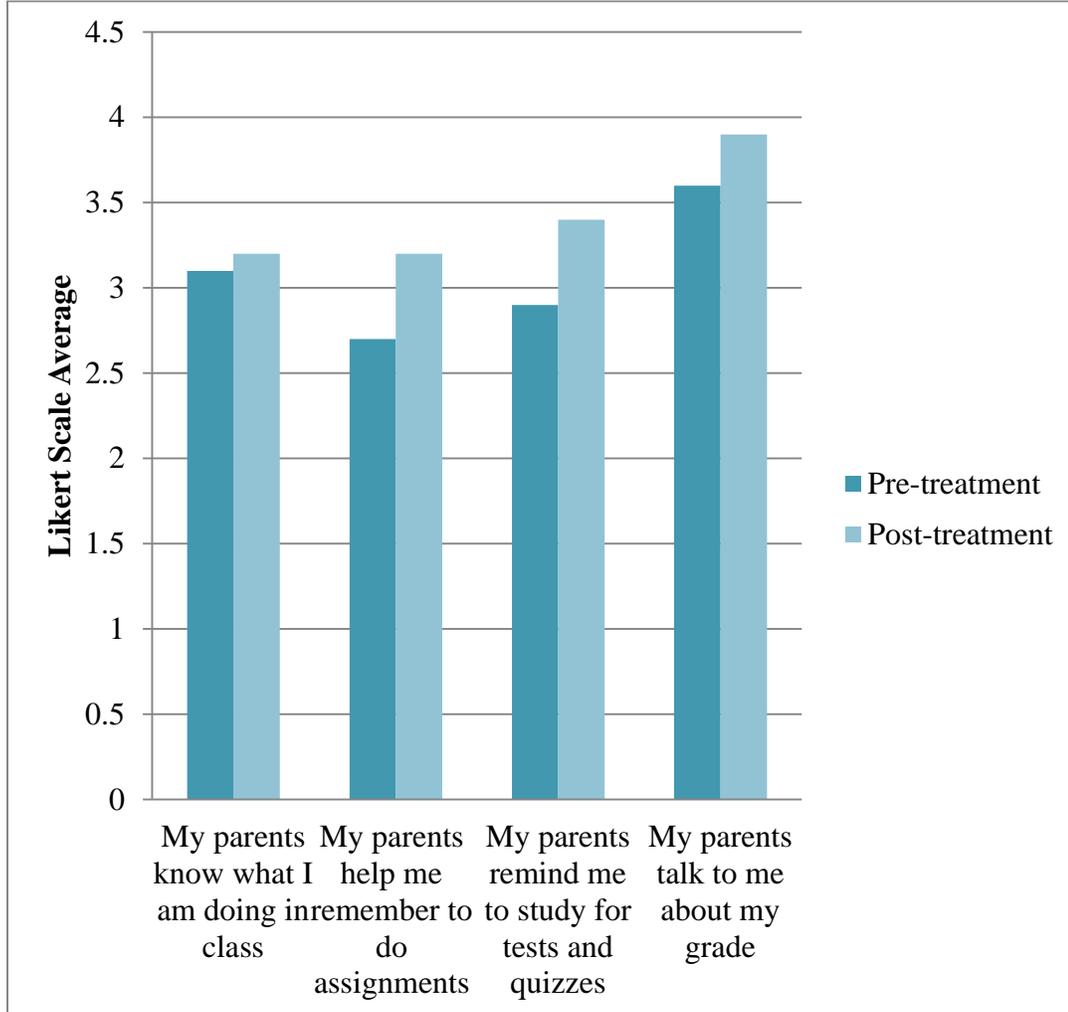


Figure 14. Student response regarding their perception of parent engagement on Pre and Post-semantic Student Surveys, ($N = 104$).

Another aspect of parent engagement explored was preferred form of communication via technology. Parents preferred texting, with 14 respondents that *agreed* it was the best form of communication. Reasons included accessibility and ease, and one parent remarked that “text messages are easier to access for me and come directly to me.” Someone else stated “it is the easiest way to get a hold of me” because “I

don't have to go anywhere.” Emails from me were the next choice with nine respondents who *agreed* it was a good form of communication with one reason being e-mails “are received on my phone so I loved that I get updates (that way).” Parents found the Silver Hills Homework Page to be least useful with only two respondents that *agreed* it was a useful tool for communication (Figure 15).

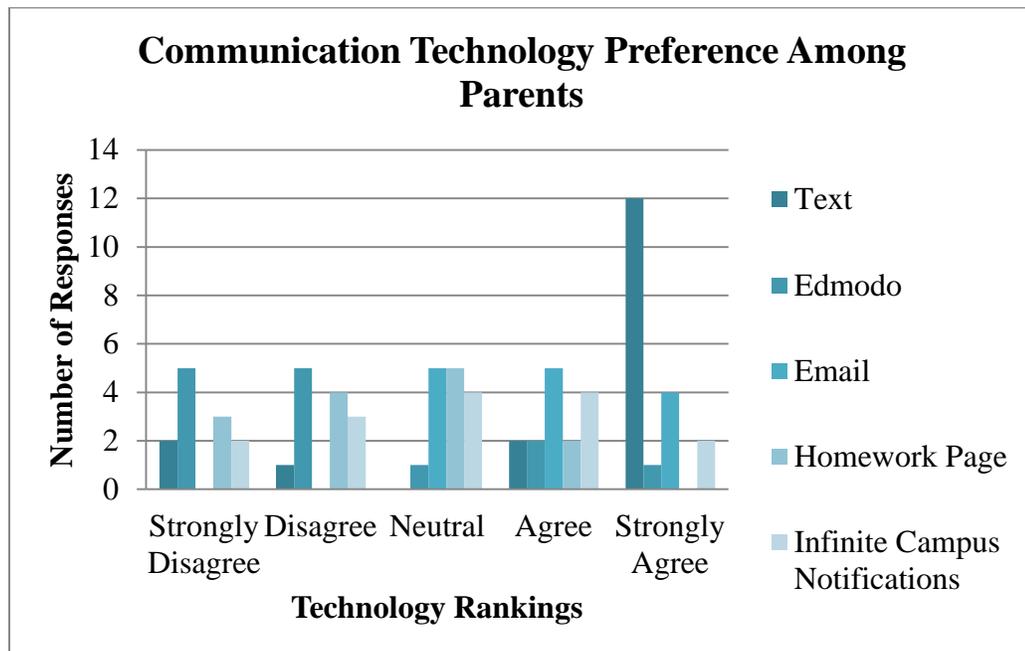


Figure 15. Communication technology preference among parents, ($n = 60$).

In order to gain a more quantitative interpretation of the effects of my communication, I tracked the number of times students and parents contacted me week by week regarding missing work and grades based on whether or not a specific type of notification had gone out. According to my records, students contacted me an average of 3.5 times more on weeks when the notifications went out and parents contacted me 2.4 times more (Figure 16).

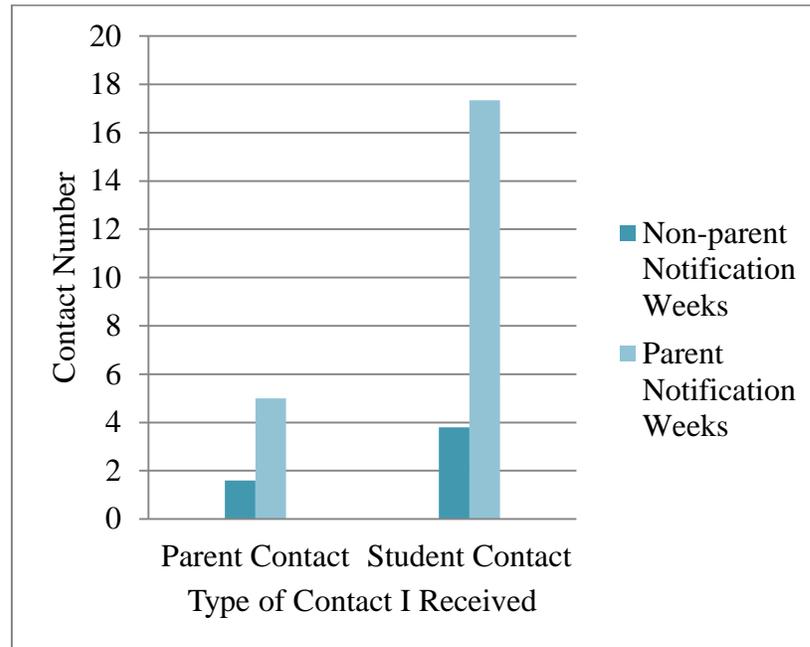


Figure 16. Number of weekly contacts received following Infinite Campus notifications, ($N = 124$).

INTERPRETATION AND CONCLUSION

This project provided evidence that technology can have a positive impact on areas of student engagement, student performance, and parent engagement as they relate to the student learning process.

With regard to student engagement, negative behaviors (which are a sign of disengagement) decreased during lessons that implemented technology and attitude toward technology and online tool use increased. Technology lessons also provided an opportunity for different types of positive behaviors to be exhibited by students. Both types of lessons elicited equal numbers of positive behavior responses but the types of responses were different. These findings suggest that lessons both with and without

technology should be taught. Content delivery should come in varied forms not only to avoid negative disengagement behaviors but also to access the variety of positive behaviors we want to see our students demonstrate. Following the treatment, there was an improved attitude toward technology as well. This increase showed me that exposing students to certain aspects of technology possibly increases their familiarity, thereby leading to a more positive perspective. Technology implementation did not appear to have a positive effect on study habits related to student responsibility which shows me there needs to be further examination of how the students use these resources to study and take responsibility for their grades and learning. Some other negative aspects were heard from students who felt overwhelmed by the updates they received during the study. Comments were made by students who felt that “constant updates were annoying” and that Edmodo was “really confusing.” I have since determined why they were receiving so many updates and will be able to modify this aspect of my communication in future years.

Student performance with the use of online tools showed an initial advantage but lacked clear enough results to indicate a correlation. While students who used online test review tools had higher test percentage points when compared to other groups of students, the advantage decreased as the number of students using the tools increased. There was a noticeable lack of access to computer labs in my school this year leading to the inability to ensure all students had access to these online tools. Future implementation of these quizzes for all my students over a longer period of time will yield more accurate results regarding student performance. Although small in sample

size, it should be noted that when students with a specific learning label were examined, those on a literary plan appeared to have a greater advantage. They had the highest percentage of students who received their best test scores after using the online test review materials. This information should lead to the encouragement of such students to use the tools for future assessments.

Ongoing communication with parents was my attempt to increase parent engagement in their child's learning process which appears to have been successful. Parents *agreed* with statements concerning their engagement more often and students also noted an increase in their parents' engagement in their learning following the treatment period. One parent emailed me independent of the project and surveys and stated, "I really appreciate your regular emails about classwork and homework and study guides on Edmodo. I believe it is very important for them to have access to all these different ways to learn" while another asked if I would "please pass on my (methods of communication) so that (she) could stay as informed about other classes as (she was) about mine." I also learned which types of technology are thought to be most useful to parents and will focus my communication efforts on emails and texts.

One surprising piece of data revealed that student perception of the number of missing assignments they had increased. Upon initial examination, it would appear that students have more missing assignments but further inquiry could reveal another trend. As my communication with parents about missing assignments increased, students simply be more aware of the fact that they are missing work. I involved parents in the

notification of students which, in turn, may have alerted students to their missing work more often.

VALUE

This action research has provided me with a great amount of data and information that I can and will use in future classes that I teach. The use of technology in schools is going to become more important each year and I am grateful for the opportunity to learn so much in one year about my students, their parents and myself related to some aspects of communication technology. Due to the extensive action research process, I have transitioned from feeling unsure of myself with regard to technology skills to being seen as a leader in technology at my school. I have been invited to participate in two technology pilot studies and was asked to be part of a technology-focused team next year because of my newfound technology skills. The first pilot study is for the district science department and focuses on online tools like the ones I implemented in this study as well as some new ones. The other pilot is within my school and will be looking into the “blended learning” model. I know that because of my participation in this MSSE project, I am much better equipped to participate in the pilot groups as well as be a more helpful team member. I have more knowledge of the technologies we will be using as well as data that could possibly drive our decision-making process. I would encourage our team to limit the amount of communication to students and parents to only the most preferred method, which appears to be texting in the case of my study group. We can possibly offer parents and students a choice before implementation. In addition, I will try to get

devices in my classroom before tests that will allow all of my students to use the online test preparation materials because of the possible positive effect on student achievement. Not only do I have new tools to engage my students and subsequently improve their performances, this project aided in my professional advancement.

The aspects of the project that yielded the most positive results will definitely be incorporated into my practices for next year. Students responded well to the online test preparation tools both in attitude and in test scores which indicates this is a practice I should continue. I hope to bring more computers into my classroom next year so that all of my students are given the opportunity to access these online tools during class time and their only opportunity isn't outside of class. In addition, the increased number of students and parents that contacted me following the Infinite Campus notifications is telling and I will begin implementing this on a weekly basis. I also think it is important to note that while technology is an important piece in education today, we can still see positive engagement happening in the learning process without it. A balance needs to be maintained because aspects of learning such as social interactions can sometimes be lost when sitting in front of a computer screen. It is also going to be the job of educators to ensure that with the increased availability of technology in our classrooms, we learn how to use those technologies to foster all capacities of students.

The aspects of the project from which I learned the most were the ones that revealed where students had difficulty. I appreciate this information because though my students this year may not realize it, their willingness to try new learning techniques that incorporate technology allows me to teach future students more efficiently. The students

appeared overwhelmed with the number of texts and notifications that were sent by Edmodo and they did not appreciate information that did not pertain to them. I now know what settings need to be used on this website to ensure that the students do not become overwhelmed and therefore frustrated with the program. I was also the only teacher using Edmodo on my core this year and wonder if more of my teammates were using it if the students would have found it “easier.” There were comments about its difficulty and that it was “confusing” or “hard to figure out.” Next year I have the opportunity to work with a core of teachers where everyone uses Edmodo, and I am looking forward to seeing if student reception of the online tool is different.

Parent involvement is a piece of teaching that often gets overlooked. Many times parents want to be involved but schedules interfere and they are left feeling uninformed. At conferences, one parent said to me, “he used to talk to us about what is going on in school, now we know nothing.” When equipped with the knowledge of what is happening in the classroom, however, parents become empowered to help their children as seen with the Pre- and Post-semantic surveys. Several parents requested I share my methods of communication with other teachers so they can “know what’s going on in those classes as well as they do (mine).” Parents and teachers care about helping students succeed and when they are provided with communication tools, they can work together toward the common goal of student learning.

What I take away from this experience is that the best use of technology is that it doesn’t necessarily need to be “exciting” for the students, but it needs to be purposeful and contribute to student learning. The use of technology doesn’t mean students will

learn more or be more engaged. It is up to us as educators to turn whatever methods we have, technology or otherwise, into tools that benefit our students.

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APPENDICES

APPENDIX A

PRE-SEMANTIC STUDENT SURVEY

PRE-SEMANTIC STUDENT SURVEY

*Participation in this survey is strictly VOLUNTARY.
Please tell Ms Hesterman if you do not want to participate*

Pre-semantic Student Survey

Name:_____

*Please rate the following items regarding your use of technology for science class.
Use this scale to reply to the statements below. Circle the number that is most true of you*

<-----Strongly Disagree-----Disagree-----Neutral-----Agree-----Strongly Agree----->
1 2 3 4 5

1. I have used the Silver Hills Middle School Homework Page for science class

1 2 3 4 5

2. I use the Silver Hills Middle School Homework Page Weekly for science class

1 2 3 4 5

3. I use the Silver Hills Middle School Homework Page when I am absent from science class

1 2 3 4 5

4. I use the Silver Hills Middle School Homework Page when I am missing work from science class

1 2 3 4 5

5. I use Infinite Campus to check my grades and missing work for science class

1 2 3 4 5

6. I use class websites to turn in homework for science class

1 2 3 4 5

7. I use class websites to get questions answered for science class

1 2 3 4 5

8. I feel comfortable sharing my ideas in class discussions in science class

1 2 3 4 5

9. I study for science assessments

1 2 3 4 5

10. I like to study for science assessments

1 2 3 4 5

11. I use online tools to study for science tests

1 2 3 4 5

12. I use online tools to help me better understand science information

1 2 3 4 5

13. I ask my science teacher for help outside of class time

1 2 3 4 5

14. I ask other seventh graders for help with science assignments outside of class

1 2 3 4 5

15. Discussions with other seventh graders helps me understand science assignments better

1 2 3 4 5

16. I am comfortable talking to the other students in my science class

1 2 3 4 5

17. I use online resources to explore topics in science that are not required for class

1 2 3 4 5

18. I like using computers and technology to learn about science

1 2 3 4 5

19. I believe technology skills will be important in my future career

1 2 3 4 5

20. I prefer learning with technology to “paper and pencil” learning

1 2 3 4 5

21. I like what I am learning in science class

1 2 3 4 5

22. I remember to do my science homework

1 2 3 4 5

23. I have no missing assignments in science class

1 2 3 4 5

24. I understand ideas taught in science class

1 2 3 4 5

25. I often forget what science homework I have by the time I get home from school

1 2 3 4 5

26. I use technology in science class: cellphone, computer, netbook, edmodo

1 2 3 4 5

27. My parents know what I am doing in science class

1 2 3 4 5

28. My parents help me remember to do assignments for science class

1 2 3 4 5

29. My parents remind me to study for science tests and quizzes

1 2 3 4 5

30. My parents talk to me about my grade in science

1 2 3 4 5

APPENDIX B

PRE-SEMANTIC PARENT SURVEY

PRE-SEMANTIC PARENT SURVEY

***Participation in this survey is strictly VOLUNTARY.
Please tell Ms Hesterman if you do not want to participate***

Write the response that best represents your opinion where:

SA = Strongly Agree, A = Agree, U = Undecided, D = disagree, SD = Strongly Disagree.

1. I use the Silver Hills Middle School Homework Page
2. I use Infinite Campus to check my child's grades and missing assignments
3. I know what types of activities are happening in my child's science class
4. I know when there are assignments due for my child's science class
5. I know when my child is missing work for science class
6. I have access to tools to help my child study for upcoming assessments
7. I see my child working on science assignments outside of class
8. My child uses online tools to gain a better understanding of science
9. My child uses online tools for science even when there is not an assignment due

How do you think technology (websites, computers, smart-phones, homework pages, Infinite Campus) can help your child be successful in science class?

APPENDIX C

POST-SEMANTIC STUDENT SURVEY

POST-SEMANTIC STUDENT SURVEY

*Participation in this survey is strictly VOLUNTARY.
Please tell Ms Hesterman if you do not want to participate*

Post-semantic Student Survey

Name: _____

*Please rate the following items regarding your use of technology for science class.
Use this scale to reply to the statements below. Circle the number that is most true of you*

<-----Strongly Disagree-----Disagree-----Neutral-----Agree-----Strongly Agree----->
1 2 3 4 5

31. I have used the Silver Hills Middle School Homework Page for science class

1 2 3 4 5

32. I use the Silver Hills Middle School Homework Page Weekly for science class

1 2 3 4 5

33. I use the Silver Hills Middle School Homework Page when I am absent from science class

1 2 3 4 5

34. I use the Silver Hills Middle School Homework Page when I am missing work from science class

1 2 3 4 5

35. I have used Edmodo for science class

1 2 3 4 5

36. I use Edmodo Weekly for science class

1 2 3 4 5

37. I use Edmodo when I am absent from science class

1 2 3 4 5

38. I use Edmodo when I am missing work from science class

1 2 3 4 5

39. I prefer to use Edmodo to complete assignments for science class

1 2 3 4 5

40. I use Edmodo to get questions answered for science class

1 2 3 4 5

41. I use Edmodo to get help from my teacher for science class

1 2 3 4 5

42. I use Edmodo to get help from my classmates

1 2 3 4 5

43. I use Edmodo to study for tests and prepare for class

1 2 3 4 5

44. I study for science assessments

1 2 3 4 5

45. I like to study for science assessments

1 2 3 4 5

46. I can turn in assignments online on Edmodo

1 2 3 4 5

47. I like having discussions and debates about science topics with classmates on Edmodo

1 2 3 4 5

48. Using Edmodo has prepared me for doing online classes or classwork in the future

1 2 3 4 5

49. I feel more confident using technology after using Edmodo

1 2 3 4 5

50. I feel comfortable sharing my ideas in class discussions in science class

1 2 3 4 5

51. I use Infinite Campus to check my grades and missing work for science class

1 2 3 4 5

52. I use online tools to study for science tests

1 2 3 4 5

53. I use online tools to help me better understand science information

1 2 3 4 5

54. I ask other seventh graders for help with science assignments outside of class

1 2 3 4 5

55. Discussions with other seventh graders helps me understand science assignments better

1 2 3 4 5

56. I use online resources to explore topics in science that are not required for class

1 2 3 4 5

57. I like using computers and technology to learn about science

1 2 3 4 5

58. I believe technology skills will be important in my future career

1 2 3 4 5

59. I prefer learning with technology to “paper and pencil” learning

1 2 3 4 5

60. I like what I am learning in science class

1 2 3 4 5

61. I remember to do my science homework

1 2 3 4 5

62. I have no missing assignments in science class

1 2 3 4 5

63. I understand ideas taught in science class

1 2 3 4 5

64. I often forget what science homework I have by the time I get home from school

1 2 3 4 5

65. I use technology in science class: cellphone, computer, netbook, edmodo

1 2 3 4 5

66. Reminders using technology help me remember what is going on in science class
(quizzes, tests, homework, projects)

1 2 3 4 5

67. My parents know what I am doing in science class

1 2 3 4 5

68. My parents help me remember to do assignments for science class

1 2 3 4 5

69. My parents remind me to study for science tests and quizzes

1 2 3 4 5

70. My parents talk to me about my grade in science

1 2 3 4 5

71. My parents talk to me about missing assignments in science class

1 2 3 4 5

Name: _____

Please answer the next questions to the best of your ability. I need your feedback so I can use technology in the best way possible for future students. Your opinions are VERY important!!!!

1. What method of communication would you prefer to receive from your teacher to remind you about upcoming assignments and tests? CIRCLE ONE AND DESCRIBE WHY

Texts from Ms Hesterman
Why?

Texts from Edmodo
Why?

E-mails
Why?

On the board in class
Why?

Information that gos to your parents so they can tell you what's going on
Why?

2. We used many different types of technology in class this year. How are these each good FOR LEARNING (I know they are all fun, describe how they help LEARNING) ????? Circle the one you like best

Smart Phones/Ipod touches

Chrome Books

Netbooks

I-pads (answer ONLY if you used one for class)

Desktop computer (normal computer)

Mimio

3. How does Edmodo help you learn AND what did you like about it?
It helps me learn by:

I liked this about Edmodo:

4. What are some things you did not like about Edmodo
5. How has technology helped you learn in science class?
- Using Chromebooks, netbooks, smart phones, desktop computers, I-pads, Ipad touches for research/classwork
 - getting help by sending e-mails/texts to your teacher
 - getting help from classmates on Edmodo
 - getting reminders through text
 - using the mimio for bellwork
 - turning assignments in online
 - Finding worksheets/missing work on Edmodo
 - Using Edmodo to study/better understand science topics

6. I have been sending texts and emails to your parents about missing work and upcoming tests and quizzes. What are they doing as a result of this communication?

APPENDIX D

POST-SEMANTIC PARENT SURVEY

9. I have access to tools to help my child study for upcoming assessments

1 2 3 4 5

10. I see my child working on science assignments outside of class

1 2 3 4 5

11. My child uses online tools (like Edmodo) to gain a better understanding of science

1 2 3 4 5

12. My child uses online tools for science even when there is not an assignment due

1 2 3 4 5

Continued on Back

How do you think technology (websites, computers, smart-phones, homework pages, Infinite Campus, Edmodo) has helped your child be successful in science class?

I have been using a variety of communication technology over the past couple of months to help parents feel more involved/informed. I would like to know which technology has been the most beneficial so that I may focus my efforts for future parents. Please rank the following forms of technology below and describe why ranked them this way: (1 = most beneficial, 5 = least beneficial)

___ Text reminders from Ms Hesterman

___ Information about science class posted on Edmodo

___ Emails reminders from Ms Hesterman

___ Information on the Homework Page

___ Emails from Infinite Campus about missing work and failing grades

Please tell me why you picked your first choice:

ANY additional information you have for me regarding using technology to communicate with you, your children, or using technology to help them learn (quizzes on Edmodo, reminders, resources on Edmodo, using technology in class like ipads and chromebooks) would be greatly appreciated. Thank you!!!!

APPENDIX E

TECHNOLOGY COMMUNICATION FORM

TECHNOLOGY COMMUNICATION FORM

Please complete the following form and either e-mail it to me or send it with your child to school. It is very important you complete the form so that I can better communicate with you to help your child be successful in science class.

Texting Information:

Starting in December, I will be sending out notifications and reminders to students and parents via text message. It is very important that all parents take advantage of this opportunity and follow the instructions below:

1. Create a new text message and type in this e-mail address in the to box: hestermanteacher@gmail.com
2. In the message box, type in your full name and tell me who your child is
3. Send!
4. Look for a text message in the next week from Ms Hesterman confirming you are on her parent listserv
5. If you do not receive a message from Ms Hesterman, retry this process or contact her to troubleshoot

Homework Page Information:

Each day, your child's teachers update the Silver Hills Homework Page with information about what activities were done that day and what homework/assignments are due. Please log onto the website and check out this wonderful resource. It is a great way for students to make up missing work or find out what needs to be done if your child misses school.

1. Enter www.silverhillsmiddle.org into the search box online
2. Look for the Homework Pages link on the right side of the page
3. Click on the Homework Page link
4. Under the 7th Grade section, click on Caldera
5. Scroll down to today's date and click on one of your child's core classes.
6. Scroll down until you see the word, "more"
7. Click on "more"
8. Check out what your child did that day in class
9. Click on any attached worksheets or handouts that are attached.

10. Contact Mrs Hesterman if you have any trouble finding this information.

Edmodo Class Website

I have created a class website that students will be using to participate in class discussions, turn in assignments, study for tests, and ask me any questions they may have about class. I will also post extra science resources there for them to increase their science understanding. You are invited to explore this website and see what great things are happening in science! I will be updating this website often so feel free to check in whenever you'd like.

1. Log onto: www.edmodo.com
2. Click on: I'm a student
3. Your username: caldera
4. Your password: parent

Infinite Campus Information:

I will be using Infinite Campus to contact you about any missing work your child has or if they have a D or F in class. E-mail messages will be sent out to you on a bi-weekly basis. Please confirm we have the correct e-mail address for you in our system below by filling out this form and returning to Mrs Hesterman:

My child's name: _____

My name: _____

My current e-mail address: _____

OR

Check here if you do NOT have an e-mail address:

APPENDIX F

EDMODO SCAVENGER HUNT

EDMODO SCAVENGER HUNT

Name: _____

Complete the following tasks ON YOUR OWN and check the items off as you finish

- _____ 1. Get to the Edmodo homepage
- _____ 2. Sign up for a new account using this information:
Group Code: ipy2nk
Username: Your first name and first initial. Ex: Annieh
Password: your birthday. Ex January 23 = 0123
Email: Optional, enter if you have one
First Name:
Last Name:
- _____ 3. Send Mrs Hesterman a message!
- _____ 4. Join your class period's group:
First period code: 06uili
Second period code: 0z9gsb
Fifth period code: huuw2a
Sixth period code: cpln6o
- _____ 4. Go to the LIBRARY
- _____ 5. Find the video folder and find the watch the video on the rolling salamanders and caterpillars. What crazy thing can they do? Write your response here:
- _____ 6. Find the classroom resources folder in the Library. After exploring each one, pick three. Then write their names below and briefly describe what the website is about:

Classroom Resource #1 Name: _____

Description:

Classroom Resource #2 Name: _____

Description:

Classroom Resource #2 Name: _____

Description:

_____7. Where can you find notes for class and the lectures/powerpoints that go with them? _____

_____8. Where can you find homework and handouts from class activities? _____

_____9. Respond to the discussion question I sent you on your home page using the attached rubric

_____10. Find the assignment labeled "Practice turning in assignments" that was sent to you. Read the instructions, complete the assignment and turn it in online!

_____11. Check with Mrs Hesterman to see that she received your assignment.

APPENDIX G

SCHOOL ACHIEVEMENT MOTIVATION SURVEY

**Based on from Chiu, 1997*

SCHOOL ACHIEVEMENT MOTIVATION SURVEY

***Participation in this survey is strictly VOLUNTARY.
Please tell Ms Hesterman if you do not want to participate***

*Mark the number of incidences of the behaviors listed below for the same five students
each class period*

Chooses to work above and beyond what is expected (extra credit, special project, etc.)

Bring in materials (pictures, newspaper clippings, old coins, etc) related to classroom activities.

Has to be redirected for behavior in class

Sticks with a task until it is completed

Attempts to solve problems that others have difficulty with

Chooses minimum over maximum assignment

Asks questions to better understand materials being studied or to aid in solving assignments

Refuses to do assignments or homework

Finds the answers to the assigned questions

Participates in class discussion or activities

Carelessly hurries through assignments

Does something over again just to get it right

Tries to avoid competitive situations

Shows enthusiasm toward class studies

Hesitates to undertake something that might lead to failing

Makes positive comments about the activity: (this is fun, is class over already? Are we going to do this again tomorrow?)