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Teaching Psychology in Secondary School: The Flipped Classroom Approach and the ARCS Motivational Model

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TEACHING PSYCHOLOGY IN SECONDARY SCHOOL: THE FLIPPED CLASSROOM APPROACH AND THE ARCS MOTIVATIONAL MODEL

by

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DEDICATION

This dissertation is dedicated to my family, generations of family. During challenging times, I envision my grandparents' hand on my shoulder, whispering the words that I need. My parents, Doug and Betty Ritter, are right behind them. My dad taught me that there is always more to learn and that each achievement leads to another. Any ounce of humility I have is because of my dad. To my mom, whose dedication and desire to give us the best has given me the ambition to do something with my opportunities. Special thanks to my siblings, Jeffery and Lucinda. How different we are. This is my biggest influence in studying motivation. Thanks for being who you are.

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ABSTRACT

Motivational levels towards learning course content are low due to the lack of resources. This action research evaluated the impact of implementing a flipped classroom approach on students' motivation to foster the content knowledge in a high school introductory psychology course. Using a flipped classroom approach, lecture-based activities were recorded and saved for the home where students could control the viewing Traditional lecture in the classroom was replaced with active learning strategies. This research answered the questions: (1) How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course? (2) How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course? (3) What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content in an introductory psychology course?

To answer these research questions, convergent parallel mixed methods design was utilized. This action research included intervention of the flipped classroom approach over eight weeks. Data collection consisted of quantitative data of teacher-made pre- and posttests and student surveys, as well as qualitative data of interviews, exit slips and researcher journal entries. Five students volunteered and participated in the interviews, while 58 total students participated in the intervention, between the ages of 14-18. Descriptive statistics and paired sample t-test were used to analyze quantitative data. Qualitative data were analyzed with inductive analysis. The findings enhanced the

understanding of how implementing a flipped classroom approach impacted student motivation, perceptions, and effectiveness of learning the content knowledge in a high school introductory psychology course. Results indicated that student motivation, perceptions, and effectiveness of learning are supported in the flipped classroom due to increased opportunity for collaboration, review, and the incorporation of active learning

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CHAPTER 1

INTRODUCTION

National Context

The National Center for Educational Statistics (NCES) investigated student access to digital learning outside the classroom in their study, *Student Access to Digital Learning Resources outside the Classroom.* Working on behalf of the U.S. Department of Education, the NCES reported that 94% of school children between the ages of 3 to 18 live in households that have computers (KewalRamani, Zhang, Wang, Rathburn, Corcoran, Dilberti, & Zhang, 2018). Increasingly, we live in a society that supports instant access to information and feedback (Roberts & Koliska, 2014). This information is no longer delivered through television, radio, newspapers, or computers, but hand-held mobile devices that are frequently within arms' reach, with the answer to infinite amounts of questions a request away (Roberts & Koliska, 2014). With digital technology progressively in the hands of our young learners, it is useful to inquire about the ways that learners are taking advantage of instant access to endless amounts of information online (Roberts & Koliska, 2014).

As the availability of technological tools increases, school districts and educators are faced with the challenge of how to harness the power of instant access to all things information. The NCES reports that while more students have access to technology, this does not translate into increased academic achievement (KewalRamani et al., 2018). Educators and school districts are in a great position to successfully integrate technology

into the educational experience and create learning activities that foster critical thinking and instruction on how to use easily accessible information.

One way that instructors can successfully integrate technology into their classroom is by creating a flipped classroom environment. To flip the classroom means to invert, or trade what one would traditionally think of as in-class procedures and lectures, to the home, and out-of-class procedures, like homework questions, to be completed in class (Lage, Platt, & Treglia, 2000). This provides an environment that is collaborative-rich (Butzler, 2015; Enfield, 2015), learner-centered (Danker, 2015; Glance, Rhinehart, & Brown, 2018; Hao, 2014; Isaias, 2018), and class time that is filled with active learning opportunities (Gilboy, Heinerichs, & Pazzaglia, 2015; Jamaldin, Osman, Yusoff & Jasni, 2016; Lage, Sultan, Woods, & Koo, 2011; Platt, & Treglia, 2000).

The flipped classroom approach and their counterparts, hybrid design and blended learning, have been incorporated into undergraduate courses around the world (Butlzer, 2015; Clark, Besterfield-Sacre, Budny, Bursic, Clark, Norman, & Slaughter, 2016; Hao, 2014; Enfield, 2013; Mok, 2014), along with the K-12 settings (Bergmann & Sams, 2009; Kostaris, Sergis, Sampson, Giannakos, & Pellicione, 2017; Sezer, 2017). Since student access to digital learning resources has increased, instructors must adapt and assimilate technology into the learning experience (KewalRamani et al., 2018; Isaias, 2018; Lo, 2018). The flipped classroom approach has grown in various disciplines (Lo, 2018) and includes the areas of health, science, technology, engineering and mathematics (STEM).

The purpose of this study was to delve deeper into the use of digital technology in classrooms, and more specifically, the integration of a flipped classroom approach in a

high school introductory psychology classroom and how this influences students' motivation, perceptions, and effectiveness of learning the content knowledge. With the advent of access to wireless communication at our learners' fingertips, it is time to adjust instructional approaches.

As the adoption of new technologies is further integrated into the educational landscape, the psychology classroom teacher has many options for assistance in effective pedagogical practices. One advantage teachers have at their disposal are national standards and course guides, accessible through the American Psychological Association (APA) website. A membership with the APA grants teachers access to resources supplied by the Teachers of Psychology in Secondary Schools (TOPSS). This professional community assists teachers with comprehensive lessons aligned to standards for $50 for a yearly membership. These resources support the planning and construction of instructional content.

In addition, there is a community of psychology teachers connected through the internet that collaborate and share materials, activities, and even syllabi that offer engaging activities designed to appeal to a student's autonomy. With the added advantage of student access to smart devices, the need for deliberate and considerate instructional materials with the integration of technology is absolute.

While instructional resources are also at a teacher's fingertips, the challenges come with pairing the lessons with 21st century technology. Magda and Aslanian (2018) report that 67% of undergraduates are using mobile devices to complete their online assignments, proving that our students are ever more reliant on their smartphones or tablets to access learning opportunities. The NCES reported that 61% of children ages 3-

18 used the internet in their own homes in 2015, with the number increasing as the level of the parents' education increases.

Furthermore, current instructors may not have grown up in the digital landscape that students born in the 21st century have come to know and expect. Moreover, absent students are consistently connected to the classroom with access to reliable internet, making lessons that are accessible online available at the students' discretion (Bergmann & Sams, 2009) an entirely plausible option, whereas a short time ago this was unheard of. The adjustment, from pen and paper and traditional lecture, to webcast and online learning management systems can be new, time-consuming, daunting, and confusing. Without proper guidance, administrative support, and adequate professional development, the integration of technology may go to the bottom of the priority list

Local Context

Students at Rohn High School have been using their own Google Chromebooks since the 2017-2018 school year. With the adoption of the Google Chromebooks came the expectation for instructors to begin utilizing the Chromebooks regularly, yet, with very little professional development. The administration expressed a desire to go paperless, or to begin limiting the number of copies and copy paper each teacher was using. The administration also expressed the desire for each teacher at Rohn High School to become a certified Google for Education instructor. This requires passing a test that includes 13 learning modules. While some teachers at Rohn High School eagerly accepted the challenge of integrating Chromebooks into the classroom, others dug in their feet and crossed their arms in resistance, preferring to cling to tried and true techniques that they are comfortable with and have yielded positive results in the past.

I found myself firmly in the middle of this pack. Initially, I was eager to dive into new instructional methods involving technology. My first effort to assimilate technology into my classroom was in the 2008-2009 school year, where I required students to comment weekly on a blog post. I reasoned that students had computers in their pockets and that I needed to meet them where they were. This trial has long since faded away. The blog posts, in their early stages, were raw and unstructured and did not yield the thoughtful dialogue I had been looking for. As these negative experiences mounted, I realized that the efforts were not going to be successful until I took the time to prepare and design useful activities and assessments that were aligned with learning objectives and fit cohesively into our classroom. What landed me in the middle of the pack was that I had the desire, but not the technological know-how, pedagogical principles, or instructional methods to accomplish the goal of successful technology integration.

Since identifying my desire to become a more technology-proficient instructor along with implementing active learning strategies, I took steps to increase my computer literacy as well as ways to learn new practices. First, I identified this desire and started my doctoral studies in Curriculum and Instruction at the University of South Carolina, with its emphasis on Educational Technology. Second, I became a Google Certified Educator in 2018. Third, I am an instructor in Google for Educators with a group of teachers at Rohn High School. Fourth, I volunteered to serve on the Discovery Education STEAM Team, which is an initiative to adopt more active learning strategies involving technology that is being offered to teachers throughout the Lancaster County School District. This requires me to implement instructional strategies suggested by Discovery Education and their professional learning network that involves technology supplied by

Discovery Education. I am a part of the professional learning community (PLC), called the Discovery Education Network (DEN) and a local PLC of my coworkers. Together we are observed four times a year, critiqued by an assessor, and left to reflect on our practices. In turn, we are expected to share our learning strategies, successes, and failures with our colleagues.

Consequently, these actions led me to teach my first online course at the local state university branch. I was the co-facilitator of the online class offered at Rohn High School through the local university called the Google for Education Course. The course began in February, 2019 and commenced in May, 2019 intending to pass the Google for Education exam.

The administration at Rohn High School hired a technology coach and made strides toward supporting teachers. I have collaborated with our media specialists on projects that required technological support. While these learning opportunities paid dividends, there was still one instructional model I wished to fully implement, the flipped classroom approach.

Another factor that led to my desire to implement a flipped classroom approach was motivation levels. Rohn High School has undergone massive growth in the last ten years. This frequently led to a shortage of textbooks. My class was allotted a classroom set of 25 textbooks. Accordingly, the only time that students could interact with the textbook materials was in the classroom. Students cannot take textbooks home because it limited other class's access to the materials. This negatively influenced motivation, as students knew that any work requiring a textbook must be done within the classroom. This created a classroom climate of passivity, with a gradual loss of interest due to low

levels of arousal as well as a lack of activities that captivated a learners' attention (Deci & Ryan, 2008; Keller, 1987). I was instructing in the ways that I had been taught; lecture, notes, and then a summative assessment. I was influenced by my own experiences as a social science student. To be clear, the class was boring.

Motivation is influenced by challenges that provide stimulation and arousal (Deci & Ryan, 2008). A classroom that is dependent upon traditional worksheets provides low-levels of engagement and challenges. Additionally, autonomy is a key tenet to creating a supportive environment that encourages personal initiative (Gagne, 2003). Autonomy, this personal initiative and drive can be cultivated through the flipped classroom approach meant to engage from the start, show students their own relationship with the content, shape the new knowledge into their own lives, and build upon the new knowledge and conception of self (Keller, 1987) through the field of psychology. By switching to the flipped classroom approach, the lack of textbooks was not an issue as all materials were accessible using Google Chromebooks. Students engaged with the material outside of class and took part in active learning activities in class with classmates to decrease boredom and increase motivation (Colakoglu & Akdemir, 2010; McLaughlin, Roth, Glatt, Gharkholonarehe, Davidson, Griffin, & Mumper, 2014).

Another objective of the transition to the flipped classroom approach was the desire to increase student learning. Due to the lack of resources, the instruction was teacher-centered and lacked the energy and enthusiasm that I sought to create. The environment was one of passivity, where students expected content to be delivered to them. I wished to switch to a student-centered, active learning community (Deci & Ryan, 2008; Isaias, 2018; McLaughlin et al., 2014). The active learning environment is

collaborative and gives students the flexibility to build prior knowledge, and then use that to drive discussions and engage in higher-order thinking skills such as synthesis, analysis, and critical thinking (Saulnier, 2015). This approach combines the qualities of cognitive and social constructivism. The active learning environment includes activities like class discussions, small group work, writing assignments and peer teaching (Alexander, 2018). Research in an undergraduate psychology course has shown increases in higher-level thinking as a result of active learning over traditional lecture (Richmond & Hagan, 2011; Danker, 2015). This was especially conducive to the introductory psychology class due to the personal nature of the subject matter and helped to build the qualifier of relevance for students (Colakoglu & Akdemir, 2010).

The average psychology student at Rohn High School was a sophomore, female, White, and enrolled in her first social science class aside from history. The introductory psychology class does not require any prerequisites, which means we have students of varying skill, interest levels and abilities. As an instructor at Rohn High School and during its rapid growth, there have been times that I have not had enough books to serve all of my students. One way to combat this issue is to implement the flipped classroom approach and make content available electronically, to all students, at their convenience.

While the flipped classroom approach required students to engage with mobile learning devices outside of class, the personal nature of the introductory psychology course helps foster the relevance necessary to increase outside participation (Keller, 1987). This personal connection with our subject, while considering Keller's ARCS theory of motivation, which includes the concepts of attention, relevance, confidence, and satisfaction, helped increase motivation while learning about human behavior. The

flipped classroom approach addressed these four conceptual guidelines to keep students motivated. Another key part of this strategy was the inclusion of active learning strategies while in the classroom, which required students to apply the learning and share collaboratively with their classmates.

Statement of the Problem

Students at Rohn High School have access to their own personal learning devices using Google Chromebooks. Motivation was negatively influenced by a lack of textbook resources. Using pedagogical best practices and instructional strategies, such as the flipped classroom approach, I examined its influences on students' motivation, perceptions, and effectiveness of learning the content knowledge while increasing my own technological literacy and skills. By adopting the flipped classroom approach, students had access to lessons on their own time, could go back if they were absent, and used video lessons to review.

Purpose Statement

The purpose of this action research was to evaluate the impact of implementing a flipped classroom approach on students' motivation, perceptions, and effectiveness of learning the content knowledge in an introductory psychology course at Rohn High School.

Research Questions

The research questions for this mixed methods action research were:

1. How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?

2. How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course?
3. What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content in an introductory psychology course?

Researcher Subjectivities & Positionality

Throughout the task of defining action research, I have begun the iterative process that Mills calls reconnaissance (as cited by Merlter, p. 59), where I have taken time to consider my personal beliefs towards my research problem. This process has taken a three-step path of "self-reflection, description, and explanation". In this I have arrived at my paradigm and positionality.

Each researcher brings with them the sum of who they are as they approach their research problem. My positionality has personal opinions towards my problem, low motivation and student apathy, lack of resources and professional development attached. I am a White female social studies teacher. I have taught for 22 years. When I began my career as an educator, most social studies teachers were male. At my school the female social studies teachers outnumber the males, 6 to 1. This representation shows a changing trend in social science, as in 2008, data indicates that 64.1% of secondary social studies teachers are male while 35.9% are female, according to the National Center for Educational Statistics (2012). Being female in a male-dominated field could be an issue at other schools, but the overwhelming majority of women in social science at Rohn High School breaks the national trends. This may influence students as well, as personal opinions towards female teachers may be slanted as being more nurturing, opening the doors to the investigation of social behaviors and its instruction with less resistance.

My problem was seeking ways to increase motivation and learning outcomes, however, I did not feel I received the proper professional development to implement meaningful computer-based instructional strategies. Despite my years of experience, only one year included complete and total access to wireless internet and students with devices at the ready. Another obstacle in my thinking was the value of extrinsic motivators like grades and test results. Our current public school structure incentivizes the wrong things, in my professional opinion. This caused students to lose the attention, relevance, confidence, and satisfaction that comes from learning for the sake of knowing more, for the extreme joy of building knowledge. To foster an environment that created a setting for that joy, I designed instruction that supported the ARCS qualifiers in an attempt to deliver content using methods students are comfortable with, rather than expecting students to adapt to my comfort level. It was my job and duty to my stakeholders to be prepared, to integrate best practices including technology, and deliver instruction that best serves them. As students discovered more about themselves while studying human behavior, they shared this journey and joy with their classmates, all while instruction was aligned to national learning standards.

Paradigms are shaped by a researcher's experiences and beliefs. While considering my personal experiences, interests, and my "mindset of the age" (Kinash, 2006), I have arrived at pragmatism. Pragmatism allows for a variety of research methods in determining an array of thoughts and opinions, while the results dictate the approach to this research (Creswell, 2014). Pragmatism is geared towards social behavior and considering multiple solutions to solving problems. By implementing mixed methods research one can approach an issue from many facets by synthesizing and evaluating

qualitative and quantitative data sets (Rudestam & Newton, 2014). A researcher can tailor their method to meet their needs while considering different points of view.

Given my background in social sciences and interest in social behavior, I believe that pragmatism is the best fit for my problem-solving. I believe that each student carries with them their own paradigm, and these shape their educational experiences. As an instructor, I take this unique perspective into account and know that world experiences influence a students' participation. Thus, treating the problem of integrating technology in an introductory psychology course could be evaluated using a variety of techniques. By using a pragmatic theory, I investigated the myriad issues that inhibit motivation and promote learning in an introductory psychology class.

In sum, to describe my positionality would be to say that I am an experienced teacher with a passion for helping my students succeed. I intended to do this with intentional, deliberate care and thought. I harbored some negative feelings and resentment towards extrinsic motivators like grades and a lack of professional development using Google Chromebooks in my classroom. This was overcome through action research approaches that included pragmatism. As a pragmatist I looked for the ways that I could help my students develop an appreciation for knowledge that is more than just the correct answers that motivated them to find out more about themselves and relevant to their own lives.

Definition of Terms

Active learning is described as the moment when instructors allow students to work on a problem that is designed to aid comprehension, which aids learning (Andrews, Leonard, Colgrove & Kalinowski, 2011).

Flipped classroom is an instructional approach that reverses, or inverts instruction from the traditional classroom sense so that the learning is more open for collaboration and interaction (Mok, 2014).

Google Chromebooks are devices developed by Google that contain no operating system or hard drive as they rely on the internet for storage (Sheninger, 2014).

Student engagement is a combination of behavioral, cognitive, and emotional supports that exist within a classroom to boost student participation, connectedness, and motivation (Fredericks, Blumenfeld & Paris, 2004).

Student motivation is that which explains the direction, magnitude, and persistence of behavior (Keller, 1983).

Student perceptions are the emotional reactions of student regarding instructional strategies that are influenced by previous learning experiences (Jeong & Gonzalez-Gomez, 2016).

CHAPTER 2

LITERATURE REVIEW

The purpose of this action research was to evaluate the impact of implementing a flipped classroom approach on students' motivation, perceptions, and effectiveness of learning the content knowledge in an introductory psychology course at Rohn High School. The research questions for the review of the literature focused on the following question, (1) How and in what ways does implementing the flipped classroom approach affect high school students' motivation to learn in an introductory psychology course? (2) How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course? (3) What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content in an introductory psychology course?

Guided by the research questions, the following variables were chosen to direct the search for literature: (1) flipped classroom, (2) motivation, (3) student achievement, and (4) student perceptions. Electronic databases were accessed using *ERIC EBSCO and ProQuest,* along with *Google Scholar.* After executing several searches, the databases were expanded to include *PsycINFO and PsycTEST* for more thorough investigations into cognitive learning theories and surveys. Following the analysis of data, new literature searches were executed to validate findings. This included the variable of (5) active learning strategies.

The searches within these databases included the following search topics: flipped classroom and motivation, flipped classroom and perceptions, flipped classroom and blended learning as well as hybrid learning. Later searches included pairing self-determination theory and flipped classroom, along with ARCS and flipped classroom.

As authors were repeated, references were mined from previous, peer reviewed journal articles using the bibliography section of researched studies. In some cases, these included links to the article itself, accessible through *ERIC.* Search years were limited to years 2013-2018 in the first initial searches, along with peer-reviewed literature. When it was discovered that much of the preliminary stages of flipped classroom approaches were in the early 2000s, the yearly search parameters were removed. Constructivist learning theory was revealed as the driver behind the flipped classroom approach, thus further inquiries into the constructivist learning theory.

Searches for the constructivist learning theory were executed in the same databases and followed the same general procedures for journal articles and yearly limitations. These searches included the topics of constructivist learning theory, constructivist learning theory and flipped classroom, constructivist learning environments, paired with self-determination theory and ARCS (Attention, Relevance, Confidence, and Satisfaction).

The review of literature focused on three main topics. First, what it means to flip a classroom and what differentiates the flipped classroom approaches from the traditional classroom. Second, an analysis of the constructivist learning theory and how the flipped classroom approach embodies constructivism in action, and third, how student

motivation, perceptions, and learning have been influenced by participating in the flipped classroom approach.

On the Rise: Flipped Classroom

What is the Flipped Classroom?

The following is an investigation into (a) the reason for the growth of flipped classroom, (b) the definition of flipped classroom, (c) connection to learning theories, (d) and how the flipped classroom differs from traditional classroom

The options for online learning have expanded at rapid rates, making the need for considerate, deliberate, and intentional instructional practices necessary (Bonk & Graham, 2005; Sommer & Ritzhaupt, 2018). The flipped classroom is on the rise due to technological advances and its widespread availability (Barrett, 2012; Bonk & Graham, 2005; Batastini, Repke, & Schmidt, 2018; Heggert & Yoo, 2018) as students have a variety of tools to access information, such as smartphones, iPads, and Chromebooks. Similarly, instructional elements are aligning, advancing, and improving as educators embrace face-to-face and computer-aided instruction (Bonk & Graham, 2005).

In a flipped classroom learning environment, the instructional process is reversed, or inverted, from the traditional classroom sense so that the learning environment is limited in conventional activities like lecture, and effectively uses class time for collaboration and interaction (Mok, 2014; Isaias, 2018). The term inverted is used to represent the flip (Lage, et al., 2000). Lecture-based activities, typically reserved for the classroom, are recorded and saved for the home where students can control the pace and place in which instructional materials are accessed (Bergmann & Sams, 2012; Schrlau, et al., 2016; Long, Cummins, & Waugh, 2017; Clark et al., 2016). Furthermore, the flipped

classroom approach unites the theoretical practices of lecture-driven instruction with active learning strategies such as project-based learning, combining the asynchronous video lecture with constructivist theory of sharing the learning experience (Bishop & Verlager, 2013; Sookoo-Singh & Boisselle, 2018). The bulk of this research is shaped around the science and technology fields rather than social sciences.

Throughout its inception, the flipped classroom approach has taken a variety of models. This includes the inverted classroom (Lage, et al., 2000), and the flipped classroom (Bergmann & Sams, 2009). In all, the flipped classroom approach adheres to essential rules that include a reverse of lecture to outside of the class so that students engage in worthwhile, meaningful activities in the classroom where they can share experiences with others and have access to the subject-matter expert, the instructor, when questions arise (Batastini, et al., 2018; Bishop & Verlager, 2013; Clark, et al., 2016; Mok, 2014; Schrlau, et al., 2016;). The overarching purpose is to reserve lower-level skills like passive lectures for outside of class in preparation for completing the higher-order skills of Bloom's taxonomy, such as analysis, application, and synthesis, for in-class activities and when the subject matter expert, the teacher is available to the student (Al-Sudais, 2019).

Practitioners like Gilboy, Heinerichs and Pazzaglia (2015), Schmidt and Ralph (2016), Tucker, Wycoff and Green (2016), and Glance, Rhinehart, and Brown (2018) have adopted similar styles when implementing their new pedagogical practices, which include following a basic, three-step approach. Gilboy et al. (2015) describe their flipped classroom approach in a three-step approach which involves pre-class assignments, during class, and after class for three distinctly separate learning experiences. Schmidt

and Ralph (2016) call their methods the "I do, We do, You do" method, which represents the three steps of homework, inquiry, and investigation. The model includes a pre-class, in-class, and post-class approach. Similarly, Tucker et al.'s (2016) three-step approach is described as inquiry and exploration (pre-class), transfer information and engage (in-class), and extend and apply (post-class). Glance et al.'s version of this three-step process is known as "the LEE Model: Learn, Expand, and Engage" (2018). The principles of the flipped classroom approach generally follow a similar three-step model. The third step is typically a formative or summative assessment.

The primary adjustment to instruction in the flipped classroom approach is the value of pre-class assignments, the essential component of the flip. Preliminary research demonstrates the inclusion of pre-class lessons combined with active learning activities in class (Alexander, 2018; Aşıksoy & Özdamlı, 2016; Chang, Chang, Hwang, & Kuo, 2018; Isaias, 2018). Accompanying this adjustment is the transition from passive learner to active learner (Petress, 2008; Swiderski, 2011).

The flipped classroom approach differs from the traditional classroom in several ways. Traditional, lecture-based classrooms view the instructor as the expert, disseminating information to be passively interpreted by the student (Barrett, 2012; Clark et al., 2016; Danker, 2015; Hutchings & Quinney, 2015; King, 1993; Mazur, 2009). Instructors spend most of their spare time in the classroom lecturing, and a simple passing of knowledge through the lecture leaves little time for interactive activities as problems are instructor-led and demonstrated (Al-Sudais, 2019; Aşıksoy & Özdamlı, 2016; ; Isaias, 2018; Schrlau, et al., 2016). Becker and Watts (1996) referred to this one-sided exchange of information as "chalk and talk" (as cited in Lage, et al., 2000). The

flow of information is one-directional, where students are expected to listen, memorize, and recollect knowledge (Al-Sudais, 2019; Danker, 2015; Petress, 2008). In the flipped classroom approach, students are responsible for their own learning outside of class (Al-Sudais, 2019; O'Flaherty & Phillips, 2015).

In contrast to support for a transition to the flipped classroom approach, Schwerdt and Wuppert (2010) advocated for the traditional, lecture-based instructional method in the math and science classroom. Their study analyzing trends in math and science compared student achievement results of the traditional lecture-based classroom to a project-based classroom and found no significant changes in performance results. While achievement in classrooms implementing the flipped classroom model may be comparable to those of the traditional classroom, a preference for active learning and a rise in motivation has been achieved (Kay, MacDonald, & DiGiuseppe, 2019; Gomz-Lanier, 2018; Sookoo-Singh & Boisselle, 2018).

Walthausen (2013) echoed the sentiment in supporting traditional lecture claiming that some students do not thrive in the active learning, group setting. While the flipped classroom model has been trending, Comber and Brady-Van den Bos (2018) reports that the lack of studies shows that there has been more adoption and less investigation into the effects on student learning and perceptions. Research into the effectiveness of the flipped classroom approach is necessary to determine its value. Furthermore, Bligh (2000) argues that despite changes in technological delivery methods and access to pedagogical advances, the lecture continues to be the dominant instructional approach.

Advantages of the Flipped Classroom

Since its inception, the flipped classroom approach has been implemented in classrooms around the world in many subjects and have found considerable advantages. Among them are that (a) students can direct viewing (Bergmann & Sams, 2009; Clark et al., 2016; Enfield, 2013; Schmidt & Ralph, 2016), (b) videos can be used for review (Bergmann & Sams, 2012; Enfield, 2013; Jeong & González-Gómez, 2016), (c) parental access to information (Bergman & Sams, 2009; Schmidt & Ralph, 2016), (d) free class time for active learning (Isaias, 2018; Mazur, 2009; Sookoo-Singh & Boisslle, 2018), (e) absent students have access to lectures (Bergmann & Sams, 2012, Enfield, 2013; Roehling et al., 2017), (f) and is better suited to today's learners that have technology readily available (Roehl, Reddy, & Shannon, 2013).

Students can view video lectures at their own pace, individualizing their experience (Bergmann & Sams, 2009; Clark et al., 2016; Enfield, 2013; Schmidt & Ralph, 2016). Students can direct their own access to information (Schrlau, et al., 2016; Kay, et al., 2018), choosing to view content on their own time. (Sommer & Ritzhaupt, 2018). Additionally, video lectures can be viewed multiple times and as a review tool (Bergmann & Sams, 2012; Enfield, 2013; Jeong & González-Gómez, 2016). This freedom of accessibility adds to student's autonomy, as students control their access to information, its regularity, and its intensity (Al-Sudais, 2018; Isaias, 2018 Moreover, parents can participate in the process with greater ease and without being subject-matter experts (Bergman & Sams, 2009; Schmidt & Ralph, 2016). The pre-class activities free class-time to be used to think critically about knowledge gathered outside of class as well as engage in active learning in various forms (Alexander, 2018; Aşıksoy & Özdamlı,

2016; Isaias, 2018; Mazur, 2009). Schrlau and associates (2016) argue that the student-centered learning environment created in the flipped classroom approach focuses on higher-ordered thinking skills. This inherently promotes personalized learning and collaboration (Jeong & González-Gómez, 2016; Keller, 2017). The flipped classroom approach grants access to lecture materials to absent students (Bergmann & Sams, 2012, Enfield, 2013; Roehling et al., 2017) and give freedom to self-paced, brighter students to move ahead while lower-level learners can view and review at their discretion. As such, the instructor is free during class to guide the struggling student (Bergmann & Sams, 2009; Al-Sudais, 2019).

Disadvantages of Flipped Classroom

The transition to the flipped classroom approach is not without drawbacks. These include (a) requiring significant time commitment to create videos and planning (Bergmann & Sams, 2012; Clark et al., 2016; Enfield, 2013; Isaias, 2018; Tucker et al., 2012), (b) student motivation and willingness to execute pre-class activities (Clark et al., 2016; Roehling, et al., 2017; Sookoo-Singh & Boiselle, 2018) and adjusting to a student-centered classroom (Findlay-Thompson & Mombourquette, 2014), (c) students without access to the internet will not be able to take advantage of flipped activities (Roehling et al., 2017) and (d) instructors are hesitant to give up the lecture and a transition of roles from instructor to facilitator (Baker & Hill, 2017).

Significant amounts of planning and implementation and the search for quality content material is done in the summer or on breaks (Bergmann & Sams, 2012, Enfield, 2013). However, this extra time reduces the amount of time and planning during the school-year (Lage, et al., 2000). This time constraint is not only limited to content

material, but also to planning for the newly created in-class times (Isaias, 2018). To assure the successful intervention, significant attention must be granted to the alignment of pre-class and in-class activities (Chang et al., 2019). Another factor is that it is possible some students simply will not do the required work outside of class (Clark et al., 2016; Roehling, et al., 2017) and reading assignments could be traded for watching video lectures (McLaughlin, et al., 2014), and may struggle with the challenge of becoming self-directed learners (Findlay-Thompson & Mombourquette, 2014). Furthermore, a lack of accountability for work outside of class exists without proper monitoring and assessments (Mull, 2012; Sookoo-Singh & Boisselle, 2018). Moreover, some students may be left out of the instructional content altogether as those without access to the internet or experiencing technical difficulties cannot participate in the outside learning activities (Danker, 2015; Roehling et al., 2017). Since the instructional materials and assembly of a flipped classroom approach is labor-intensive to start (Bergmann & Sams, 2009) and it requires a shift from instructor to facilitator, instructors may resist the drastic adjustments to classroom leadership (Baker & Hill, 2017).

Characteristics of the Effective Flipped Classroom

Several successful studies have outlined the procedures recommended for the effective flipped classroom. First, classroom assessments must be aligned to learning goals and objectives (Chang, et al., 2018; Findlay-Thomspon & Mombourquette, 2014; Schrlau, et al., 2016), and expectations should be communicated to students (Clark et al., 2016; Danker, 2015; Enfield, 2013; Morrison, 2014; Tucker et al., 2012). For example, Enfield (2013) found that videos were more effective for student learning when all activities (pre-class, in-class, and assessment activities) were aligned. Clark et al. (2016)

recommend communicating with students on the appropriate expectations and goals of the flipped classroom for optimum student learning experiences before embarking upon the flip. Time must be devoted to training students on their new role of activity over passivity (Moffett & Mill, 2014).

Second, a mere change of instructional information is not enough to flip a classroom, rather, pedagogical approaches of active learning in the classroom are necessary (Abeysekera & Dawson, 2015; Isaias, 2018; Roehl, et al., 2013) and should be a part of the inversion. This includes providing students with an encouraging environment where peers can interact, creating autonomy and relatedness with their classmates. *The Flipped Learning Network* suggests that the flipped classroom contains the four pillars of F-L-I-P, which are a flexible environment, a learning culture, intentional content, and a professional educator (FLN, 2014). A classroom that follows the FLN strategies will ensure that students have class time to interact and reflect, activities that are student-centered, to create relevant content, and to assess student learning in a variety of ways, which should be used to help inform future instructional decisions (FLN, 2014).

The interaction between peers and instructors is a valuable part of the flipped classroom experience, as discovered by McLean, Attardi, Faden and Goldszmidt (2015) in their study of undergraduate science. Here students reported appreciation for the collaboration between classmates and instructors. Such interactions are also a key component of Keller's (1987) subscale of confidence, as the student has increased feedback and confirmation of learning objectives. The combination of collaboration and discussion with classmates and instructors builds confidence providing varied

experiences and beliefs that students could be successful (Colakoglu & Akdemir, 2010). An increase in interaction, both peer-to-peer and student-to-teacher is an added benefit to the flipped classroom approach (Sookoo-Singh & Boisselle, 2018; Al-Sudais, 2019; Gomez-Lanier, 2018).

Theoretical Underpinnings of Flipped Classroom

The following section will focus on (a) the constructivist theory, and (b) how the flipped classroom design embodies constructivism. These theoretical concepts are tied to the flipped classroom approach.

The Constructivist Theory

Constructivism is rooted in the cognitive theory of Jean Piaget but includes the social component of sharing the learning experience with others through interaction within learning communities (Vygotsky, 1978). The constructivist theory emphasizes that learners construct meaning out of experiences in situations and that learning is an active process where teachers guide students to conceptual understanding (Applefield, Huber, & Mahnaz, 2001; King, 1993; Glance, et al., 2018; Mazur, 2009; Moallen, 2001; Schunk, 2000).

Central to the constructivist theory is the influence of prior knowledge in a learner's experiences. The experiences give the learner certain filters in which they see the world (Karagiorg & Symeou, 2005). When engaged in a traditional lecture, the passive learner shapes the information from their own personal lens rather than discovering and accommodating their new-found knowledge in a meaningful way (Glance, et al., 2018; Petress, 2008).

The classroom that represents this shift to constructivist beliefs and practices were defined by Jonassen in 1999 as constructivist learning environments (CLEs). These types of classrooms implement strategies that include active learning (Jonassen & Rohrer-Murphy, 1999). Constructivist learning environments are more student-centered rather than teacher-centered and include action rather than passivity (Aşıksoy & Özdamlı, 2016; King, 1993; Mazur, 2009; Petress, 2008; Roehl, et al., 2013). Key elements of the constructivist classroom include activities that inspire motivation and allows a higher degree of autonomy and opportunities to engage in critical thinking (Cattaneo, 2017; Sooko-Singh & Boisselle, 2018). Teachers in these scenarios are facilitators that direct inquiry and discovery, scaffold instructional design, and offer useful feedback, while training students to analyze their own work, along with the work of others (Aşıksoy & Özdamlı, 2016; Cattaneo, 2017;).

How the Flipped Classroom Embodies Constructivism

The flipped classroom approach utilizes the theoretical principles of constructivism by (a) making the move from passive learning to active learning (Sultan, Woods, & Koo, 2011; Swiderski, 2011), (b) making learning a shared experience (Glance, et al., 2018; Eppard & Rochdi, 2017; Abeyskera & Dawson, 2015), (c) creating an active learning environment through collaboration utilizing video information (Cattaneo, 2017; Jonassen, 1991; Kennedy & McKnaught, 1997), (d) and inspiring a motivational learning environment (Abeyskera & Dawson, 2015; Al-Sudais, 2019).

A key element of constructivist theory is active learning, where learners are engaged in tasks that require independent thinking. Active learning, according to King (1993, p.30) is “getting involved with the information presented-really thinking about it

(analyzing, synthesizing, evaluating) rather than just passively receiving it and memorizing it." Students get involved with the knowledge by sharing and interacting with classmates in group projects and problems. Andrews, Leonard, Colgrove, and Kalinowski (2011) describe active learning as the moment when instructors allow students to work on a problem that is designed to aid comprehension and argue that active learning methods support learning. This learning is more reliable and readily available when constructed actively, by relating new knowledge to the real world (Yam, 2005). The instructor acts as the facilitator in the active learning environment, which enables the learners to construct meaning for themselves with a guiding hand (Bergmann & Sams, 2012). Students gain more benefits from a classroom that supports instruction designed to increase motivation, and these environments must be created to sustain motivation (Colakoglu & Akdemir, 2010).

Utilizing the flipped classroom approach in combination with active learning strategies helps the instructor make the transition from the transmitter to the creator (King, 1993) as the instructor is responsible for presenting material that students can manipulate and personalize, such as videos and readings, then share with others in meaningful projects. For constructivists, knowledge is something to be built, or constructed, by each learner, based on prior knowledge and newly acquired information to personalize the learning (King, 1993; Mazur, 2009; Petress, 2008; Swiderski, 2011). This prior knowledge and critical analysis allow the learner to make connections to the real-world (Danker, 2015). The process of accommodation increases learners' knowledge by sharing a supporting the given construct and increasing all that fits within them

(Swiderski, 2011). In all, the activities create a community through interactions and activities (Sultan, Woods, & Koo, 2011).

The flipped classroom approach requires the learner to transition from the passive to active learner by interacting with content, classmates, and instructors (Glance, et al., 2018) as they embark upon the construction of new knowledge based on prior knowledge under the guidance of a knowledgeable instructor (Eppard & Rochdi, 2017). The flipped classroom offers students the opportunity to satisfy their need for competence, autonomy, and relatedness by engaging in active learning environments that encourage shared experiences, rather than working for extrinsic rewards that are instructor-created (Abeyskera & Dawson, 2015). Furthermore, active learning strategies put students into situations that will engage them in challenging tasks to make meaning out of their learning (Barrett et al., 2018).

By combining the flipped classroom model with a constructivist learning environment, one in which a learner engages in meaningful activities while in the setting that learning takes place (Cattaneo, 2017), students experience different learning opportunities while interacting with classmates and their instructor (Jonassen, 1991). Constructivism depends upon prior knowledge and its meaningful use; therefore, the flipped classroom setting creates the environment in which to construct the active engagement with material (Barrett, Denegar, & Mazerolle, 2018; Kennedy & McNaught, 1997). Students gain experience with new material in pre-class activities (Alexander, 2018, Chang et al., 2018, Isaias, 2018) creating the prior knowledge to be applied during the in-class phase of the flipped classroom approach.

Achievement for students is defined in this section as determined by the administrators of the research. Each study measures student achievement or learning outcomes in their original way. Research regarding student achievement in the flipped classroom approach is limited. The research is more focused in the Science, Technology, Engineering, and Math and quantitative courses (STEM-Q) and is especially limited in the social sciences (Roehling et al., 2017).

Research Findings Regarding Student Achievement, Motivation, and Perceptions

Student learning and achievement is defined by each researcher in various ways. It can be representative of student learning, changes in critical thinking, or some measurable assessment. In most cases it is a quantitative measure of changes that result from the adoption of flipped classroom methods. In the engineering field, student achievement was measured by student performance on work in classes pre-flipped versus flipped versions of the engineering courses by Clark and colleagues (2016). Schrlau and associates (2016) used three assessment activities designed to measure conceptualization, application, and comprehension over the course of the semester. Sommer and Ritzhaupt (2018) used pre-test and posttest assessments to measure learner achievement among a flipped class in comparison to a traditionally-led class in an undergraduate literacy course.

Research provides evidence that the flipped classroom approach produces student achievement that is similar to traditional lecture-based classes. For example, the engineering courses of Clark et al.'s (2016) study found little evidence of improvements in achievements, but instructors expressed students were more open to collaboration and better problem-solvers than before, and instructors were better informed on the direction

for future in-class projects. The engineering classes of Schrlau, Stevens, and Schley (2016) revealed that assessment results were nearly the same as those taught using traditional classroom strategies.

In one action research study conducted by Sharpe (2016), middle school trigonometry classes revealed no statistical difference in comparable text-based comprehensive exams and that most students preferred the traditional classroom methods. In an undergraduate technology literacy course, Sommer and Ritzhaupt (2018) reported no significant difference in the flipped classroom compared to traditional lecture. Finally, Jamaludin, Osman, Yusof, and Jasni (2016) found that student achievement in a flipped accounting class was not impacted.

The results of Thai, De Wever, and Valcke's (2017) research into the impact of the flipped classroom approach on learning performance in higher education showed improved student learning outcomes due to factors such as being able to prepare in advance of in-class activities and receiving immediate feedback on instructor-supplied guided questions that followed the video instruction. Similarly, Sezer (2017) reported greater academic achievement and greater motivation when carrying out flipped classroom methods in a sixth-grade science course. Likewise, Al-Sudais (2019) discovered an increase in the academic achievement of undergraduate students in an English as a foreign language class using pre-and post-test results in a quasi-experimental study.

According to Roehling et al., (2017), empirical evidence about the improvement of student achievement as a result of the flipped classroom is still being gathered. In a search on *ERIC* for "the effect of flipped classroom on student achievement" only yielded

5 studies in the last 3 years, as of 2017. While flipped classroom approaches and their effectiveness have been investigated widely in the STEM fields, evidence of its practical use is lacking in the field of introductory psychology (Roehling et al., 2017).

Motivation to Learn in the Flipped Classroom

One challenge of implementing the flipped classroom approach is how to motivate students to complete pre-class activities, such as viewing videos, listening to podcasts, and acquiring the knowledge necessary for successfully participating in the in-class activities. Abeysekera and Dawson (2015) posit that students must find an activity engaging and worthwhile to be intrinsically motivated. To be intrinsically motivated, one must have an internal desire for satisfaction that comes from within rather than external rewards like grades (Ryan & Deci, 2000). Additionally, Abeysekera and Dawson (2015) support the flipped classroom to aid students in managing cognitive load, which in turn increases motivation out of their need for autonomy. From autonomy, intrinsic motivation can be derived.

Autonomy is a key in Keller's ARCS instructional design model, which stands for attention, relevance, confidence, and satisfaction (Keller, 1987). According to Li and Keller (2018) and the ARCS model, the instructional material must meet several criteria for the learner to be motivated and stay motivated. The first condition to be met is attention. This attention is tied to instructional stimuli that are engaging, dynamic, and worthwhile; to strike a balance between monotony and curiosity (Li & Keller, 2018). The second condition is relevance. To meet this condition, instructors must relate material, or the instruction itself, to present or future career opportunities. Relevance can also be established by working with peers (Keller, 1987; Li & Keller, 2018). The third condition

to be met is confidence. Instructors can help foster confidence in students by relieving some of the competitive nature and emphasis on external rewards, such as grades (Keller, 1987). Finally, the fourth component is satisfaction; for students to feel satisfied when they feel good about their accomplishments.

The ARCS motivational model was used by Aşıkso and Özdamlı (2016) to compare the achievement, motivation, and self-sufficiency of 66 students in two physics courses. One class was the experimental group, which received instruction using a flipped classroom approach. The second class used a traditional lecture format. An increase in both achievement and motivation was recorded by the experimental group. Motivation was maintained in a flipped undergraduate science course. McLean, Attardi, Faden, and Goldszmidt (2019) concluded that most students (70%) participated by viewing the class videos the night before they were quizzed on the content and that most students (80%) only viewed the lesson once. They were encouraged by the fact that only 1 student out of 54 students reportedly did not view pre-class videos. Students in the senior-level class had a mean grade of 85% in the winter term and 84% in the fall.

Delialioglu and Yildirim (2007) interviewed 25 students in a hybrid course of computer network optics at Middle East Technical University. The findings demonstrated that students that were externally motivated were less likely to find flipped classroom approaches worthwhile; these students' participation dropped off as the class progressed. The conclusion was that intrinsic motivation plays a larger role in success than extrinsic motivators.

Student Perceptions in the Flipped Classroom

Perceptions about the flipped classroom methods are measured and defined by researchers in ways that best suited their studies. Qualitative research methods were employed to extract student perceptions of the flipped classroom course design.

Positive Perceptions. Research findings on the perceptions of the flipped classroom environment include that students feel a connection to professors at levels that are higher than traditional classroom setting (Bergmann & Sams, 2009; Comber & Brady-Van den Bos, 2018; Gilboy et al., 2015; Roehling et al., 2017).

Baker and Hill (2017) used a survey on teacher effectiveness and course quality where students report improved students' perceptions of course quality. The students approved of the active learning structure and had positive perceptions. Ng (2016) collected data using questionnaires about student perceptions of flipped classroom approaches and rated self-study skills the highest, as students enjoyed the flexibility and self-sufficiency elements. Clark and colleagues (2016) identified the personalization of flipped classroom and interactions between instructors and students among the appeal of the flipped classroom. Students in a secondary English language class expressed positive feelings towards the class. These students felt the flipped lessons helped them understand the content and helped them with self-management skills (Yang, 2017).

Students felt strong acquisition of content knowledge and self-directed learning (Ng, 2016) and were more confident in their abilities to navigate the online learning community, improving self-efficacy towards independent learning (Danker, 2015; Enfield, 2013), while having the ability to watch and re-watch videos empowered learners and provided more time for collaborative and group projects (Jeong & González-

Gómez, 2016; Schrlau, et al., 2016). These were listed as valuable experiences for students.

Negative Perceptions. Not all students are in favor of the flip. In 2016, Sharpe's action research revealed that middle school students preferred traditional lecture. Sharpe surveyed the treatment group that was subjected to a flipped classroom approach and found that 73% preferred traditional classroom methods.

Drawbacks to a flipped classroom approach were identified by Conner et al., (2014). Their thematic analysis of survey data from two focus groups of 32 students shows that participants reported difficulties with online videos not working and a dislike for the sounds in the videos. Student opinion regarding in-class activities was "a waste of time" and ineffective because it was work the students felt should be done at home. Conner et al. confirmed that video quality may have an impact on student learning.

A final analysis of introductory psychology course by Roehling and colleagues (2017) concluded that students showed a slight preference for traditional classroom procedures rather than flipped classroom approaches but believed that the flipped classroom method had a place in the learning environment. In all, reports of preferences are mixed and can be due to several factors.

Summary of the Literature Review

This literature review defines the flipped classroom approach and the reasons for its popularity in the 21st century classroom. The flipped classroom approach differs from the traditional classroom in that it requires the learner and instructor to adjust their framework for the classroom from an environment of passive learning to one of active learning. The advantages of the flipped classroom include student-access to materials on

their own time, for review, and to be shared with parents while learning at differing rates and allowing class time to be managed more effectively. The disadvantages are that it requires planning and a time commitment from instructors, students must be motivated to be engaged in materials, and must have reliable internet access, as well as a shift in the roles of students and instructors. Lastly, an instructor may not be comfortable turning control over to students.

For the flipped classroom approach to be effective, learning goals and objectives must be aligned and clearly communicated to students, along with the shift in expectations and demands. While these strategies have been attempted, the evidence does not support improvements in student achievement, but it does support the rise of collaboration and improved relations between instructors and students. A wide variety of subjects and age groups have experienced the flipped classroom, but few studies have been conducted in introductory psychology (Roehling, et al., 2017).

By adhering to the constructivist approach of building learning together built on a prior knowledge foundation, framing instruction around guidelines like attention, relevance, confidence, and satisfaction, students can be motivated to complete activities that support an active learning community.

CHAPTER 3

METHOD

The purpose of this action research was to evaluate the impact of implementing a flipped classroom approach on students' motivation, perceptions, and effectiveness of learning the content knowledge in an introductory psychology course at Rohn High School. The research questions for this mixed methods action research were:

- How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?
- How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course?
- What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content in an introductory psychology course?

Research Design

Action research was the preferred approach to gathering information as it is an inductive process that allows the researcher to identify the problem, plan solutions, collect data, synthesize the data, interpret and share the findings (Creswell, 2009). This approach offers the instructor the ability to examine their procedures and methods to increase results (Mertler, 2017; Sagor, 2000). I aimed to evaluate my instructional strategies, making action research well-suited to my goals. Engaging these methods in my own classroom gave me an added advantage of having a personal relationship with my

stakeholders (Mills, 2011) and improving my instruction in the future (Reeves & Oh, 2016).

Action research was the best option for this study since I was fully invested in the classroom. My interest in this study was personal improvement and fulfillment, a key tenet of action research (Mills, 2011). By identifying the problem and studying my proposal using a systematic plan of action, I initiated my personal development to address issues concerning motivation in the classroom (Mertler, 2017; Sagor, 2000). Using my classroom as a laboratory, I focused on the implementation of the flipped classroom approaches, collected and analyzed data, merged this data and shared with the members of the community and professional learning communities (Creswell, 2014; Sagor, 2000). I worked cyclically, continually evaluating my practices, making necessary adjustments, and implementing changes (Manfra & Bullock, 2014). Part of this cycle included critically investigating methods while identifying deficiencies and addressing the shortcomings, and again investigating results (Sagor, 2000).

I used a mixed methods research design, which enabled me to assess my effectiveness by examining both quantitative and qualitative data. By working from the bottom up I reflected on the flipped classroom approach, evaluated decisions, and adjusted to fit new scenarios and students (Creswell, 2009). A convergent parallel mixed methods design was executed, as qualitative and quantitative data was gathered simultaneously and merged in order to validate the findings, which created the opportunity for fine-tuning instructional methods while adding credibility to the research process (Creswell, 2014; Glaser, 1965). The integration of data from multiple sources

aligned with my pragmatic worldview and established the link between my purpose and procedures throughout (Morgan, 2014).

Furthermore, this allowed me to interpret and explain my findings to my school district and the professional learning community. It is the merged data and interpretation that revealed themes that are useful to the community (Creswell, 2013; Saldana, 2015). The combination of quantitative and qualitative data assisted me in addressing problems of motivations, perceptions, and learning content more effectively than one would alone (Creswell, 2014; Creswell & Plano Clark, 2011). Due to this approach, I participated in the intervention and continually upgraded my performance while revising effective strategies for meaningful active learning, fueled by the positive perceptions in the flipped introductory psychology classroom.

Quantitative data included a teacher-created pre- and posttest, information from exit slip questions, and survey data. Qualitative data consisted of semi-structured student interviews, exit slip open-ended questions, and researcher journal entries.

Having identified pragmatism as my approach to action research, I have determined there are a number of ways to solve a problem, and using mixed methods is the way that I sought to solve the problem of low motivation levels and student apathy in an introductory psychology course at Rohn High School. As a pragmatist, I considered both quantitative and qualitative data aligned to address the problem of practice, approaching this problem with the understanding that there are many ways to improve motivation, and the flipped classroom approach is just one that I focused on (Creswell, 2014). The combination of quantitative and qualitative data allowed me to see multiple perspectives regarding the instructional model (Creswell, 2014). As such, my research

design guided my research methods as I evaluated my instructional interventions and practices, using both quantitative and qualitative data in my decision-making process (Morgan, 2014). After identifying research methods, I sought out the approval of my university internal review board. This approval is documented in Appendix A.

Setting and Participants

This action research took place in my introduction to psychology course at Rohn High School. Rohn High School has a student population of 1,176 students. The school is located 8 miles from a bordering state, and is a part of a rural school district, although this school is outside of a major city in the southeastern U.S. Due to this proximity to the city, the community has attracted a diverse student population that consists of students that have moved from other geographic locations and give it more of a suburban appeal. The area covers 3 zip codes and has experienced a growth rate of 36% from 2010 to 2016 (Marks, 2018). It is this growth and experience of the student population of having once been the new student in the class that offers a friendly and welcoming community culture. The students bring with them a wide variety of skills, talents and experiences from all over the country, and internationally in some cases. It is this growth, diversity, and friendliness that gives Rohn High School its character and charm yet is also has caused overcrowding. This overcrowding has necessitated the building of a new Rohn High School, currently under construction and set to open for the 2020-2021 school year.

In the 2017-2018 school year the social studies department, which includes psychology, was moved to mobile classroom units. The mobile unit I teach out of is built for a maximum of 24 students. The typical psychology class at Rohn High School ranges from 20 to 27 students, which means that the classroom is crowded, and advanced

planning is needed for moving the desks required for group work. Our desks are one single unit and cannot be separated as a table and chair could. Therefore, when activities are planned, I rearranged the desks before students arrive in order to save time.

The antecedent learning procedures in my introductory psychology course involved guided notes and a textbook. Each lesson in the guided notes began with the learning objectives. Students received guided notes and used the textbook to fill in the missing parts of the guided notes. The missing parts were typically definitions to vocabulary terms or important key points included in the learning objectives. The expectation was on students to use textbooks in class and to read the accompanying text as they completed the notes. Once guided notes were executed, my role was to explain the details more in-depth and answer any questions that may have arisen. This class time may have been followed by an instructional video or active learning strategies and group work. The process was slow, tedious, and monotonous. Not only that, but it was predictable and repetitive, leaving little curiosity or creativity.

While this approach yielded positive learning outcomes, it supported an environment of passivity and boredom. Students were not challenged, nor did they collaborate with peers or engage in critical thinking. Student roles were firmly established as uninvolved, inactive participants since they could rely on my instructional lectures to guide them to the valuable information necessary for positive test results. I found myself at the helm of a classroom full of uninterested students in a subject-matter that is personally relevant. Those that desired great grades were willing to complete my tasks, but for no reason other than extrinsic motivators. This meant that the remainder had few incentives for learning more about psychology and ultimately, themselves.

What made this class an optimum population for the action research was the adoption of Google Chromebooks in the 2017-2018 school year. Each student has an assigned Chromebook throughout their career at Rohn High School. If students do not have access to Wi-Fi at home, they could check out a mobile hot spot from the media center. This was one of the factors taken into consideration when proposing research. This helped create a community of digital learners that are well-practiced at using the Google for Education tools and can easily maneuver throughout the digital landscape. This initiative to get Chromebooks into students' hands has been district-wide, so students at all levels have experience using Google and the Google for Education suite of tools. This means that by the time students get to me, they've had their Chromebook all of their days as a part of our school. Since our district has provided Google Chromebooks, the administration has made it a goal to have every teacher certified as a Google Educator.

In addition to access to Google tools, the district also provides students with the Adobe Suite and students have elective courses such as photography and graphic arts where they gain experience in digital imagery. Some classes at Rohn High School are offered completely online, such as business classes and engineering. Our local community college offers introductory courses that are all online while on Rohn High School's campus. While the primary population I dealt with were sophomores, by the time the students have gotten to my course, they have had some components of online instruction or assessments.

The participants in this action research were introductory psychology class for the first time. There are no prerequisites, nor are there any teacher recommendations. It is an

elective course that counts as a social studies credit. The class is conducive to project-based learning and active learning strategies due to its subject matter. Psychology is the study of human behavior and mental processes, which open a wide variety of projects and reflective activities.

Fifty-eight high school students from the introductory psychology class were attended this action research. Of these participants, 44 (76%) were female and 14 (24%) were male. The racial characteristics included 38 Caucasian, 7 African American, 6 identified as mixed-race, 6 Hispanics, and 1 Asian. Two of these students had classroom accommodations supplied by an individualized education plan. Students were between 14 and 18 years of age with the mean of 15.14 because this is an elective course open to grades 9-12. The students were enrolled in three separate classes and each class was subjected to the intervention.

Students volunteered to take part in the semi-structured interviews to share their experiences and were chosen randomly, according to schedule availability. Five were chosen and their identities were protected. Table 3.1 is a description of students that volunteered and participated in the interviews and their pseudonyms.

Table 3.1 *Interview Participants*

Pseudonym	Ethnicity	Gender	Age	Grade
Ally	Asian	Female	14	10
Brian	Mixed Race	Male	16	10
Caley	Hispanic	Female	15	10
Demi	Hispanic	Female	15	10
Ellie	African American	Female	16	10

Intervention

The purpose of the flipped classroom intervention was to connect students to active learning and projects that enabled students to apply the knowledge acquired outside of class in the preliminary stages, during the pre-class sessions. This set the expectation for students to interact with what they have learned and engage with the material, manipulating it to meet their needs (King, 1993). These requirements fall in line with the cognitive constructivist principles of Piaget and the social constructivist principles of Vygotsky which evaluate age-appropriate critical thinking skills that need to be cultivated and trained through relevant hands-on activities (Murphy, 2000). Knowledge is acquired through experience according to constructivist theory, and this was guided by the three steps of the flipped classroom hierarchy. The class format was highly conducive to this setting as one period is 1.5 hours long and met daily, which provided time for project-based lessons. Each of the three stages played a part in the acquisition of learning objectives for every class session. Table 3.2 below demonstrates the three steps of the flipped classroom intervention. The class instructional units and national standards are listed in Appendix B.

Table 3.2 *Three Steps of Flipped Classroom Approach*

Before Class	• View video lectures • View and fill in PowerPoint guided notes • Get acquainted with terms and phrases • Become familiar with learning objectives • Gain a clear understanding of learner expectations • Complete bell-ringer questions
During Class	• Participate in formative assessment to evaluate prior knowledge gained outside of class (bell-ringer) • Answer teacher-led scaffolded questions • Formative assessment • Check for understanding

	• Work in teams or individually on project-based learning activities and participate in learning stations
After Class	• Projects, papers, creating artifacts • Additional formative assessments • Review terms and key ideas • Share work on social media or other platforms like Padlet or FlipGrid • Seek out further learning opportunities

The intervention for this action research followed models that have been implemented in previous studies and provided insight into the flipped classroom approach. Gilboy, et al. (2015) described their flipped classroom in a three-step approach which involves pre-class assignments, during class, and after class for distinctly separate interactive experiences. I followed a similar approach, dividing class material into separate domains following a template provided by Gilboy, et al. (2015), (see Table 3.3). This division allowed me to customize the learning experience into three independent learning events that each addressed the end goal of increased higher-ordered thinking and readiness for classroom experiences that centered around active learning. Approval for use of the template is in Appendix C.

Table 3.3 *Lesson Plan Template for Flipped Classroom* (Gilboy, et al., 2015)

Week 1		**Topic:** **Theories and Approaches for Behavior Change**
		Learning Objectives for topic: 1. Explain the importance of behavior change models and theories for a nutrition practitioner. 2. Describe major concepts of selected behavior change theories and models. 3. Describe major components of selected theoretical approaches to counseling. **4.** Apply theory/approach to nutrition-related practical settings.
		Resources needed:

<table>
<tr><td></td><td></td><td colspan="4">poster paper, markers, 5 minute video clip description of jigsaw activity for students, completed theory table (from students)</td></tr>
<tr><td></td><td></td><td></td><td>Before Class</td><td>During Class</td><td>After Class</td></tr>
<tr><td></td><td></td><td>Activities:</td><td>read, take notes, watch lecture and videos</td><td>jigsaw activity</td><td></td></tr>
<tr><td></td><td></td><td>Assessments</td><td>Complete theory table (Low stakes worth 5 points of final grade) Dropbox on due date and bring a copy to class for in class activity</td><td>Instructor monitoring for understanding.
• Mini-summary from each group
• Clarify difficult concepts
• Clear up misconceptions</td><td>Essay questions as part of mid-term exam</td></tr>
<tr><td colspan="2"></td><td colspan="4">Suggestions for using the Template:

• Make sure learning objectives use action verbs so you can assess the students. The objectives should align with the assessments.
• Resources: this can be specific websites etc.
• Activities can be: lecture screen-cast; web 2.0 tools; discussion; etc.
• Assessments can be “low stakes”: quiz, “ticket in”, discussion board, exam, practical, focused discussion, and/or application of course content using web 2.0 tool (i.e. one example - goanimate.com which applies material using a cartoon) etc.</td></tr>
</table>

Following the procedures outlined in this template allowed me to focus on the three-step process of the flipped classroom approach. This process included an emphasis on active learning and engagement that lent itself to critical thinking highlighted by

Bloom (1965), which includes analysis and evaluation, as well as Marzano's construction of knowledge (Marzano & Kendall, 2006) and use of higher-order thinking skills. Furthermore, this division was meant to capitalize on the individual cognitive experiences outside of class in pre-class and after class activities, while utilizing social constructivism principles in the during class phase of lessons.

The largest impact on this study were the results and suggestions of the previous research that included the three-step design to the flipped classroom approach (Gilboy, et al., 2014; Danker, 2015; Glance, et al., 2018). It was from this research that I mined the framework to shape the before class, during class, and after class segments of the flipped classroom approach. Gilboy and colleagues (2015) determined that students were learning and more engaged in the flipped classroom, but acknowledged the necessity for planning, alignment, and valuable feedback and assessments. This research stressed the need to inform students of the change in roles and communicate the value of the shift from passive to active learner. These factors were taken into consideration while preparing my own action research.

Before Class

Students were expected to participate in activities outside of class that were easily accessible online. This included activities such as viewing video lectures, taking notes from a teacher-made PowerPoint and guided notes, getting acquainted with terms and phrases, and taking part in online communities. By utilizing this strategy students built the knowledge necessary for the second phase. An example of the type of outside activity that our class had was an online PowerPoint lecture that aligns to national standards and learning outcomes. When students arrived in class, I had questions ready so they could

review, either by themselves or in teams. These were called bell-ringer questions as they were executed before class began, as the bell was ringing. This material was scaffolded and introductory, such as vocabulary and learning objectives so that students knew what was expected of them upon arriving. Other ways to introduce the material included short multiple-choice questions to evaluate mastery of the learning objectives. The topics of the bell-ringers were typically a review of the lesson of the previous night.

Students watched teacher-created videos. I chose to create my own videos in combination with supplementation from other sources. These sources include Kahn Academy and Crash Course in Psychology, along with the video hosting site, EdPuzzle and PlayPosit. EdPuzzle and PlayPosit allows teachers to post videos, edit the videos, and insert questions that can be merged with Google Classroom. This list of outside sources is not limited and should also include Discovery Education, as our school district is involved with adopting many of its newest technological offerings.

During Class

Carefully crafted questions were used to reinforce the material that students digested prior to class. These questions were delivered in many ways. Online platforms such as Padlet or Google Forms allows instructors to quickly assess learner acquisition of knowledge. It can be more traditional, with teacher-led discussion between 5 to 10 minutes of class, followed by a quick quiz or formative assessment. Another example is think-pair-share, as in, writing down everything one can remember from the PowerPoint, share with a partner, then share with the class. Additionally, this was a time for application of the knowledge garnered in earlier training. While in class, students were given tasks to be completed individually and in teams, and I was available to work one-

on-one and in groups or in stations. This time was especially focused on hands-on, interactive learning activities where students were engaged and focused. Keeping in mind the benefits of online learning and face-to-face meeting in a convergent atmosphere and utilizing the best of both to encourage and foster higher-order thinking was the goal. Following constructivist principles, this was time that was dedicated to collaboration and making content personally relevant.

After Class

After class extension activities offered a wide variety of possibilities and functions. In some cases, the extension activity was to finish a larger individual project or to collaborate on a group project on Google Slides or Docs. Students were asked to complete Padlets as an exit ticket or introductory activity to the next objective. Exit tickets were also initiated manually. Students participated in summative and formative assessments individually and in groups. Finally, students had access to online lectures through outside sources. These sources were supplied by the teacher, though they were not mandatory. Included in Table 3.4 below is a sample of what a typical day in the action research looked like, following the three steps and the national standards for the teaching of psychology in secondary schools (APA, 2011).

Table 3.4 *Sample Flipped Lesson in Psychology Class*

Week 1	**Topic:** Development of psychology as an empirical science		
	Learning objectives for topic: 1.1 Define psychology as a discipline and identify its goals as a science. 1.2 Describe the emergence of psychology as a scientific discipline		
	Resources needed: Students will need Chromebooks and guided notes from instructor. Reliable internet access.		
		Before Class	**During Class**	**After Class**
	Activities	Watch teacher-made instructional	Instructor does a quick check of notes	Exit ticket: what is the definition of

		video and fill in guided notes. Complete questions in the video. Complete bell-ringer upon arriving to class in order to review material. *What is psychology, and what can a person hope to gain by studying psychology?*	completion. Students that are not done must go to other room to get them finished up. Teacher reviews guided notes, following up the bell-ringer question and the goals of psychology. Give each group a 2 sets of cards with definitions and names of psychology, and other social sciences. Students match names of disciplines with definitions and write an explanation of how each of these social sciences can contribute to our understanding of human beings	psychology? This question must be answered before leaving. Students will complete the next lesson notes for the next day.
	Assessments	Completion of video notes will be quickly checked at the beginning of class.	Participation in class discussions of notes. Small group activity and abilities to match cards quickly.	Exit ticket to assess comprehension and mastery of learning objectives.
		Questions from the video are answered in guided notes.		

Instructional content divided by unit and its corresponding activities are listed in Table 3.5.

Table 3.5 *Instructional Unit, Pre-Class, In-Class, and After Class Activities*

Unit	**Pre-Class Videos (length)**	**In-Class**	**After Class**
Unit 1: History, Approaches, and Methods	• What is Psychology? (7:24) • History of Psychology (9:28) • Psychological Approaches (12:29) • Subfields & Careers (8:24) • Research Methods (14:06) • Types of Research Methods (13:27) • Experimental Design (7:34) • Correlation (10:32)	• Vocabulary card match • History of psychology timeline in groups • Case Study Jigsaw • Research Methods Scenarios • Unit 1 Terms to Know and Crossword • Harvard Longitudinal Study (TED Talk)	• Exit tickets • Review notes • Complete Unit 1 Terms to Know and Crossword if not done in class • Review for summative assessment • Kahoot
Unit 2: Biological Bases of Behavior	• Nervous System Part 1 (7:36) • Nervous System Part 2 (8:18) • The Brain (9:13)	• Baby Brain Video • Neuron Diagram • Pipe Cleaner Neuron • Neurotransmitter Superheroes Partner Project	• Exit tickets • Review notes • Prepare for quizzes • Complete partner project

	• The Brain & Cerebral Cortex (14:53) • The Endocrine System and Genetics (13:54)	• Nervous System Quiz • Parts of the Brain Worksheet • Left Brain vs. Right Brain Worksheet • Brain Hemisphere Hat • Unit 2 Terms to Know and Crossword	• Finish worksheets • Kahoot
Unit 3: Sensation and Perception	• Vision (9:45) • Hearing (4:28) • Smell, Taste, Touch (14:28) • Gestalt Principles (8:03) • Depth Perception (10:07) • Perceptual Constancies (10:38)	• Complete optical illusions and Stroop effect worksheet • Parts of the eye and ear worksheet • Sensation and Perception Olympics • Unit 3 Terms to Know and Crossword	• Exit tickets • Finish worksheets • Answer questions for Sensation and Perception Olympics • Finish terms to know and crossword • Kahoot
Unit 4: Learning	• Classical Conditioning (19:56) • Operant Conditioning Part 1 (14:00) • Operant Conditioning Part 2 (13:35) • Cognitive Factors in	• Classical Conditioning Practice worksheet with a partner • Identify operant conditioning with a partner • Classical Conditioning Melodramas – Flipgrid partner assignment	• Exit tickets • Complete worksheets • Comment on classmates' Flipgrids • Unit 4 Terms to Know and Crossword

	Learning Part 1 (9:58) • Cognitive Factors in Learning Part 2 (7:04)	• Phobias and systematic desensitization video • Operant conditioning real-world applications webquest with a partner • Review stations	
Unit 5: Memory	• Introduction to Memory (5:11) • Processes of Memory (9:46) • Three Stages of Memory (9:36) • Brain Damage and Memory (11:40) • Improving Your Memory (9:50)	• What's in the Box Demonstration • Types of Memory Worksheet • Context & State dependent Memory Worksheet • Endless Memory Video (60 Minutes) • Forgetting Worksheet • Eyewitness Testimony Reading • Brain Games Eyewitness Testimony • Improving Memory Worksheet • Ron White Mind Palace Video	• Exit tickets • Complete all hand-outs that didn't get finished in class

Finally, instructional units lasted for a total of eight weeks and followed the strategy outlined above. Table 3.6 below includes the instructional units, the national

learning outcomes, and the duration of the instruction. A full description of the learning outcomes are listed in Appendix B.

Table 3.6 *Instructional Units for Flipped Classroom and Duration*

Instructional Units	**National Learning Outcomes**	**Duration**
Unit 1	History, Approaches, and Methods After conclusion of this unit students will understand: 1. Development of psychology as an empirical science 2. Major subfields within psychology 1. Research methods and measurements used to study behavior and mental processes 2. Ethical issues in research with human and non-human animals	6 class periods
Unit 2	Biological Bases of Behavior After conclusion of this unit students will understand: 1. Structure and function of the nervous system in human and non-human animals 2. Structure and function of the endocrine system 3. The interaction between biological factors and experience 4. Methods and issues related to biological advances	9 class periods
Unit 3	Sensation and Perception After concluding this unit, students understand: 1. The processes of sensation and perception 2. The capabilities and limitations of sensory processes 3. Interaction of the person and the environment in determining perception	6 class periods
Unit 4	Learning After concluding this unit, students understand: 1. Classical conditioning 2. Operant conditioning 3. Observational and cognitive learning	8 class periods
Unit 5	Memory & Intelligence After concluding this unit, students understand: 1. Encoding of memory	10 class periods

2. Storage of memory
3. Retrieval of memory
4. Perspectives on intelligence
5. Assessment of intelligence
6. Issues in intelligence

Data Collection

A variety of data sources were used to illuminate the results of this study. These data sources include (a) student interviews, (b) exit slips, (c) teacher journal entries, and (d) student surveys. Table 3.7 below provides the research questions along with their data sources.

Table 3.7 *Research Questions and Data Sources*

Research Questions	**Data Sources**
How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?	• Student interviews • Researcher journal • Student surveys (Instructional Materials Motivation Questionnaire)
How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course?	• Student pretest and posttest scores • Exit slips
What are high school students' perceptions about the effectiveness of a flipped classroom approach to learning the content in an introductory psychology course?	• Student interviews • Exit slips

Qualitative data gathered in open-ended interview questions and researcher journals gave me insight into the inductive and subjective experiences of my stakeholders, and quantitative data gathered through pre- and posttests and exit slips

provided reliable empirical data that is objective (Morgan, 2014). Qualitative data was gathered through semi-structured student interviews and a teacher journal. These methods were chosen and shaped by the research questions in order to gain insight into student perceptions as well as my own subjective viewpoints as the study progressed (Morgan, 2014). This approach helped uncover opinions not revealed through quantitative analysis and since I conducted the interviews, my personal relationship with the stakeholders offered a greater understanding of the student experience (Mertler, 2017; Rudestam & Newton, 2014).

The quantitative data collections for this study was gathered through student surveys designed to evaluate student motivation using Keller's ARCS theory of motivation (Keller, 1987). The survey results, grounded in Keller's ARCS model of motivation and constructivist learning principles are aligned to research questions and provided objective data regarding student motivation (Creswell & Plano Clark, 2011; Morgan, 2014). The survey data was collected at the conclusion of the intervention and was voluntary. Since this is action research and limited to my own experiences, it would not be appropriate to generalize results as this experience was unique to my classroom and its participants (Mertler, 2017).

Specially designed exit slips were crafted in part of the data collections to determine levels of motivation, learning, and perceptions of specific learning units at their conclusion. These short, formative assessments collected information regarding the learning outcomes and help determine student mastery (Lemov, 2010). This information was used to make future decisions about flipped classroom strategies. The exit slips were administered at the conclusion of each unit. Participation was voluntary.

Student Interviews

Semi-structured interviews are conversations that follow a set of guidelines, yet are not bound by rules which would prevent depth and flexibility, as the interviewer has the liberty to probe a subject or issue of interest (Alshenqeeti, 2014; Mertler, 2017). Semi-structured interviews were utilized in order to gain insight into the classroom strategies students were motivated by and what best practices were most efficient (Alshenqeeti, 2014; Mertler, 2017).

The interviews were conducted one week after the conclusion of the intervention. Five students were chosen based on their willingness to participate in the interview. Special consideration was given to gender and ethnicity in an effort to reflect the overall population of Rohn High School. The interviews were face-to-face and lasted 20 to 30 minutes. Since the questions were open-ended, students had the freedom to answer thoroughly and offer their own unique perceptions and opinions (Mertler, 2017). The interview consisted of questions aligned to the research questions. An interview protocol (see Appendix D) was included to establish rapport meant to enhance the students' willingness to participate. Student anonymity was respected and protected. Questions for the interviews (Appendix D) were modeled after previous investigations into the effectiveness of flipped classroom approaches and survey data from Gilboy, et al. (2015).

In order to prevent mistakes and gain the respect and trust of students, I practiced the interview procedure ahead of time by role-playing with a student that is a part of our teacher-training classes. This helped me to review the research questions and ensure that my coverage was comprehensive and complete (Mack, 2005). Practicing this interview strategy helped detect subtle cues in student behavior to construct rich and deep meaning

(Saldana & Omasta, 2017). Table 3.8 below is a sample of the questions used in the semi-structured interviews.

Table 3.8 *Sample Interview Questions*

Research Question	**Sample Questions**
How and in what ways does implementing the flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?	• Describe elements of the flipped classroom that motivated you • How did your flipped classroom experience differ from other classes you've taken that did not use the flipped classroom?
How does implementing the flipped classroom approach affect high school students'' learning in an introductory psychology course?	• Describe how effective you feel that participating in the flipped classroom approach has been in helping you learn the content. • Tell me about the learning activities that made you feel as though you really got it.
What are high school students' perceptions about the effectiveness of the flipped classroom approach to learning the content in an introductory psychology course?	• Describe your feelings about your classroom experience regarding activities before, during, and after class. • What words would you use to describe the flipped classroom experience?

I had a hard copy of the questions that I turned into my template to record field notes (Appendix E). In these field notes I recorded the date, time, and place of each interview. It was useful to provide space for questions and answers that allowed for reflection later and used key phrases and shorthand where practical. A computer was used to record the interviews and directly after the interviews I wrote down my summary of the interview, being sure to take note of student nonverbal communication. Next I

transcribed the audio recording and listened to the interview again in order to review and capture anything I missed in my hand-written notes.

Exit Slips

Exit slips (Appendix F) were utilized at the conclusion of each learning unit. The data gained from the exit slips provided quantitative and qualitative data that drove decisions as instructional materials were designed. The exit slips consisted of five questions. Three questions were designed to determine the effectiveness of the flipped classroom approach, along with student perceptions, and 2 questions were open-ended questions that required students to critically assess their own acquisition and motivation. Exit slips gave useful feedback about student perceptions (Marzano, 2012). The exit slip collected data using a 5-point Likert scale, and the scoring is as follows: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree.

Researcher Journal

I maintained a researcher journal throughout the intervention period. The purpose of the journal was to record my own feelings and perceptions about the successes and failures of the intervention. The journal entries enabled another layer of qualitative information, as my role as a reflective researcher was valuable to the class (Mertler, 2017). The combination of the researcher journal and exit slips allowed me to check the evidence and feedback I received during the interviews, and determine if my feelings were shared or contradicted my students'. Journal entries and exit slips helped determine which students were open to participating in interviews and provide solid, objective information since they were ongoing, during the intervention. Journal entries and reflections were updated weekly.

Instructional Materials Motivation Survey

This survey (Appendix G) was developed by Keller (1987) in order to measure student's levels of motivation and utilizes four components in order to do so. These four components, attention, relevance, confidence, and satisfaction (ARCS) are necessary to cultivate and bolster motivation while engaged in the learning process. This survey measures the four components and is divided into sections for that purpose. The IMMS is comprised of 36 items and four subscales to measure ARCS, which are critical to the learning process (Keller, 1987). The subscales are attention (12 items), relevance (9 items), confidence (9 items), and satisfaction (6 items). The survey measures student motivation by applying a 5-point Likert scale, and the scoring is as follows: (1) not true, (2) slightly true, (3) moderately true, (4) mostly true and (5) very true. There are 10 reversed items, which indicate that the lower the score the student gives, the higher the motivation level score is. The minimum score is 36, and the maximum score is 108.

The reliability of the survey was established by administering the survey to 90 undergraduate students in two classes of preservice teaching at Florida State University (Keller, 1987). The reliability estimates had the following Cronbach's alpha of .89 for attention, .81 for relevance, .90 for confidence, and .92 for satisfaction. Cronbach alpha for the whole survey was reported as .96. The reliability coefficient (Cronbach's alpha) was calculated to confirm the reliability of the survey.

The validity of Keller's IMMS was established by preparing two sets of instructional materials covering the concept of behavioral objectives in part of lessons on instructional planning and design. The students exposed to the lessons containing strategies to enhance motivation through the use of the ARCS motivational model earned

higher scores on the points of the survey than those in a control group, despite both lessons having the same objectives and content. Furthermore, the validity of the IMMS has been confirmed by its use in other studies (e.g. Cook et al., 2009; Huang & Hew, 2016; Loorbach, Peters, Karreman & Steehouder, 2014; Pittenger & Doering, 2010).

The IMMS survey was slightly modified to fit the intervention and the class. For example, the word lesson was adapted to *learning objectives*. Material was substituted with *psychology learning units.* Table 3.9 is a sample of the modified questions, to be more conducive to the desired research. A full comparison table is listed in Appendix H.

Table 3.9 *Modified IMMS Survey Comparison*

Original IMMS	**Introduction to Psychology IMMS**
1. When I first looked at this lesson, I had the impression that it would be easy for me.	1. When I first looked at the learning objectives, I had the impression that it would be easy for me.
2. There was something interesting at the beginning of this lesson that got my attention.	2. There was something interesting at the beginning of these learning units that got my attention.
3. This material was more difficult to understand than I would like for it to be.	3. The psychology learning units were more difficult to understand than I would like for it to be.
4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from this lesson.	4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from these learning units.
5. Completing the exercises in this lesson gave me a satisfying feeling of accomplishment.	5. Completing the exercises in these learning units gave me a satisfying feeling of accomplishment.
6. It is clear to me how the content of this material is related to things I already know.	6. It is clear to me how the content of these learning units are related to things I already know.
7. Many of the pages had so much information that it was hard to pick out and remember the important points.	7. Many of the videos had so much information that it was hard to pick out and remember the important points.
8. These materials are eye-catching.	8. The videos and instructional material are eye-catching.
9. There were stories, pictures, or examples that showed me how this material could be important to some people.	9. There were stories, pictures, or examples that showed me how this

10. Completing this lesson successfully was important to me.	material could be important to some people. 10. Completing these learning units successfully was important to me.

Teacher-Made Pre- and Posttest

The teacher-made pre- and posttest (Appendix I) was administered before the intervention and after its conclusion. Designing my own test ensured the assessment was aligned to my instructional unit learning objectives and its validity (Rudestam & Newton, 2014; Schoonenboom & Johnson, 2017). This assessment was checked by the members of the social studies department at Rohn High School to reaffirm my adherence to measuring the desired learning goals. In addition, I reviewed the biology portion of the test with the science department head in order to determine content validity.

The test was delivered before the interviews to determine student acquisition of learning objectives over the course of the instructional units. The test was designed to measure acquisition of content knowledge. The test was comprised of 50 multiple choice questions aligned to learning standards and corresponding to the national learning outcomes that are provided by the American Psychological Association (APA, 2011). Using the pre- and posttest allowed me to appraise the significance of the intervention (Rudestam & Newton, 2014), and use the quantitative data to drive the subsequent qualitative research. Table 3.10 provides some sample test questions for each learning unit. The entire test, along with answers and unit alignment is in Appendix I.

Table 3.10 *Teacher-made Pre- and Posttest Sample Questions*

Instructional Unit	**Question**
Unit 1: History, Approaches, and Methods	The psychologist who wrote the first modern book of psychology, *The Principles of Psychology* in 1890 is a. Wilhelm Wundt b. John B. Watson c. William James d. B.F.Skinner
Unit 2: Biological Bases of Behavior	The modern biological perspective of psychology studies a. only the behavior of animals b. the effects of biological factors on our behavior. c. the effects of the environment on human behavior d. the impact people have had on their environment
Unit 3: Sensation and Perception	Distinguishing between two shades of red is an example of a. absolute threshold c. sensory adaptation b. difference threshold d. afterimage
Unit 4: Learning	A conditioned response may be extinguished when a. similar stimuli cause the same response. b. stimuli that are not similar to each other cause a different response c. a conditioned stimulus is no longer followed by an unconditioned stimulus. d. the conditioned response is no longer paired with an unconditioned response.
Unit 5: Memory and Cognition	What is the memory process that locates stored information and returns it to consciousness? a. retrieval b. storage c. encoding d. interference

In summary, the multiple data sources of student interviews, exit slips, researcher journal, survey results, and teacher-made pre and posttest granted me flexibility in addressing the purpose of my research (Schoonenboom & Johnson, 2017). The multiple sources added integrity and validity to my research (Schoonenboom & Johnson, 2017).

Data Analysis

The qualities of mixed methods design allowed me to evaluate data from several sources. The qualitative data collections for this action research included (a) student interviews, and (b) a researcher journal, as well as the (c) open-ended questions on the exit slips. The quantitative research methods utilized in this action research included (a) surveys, (b) exit slips, and (c) pre- and posttest scores. Table 3.11 below describes and details the research questions along with their quantitative and qualitative data sources and analysis methods.

Table 3.11 *Research Questions, Data Sources, and Data Analysis Methods*

Research Questions	**Data Sources**	**Data Analysis**
How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?	• Student interviews • Researcher journal • Student surveys (Instructional Materials Motivation Questionnaire) • Exit slips	• Inductive analysis • Descriptive statistics
How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course?	• Student pre- and posttest scores of teacher-made tests • Exit slips	• Paired sample t-test • Descriptive statistics
What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content knowledge in an introductory psychology course?	• Student interviews • Exit slips	• Inductive analysis • Descriptive statistics

Qualitative Analysis

To analyze the qualitative data, I applied a constant comparison method using inductive analysis (Creswell, 2014; Morgan, 2013). Strauss and Corbin (1998) describe inductive analysis in three steps. These steps include applying a constant comparison of the entire data set to find categories. Next, examining how the categories are related, and third, singling out one category as a theme that relates all other categories. Analyzing the qualitative data involved the collection of raw data, organization, and reading multiple times. Similarly, I hand-coded the interviews and researcher notes, working to identify themes that emerge throughout. Coding revealed repetitive events or observations (Creswell, 2014). The coding began to paint a picture of the student experiences, which then allowed me to interpret the findings. Using a process known as *codeweaving* (Saldana & Omasta, 2017) I synthesized the emerging data into a narrative that described the relationship between sources. The synthesis of data is one of the main goals of implementing mixed methods research, therefore I looked for themes in answers across data collection sources (Morgan, 2013).

Interview data began with transcriptions that were subjected to coding. The combination of interviews and exit slips allowed me to check the evidence of the researcher journal entries, gathered as part of my reflective practice. The journals and exit slips helped determine which students were open to interview feedback and provided solid, objective information. Furthermore, the data were analyzed using a thematic analysis method which allowed me to focus on keywords and phrases (Creswell, 2009; Thomas, 2006). A concurrent triangulation approach was implemented which allowed me to collect data while comparing the differences (Creswell, 2009).

Qualitative data was scrutinized inductively in the form of student interviews along with transcripts and journals, using a constant comparative method in which the researcher continued to journal in order to illicit themes in data (Glaser, 1965; LeCompte & Preissle, 1993). This required coding as repetitive categories emerged after several read-throughs of the interview transcriptions, exit slips and journal entries (Creswell, 2009; Creswell & Creswell, 2017; Mertler, 2017). Using this approach helped validate my findings while executing efficient mixed methods data collection. Ultimately, I made sense of the myriad data in a systematic, rich descriptive method that illuminated the classroom experience, capturing the essence of my students' experiences.

My findings were represented by using thick, rich descriptions to create a narrative of the classroom by singling out the most significant events (Mertler, 2017). I reported what I found throughout the instructional units impartially and fairly while remaining objective and supporting themes with evidence. Data collected through interviews are reported in tables demonstrating thematic components.

Quantitative Analysis

Teacher-made pre- and posttest assessments were administered before the intervention and after the intervention. I used a paired sample *t*-test to determine the influences of the intervention on students' learning. This conveys the effectiveness of the flipped classroom method on student learning with the significance alpha level of 0.05. Furthermore, descriptive statistics were used to analyze the survey and exit slip results in order to adhere to valid research (Creswell, 2017).

Rigor and Trustworthiness

This mixed methods study included numerous safeguards to ensure the rigor and trustworthiness throughout the research. Rigor and trustworthiness is valuable in action research as it establishes a level of credibility that is comparable to experimental research (Mertler, 2017). In this case, the rigor and trustworthiness were grounded in practices that ensure accuracy, credibility, and validity. These include my personal prolonged exposure to the research site and utilizes (a) thick, rich descriptions, (b) member checking, (c) triangulation, and (d) peer debriefing.

Thick, Rich Descriptions

I observed participants in their natural setting, our classroom, where I watched students behave in their familiar atmosphere, free of manipulation and outside influence (Creswell, 2014). As the participant-researcher I had prolonged exposure and familiarity to the environment. This gave me the ability to provide thick, rich descriptions that included a detailed account of our setting and multiple sources for interpretations of themes and information. These rich descriptions come from the interviews, exit slips and journal entries, as they went through the process of narrowing information into manageable units, coded and examined for repeated themes (Manfra & Bullock, 2014). This research was conducted in my own classroom, over the course of eight weeks. During this time I was able to build a rapport with students and gain their trust, adding a layer to the thick and rich descriptions.

Member Checking

Member checking is a necessary component, as it served as a safeguard to the value of the data (Rudestam & Newton, 2014; Mertler, 2017). Following the interview

transcription, the interview participants reviewed their answers to ensure the accuracy of my reporting. I printed the interview transcript and hand-delivered this to the participants. The five participants each returned the transcripts to me the next day. The procedures were part of determining successful methods of instruction and best practices. This member checking included the opinions of the participants and their views regarding the accuracy of the findings (Creswell, 2014). The transcripts of the interview and the participants' responses were shared with the interviewee to check the final results.

Unfortunately, the safeguards for member checking were not able to be completed. I was not able to share my findings with my interview participants as a result of school closure caused by COVID-19 pandemic. The intention of sharing was to allow participants to confirm my analytical findings (Mertler, 2017; Shenton, 2004). We were only able to complete the checks of the interview transcriptions, therefore member checks were not fully completed.

Triangulation

Triangulation, or the "use of a variety of instruments, methods, and sources to collect data" (Mertler, 2017, p. 141) was implemented in order to establish the trustworthiness in my design by integrating the combined quantitative data acquired in surveys and test scores with the qualitative data gathered using interviews, exit slips, and journals. The interview data was corroborated by observational data contained in my researcher journal and survey responses, combined with descriptive statistics from pre- and posttest scores. Triangulation provided the action researcher the opportunity to establish the credibility of the findings of multiple sources (Hendricks, 2009). Different kinds of data translated into different results, but by triangulating, themes emerged

throughout cross-checks (Rudestam & Newton, 2014). In this study, data collection was conducted for eight weeks. The qualitative data included semi-structured interviews, where students had the opportunity to answer fully on the research topics, exit slips, and researcher journals. These were combined with quantitative measures of Likert-scale survey items and pre- and posttest results. These methods ensured credibility as the data were analyzed and synthesized. Triangulation of data using both quantitative and qualitative methods ensures the trustworthiness of the research (Mertler, 2017; Morgan, 2013).

Peer Debriefing

I conducted peer debriefings over the course of the action research on several levels. I worked closely with my dissertation chair and accepted criticism and suggestions on my data collection, analysis, and interpretation of that data (Mertler, 2016). Moreover, my classroom was observed by other professionals in collaboration with Discovery Education's STEAM initiative. These additional eyes brought a fresh perspective that would otherwise go unseen. As I progressed through the research my team members were empathetic and experienced listeners helping guide me through the pitfalls and steer me clear of biases (Rudestam & Newton, 2014). This information enhanced the output of the research as it was refined in order to provide deeper meaning (Shenton, 2004).

Finally, throughout the analysis process I met with my dissertation chair regularly. Chiefly among our discussions and corrections were quantitative analysis and working with descriptive statistics. This guidance was instrumental as I made sense of the data.

Procedures and Timeline

Procedures for this action research were completed in a series of three phases. Participants were students in introductory psychology course at Rohn High School and interview subjects were volunteers. All students participated in the flipped classroom approach and quantitative data collection. Table 3.12 summarizes the timeline followed in this study.

Table 3.12 *Timeline of Participant Identification, Data Collection & Data Analysis*

Phase	Researcher Expectations	Student Expectations	Time Frame
Phase 1: Introduction	• Hand out consent and assent forms • Distribute teacher made pre-test • Identify interview participants	• Complete consent and assent forms • Take pre-test	1 week
Phase 2: Intervention and Data Collection	• Begin flipped classroom approach • Administer posttest • Interviews for the conclusion of instruction • Distribute surveys • Administer exit slips and journal entries	• Complete assignments and active learning tasks related to flipped classroom • Take posttest • Interviews • Complete surveys	8 weeks
Phase 3: Data Analysis	• Transcribe interview data • Paired t-test • Survey results • Member-check	• No expectations in phase 3	18 weeks

Phase 1: Introduction

The first week was spent handing out and collecting the consent and assent forms (Appendix J). Then, students took the teacher-made pre-test that is aligned with national learning standards. During this phase the interview participants were chosen on a voluntary basis. Instructional time was spent explaining the instructional procedures and student expectations. Class time was devoted to describing the intervention that students would experience.

Phase 2: Intervention and Data Collection

Students participated in the flipped classroom approach and active learning tasks aligned with national learning standards. Students experienced 5 learning units over 8 weeks of instruction. Students were exposed to the material outside of class and took part in active learning activities in class with classmates, with the goal of decreasing boredom and increasing motivation (McLaughlin et al., 2014). Students were instructed on three distinct levels: before class, in class, and after class. When the units were completed the volunteers took part in semi-structured interviews. The interviews were face-to-face and one-on-one, with questions aligned to research questions. The interviews were scheduled with the student during the school day and lasted from 20 minutes to 30 minutes. Participation in the exit slips, motivation and perception surveys was voluntary, while the pre- and posttests were mandatory. The order of the data collection was the pre-test, exposure to the intervention, a posttest, completion of the IMMS questionnaire, and the interviews.

Phase 3: Data Analysis

This phase was spent analyzing the data gathered throughout the eight weeks prior. This includes exit slips and researcher journal transcription, the interview data and transcription, the survey analysis, and the pre- and posttest analysis. For the journal, I looked for confirmation of codes and themes throughout. Interviews required a hard-copy of the interview itself, listening afterward for anything that I may have missed, and objectively summarizing findings. I used the teacher-made pre- and posttest data to analyze by using a paired sample *t*-test and survey data was subjected to critical analysis using descriptive statistics. This iterative process allowed for triangulation by provided multiple sources of data (Creswell, 2014).

Plan for Sharing and Communicating Findings

As my research into the effects of the flipped classroom approach progressed, I shared my findings in the areas of flipped classroom adoption and efforts to increase student motivation first with the social studies department at Rohn High School. I shared results using my quantitative and qualitative measurement tools in a PowerPoint along with a short summary in a hand-out during a faculty meeting. After receiving feedback from the social studies department, I presented my findings to my administrative staff at Rohn High School. I then shared with the entire staff at RHS during a faculty meeting. I will share my findings at the October professional development meeting for my district. In addition to presentations, I will make the PowerPoint, hand-out, and video of the presentation available on the school district-wide Google Drive.

Lastly, after receiving feedback from my school and my district and giving consideration to these sources, I will submit my findings to the online communities in

which I am a member, such as Teaching of Psychology in Secondary Schools (TOPSS) and the American Psychological Association (APA). I will also seek an opportunity to share my experience in a national conference on teaching psychology and consider publishing my study in a journal. Throughout this process my students' anonymity will be protected by providing a pseudonym and communicating to the audience that names and identities are fictitious.

I submitted a proposal and was accepted to present my findings at the Association for Educational Communications and Technology (AECT) that meets in November 2020. Here I will share my findings among the professional learning community in hopes of networking and increasing my own knowledge in this field.

CHAPTER 4

ANALYSIS AND FINDINGS

The purpose of this action research was to evaluate the impact of implementing a flipped classroom approach on students' motivation, perceptions, and effectiveness of learning the content knowledge in an introductory psychology course at Indian Land High School. The research questions for this mixed methods action research were: (1) How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course? (2) How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course? (3) What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content in an introductory psychology course?

The preliminary part of this chapter will include the quantitative research methods implemented throughout the units of instruction. The succeeding portions of the chapter will detail the qualitative research methods and findings, and identify and explain the three themes that emerged.

Quantitative Findings

The following is a description of the methods of analysis utilized during the quantitative analysis of this action research, along with a description of internal

consistency and concludes with descriptive statistics and paired *t*-test findings. The data sources included (a) pre- and posttest scores, (b) IMMS surveys, and (c) exit slip questions.

Teacher-Made Pre- and Posttest

The teacher-made pre- and posttests demonstrated student mastery of content objectives over the eight weeks. This assessment was checked by the members of the social studies department to reaffirm my adherence to measuring the desired learning goals. Additionally, I reviewed the biology portion of the test with the science department head to determine content validity. The assessment provided quantitative data designed to measure the students' mastery of introduction to psychology coursework over 5 units of instruction. Consideration was given to the bulk of questions to the corresponding length and breadth of the unit. The test was 50 questions long, multiple-choice with 4 options. The test was administered 8 weeks apart. The pretest was administered before the intervention, and the posttest was completed immediately following the conclusion. Fifty-eight students completed both pre- and posttest. The highest score a student could achieve was a 100%.

Descriptive Statistics. Descriptive statistics of the pre- and posttest scores are recorded in Table 4.1. The pretest mean was 33.93. Posttest mean was 81.24.

Inferential Statistics. A paired-samples *t*-test was used to determine the impact of flipped classroom approach on students' learning and is reported in Table 4.1. To test the assumptions of normality, Shapiro-Wilk normality test, histogram, skewness and kurtosis values were checked. Although Shapiro-Wilk normality test was significant, which showed that the difference between the pretest and posttest is not normally

distributed, the histograms showed that distribution is approximately normal. Also, skewness and kurtosis values ranged from -1 and +1. According to Tabachnick and Fidell (2001), the variables were normally distributed. Paired-samples t-test revealed that students' posttests scores (*M*=81.24, *SD*=18.80) were significantly higher than their pretest scores (*M*=33.93, *SD*=9.38), *t*(57) = -20.39, p < .001. The effect size, Cohen's *d*, was 2.68 indicating a large effect of the flipped classroom approach on students' learning.

Table 4.1 *Paired Sample t-test Results*

	M	*SD*	*T*	*Df*	*p*
Pretest	33.93	9.38	-20.39	57	<.001
Posttest	81.24	18.80			

N=58

Instructional Materials Motivation Survey

This survey was used to measure student's levels of motivation and utilizes four components in order to do so. These four components, attention, relevance, confidence, and satisfaction (ARCS) are necessary to cultivate and bolster motivation while engaged in the learning process. The IMMS is comprised of 36 items and four subscales to measure ARCS, which are critical to the learning process (Keller, 1987). For this study's purpose, students completed the IMMS survey after our instructional intervention.

Descriptive Statistics. Table 4.2 represented the mean and standard deviation of each subscale of the IMMS.

Table 4.2 *Mean and Standard Deviation of the IMMS Subscales*

	N	***M***	***SD***
Attention	57	3.27	.54
Relevance	56	3.89	.63
Confidence	57	3.40	.56
Satisfaction	56	3.53	.91

Exit Slips

A total of five exit slips were administered to students after each instructional unit. Students anonymously and voluntarily completed the exit slips after executing the unit assessment, so that they could critically consider their exposure to content and learning experiences. Fifty-eight students were subjected to the exit slips, though not all students completed them for every unit. A total of 268 exit slips were gathered using Google Forms. Each exit slip had a total of five questions, two of which were open-ended. Table 4.3 reports the mean of the three exit slip questions that were answered after each instructional unit on an anonymous and voluntary basis. These were Likert-type questions used as formative assessments to determine the effectiveness and to make adjustments to instructional methods.

Figure 4.1 presents the results of the questions above in a graph in order to illustrate the increases in the mean. This reveals that students found value in the during class activities. The largest increase in perceptions of learning material came in Unit 3 and its after class activities. Unit 3 is the sensation and perception unit, which includes several stations that challenge students to consider the influences of sensation on their

perceptual experiences. This includes snacks. Pre-class experiences show a gradual increase over the five units, while the during class activities are at their highest for Unit 3.

Table 4.3 *Descriptive Statistics of Exit Slip by Unit*

Item	Unit 1 Mean (N=58)	Unit 2 Mean (N=56)	Unit 3 Mean (N=50)	Unit 4 Mean (N=52)	Unit 5 Mean (N=52
1. The pre-class activities (video lectures, guided notes, introductory materials outside of class) for this instructional unit motivated me to find out more about the topic.	3.45	3.43	3.56	3.65	3.82
2. The during class activities (group projects, individual projects, evaluations) helped me to learn the material for this instructional unit.	3.88	4.04	4.14	3.98	4.04
3. After completing the flipped classroom strategies in this learning unit, I feel that I have learned the material.	3.64	3.44	3.96	3.71	3.90

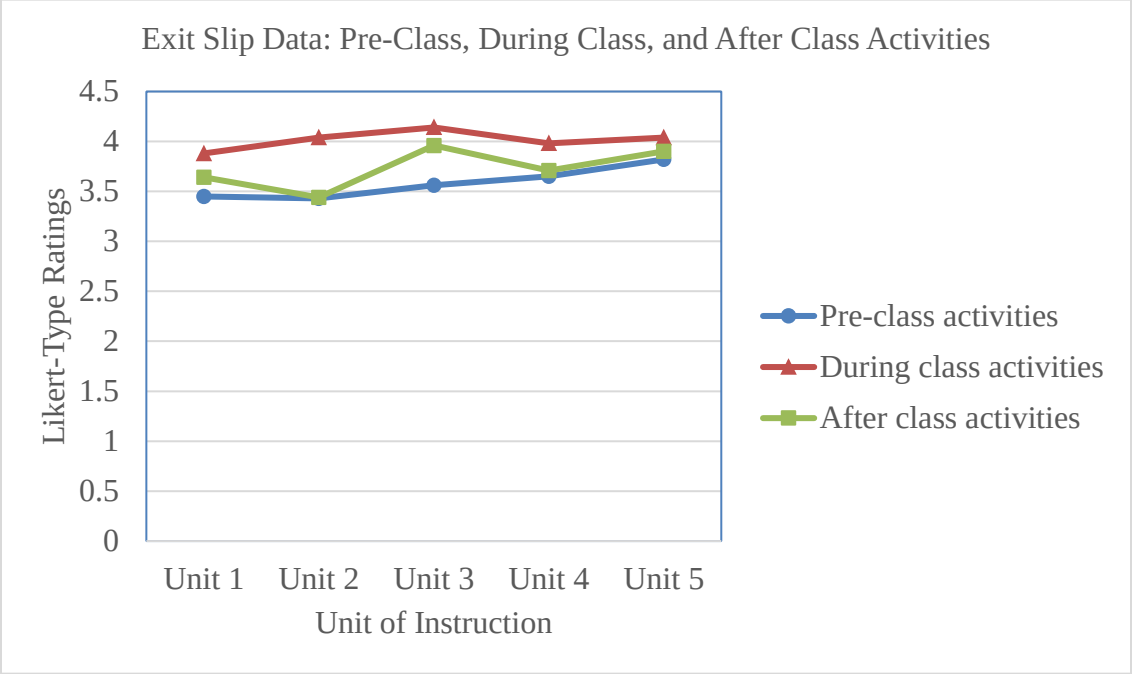

Figure 4.1 *Exit Slip Data by Unit and Question*

Qualitative Findings and Interpretations

This study collected qualitative data from two different data sources: five semi-structured interviews, 268 exit slip and researcher journal. Exit slips and interviews were used to gather the motives and perceptions about learning the content in our course. Table 4.4 presents the qualitative data source highlighting the variety of information obtained through these sources. The purpose of this section is to share the methods of qualitative data analysis that were conducted during the action research. A discussion of the methods of analysis will be followed by a description of the coding process, which revealed categories that formed themes while employing a constant comparison method.

Table 4.4. *Summary of Qualitative Data Sources*

Types of Qualitative Data Sources	**Number**	**Total Number of Codes Applied**
Student interview transcripts	5	150
Exit slips open-ended questions	2	93
Totals	7	243

Initial coding efforts were distilled, assimilated, and some relinquished to blend with others. The following will describe the process and present its findings.

Methods of Analysis

A sentence-by-sentence unit of analysis was the process followed while coding student interview data. This process began by transcribing verbatim recorded interviews. Interview transcriptions were reviewed and confirmed by students in a thorough member check. I hand-delivered my hard copies of transcriptions to the students. Students took a day to review and confirm their statements. The transcripts were then set aside for two weeks in order to separate from the interview transcription and the data within and allow information to take root. After a break, I listened to the student interview recordings again while reviewing my transcription, paying close attention to any nuanced inflections and interactions not included in my primary transcriptions. These final transcriptions were loaded into the Delve, online qualitative data analysis software. From here, the sentence-by-sentence analysis was initiated. This same system was implemented for exit slips. The researcher journal was used to verify these two data sources. As codes revealed themselves, I consulted my researcher journal to confirm my perceptions in comparison with students'. The researcher journal aided concurrent triangulation throughout the coding (Creswell, 2009).

Glaser and Strauss (1967) describe a constant comparison method as the researcher attempts to categorize data using inductive analysis (Rudestam & Newton, 2014). This inductive analysis process allowed for the continual synthesis of information into their respective categories. After transcribing the interviews, member-checks were conducted to ensure accurate recording of member input. Transcriptions were subjected

to inductive analysis. This was executed using a sentence-by-sentence unit of analysis (Mertler, 2017).

The sentence-by-sentence analysis included two waves of coding. The first round of coding took place as a practice run. This initial coding led to In Vivo and Process coding throughout the first and second phase of qualitative analysis (Saldana, 2017). As a beginning qualitative researcher, I was most comfortable using the student's own words while completing analysis. This honored their contributions and truly represented their voice. In doing so, I was best able to break down their perceptions and categorize their input. This first round was repeated one week later. After the first wave, a Word document was created with all codes. These codes were physically cut out and visually sorted by topic.

Next came the second round of pattern coding and a repeat of cutting up of codes to reveal categories. The final step was to go back to Delve to elicit the themes emerging from the interview data. This process was also utilized to analyze exit slip data. The teacher journal was consulted to authenticate findings. Peer debriefing was implemented to provide checks and confirmation of emerging codes throughout each phase of coding. Over the five months of data analysis, I was assisted by two cohort members that provided professional feedback, suggestions, and emotional support (Rudestam & Newton, 2014). The analysis was checked by the cohort colleagues weekly through online meetings, and my dissertation chair on a bi-weekly basis, also online, throughout the investigation to confirm categories derived from research. My dissertation chair met individually with me eight times, and my committee chair along with other dissertation committee members conducted a qualitative analysis workshop during our experience.

The coding was completed using Delve and Figure 4.2 displays a screenshot of these early coding stages.

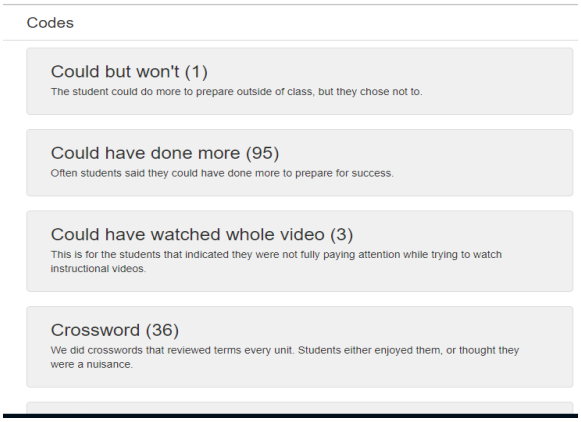

Figure 4.2. Screenshot of Coding Process

As the coding progressed, I transitioned to the physical display of the codes and divided each code by research question. This process is displayed in Figure 4.3.

Figure 4.3. Physical Process of Coding

One final step that was taken throughout the coding was recording and reflecting my thoughts and perceptions along the way. These thoughts were recorded in a coding journal (separate from my researcher journal) as insights were revealed. I preferred to

take hand-written notes to aid the reflection process. This was where I noted changes to codes, reflections, and suggestions from my peers and dissertation chair. My coding journal is pictured in Figure 4.4. This process was repeated for my second round of coding as categories began to reveal the themes of the qualitative data.

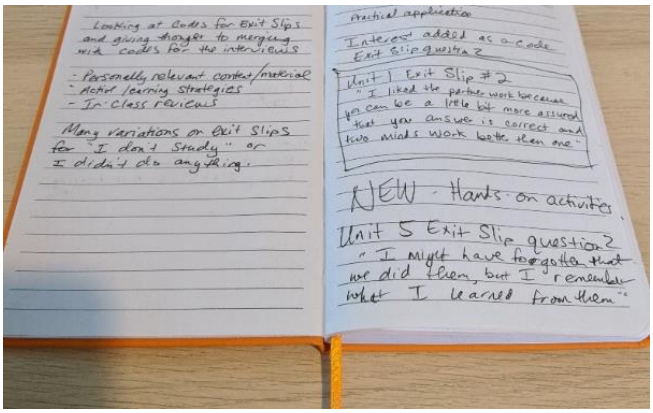

Figure 4.4. Journal for Recording Coding Information

First Round Coding Results. The 284 codes that were informed during the first round were divided by the research question and between interviews and exit slips. These two data sources were merged to reveal a consensus that was further analyzed in round 2 of the coding process. The early codes that emerged in the first round included those such as *in-class activities are engaging and interactive, our materials are interesting and easy to access as well as personally relevant.* This helps increase motivation, as students are motivated by the personal nature of the subject matter as well as the increased opportunity to share the class content. A sample of the first round of codes is displayed in Table 4.5.

Table 4.5 *First Round Codes and Samples*

First Round Codes	Sample Codes
Accessible	• Easier to access information • Notes taken anywhere • Review

	• Materials are easily provided • Videos are super easy • Super simple • Extremely effective • Google Classroom • It's pretty accessible • YouTube channel
Active Learning Strategies	• Hands-on, or like, interactive things and I like that a lot more • Help me remember • Neuron and brain hat helped me visualize • Get up and do stuff • Kinesthetic learner • Relate to personal experiences • Timeline helped me learn • More fun than listening to teacher • Not just busy work • Shows differing perspectives • Fun examples • Watch videos and use with friends in class • Examples in class • Sensation and perception activities • Everything is really progressive • Review games • We do a lot more in class • Brain hat really helped me because it was fun • Hands-on activities • Case studies • More participation • Relate info to real life • Moving around • Relate content with real life • Visual and interactive activities • Connecting activities to real-life things • Review games • Flipgrid • Food gets my attention

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One example of changes suggested at the direction of my dissertation chair included consultations regarding the use of active learning strategies. Originally I was

treating the code for active learning strategies as a category. The suggestion was made to differentiate between activities that were conducted in class from the active learning strategies in order to make the distinction between the innumerable events that took place within the eight week intervention. A second suggestion was the conversion of the word *collaboration* to a category, as this became a theme. The transition from code to category is displayed in Figure 4.5 using a Word document from Delve.

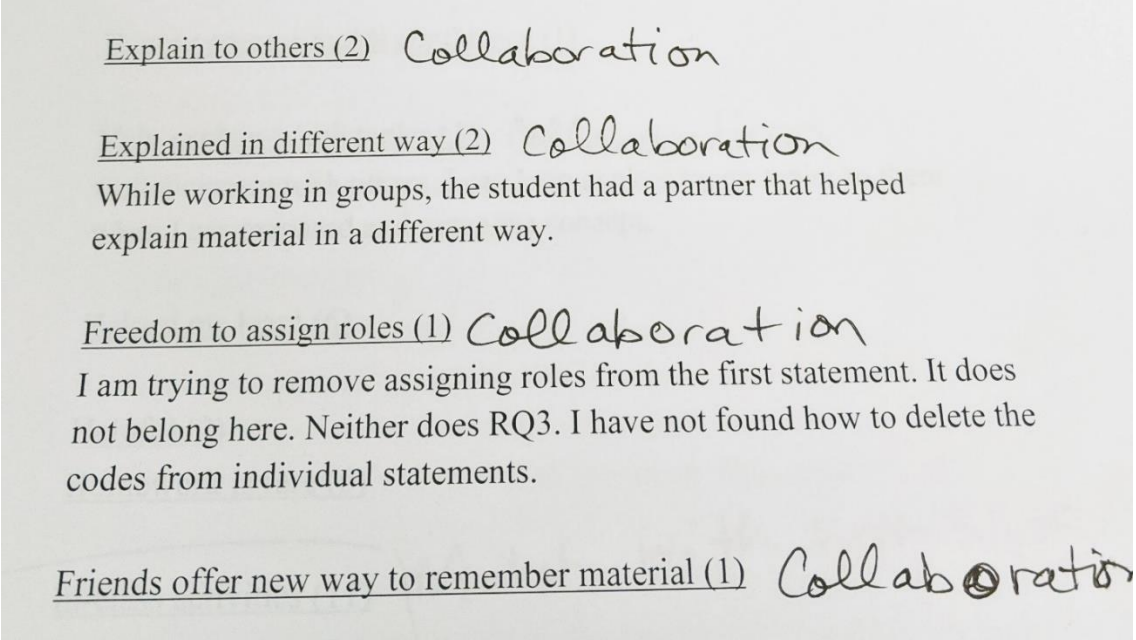

Figure 4.5 Transitioning to second round of coding

This procedure became a part of the second round of coding, where the first round codes were converged into categories.

Second Round Coding Results. Further iterative evaluations of exit slip and interview data revealed common categories among qualitative data. Synthesizing codes revealed 260 final codes to establish 12 categories. Peer debriefings helped sort through the myriad codes on their way to categories and themes. At the direction and assistance of my dissertation chair and cohort colleagues, the codes were distilled through the process

of analysis. These continued to reinforce the constructivist principles and value of active-learning strategies as well as the during class component incorporated into the flipped classroom instructional approach. Demonstrated in Figure 4.5, the first round codes were integrated into categories. From the categories, themes were derived according to each research question and are included in Table 4.6. This information is the amalgamation of the merging codes over the 5 months of analysis.

Theme 1 was confirmed through categories such as *in-class review, in-class activities, interesting, practical application, personally relevant, active learning strategies, review games, and in-class materials*. These categories are contributors to motivation and can be traced to the ARCS theory of motivation (Keller, 1987). Theme 2 was confirmed through categories such as *collaboration, constructivism, in-class review, notes and hand-outs connect prior knowledge to class interaction, and practical application.* These categories are connected to the phase of during class activities, also known as the active learning strategies that students found valuable to their motivation and learning outcomes. Theme 3 came from categories such as the *flipped classroom instructional approaches are different, easy(ier), are more engaging than traditional classes, require getting used to.* These categories encompass student perceptions regarding the comprehensive intervention experience. Table 4.6 displays the themes that emerged, along with their categories and sample codes.

Table 4.6 *Themes that Emerged from Qualitative Data*

Themes	Categories	Summary of Evidence
1. In-class activities increased motivation	a. materials are easy to access, personally relevant, and interesting b. class is engaging c. collaboration increased motivation d. active learning strategies increase motivation	• Real-life topics • Class is never boring • Group activities spark motivation
2. Collaboration and interaction help learning	a. collaboration b. constructivist principles were a part of student learning experience c. more effective use of class time d. practical application of knowledge	• Active learning strategies engaged learners while working with others • Connections to prior knowledge in class • Learning experiences are shared with classmates and teacher • Class time devoted to applying the information acquired outside of class
3. Students are engaged and motivated	a. instructional strategies are different and easy(ier) b. class-time used for learning c. hand-outs and review in class was worthwhile d. takes some getting used to	• Combining video information with in-class activities led to visual imagery and learning • Hands-on activities help each other • Simplified explanations together in class

In-class Activities Increased Motivation

Active learning strategies that took place during the in-class phase of our intervention include a large number of techniques meant to challenge learners to analyze, synthesize, and utilize the information that is acquired throughout flipped classroom lectures (Roehl, et al., 2013; Sookoo-Singh & Boisselle, 2018; Catteneo, 2017; Jonassen, 1991; Kennedy & McKnaught, 1997). According to Swiderki (2011), teachers can utilize

such activities in class to help make material meaningful for learners. Evidence gathered suggests that this was achieved. This evidence is framed around Theme 1, that in-class activities increase motivation using the categories: (a) materials are easy to access, personally relevant, and interesting, (b) class is engaging, (c) collaboration increased motivation, and (d) active learning strategies utilized in class increased motivation.

Materials are easy to access, personally relevant, and interesting. Students in interview data agreed that materials were easy to get to, as four out of five interview participants acknowledged the ease at which materials were acquired. Regarding their perceptions towards acquiring the information Ally said, "All the links were provided for us and everything that we needed was either given to us in class or put into Google Classroom for us to visit on our own time." This sentiment was echoed by Ellie, "it's on Google Classroom so it is easy to get to." Obstacles to obtaining information were eliminated from the beginning as students worked throughout units. This opinion was important, as noted by Alexander (2018) that when students are uncertain about the requirements and expectations, motivation suffers and participation is affected. Figure 4.6 demonstrates the ease with which students could access materials through the class website. This website was listed as a topic in Google Classroom.

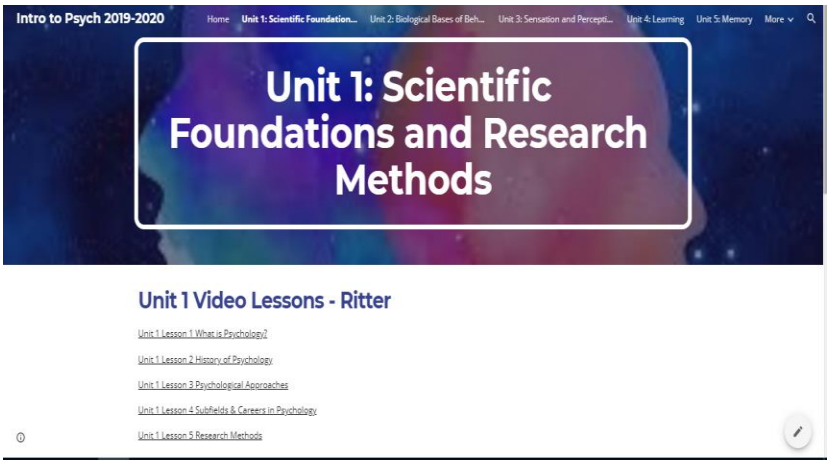

Figure 4.6 Class Website, Accessible through Google Classroom

Knowing that students felt that the information was easy to get to was reassuring as in the early weeks of the intervention determining how to deliver the content was an issue. I wanted to put videos into a video hosting website called PlayPosit, but not all students could access the videos. Chromebooks did not allow some students to access the videos, but they could on their mobile phones. This was a problem since students have the Chromebooks, district expectation is that students use them. After trying unsuccessfully to deliver videos on PlayPosit, I tried EdPuzzle. The purpose of both of these video hosting options was to monitor student video interaction and make sure that students were viewing the videos, along with embedding questions into my videos to provide active engagement. Neither of these checks was successful, and I was forced to put all videos on YouTube. By the third week of our intervention, I was putting all videos onto YouTube and doing unit binder checks to ensure that students were doing notes. My teacher journal revealed frustrations of the technology issues, but a satisfying remedy was reached. One journal entry from the opening week revealed, “EdPuzzle-not all students were in EdPuzzle, therefore they had to watch the video without questions, and leaves me no feedback about who has watched the video”. This turned out to be a positive

roadblock. This was the primary stage of the intervention and I was able to establish an alternative check.

Students in both exit slip and interview data concur that the introduction to psychology class contained materials that were personally relevant and interesting. This was demonstrated in interview transcription data by Ally, "It makes what we learn a lot more interesting and it [flipped classroom approach] allows us to go deeper into what we're learning," since the material is personally relevant. The analysis process revealed up to 15 variations of student interest or material being interesting when interview and exit slip categories were combined. One such exit slip comment included from Unit 5 was "The memorizing activities [helped] because it helped me relate the content with real experiences"; relating the content to personal experiences through the class activities allowed students to make meaning of content.

Class is engaging. Progressing through the intervention, I observed student engagement, established through behavioral, cognitive, and emotional supports to boost participation, connectedness, and motivation (Fredericks, Blumenfeld & Paris, 2004). One conclusion revealed suggests that student engagement was higher than in traditional classes. Interview data shared by Brian indicated:

> what I liked specifically is how we already have the notes done ourselves so we have so much more time to actually discuss the material and answer questions about it because normally you spend basically the entire class period just jotting down notes [in contrast to the traditional classroom].

This opinion was reinforced using exit slip data from Unit 2 that revealed a change in cognitive engagement, "I think the hands on activities helped me because I could see and

visualize what we were supposed to be learning and it helped me understand the information more" (5.3). This represents a cognitive shift the student experienced due to the participation in active learning that was conducted in class as a result of the after-class reflection. This unit included hands-on activities like constructing a pipe cleaner neuron and coloring and labeling a brain hemisphere hat and are specifically referenced as key learning tools in interview and exit slip evidence. These activities are featured in Figure 4.7.

Students also remained engaged through the use of review games and online learning platforms like Kahoot and Quizlet. Kahoot proved to be a useful and engaging tool for students as exit slip answer from Unit 3 said that "the Kahoot helped me practice over and over very similar questions to the test and the notes helped me solidify the definitions" (5.9), adding value to the use of competition and repetition as well as hand-outs and materials to guide instruction (Swiderski, 2011). Exit slip data from Unit 5 revealed that it is the combination of activities and instructional materials that help students "The Kahoot is great because it gives me ideas of what type of questions would be on the test, Also going over our notes in class and bell ringers are great too" (5.38). Caley reiterated this combination of activities as meaningful, reflecting, "I think you're always learning, um, but when we get our worksheets and we get out Kahoots and I know it like the back of my hand I consider myself ready for the test". Instructional materials led to success in review games, which in turn created more confidence for students (Keller, 1983). Students valued elaborative rehearsal (Swiderski, 2011) in part of class review. This opinion was repeated by Brian:

> When you actually learn things and you start truly remembering them you feel more confident about your knowledge and about yourself you can see obviously when someone starts becoming more successful you gain more confidence around it.

The sequential organization of content through video lectures, in-class collaboration and review increased engagement and led to student learning and confidence around the subject matter. The engagement was demonstrated in behavioral, cognitive, and emotional supports that created a classroom environment to increase participation, motivation, and collaboration.

Collaboration increased motivation. Throughout both exit slip and interview data, students expressed an added component to motivation in exit slip comments such as "group projects because working with others, especially close friends, is more motivating and helpful" (Unit 2; 5.27). This opinion is reiterated through interview information that confirms that collaboration is useful, as Demi said:

> they're great [classmates] because like I said, people in my group are very motivated and they want good grades and so, and so I try to put myself around people who don't [lose focus] because then I will stray off the topic and not be focused.

Students acknowledged their tendency to submit to social pressures while working in groups. Ellie described this, "I guess just being able to like, connect with that person you know, laughing, and then just being crazy, and then you can get back to the work of understanding it". They also acknowledge that in doing so they can redirect themselves to

execute the required assignments and learn throughout the process, as expressed here by Brian:

> the collaborative experiences have definitely been very fun especially the superhero ones (Unit 2) and we just got together over the internet and we just had fun we laughed the entire time we did it and that's the most important thing.

The combination of exit slip and interview data revealed the mention of collaboration 80 times. Collaboration contributed to motivation and positive perceptions among students.

Classroom activities where collaboration was high was a review day for Unit 4. Researcher journal data revealed that working in stations increased participation and motivation. The class was divided into groups to review for our test on learning. There were five stations. Students were in a station for 15 minutes. Their breakdown was: station one was flashcards over unit terms, station two was multiple-choice questions to practice over the unit content, station three was a review over the principles of operant conditioning, station four was a meme creation station, and station five was one I called, Ritter Review, as students got to work one-on-one with me to clear up any confusing points and to go over answers from station two. The researcher journal led to the following observations:

> Everything went very well. Since I was at one station I was not able to visit and make sure that everyone was on-task but from what I could see most students were engaged. The ones that were not were mostly students that know the material pretty well. Only a few students are still working on terms and crossword [from the previous day]. We still have students getting reinforcement and punishment confused, but I do that too. I think test grades will be pretty good.

We will start on Unit 5 early and on Friday we will do some memory training.

Students were engaged and on-point. Level of engagement 8/10.

Having additional class time to review led to more collaboration. This time proved to be worthwhile for the students as well. Exit slip data for Unit 4 included, "the stations helped me the most because you got others help" (5.18). Collaboration further engaged students in class. Stations were designed to take advantage of the longer class periods and increase engagement.

Active learning strategies increased motivation. Since pre-class instructional strategies covered the course content, students appreciated the role of active learning strategies and use of class time. The switch to active learning required students to accept their new role from passive learner to active learner (Petress, 2008; Sultan, Woods, & Koo, 2011), as well as collaborating with classmates while using prior knowledge gathered through videos (Cattaneo, 2017; Jonassen, 1991; Kennedy & McKnaught, 1997; Sookoo-Singh & Boisselle, 2018; Gomez-Lanier, 2018).

Hands-on, active learning strategies such as constructing a pipe cleaner neuron and a brain hemisphere hat were central procedures for Unit 2. The students worked collaboratively on crosswords and vocabulary to end and review each unit. Students worked with partners on interactive sensation and perception activities, such as determining the distance someone was away while blindfolded, or guessing what color of skittles a person was eating while blind-folded. Demonstrations were a part of the classroom active-learning category, as I used a box of random items and pulled the items from the box to determine how much information students could keep in their short-term memory. We reenacted the first psychological experiment performed in a lab through

demonstration. We even had a mobile, active timeline of the history of the early founding of psychology. Students came to appreciate this and apply to their motivation levels, as shown in this comment from Demi:

> I think that, especially with the flipped classroom it's easier to learn the material and I think the flipped classroom makes the class fun, especially when we can do, when we did the project where we like went outside and the taste test and the ruler test and everything it just, it adds spark to the class and makes it fun instead of just always sitting at a desk listening to teachers rant on, just go through the lesson, it's more fun.

Exit slip evidence of the effective use of active learning strategies included statements such as "I think the hands-on activities helped me because I could see and visualize what we were supposed to be learning and it helped me understand the information more" (Unit 2; 5.3). One mentioned a specific activity, our pipe cleaner neuron, as the key to remembering neural transmission, "when taking the test, I thought of the pipe cleaner neuron, and the brain hat that we did, and those images helped me a lot" (Unit 2; 5.1). This demonstrates the cognitive changes students experienced.

Researcher journal reflections revealed some apprehension towards active learning strategies and collaboration. My reflection was that "I struggled today and I don't know why. Probably because this was three days of what looks like disorganization, but learning was happening". During this week our class was interrupted several times for various fall activities. One afternoon we had a fire drill. Another day our time in class was limited by a pep rally and we were headed for a 3-day weekend over Labor Day so the focus was limited. However, I found that the hands-on activities were a

good way to fill a distracted day. Students were engaged, but could work individually or in small groups at their own pace. Exit slip and interview data put my doubts at ease as I found that I could trust my experience in knowing that the hands-on activities are good for Fridays where students may lack focus. Figure 4.7 are examples of classroom active learning materials.

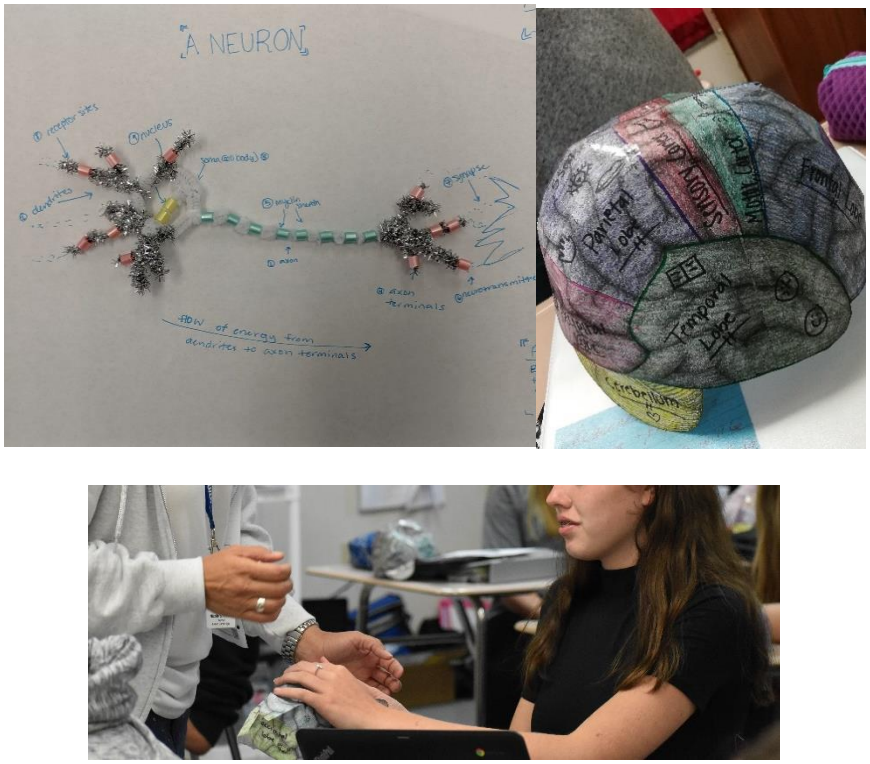

Figure 4.7 Samples of Classroom Active Learning Materials and Myself Working with a Student

This challenged my willingness to make the transition from the director to the co-creator of new knowledge, creating the active learning center rather than the passive listening center (Andrews, et al., 2011). These activities were designed to present students with the opportunity to interact with new information and create their own meaning to support learning, a key concept in constructivist theory. Student-centered

learning is an integral part of active learning (Sookoo-Singh & Boisselle, 2018) and provided students the opportunities to reflect on learning.

Collaboration and Interaction Help Learning

One of the main goals of the flipped classroom approach is to increase the opportunities to share the learning experience (Gomez-Lanier, 2018; Mazur, 2009; Mok, 2014;). The student-centered learning culture creates the prospect that enhance higher-ordered thinking skills (Schrlau, et al., 2016) and promotes collaboration (Jeong & González-Gómez, 2016; Keller, 2017). Collaboration and interaction were Theme 2. The Flipped Learning Network (FLN, 2014) suggests that class time ought to be devoted to interaction and reflection. Furthermore, creating classroom environments that support communication, autonomy, and sharing between students and teachers is a necessary component to flipped classroom approaches (Abeysekera & Dawson, 2015; Aşıksoy & Özdamlı, 2016; Gomez-Lanier, 2018; Isaias, 2018). This is proven and included in categories such as (a) collaboration, (b) constructivist learning principles, (c) more effective use of class time, and (d) practical application of knowledge.

Collaboration. Collaboration was a key to aiding student mastery of class content. This was confirmed through exit slip data that states that "the group activities in class, because the social interactions about the unit helped to engrain the content in my memory" (Unit 1; 5.23). Since this was our first unit comments like this were encouraging, "I enjoyed the articles [case studies jigsaw activity] because everyone has their own personal perception on how everything is and I kinda enjoyed explaining what happened in the articles in a small group" (Unit 1; 5.57). This was repeated in comments from Unit 4 exit slip data (5.49):

> These [small groups] helped the most because when I was confused it seemed as if the whole class was confused so we would spend about 3-5 min asking questions as a class and just helping each other out and giving our own tips at remembering information.

Student interview information further validated these opinions in statements such as "we get to work together a lot which is nice because if someone doesn't understand a question we can help each other out" from Ally. Challenging material was able to be broken down and analyzed within group settings as students helped each other apply practical skills and procedures inherent in the psychology course, fostering critical thinking, engagement, and self-directed learning (Gomez-Lanier, 2018). Furthermore, collaboration aids the positive perception of the class by combining interaction with classmates and instructors to build confidence through various activities (Colakoglu & Akdemir, 2010). Students reported positive feelings towards class activities and collaboration in 80 pieces of interview and exit slip analysis.

Constructivist learning principles. Constructivist theory emphasizes that learners construct meaning out of experiences in situations and that learning is an active process where teachers guide students to conceptual understanding (Applefield, et al., 2001; Glance, et al., 2018; King, 1993; Mazur, 2009; Glance, et al., 2018; Schunk, 2000).

Constructivist learning principles are grounded in the constructivist theory that promotes interaction and sharing. Evidence from exit slips supports this, as one student wrote, "I felt that when as a class we had more participation than we only individuals tried to learn it, also helped that you [instructor] simplified it and kinda turned the definitions and lessons something I can tolerate/actually enjoy reading about" (Unit 1;

5.8). This sentiment illustrates the classroom environment that cultivates learning communities (Vygotsky, 1978) and emphasizes that learners construct meaning out of experiences and situations (Applefield, et al., 2001; Glance et al., 2018; King, 1993; Mazur, 2009; Schunk, 2000). This is further demonstrated by the use of students' prior knowledge upon arriving to class.

Notes taken outside of class as directed through the use of video lectures, combined with the in-class component of the class was valued, as illustrated by exit slip comments such as "The notes and activities mix together to create my learning" (Unit 1; 5.45). This opinion was reinforced in Unit 5 "it helps me more when I can process the information by myself then go over it with you [instructor] and the class the next day" (5.34). Pre-class activities combined with in-class activities fostered a constructivist learning environment (Sookoo-Singh & Boiselle, 2018). Interview data revealed similar experiences, as Brian expressed that "It wasn't just doing homework just to do homework, it was taking the notes so that the next day in class we could go more in-depth," reflecting a personal relationship with material and its acquisition. This was further reiterated in a statement from Demi:

> You [instructor]give the somewhat important stuff at home and then they have that like prepared our brain to talk about it the next day and then you come to class some people have questions, you review the notes and then you give us the worksheets and then we get the information.

The flipped classroom approach presents content to students before arriving to class so that they may be prepared to interact with classmates, using what they have learned in pre-class activities (Aşıksoy & Özdamlı, 2016; Gilboy, et al., 2015, Schmidt & Ralph,

2016; Tucker, et al., 2016). Students work together to create new meanings (Glance, et al., 2018).

A specific activity that demonstrated the implementation of constructivist learning principles came on a Monday, where students needed to reignite learning from the previous week that likely was not reinforced over the weekend. Ironically, this was our memory unit, and my journal revealed on the Friday before, "Good day instructionally because we were able to use what students saw on Unit 5 Lessons 1 & 2 videos in action. Shortened periods for pep rally and by the end of the day students were bouncing off the walls".

To tap into the prior learning, pre-class activity on the following Monday was to review from the previous week, semantic and episodic memory. This got students primed for the in-class component, to talk about memory processes, and complete a partner worksheet over semantic, episodic, and procedural memories. This worksheet was followed by three scenarios about context vs. state-dependent memory, and then the partners had to create their own scenario and identify the memory as context or state dependent memory. These activities served as a review of the previous week's lesson. The final activity was one I call ABC Summary, and allowed for more confirmation of prior knowledge in addition to new learning. This was a summary of a review video. My thoughts on this activity were as follows:

> Each student was assigned a letter for which they began their summary of the video. We watched the video two times. The first time was just to watch and get key points. The second time was to watch and take notes. The final step was to write a summary statement using their letter to begin the statement and share the

statement with the class. These turned out really good. Level of engagement was 9.5/10. The video for this activity was a little on the long side though.

Since I was unable to interact with students about the lessons from the previous Friday due to the shortened period, using the entire class on Monday to apply what we had introduced was a logical sequence of scaffolded instruction. Students reviewed the previous material individually, shared with a partner, reviewed the content, and shared it again. Introducing the new material on Friday and allowing students the weekend to create space for reflection between the learning and the applying validated constructivism in action.

More effective use of class time. Students reflected on learning experiences and how their introduction to psychology class time differed from traditional classes. The pre-class activities of the flipped classroom approach were designed to allow class-time to be used to think critically about knowledge gathered outside of class and engage in active learning in various forms (Isaias, 2018; Mazur, 2009; Sookoo-Singh & Boiselle, 2018; Swiderski, 2011). Student interview data revealed a more effective use of class time as Brian explained that:

> I think it just makes it a lot easier to understand what's going on in the classroom especially with more difficult topics and concepts because it's not just taking notes it's spending five minutes with a teacher it's spending the whole class with the teacher and being able to ask questions.

Another take on this topic included the opinion from Ellie:

> And like in your class [psychology] it's different cause like, before class I can like, look over my notes, and you know, during class we talk about notes, and

then, if I didn't understand anything I can really go back and re-watch the video and then continue onward with more material.

Effective use of class time is confirmed in this exit slip data from Unit 4: "I could have reviewed the notes a bit more but it was really thanks to in-class learning and activities," (4.30). This was verified in Unit 5, "the group projects, flipped classroom and going over the notes in class afterward, the worksheets, and the review games" (5.9), revealing a combination of instructional methods to approach content mastery. Students reflected on the multitude of in-class experiences as they contributed to their learning experiences throughout the intervention.

To appeal to students' level of motivation, the direction, magnitude, and persistence of behavior (Keller, 1993), the researcher journal shows careful planning of class time. This plan was also meant to capture student attention and interest. This attention is tied to instructional stimuli that are engaging, dynamic, and worthwhile; to strike a balance between monotony and curiosity (Li & Keller, 2018). While introducing new lessons, I showed students the bigger picture, so that we may reveal the smaller steps together. This was my approach to introducing the principles of classical conditioning.

My plans for the introduction to Unit 4 were a scaffolded collection of whole-class instruction, followed by partner work, individual work, and back to partner work. Step one was to participate in a classical conditioning lesson, where students "learn" to salivate at the sound of a bell. As a class, we identify the parts of the experiment. Then students are partnered up to identify the parts of classical conditioning experiments together. Finally, partners created their own classical conditioning experiments. Once that was completed, students watched the next lesson instructional video and had a reading

that reinforced that video. To conclude the class, and to serve as a review for our next period, I introduced a FlipGrid assignment, where groups would record a video and share their classical conditioning experiment. This reveals the importance of aligning all activities (pre-class, in-class, and assessment activities) to make videos and student learning most effective (Clark et al., 2016; Chang, et al., 2019). This allows students to construct concrete examples in class.

Practical application of knowledge. Creating an active learning environment requires the effective use of active learning methods (Andrews, et al., 2011; Petress, 2008). The flipped classroom requires students to interact with material as well as classmates in order to assist in making connections to the real-world (Danker, 2015). This was achieved, and epitomized in comments in exit slips such as, "The in-class activities because I can relate the info to real life experiences" (Unit 3; 5.21) and "doing activities and connecting them to real life things" (Unit 1; 5.54). This was further highlighted from interview comments from Ellie:

> I think it made me more motivated to like learn more about real-life topics, um, not just learn what I needed for the test but actually, like, especially with the videos actually like get out there and understand and ask questions about what other people could potentially be going through and how it affects all of us differently.

Comments such as this help to demonstrate the students' relating class content to their own lives. Very simply, in response to my comments that she was using course vocabulary terms to answer questions, Ally matter-of-factly stated, "it's relevant to our lives." This exemplifies relevance, a key concept in the ARCS motivational theory, and

emphasis on working towards intrinsic values rather than extrinsic motivators (Abeyskera & Dawson, 2015) and appeals to a learners' sense of autonomy (Ryan & Deci, 2008). Further confirmation of this opinion was the statement from Demi:

> When I really learn something is when I can recall it at a later date or later chapter even if it's completely unrelated and the way that this helps us learn it in general is because of the correlations that it makes to our real life so even if you can't remember it directly, you still remember that link more strongly than the actual definition so you can still create your own definition.

By providing learning opportunities in class that required students to apply their knowledge, students were training to be more active in their educational pursuits and think critically (Cattaneo, 2017). Students were learning to become active learners by applying the science of human behavior to their own lives. This statement also confirms the theoretical basis of constructivism as students assimilate class content into their understanding (Danker, 2015; Gilboy, et al., 2015).

Student Perceptions of the Flipped Classroom Approach

The final theme for this action research revealed student perceptions towards the flipped classroom instructional design. This centered upon (a) instructional strategies were different and easy(ier), (b) class time is used for learning, (c) hand-outs and review in class were worthwhile, and (d) the flipped classroom approach takes some getting used to.

Instructional strategies are different and easy(ier). One of the appeals of the flipped classroom approach proved to be its novelty, as students expressed interest because it was different. Students' expectations were challenged and required to adjust

their thinking towards the traditional role of teacher and student (Baker & Hill, 2017; Alexander, 2018). For most students, this was a welcome change that invoked curiosity and proved effective. One such position was displayed by Brian's statement, "I think (pause) honestly, it's pretty effective and not the way that it's intended to be, but for the simple fact that it's different". Ellie put it this way, "It made me feel, um, I guess interested and liked the material and you know like, about learning it like, you know the different style you know going to the videos and watching and stuff". The novelty was designed to invoke student attention, as Keller (1987) promoted attention as a critical part of the learning process. This different approach was further confirmed by Demi:

> I would recommend [the class] it because it's not hard in my opinion it's not hard because even if you're not paying attention you're gonna get it because at home I mean if you want a good grade you have to go do the guided notes and you review the videos but at some point I think you're going to get interested because psychology in the flipped classroom is not like in the class, so I feel like you want to pay attention.

While similar sentiments were not gathered through exit slip data, students expressed the usefulness of in-class review as part of their academic and recall successes. However, many students felt they could have done more to prepare after the units. This admission was made by students in some variation up to 125 times.

Exit slip data supported the category that the flipped classroom approach makes learning the material easier in a statement that said, "the best content was the flipped classroom strategies for me it was easier to learn" (Unit 2; 5.32). A second opinion was "the stuff we did last Friday [memory demonstrations] was pretty helpful because it's

easier to understand the concepts once you've done it (like learning about STM by seeing how many things on a list you can remember)" (Unit 5; 5.31).

Student interview data corroborated statements regarding easy or easier in several ways. Student interviews revealed 18 codes that mentioned easier and variations of easy. These included easier for teachers, easier for students, easier to understand the material, easier to visualize, videos are easy, super simple, for example. Further, as was pointed out by my dissertation chair in peer debriefing, there is a distinct difference between something being *easy* or *easier*. Most useful for this research was the consensus that the flipped classroom approach made understanding material easier. Caley said that "I felt like it was a lot easier to just take the notes at home and go more in-depth in class". Demi elaborated to say:

> I just, I really liked it, I thought that it was a really super easy way to learn and uh, one of my methods of encoding information better is color coordinating each lesson, um, and using different flash cards and stuff too, um, so everything, just the whole class in general has been easier for me.

While students indicated that the flipped classroom approach was different, they frequently declared that their outside activities were limited to watching videos, completing the accompanying notes, and finishing review hand-outs for each unit.

Handouts and review in class were worthwhile. Similar to the category that class time was used more effectively, student perceptions revolving around the efficient use of class time was invoked in evidence from interviews. This included the opinion from Ellie:

> Well in other classes after class I feel like is busy work and in class is just lecturing and talking and going on and on and you're just trying not to fall asleep but in this class it's, you come in bell-ringer, get you ready for the day and you have fun, you have group activities, you have us get up, do stuff, and at home we take notes on the topic that we are gonna learn the next day that we review the next day.

Additional positive feelings about the use of class time were relayed by Demi, "I really like, like going home and watching the videos and then if I have questions I can come in and ask my friends about it and see what they had to say about it". These statements were centered on group activities involving the application of knowledge in class. The hand-outs then became resources for review. Review strategies and approaches were a key portion of our pre-class activities.

With classroom strategies catered to review and recall of learning, students were able to practice without risk. Three of the instructional units focused on learning, memory, and intelligence. Students took these lessons and applied them in preparation for the class. Data supports this, as exit slips indicate that students' preferred methods of the review included studying notes and hand-outs, doing teacher-created crosswords and vocabulary sheets on days before assessments, and review games that were teacher created and that students created for themselves. When asked in Unit 3 exit slip if students could have done more to prepare, one student said, "the in-class activities made me feel like I know the material enough" (4.8). Students relying on notes and videos for review were mentioned 105 times in exit slips, while crosswords and vocabulary sheets were indicated 68 times. Students also expressed appreciation for hand-outs in class like

case studies and small formative assessments, typically with real-life scenarios. One example came early in our instruction, “but in class watching videos and reading examples like the articles about Jeanie [case study jigsaw activity] and the others helped me understand more” (Unit 1; 5.29). By the conclusion of the intervention, exit slip data revealed a combination of tactics, “the group projects, flipped classroom and going over the notes in class afterward, the worksheets, and the review games” (Unit 5; 5.9). Students had positive feelings about hand-outs and review in class. These expressions indicated an understanding that assignments were not for busywork, but to aid and encourage student mastery of content knowledge.

Student interview data concurs that reviewing in class was a valuable part of our course and collaboration was a key piece in the following statement, “We were able to help each other understand those things better” (Demi); while Ally expressed, “I think just being able to discuss our ideas about a particular topic like when we did intelligence just trying to be able to figure it out ourselves and then going into it” after having devised mnemonics for psychological perspectives. These methods helped students recall information. This confirms the importance of collaboration and being able to work with peers (Colakoglu & Akdemir, 2010; Jamaludin, Osman, Yusoff, & Jasni, 2016; Danker, 2015; Gomez-Lanier, 2018). This also demonstrates students making the successful transition from passive learner to active learner, since students were aware of the value of their classmates and being able to forge their way through learning (Petress, 2008).

Emphasizing the value of pre-class activities such as flipped classroom video lectures was an important aspect of the instructional approach as I expected that students to view videos before class. To begin class, we would have a bell-ringer to review the

pre-class video lecture along with a brief period where students could check their work and questions with others. The review was meant to highlight important concepts (Isaias, 2018; Aşıksoy & Özdamlı, 2016) and make connections, along with small formative assessments to determine student mastery so that I could gain insights into which students needed more personalized instruction. This review served as a way for students to gauge their own preparedness, while I was able to make informed future instructional decisions (Bergmann & Sams, 2009).

Researcher journal evidence showed some concern in our sensation and perception unit about student preparedness. This unit, while it does not have a lot of new material since students have been studying the conversion of sensation and perception since they were young, I was concerned about the complexities of the perceptions and processing side of this material. Between two days my opinion began to change from one of, "I am not expecting test scores to be so high this time. Why? Not as much time to review and there is no biology. Most of lessons 4-6 is brand new material. Sure they've had sensation before, but perception is new". This was followed by a 90-minute class period that included a bell-ringer review question, a 16-minute crash course in psychology video, a Kahoot review game, and an instructional strategy known as Snowball Fight. My opinion the next day when class began shifted to, "Students are confident. I was not so confident. From the exit slips, it looks like many students used the Kahoot so this is something I want to continue. Test grades were great." My apprehension was reduced as I determined the validity of using entire class periods to review material and that student confidence was bolstered.

The flipped classroom instructional design takes getting used to. Student experience and expectations of teachers influenced the receptivity to the intervention, as students assume a passive role in teacher-lecture models (Barrett, 2012; Clark et al., 2016; Danker, 2015; Hutchings & Quinney, 2015; Kenwright et al., 2017; King, 1993; Mazur, 2009). Attempts to alleviate any confusion and frustration by guiding students and introducing our class's shift was a priority, though the adjustment did take time. Before starting my intervention, I described the goals and procedures behind my instructional shift as required by my university review board. The intention was to prepare students for the paradigm shift of incorporating short video lectures into their education as well as the strategic adjustment of each respective role of student and teacher. The first week of the class was spent describing and explaining the transition from passive to active. Students watched a video in class that was similar to what the instructional videos would be like. This was shared with parents and on my class website. This was a shift some students embraced, while some struggled. Ellie indicated that the flipped classroom approach required an adjustment:

> I mean, it is different, it did take me the first two weeks to get used to it cause like you know I'm just used to you know coming to class and like getting a piece of paper and like so you know write and take notes and stuff and doing it in class even guided notes that type of thing, but it is different and something you gotta get used to, but it's not bad.

Only one student had this opinion in interview data, but it was relevant to the action research. This students' suggestion for future students included letting students know that they could listen to videos at increased speeds so it didn't take so long and that students

must pay attention while watching instructional videos. This demonstrated the value of self-regulation and autonomy as the learner discovered techniques that were effective for themselves (Carr, Palmer, & Hagel, 2015). Demi shared the requirement for adjustment opinion, but the transition was explained, saying:

> Because, well, before class even started you told us how it was going to go and how it was going to work and at some point it, I got used to it, and now it's totally normal and I'm just like, ok.

Similarly, exit slip data indicated in the early stages that students struggled while watching videos and taking notes, "focusing on writing notes and comprehending a video at the same time is a little tough for me" (Unit 1; 5.14) and Unit 2 "flipped classroom doesn't help me much because I focus better doing notes at school," (5.54) but was not mentioned in subsequent exit slips. The lack of repetition of these codes could indicate student comfort levels with the transition increased with experience.

Besides student interviews and exit slips, the teacher journal revealed similar concerns. As the instructional intervention began I had idealistic impressions about classroom procedures and implementation. Prominent technological challenges surfaced throughout the early stages. These included the incidents with EdPuzzle and PlayPosit but was not limited to this. Students all had internet access at home, but frequently it was not the home access that was the issue, but school issues. Midway through the intervention, the district was forced to set tighter restrictions on YouTube. Trouble-shooting got us through this issue. This is just a sample of the adjustments that I encountered. At this point I was comfortable making videos and with the extra time created in class for active learning.

Chapter Summary

This chapter described the process of data analysis. This mixed methods action research included quantitative and qualitative data. The quantitative data included pre- and post-test information, the results of the IMMS survey, and Likert-scale exit slip data. The pre-and post-test data show significant increases in student achievement as a result of the intervention, as well as a gradual increase in attention, relevance, confidence, and satisfaction. The results are similar to comparable literature. The qualitative analysis described the coding process, involving two rounds of coding to reveal categories and three themes. These themes included an increase in motivation due to the emphasis of active learning, the value of collaboration and interaction to help learning, and students that are engaged and motivated due to the flipped classroom approach.

CHAPTER 5

DISCUSSIONS, IMPLICATIONS, AND LIMITATIONS

The purpose of this research was to evaluate the impact of implementing a flipped classroom approach on students' motivation, perceptions, and effectiveness of learning the content knowledge in an introductory psychology course at Rohn High School. Students' thoughts on flipped classroom approaches regarding motivation, perception, and learning were collected throughout this intervention. Data from both quantitative (i.e., pre and posttest scores, surveys, and exit slip) and qualitative methods (i.e., student interviews, exit slips, and teacher journal) were collected and subsequently analyzed. This chapter includes the major findings as related to the literature on flipped classroom approaches on motivation, perceptions, and effectiveness of learning content. The sections which follow include connections to motivational and learning theories, as well as an examination of the implications and limitations of this action research. Recommendations for future studies are included.

Discussion

The results of this action research are viewed in consideration to comparable research of flipped classroom approaches. When considering the research questions, the data were combined and examined, taking into consideration literature on active learning strategies and constructivist learning principles, as well as my participation in the action research. The discussion is divided into sections along the research questions.

Research Question 1: How and in what ways does implementing a flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?

This question was shaped around the problem of practice, that resources were limited due to the rapid growth of the student body. This rapid growth led to a lack of an adequate number of textbooks. While we did not have enough textbooks for each student, every student did have their own Chromebook. The lack of textbooks could be remedied by transitioning from reliance on textbooks to the delivery of material using Chromebooks. Surrounding this question was the challenge of the shift from passive learning to active learning. As existing literature indicated, students and teachers have encountered difficulties when making the change (Abeysekera & Dawson, 2015; Alexander, 2018; Isaias, 2018; Moffett & Mill, 2014, Roehl, et al., 2013). Students had to adjust their expectations of being a passive learner, one that receives information, to an active learner, that participates in the knowledge acquisition process, thereby building new understanding (Petress, 2008; Swiderski, 2011).

Students that participated in this intervention did express the challenge of adjusting from passive learning to active learning in early intervention. After three weeks of exposure to the intervention, this opinion was not repeated. Only one of the five interview participants expressed the complications of balancing new active learning approaches within the constraints of previous expectations.

To answer the specific question of how the flipped classroom approach influences motivation, we will examine how in-class activities influence motivation. Motivation was

increased as a result of (a) ease of access, (b) collaboration and active learning strategies, and (c) ARCS motivational theory of instructional design.

Ease of Access. One characteristic that boosted student motivation to learn was student familiarity with their Google Chromebooks and the Google Suite of Educational Tools. Students at Rohn High School have been using Google Classroom for three years (assuming they have been in our district). Their comfort level with the content delivery methods was necessary for the success of this action research. Rather than rely on the classroom textbooks that were only accessible during class, students were able to access materials at the time in which it offered, and for the duration of their course. Heggart and Yoo found that students were unwilling to use learning systems that were difficult to use. The added benefit included being able to access materials on a variety of devices, thus appealing to autonomy (Heggart & Yoo, 2018). For this study, ease of access appealed to students. The incorporation of Google Classroom, a delivery method that students viewed as simple and easy to use, assisted the transition. This appealed to my comfort-level as well. I had not used the Google Suite of Educational Tools to the extent that I had for this intervention, however, my reliance upon the delivery system did not hinder my development of quality instructional planning, which frequently revolved around the Google implementation. Since we were adjusting to new roles, this inclusion of technology that students were familiar with was integral to its success. Of the intervention. Pairing the Google Suite of Tools for Education with active learning gave students the competency for 21st century technology and learning (Crane, 2016) and increased engagement and motivation.

One example of how Google Classroom was used in this action research include a weekly posting of instructional videos using a Google supported website. By clicking a link on Google Classroom, students had access to the unit materials. The website was divided into the instructional units. I added material to the website as the instructional videos were completed. The information was accessible immediately, and students could get content whether they were present or absent. Providing clear access to the material was a priority.

Among the appeals of the ease of accessibility for students in this action research was the ability to check their work and review. In response to the use of technology and obtaining resources, Ally stated,

> No it made it a lot easier to access information [flipped classroom approach] that we would need, like if I forgot something or if I didn't have it in my notes I could look back on those and see where I was missing it.

Having access to videos made an impact for Ellie as well, as she frequently re-watched videos after experimenting with the content during class, "if I didn't understand anything I can really go back and re-watch the video and then continue onward with more material." This access to material at all times gave the students the freedom to interact with material on their time, thereby influencing motivation to learn psychology.

Ally had more insights into motivation and research, saying that:

> I had more time to look into other topics that we didn't really look into as much, I think that would be more like, stuff that we would be talking about in AP psych, but I wanted to learn about them now.

This helped Ally to create a personalized learning experience and sparking curiosity. On one occasion, Ally emailed me readings from relevant sources that related to course content. This contributed to the personal relationship between instructor and student, as I reviewed the article and shared the article with classmates on Google Classroom. Brian felt that the ease of access made an impression upon students' willingness to participate and study:

> I think it works out personally because it creates accessibility. I don't study personally but I know there's a ton of people that extensively study all the time and when they're provided the material this easily, because searching through your notes can be such a hassle trying to read your own hand-writing.

The accessibility helped Brian adjust his approach to class time and the value added to our in-class experiences, and being a student overall:

> I've been extremely surprised [by good grades] because based on the entirety of last year I didn't care I was in that rebellious stage school's dumb and doesn't matter but when I actually sit down and try to focus it all works out.

Through the transition in instructional methods, Brian experienced renewed focus in school as a result of the flipped classroom approach.

Motivation was positively influenced by the ease of access to materials. Had students come across barriers to obtaining class content, negative attitudes may have resulted. Since this action research took deliberate steps to make content readily available, students maintained positive feelings towards obtaining information. Access to course materials was a contributing factor to the intervention's success.

Another review option was the inclusion of Kahoot games on Google Classroom. I posted the Kahoots onto Google Classroom the day before we played the game in class. Students that previewed the game before playing in class had an edge. Students got to choose prizes if they finished in the top three in the game. This contributed to motivation and learning, as demonstrated by this comment from the Unit 4 exit slip, " the Kahoot, both in class and on my own, really helped me learn the content most because for some reason it just stuck with me more," (5.10). The capacity to review material outside of class affected motivation to access material, thus encouraging mastery of course material.

Ease of accessing course materials helped students as they were able to access course content on their own time, allowing students to individualize their experiences (Bergmann & Sams, 2009; Clark et al., 2008; Enfield, 2013; Schmidt & Ralph, 2016). Answering research question 1, participants expressed positive feelings towards accessing materials and using additional materials acquired in class, such as hand-outs, crosswords, Kahoots, and readings, for review. This, in part, influenced student motivation as students could progress at their own pace, appealing to autonomy and helping students gain a deeper understanding the of material (Bergmann & Sams, 2009).

While the effectiveness of this action research was contingent upon the access to materials, the levels of student motivation were further influenced by collaboration and active learning.

Collaboration and Active Learning. Collaboration supported motivation as students came to acknowledge the value of sharing with their classmates. The flipped classroom approach required students to do prerequisite work on their own, but in line with constructivist theory, combined individual prior knowledge with that which is

achieved in class (Comber & Brady-Van den Bos, 2018; Danker, 2015; Gilboy, et al., 2015; Glance, et al., 2018). The in-class collaboration was one of the motivational appeals for interview subjects as well as exit slip indicators. Collaboration was initiated in the intervention in a number of ways; students participated in partner work or small groups, which consisted of two to five students. The purpose of such collaboration included desires for deeper learning and to help build communication skills (Danker, 2015; Swiderski, 2011), and to make our class more student-centered and less passive (Aşıksoy & Özdamlı, 2016; Gilboy, et al., 2015; Tucker, et al., 2016).

This approach fostered greater motivation to complete pre-class assignments and participate in class activities consistent with prior research conducted by Sookoo-Singh and Biosselle (2018) in a high school chemistry class. Similarly, Al-Sudais (2019) found greater interactions between students as well as among students and teachers in their undergraduate English as a foreign language class, affecting motivation levels.

Interview data revealed students desired to complete pre-class assignments so that they did not let teammates down and to be able to contribute to the group. Exit slip data showed that students valued the input of their classmates, and recognized that interaction was key to their success. Moreover, by completing the instructional videos outside of class, students were able to come to class prepared with questions after having already previewed material for in-class investigation. These questions could be answered by classmates by the whole-class. One student, Caley found value in the time set aside for worksheets to be done in class:

> The pre-class activities is definitely just going home and writing our notes I think it's a more effective way to do homework for example, uh, cause I think that

> students are more motivated to go home and write their notes, and then in class I think a lot of times in other classes might not do their homework at all if they don't understand something so it's easier to get those worksheets out of the way during class so that there's no excuse why they wouldn't know something because they can ask questions.

Active learning was structured to address the lower levels of Bloom's taxonomy at home so that we could tackle the analysis, application, and synthesis in class. This proved to inspire the students to accomplish pre-class activities (Danker, 2015). Students may get discouraged when confronting difficult material outside of class and disregard it altogether. Setting aside time in class to tackle challenging issues confronts this confusion.

Not all students took part in watching instructional videos. This is supported by Al-Sudais' (2019) research where one in every six students did not do required work outside of class. This is not an isolated trend, as the success of the flipped classroom approach is heavily reliant on student completion of pre-class activities (Sookoo-Singh & Boisselle, 2018). The pre-class work was an essential step for the flipped classroom approach (McLean, et al., 2015). In cases where students did not watch videos and complete guided notes, students were required to sit out of active learning events until the videos and the accompanying guided notes were completed. This policy was instituted to get students the necessary prior knowledge.

Not every student possessed the motivation to work at home. As one exit slip indicated that "Flipped classroom doesn't help much because I focus better doing notes at school, "(Unit 1; 5.54). This preference for notes in class, while only expressed once, may not be a secluded opinion. Some students prefer to work alone, which could have a direct

impact on motivation, concluded by Gomez-Lanier (2018), in their research; despite choosing their groups, motivation to participate in group activity was not enhanced by the flipped classroom approach, but rather, was similar to that of the traditional classroom. While the flipped classroom approach offers more opportunities for interaction, not all students welcome the chance to work with others.

Following constructivist learning theory and precepts of building knowledge together (Clark et al., 2014; Comber & Brady-van den Bos, 2018; Gilboy, at al., 2015; Sookoo-Singh & Boisselle, 2018), active learning and the in-class activities can be credited for motivating students to be prepared for class. Active learning and the use of strategies that involve students in the learning process (Aşıksoy & Özdamlı, 2016; Bergmann & Sams, 2012; Findlay-Thompson & Mombourquette, 2014) encourage students to take part in their learning,

Active learning strategies that impacted motivation included review games that appealed to student autonomy, like Kahoots, and teacher-designed Jeopardy! type slideshows. These games were a combination of team-based or individually executed formative assessments. Students found value in repetitive review activities that included elaborative rehearsal (Swiderski, 2011) using this as a self-assessment. More traditional review strategies served to motivate students to complete tasks, such as crosswords that required students to review vocabulary. In the traditional classroom, these assignments would have been homework and students would not have the benefit of help from classmates or the instructor. Relocating the lecture out of class freed class-time for review, helping motivate students. This also discourages plagiarism, as I am present and able to assist when necessary and prevent copying work for the sake of getting it done. This is a

reflection of the careful planning that is integral to the success of the flipped classroom approach (Alexander, 2018).

ARCS Motivational Theory. The ARCS Theory of motivation was developed by Keller in 1983 to systemically incorporate consideration for motivation into instructional design. As follows, motivation, or the direction, magnitude, and persistence of behavior, had long been the onus of the student; one either had it or they did not (Keller, 1983). Motivation was thought to be persistent with personality and unchangeable before Keller. Further, all an instructor could do was provide quality content and let the responsibility of learning material fall to the students. According to Keller, this is not the case, as instructors are obligated to use their abilities as subject-matter experts to present content that inspires curiosity and capture interest, connecting content to prior knowledge and teaching in ways that resonate with students. This can be achieved by providing quality feedback built through completing tasks with meaning and developing achievable learning goals. This gives students a way to be successful in ways that the students themselves can influence (Keller, 1983).

For this action research, quantitative data from the IMMS survey shows higher motivation as a result of the instructional materials and methods on student motivation (attention M=3.27, relevance M=3.89, confidence M=3.40, satisfaction M=3.53) and further support the integration of ARCS motivational theory into the flipped classroom approach. This can be achieved using strategies suggested by Keller (1983, 1987, 2008, 2012) and supported by the prior research.

Shortcomings of ARCS. Survey data revealed that the four subscales of attention, relevance, confidence, and satisfaction supported student motivation, but the lowest score

was for attention (M=3.27). This trend is repeated in qualitative data as interview students were unable to identify the learning goals of the instructional units, indicating that the goals were not discernable, despite being listed on guided notes and featured at the beginning of each instructional unit video. Students struggled to identify events that sparked curiosity or ways in which they experienced satisfaction. Furthermore, confidence was a word that was used by only one interview subject. The complementary language of the ARCS motivational theory was not employed by students. This is not an indication that students did not experience these subscales. It is unknown if students related the interview questions in ways that Keller intended, but the steady rise of quantitative data reveals that the intervention was successful in creating and maintaining motivation. In contrast to lower scores for attention, students rated relevance higher (M=3.89) and were able to make connections of class content to their own lives, demonstrating connections to past experiences (Keller, 2008).

Following the ARCS motivational theory and incorporating the subscales of attention, relevance, confidence, and satisfaction into the flipped classroom approach indicates that motivation was positively impacted in this action research. The increase in motivation was not as stark as previous research, such as Aşıksoy and Özdamlı (2016). Motivation was higher among the experimental group that received flipped classroom instruction. This is attributed to students finding the class more entertaining and engaging. The students interviewed by Aşıksoy and Özdamlı did not credit their increase in learning and higher test scores to the flipped classroom approach, in contrast with this action research.

When investigating motivation, Colakoglu and Akdemir (2010) developed their measure of motivation using a survey to analyze attention, relevance, confidence, and satisfaction. The overall findings of Colakoglu and Akdemir (2010) supported the incorporation of ARCS motivational theory into instructional design and the blended classroom. This action research aligns with these findings.

The two previous studies, that of Aşıksoy and Özdamlı (2016) and Colakoglu and Akdemir (2010) each include an experimental group and a control group among undergraduates, in contrast to this action research.

In conclusion, motivation was positively influenced as a result of easy access of information, collaboration and active learning, and the incorporation of ARCS motivational theory into the flipped classroom approach.

Research Question 2: How does implementing a flipped classroom approach affect high school students' learning in an introductory psychology course?

The second research question was crafted to determine the effectiveness of pairing the flipped classroom approach with active learning strategies and making the transition from passive to active learner. This is the moment when instructors allow students to work on a problem that is designed to aid comprehension, which aids learning (Andrews, et al., 2011). This research question was framed around the problem of practice, which was that students were aware that class activity would be limited to lectures and notes due to a lack of textbook resources. Student learning was assessed through the gathering of quantitative data in pre-and posttests and exit slips as well as interviews. Learning was observed in student engagement, which is defined as a combination of behavioral, cognitive, and emotional supports that exist within a

classroom to boost student participation, connectedness, and motivation (Fredericks, et al., 2004). Student engagement was observed and recorded in the researcher journal. Student learning was investigated by examining these data sources.

Student Learning. Student learning was positively impacted. Pretest and posttest quantitative data show a large effect on student learning. Paired samples t-test revealed that students' posttest scores *(M*=81.24, *SD*=18.80*)* were significantly higher than their pretest scores *(M*=33.93, *SD*=9.38*)*, $t(57) = -20.39$, $p < .001$. The effect size, Cohen's *d*, was 2.68 indicating a large effect of the flipped classroom approach on students' learning.

Early investigations into learning as a result of the flipped classroom approach were conducted by Enfield (2013) in an undergraduate film class. Students in Enfield's study reported the flipped classroom approach positive and effective in helping them learn. A second preliminary report on the flipped classroom approach with similar findings includes Danker's (2015) investigation that demonstrated that students developed individualized higher-ordered thinking skills and advanced at their own pace. The emphasis was on a student-centered experience, where learners collaborate to make meaning, and that students look to their classmates for help in the meaning-making process. This ensures student engagement and interaction. The findings are similar to this action research, and the recommendations were a substantial influence on its success.

This action research and its findings aligned with Enfield (2013), Danker (2015), and Gilboy, et al (2015) and used their recommendations to shape planning. Students reported in interview data an appreciation for the flipped classroom approach methods as being fundamental to their learning, saying, "I probably wouldn't be doing as well in this

class without it [the flipped classroom approach] "(Ally) and is reinforced by Caley, "it helps me retain it better". This statement validates the effectiveness of the flipped classroom approach and its impact on student learning.

In response to exit slip open-ended question, "the during class activities (group projects, individual projects, evaluations) helped me to learn the material for this instructional unit." was this concurrent this perspective, "It's taught me different ways that I can remember things better, and how I can learn what I need to learn, and not include the things that aren't necessary for my knowledge" by Caley. This supports Danker's (2015) assertion for individualized, deep learning.

Information essential to the learning process was gleaned from exit slip data from each learning unit, where during class activities were ranked higher than 3.0 (Unit 1= 3.88, Unit 2=4.04, Unit 3=4.14, Unit 4=3.98, Unit 5=4.04). Unit 3 had the highest ranking, and it is noteworthy that this is the sensation and perception unit, which has lessons that included skittles and food as part of the active learning strategies. One exit slip for Unit 3 (5.43) acknowledged this, "Projects with food because food gets my attention." The inclusion of candy helped get students involved.

Recent research that shares similarities with this action research include those of Sookoo-Singh and Boiselle (2018) and their integration of the flipped classroom approach into a high school chemistry class. Comparable to this action research, the study was shaped around constructivist theory and a desire to improve motivation while supporting an active learning environment. Sookoo-Singh and Boisselle (2018) determined that their methods positively impacted motivation, but there was no significant effect on student achievement. Similarly, Jamaludin and colleagues (2016)

discovered that student achievement and student engagement were not significantly correlated and that student engagement did not influence achievement. Similar results were elicited from Clark and colleagues (2016) though a preference for collaboration was reported, and Schrlau, et al., (2016) found no changes to achievement as a result of the flipped classroom approach. These studies contrast with action research, as there was an impact on both learning and achievement.

One study that shares results with this action research is that of Al-Sudais (2019). This investigation in an English as a foreign language class among undergraduate students revealed positive results for both engagement and achievement. Al-Sudais credits the positive trends to active learning and interaction amongst students and teachers. Sezer's (2017) investigation of a middle school science course revealed higher pre- and posttest results when comparing experimental and control groups. Sezer also reported that focus group interviews showed that students found the flipped classroom methods motivational, instructive, and interesting (2017).

The success of this action research and the positive outcomes of learning and achievement is similar to the studies mentioned and relied upon careful and deliberate planning (Al-Sudais, 2019; Sezer, 2017) aligning video content with in-class activities (Danker, 2015; Enfield, 2013; Gilboy, et al., 2015), and making the transition from passive learning to active learning (Al-Sudais, 2019; Danker, 2015; Gilboy, et al., 2015; Sookoo-Singh & Boisselle, 2018;). These factors helped to create a learner-centered atmosphere that fostered learning and engagement. This action research is akin to previous research, revealing a positive correlation between learning as a result of the

flipped classroom approach. Table 5.1 demonstrates the various opinions students had concerning their own learning and reflecting on their experiences

Table 5.1 *Exit Slip Data Open-Ended Questions Samples by Unit*

Question	Student Responses and Unit
What activities helped you learn the content the best and why?	• Watching videos helped me learn the content the best because it allowed me to see things visually as well as take notes. (Unit 1; 5.26) • I definitely liked the flipped classroom style, since videos are much easier to follow/change the pace of than an in-class lecture. (Unit 1; 5.25) • I think the hands on activities helped me because I could see and visualize what we were supposed to be learning and it helped me understand the information more (Unit 2; 5.3) • The terms definitely helped the best, as they forced me to learn it by writing it down (Unit 2; 5.17) • The videos and note taking as well as the in class hands on work (Unit 3; 5.6) • In class activities helped me learn the most because it got me involved (Unit 3; 5.33) • I like watching videos and the hands on activities where we can ask questions and get to know the material (Unit 4; 5.1) • Doing activities and connecting them to real life things (Unit 4; 5.51) • The in class activities because I can relate the info to real life experiences (Unit 5; 5.3) • Watching videos on notes because it was at my own pace (Unit 5; 5.10)

Table 5.1 shows that the combination of many factors contributed to student learning in the flipped classroom approach. In summary, learning and engagement were positively impacted by the intervention.

Research Question 3: What are high school students' perceptions about the effectiveness of a flipped classroom approach to learn the content in an introductory psychology course?

The final research question stemmed from a desire to discover the thoughts, feelings, and perceptions of students as they were exposed to the flipped classroom approach. The goal was to discover the emotional reactions of student regarding instructional strategies that are influenced by previous learning experiences (Jeong & Gonzalez-Gomez, 2016). This action research was guided by the belief that psychology is a social science that is a great fit for the flipped classroom approach due to its relevance and availability of worthwhile active learning opportunities. Significantly more research on the flipped classroom approach has been initiated in the STEM fields (Roehling, et al., 2017) and not the social sciences. Notably, this previous research has been at the undergraduate and graduate levels.

Perceptions of the flipped classroom approach have been the focus of previous studies that implemented surveys and interviews to gather data (Gilboy et al., 2015; Hao, 2014; McGlaughlin et al., 2013; Sezer, 2017). These studies determined that students are positively impacted by the flipped classroom approach, with a preference for active learning. This action research aligns with previous research and demonstrates similarities in the appeals of the flipped classroom approach. The following will investigate the positive and negative perceptions of learning the course content by investigating (a) the relationships between students and instructors, (b) the use of active learning strategies, including the effective use of class time, (c) getting used to new methods, and (d) watching videos was homework.

Positive Perceptions

Relationships between students and instructors. Previous research includes positive feelings towards building relationships between students and instructors (Bergmann & Sams, 2009; Comber & Brady-Van den Bos, 2018, 2000; Gilboy et al., 2015; Roehling et al., 2017). Students that took part in this action research validate these findings, pointing to feelings of personalization due to video content, as Ellie indicated:

> because of the videos and me watching at home I feel like it's a little more personal because we're trying to do it by ourselves and then the next day we can come in and talk to you instead and then you'll answer our questions.

And was reinforced by Brian:

> I think it brings a much more personal role to the instructor/teacher because now you're not just preaching to an entire class at once you can have much more direct one on one time with the students and that creates a stronger bond.

This personal relationship between student and instructor has many benefits as students navigate the transition from passive learner to active learner. As Bergmann and Sams (2009) pointed out, this stronger bond helped instructors make quick assessments per individual student as they got to know each student better. Because of this, instructors are better equipped to differentiate instruction according to strengths and determine which students need more attention. Fostering relationships helped students to acquire content knowledge individually as they began to direct their own learning (Danker, 2015; Enfield, 2013; Ng, 2016; Yang, 2017).

This was reflected in our action research and was especially clear by our fourth unit. This was the unit where students navigated test review in stations. I was able to

review with students in small groups and make personal assessments about preparedness while clearing up confusion. This was important as the topics, such as positive and negative reinforcement vs. punishment in classical conditioning can be very confusing. In our time together in stations, we reviewed key terms and made sure students had correct answers on worksheets in their preparation for the summative assessment.

Use of Active Learning Strategies. The purpose of the flipped classroom approach for this action research was to free class time to incorporate active learning into our processes. This was achieved and positively perceived. Roehl, Reddy, and Shannon (2013) conjecture that although students of today's generation have grown up in a digital world and are increasingly resistant to lecture-driven instruction, lecture remains the dominant practice in classrooms (Bligh, 2000). Active learning is described as the moment when instructors allow students to work on a problem that is designed to aid comprehension, which aids learning (Andrews, et al., 2011). One of the aims of this action research was to free class time in order to incorporate active learning into our processes. This was achieved and positively perceived through the use of the flipped classroom approach.

Qualities of the active learning environment include students that are less reliant on the instructor, ask quality questions, reflect on their learning, connect new learning with that which has previously been learned, and are enthusiastic about learning (Petress, 2008). Likewise, these are the same trends elicited in the constructivist classroom as students create meaning from prior experiences with the help of others (Swiderski, 2011).

Student perceptions of the flipped classroom approach in its early phases were gathered at the end of the semester survey in Lage, Platt, and Tregalia's microeconomics

course (2000). Students reported strong preferences for working in groups, in-class experiments and demonstrations, as well as worksheet assignments as part of their learning.

This prior research is resonated in the findings of this action research in quantitative and qualitative data. Ranked the highest among the exit slip data is question 2, where students are asked to rank the factors that helped them learn in that, "The during class activities (group projects, individual projects, evaluations) helped me to learn the material for this instructional unit." The mean score per unit scored "agree" in three out of the five units, while a fourth unit ranked a mean score of 3.98. This suggests that students benefitted from, and perceived positively the differentiated activities.

Gilboy, et al., (2015) reported preferences for watching videos individually rather than a face-to-face lecture (76% of participants) and active learning over equal time spent listening to lecture (62%). This opinion was reinforced in interview data in this action research by Ally, "We spend a lot more time doing hands-on, or like, interactive things and I like that a lot more." Among the positive perceptions found by McLean, Attardi, and Goldszmidt (2015) were that students valued the chance to work with others, but especially experienced benefits such as independent, deep learning and engagement.

This action research confirmed such opinions in exit slip data from Unit 2 (5.17), "I would say the group activities or case studies [helped] because talking to other people and hearing their input on the topic helps me". Similarly, Gomez-Lanier (2018) reports that student perceptions shaped around collaboration experienced a gradual rise in appreciation for the diversity of in-class activities, working with others and time in class for completing assignments. Most recently, the participants in Al-Sudais' (2019) research

showed preferences for reviewing lessons and having additional time to reflect on lessons. These qualities were also included in the results of this action research

When interview participants were asked to identify words that described their flipped classroom experiences, the words included: “efficient”, “different”, “interesting”, “effective”, “understandable”, “easier”, “challenging”, and “deeper learning.” These reflected positive perceptions of the flipped classroom.

In conclusion, students felt that the relationship between students and the instructor improved their learning and that active learning in class positively influenced their learning.

Negative Perceptions.

Interview subjects in this action research reported favorable perceptions. Two negative opinions came to light. One was (a) the flipped classroom approach takes some getting used to and (b) watching videos was homework.

The flipped classroom approach takes time to adjust to. The opinion held by Ellie was that the flipped classroom approach takes time to adjust to. I attribute this sentiment to the transition from passive to active learning, and from teacher-centered to learner-centered instruction. Previous research recommends making the preparations for students to take more responsibility in their learning by describing the change and careful planning (Al-Sudais, 2019; Comber & Brady-Van den Bos, 2018, Danker, 2015; Jonassen, 1993; Glance, et al., 2018; Swiderski, 2011;).The adjustment was made by the interview subject, but this is not to be generalized, as not all students made the transition, nor wished to be a part of the transition. This was expressed in exit slip data, such as

"They [notes] are so long and they don't get my brain working." (Unit 1). This response was in the early phase of our intervention and was not repeated.

Videos were homework. The perception that videos and class notes were homework was an additional drawback. Two of the five interview participants said that notes and videos sometimes felt like homework, but they agreed that it was manageable along with their other classes. Previous research indicates a similar trend in work required outside of class. Lage, Platt, and Tregalia's (2000) students rated the amount of work outside of class low and didn't require more work than other classes. Despite efforts to keep videos and their length below 15 minutes, as suggested by Bergmann and Sams (2012), some students did not do work outside of class. The code for "didn't do anything" to prepare for class appeared 28 times in exit slip data across the five units.

In summary, in response to research question number three, students had positive perceptions about the flipped classroom approach. These centered on the relationship between students and the instructor as well as active learning strategies. Negative perceptions were expressed regarding the shift from passive learner to active learner and this adjustment takes time. Students recognized that their participation required viewing videos, which was homework. A final negative was the perception students had of the videos as homework and as a result, did not complete them or garnered negative feelings towards them. Understanding student perceptions in this study helps the researcher take note of the areas of the study that were effective and those that need modification.

Implications

Since technology is becoming a mainstay in public education it is imperative that instructors must be equipped with the professional know-how to integrate these tools into student experiences. The following section will investigate the implications of this action research, including (a) personal implications, and (b) implications for teaching introductory psychology at the secondary level, and (c) implications for future research.

Personal Implications

As a research practitioner conducting action research, I have thoroughly investigated and considered my own decisions regarding student learning throughout this intervention and recognize that my perspectives are shaped by my own experiences (Mertler, 2017). Among the outcomes of this experience include changes to (a) my instructional practices, and (b) student-teacher relations.

Changes to my instructional practices. In the years before this intervention, my social studies classroom was boring. The setting was routine, predictable, and lacked vibrancy due to its lack of resources. I envisioned a classroom of activity, collaboration, laughter, and learning. I had a clear picture of how I wanted the learning in my classroom to go, but I lacked the professional development and theoretical pedagogy to put it into practice. Two words that resonated with me were “facilitator” and “coach”. I sought to fulfill this role in the classroom, but continually came up short when I did not get the anticipated results, falling back on instructional methods that I had come to know in my own social science education; unfulfilling, unchallenging, and rote. I was bored, and so were my students.

Action research allowed me to systematically evaluate my instructional practices (Mertler, 2017) of the past and break away as I grew into the comfort of the constructivist learning theory. One of the obstacles that long plagued my passive classroom was that of a lack of resources. Now that students have access to instructional materials that I design, the lack of resources is no longer a factor. In the past, assigning reading or notes has been unsuccessful, as students are not motivated to complete the activities because I did not have a planned assessment for those that did the required work. The following are the results of reflective action research addressing (1) lack of resources, (2) use of class time, (3) constructivist learning theory and active learning, (4) ARCS motivational theory.

By reflecting on these obstacles and delving into the possible solutions, the flipped classroom approach, and its marriage with the ARCS motivational theory emerged as a leading instructional method for a variety of reasons. First, students are no longer dependent upon a book to get their answers. Students can get content from short videos, and then have the liberty to investigate topics further as they wish. Since students have their own learning devices, they are free to access information independently.

Second, another barrier to learning has long been the limitations of class time. There is a large amount of content to be covered in one semester, and this barrier can be broken by covering content outside of class when combined with active learning and motivational theory components. This caveat is made sweeter by the 90 minute period and its implementation of active learning. A full 90 minutes to engage students in discussions, to share case studies of intriguing individuals in psychology, to construct physical diagrams, to get up and out of our seats to learn is fun, and the antithesis of the boring, passive procedures we all moved away from.

Third, the constructivist theory and active learning strategies helps build collaboration, teamwork, and a sense of community (Tucker, et al., 2012), thereby assisting discussion within the classroom. These personal connections, not only between classmates but also with the instructor, help support student learning cognitively, emotionally, and in social ways while making connections to prior knowledge (Demirci, 2015). These supports are especially necessary for today's climate. This is apparent in studies like Rykard's (2020) investigation into high school English students' self-assessed levels of cyberslacking while in class. Students have significant distractions, as 77% reported using cellular devices in class when not engaged in instruction. The contributing factors to cyberslacking include internal and external causes that can be addressed by incorporating active learning into instruction to foster engagement and build a classroom culture that supports participation and the value of each students' input (Rykard, 2020). Building a community of learners around constructivist theory can build interdependence and growth.

Fourth, motivation is a key factor in student achievement and is frequently neglected by instructors (Keller, 1983). Using strategies that intentionally incorporate motivational guidelines into classroom activities and instruction builds the factors essential to learning in the constructivist classroom. Using activities that are geared to create interest can hook the student into finding out more. This happens by integrating the components of ARCS motivational theory. This is a small but worthwhile adjustment as students relate the learning to themselves.

To summarize, transitioning to a classroom built upon constructivist learning and active learning strategies by implementing the flipped classroom approach has helped

build an environment that supports autonomy, makes optimum use of class time, and inspires working with others through engaging activities.

Student-Teacher Relations. One area that impacted me was the personal relationships that I formed with my students. Rapport with students has come easily for me. One reason for this is the personal nature of our subject matter since we share our personal experiences. Second, I have been at the school for twelve years and oftentimes have had students' siblings. Third, I have an easy-going nature which allows students to feel comfortable while striving to succeed. Using action research to consider my relationships before and after the intervention, I discovered valuable benefits (Mertler, 2017). Adopting the flipped classroom approach gave me greater insights into student perspectives. Participating in the active learning strategies with my students allowed me to see the lightbulb moments when connections were made. I saw the joy of sharing knowledge with classmates. I observed their pleasure when they achieved a grade higher than what they expected. I was able to "coach" them through the hard moments where they doubted themselves. For me, the best part of the flipped classroom was that active learning strategies invigorated me. I loved making the videos and embedding silly jokes into them to see who was paying attention. Since I didn't have to spend so much time in class talking, I was able to get to know my students more intimately and create an environment that was more like a team than a collection of individuals gathered at random for the semester. We grew together. This was valuable information that will change my instructional approach moving forward.

To summarize my personal implications would be to say that in the future I will continue to integrate active learning strategies facilitated by the flipped classroom

approach and follow the precepts outlined in ARCS motivational theory to capture the high school student. As a subject-matter expert, it is my obligation to my students to inspire curiosity for learning, especially when the learning is about themselves. I will do this by implementing the flipped classroom approach.

Implications for Teaching Introductory Psychology at the Secondary Level

Part of this researcher's personal bias includes the belief that every high school student should have a semester of psychology. The U.S. Department of Health and Human Services reports from the Office of Adolescent Health that mental health statistics related to teen anxiety, depression, and suicidal ideation continue to rise (U.S. Department of Human Services, 2016). By studying the broad array of topics related to human behavior in psychology, students can gain insights into themselves and their emotional well-being to improve their academic achievement and mental health (Tracy, 2019). For these reasons, I believe that psychology helps to serve our students in their future, especially in a climate where the very benefits of mobile technology further isolate adolescents as it influences peer relationships and interactions (Xie, Tao, Liu, & Lei, 2020). Creating the constructivist learning environment by implementing the flipped classroom approach is a way to create a community.

Teaching psychology in secondary schools was investigated by Ernst and Petrossian (1996) as they made the case for including psychology in high school curriculum, and ensuring that the teachers of psychology had adequate training. With the support of the American Psychological Association and the Teachers of Psychology in Secondary Schools (TOPPS), the authors advocated providing resources for students and teachers that included access to lesson plans, curriculum standards, and guiding scientific

principles in the practice of psychology (Ernst & Petrossian, 1996). Ernst and Petrossian estimated in 1996 that between 700,000 and 900,000 students were taking psychology. While current estimates are not known, this number has likely increased in 24 years. As the number has increased, the technology and its availability has increased, therefore staying current while being guided by curriculum standards is a part of the flipped classroom approach in the psychology classroom.

The flipped classroom approach and its integration into the undergraduate psychology experience has been investigated by Hudson, Whisenhunt, Shoptaugh, Visio, Cathey, and Rost (2015), Lyons, Limniou, Shermbrucker, Hands and Downes (2016), and Roehling et al., (2017). It has further been included in a life span development course for graduate students by Wright (2020), as well as Batastini, et al (2018) when studying cognitive abilities and personality assessments.

Each of these studies contributed to the research surrounding the inclusion of flipped classroom approach in psychology. For instance, Hudson, et al., (2015) discovered that it takes up to five semesters for students to grow comfortable with the responsibilities of self-regulated learning, or growing comfortable becoming an active learner. Lyons, et al., (2016) associated a preference for flipped classroom approaches with student personality traits of agreeableness, and demonstrated an expression of deep learning, similar to Danker (2015). Roehling, et al., (2017) contend that student preferences are mixed regarding the effectiveness of flipped classroom, and that research is limited in undergraduate psychology. Batastini,et al (2018) recommend flipped classroom approaches for graduate students due to its reliance on application of prior knowledge, and Wright (2020) supports the flipped classroom approach, as this cultivates

formal ownership of learning within students and strengthens the relationship between instructors and students. These studies contribute to the literature of higher education, the adult learner, and its support of the flipped classroom approach, but it does not account for younger students in the secondary school experience.

Maturity and cognitive abilities of 14-16 year-olds differ from that of the undergraduate or graduate student, and comparative literature of the high school psychology student in the flipped classroom was not able to be obtained. However, this does not mean that students are not being instructed using the flipped classroom approach. For instance, there are several edu-celebrities in the social sciences on YouTube. Additionally, resources such as the Kahn Academy supports the integration of short videos into the classroom. Maturity and cognitive abilities were a factor in this action research. The IMMS survey data indicated lower results than that of undergraduate students, and students did not use similar categories to describe their experiences in relationship with the ARCS motivational theory. This can be attributed to maturity and cognitive abilities. Furthermore, the high school student is a member of the public school setting and may not have the same levels of self-regulation and motivation that an undergraduate student has.

One of the goals of this research is to contribute to the support of flipped classroom approach into the teaching of psychology. Among the units of instruction in this intervention included the history of social sciences and research methods, biology and how it affects behavior, sensation and perception, learning and memory. These topics are perfect for active learning, as they are scientifically supported.

The implementation of flipped classroom methods supports the subject-matter being instructed, supported by Brian in his interview, saying proudly, "You're using psychology to teach psychology if that makes sense." As we progressed through the learning and memory units, students were able to review in ways that they learned from the units themselves and integrate this into their responses and reflections. They came to value repetition, elaborative rehearsal, distributed practice, all advocated by the psychology curriculum. In this way, psychology is a good fit for the flipped classroom approach. This further supports the belief that students should experience a psychology course within their high school experience. Once students are instructed about how they learn, the values of metacognition, sharing their learning experiences with others, and connecting the prior learning that which they have already experienced, their knowledge can only increase.

To summarize, the body of literature for integrating the flipped classroom approach is limited to undergraduate and graduate experiences in the psychology classroom. This research in itself is limited to only a few studies, as the flipped classroom approach and research has mainly been restricted to STEM fields (Roehling, et al., 2017). The personal nature of the field of psychology makes it a good fit for the flipped classroom approach. This action research supports the inclusion of the flipped classroom approach in the high school psychology experience.

Implications for Practice

As a result of this action research, the following recommendations should be considered by those seeking to institute the flipped classroom approach. While this research is in the social sciences, the flipped classroom approach provides advantages

that would complement a variety of subjects. First of all, extensive planning must be paramount, though not due to the use or implementation of videos, but rather the increase in class time. The increase in class time is a special benefit that must be capitalized on through the use of active learning strategies. Second, being clear about learning objectives will increase student reflection. Incorporating learning objectives into introductory and conclusion activities will assist the mastery of content. Third, students must be prepared for the adjustment from passive to active learner. This action research took the first week of the intervention to explain and experiment with active learning, but students would have been assisted with more practice. Fourth, prior research supports embedding review questions or short quizzes into instructional videos. Due to technology constraints, this action research was not able to incorporate these useful strategies. Finally, making videos is not the biggest challenge to the flipped classroom approach. The video process is time-consuming, but the value is unlimited.

It is also noteworthy that students in the school district had access to their own Chromebooks and each student had access to the internet at home. Access to technology may inhibit others. Challenges with access to quality internet was not a factor in this action research, but this is not the case everywhere. Moreover, when facing internet access problems, the larger issues came within the school setting. None of the participants expressed problems accessing information outside of school.

Implications and Recommendations for Future Research

The findings from this action research make prominent several implications for future research. Among them are (1) the impact of intrinsic and extrinsic motivation on student participation in the flipped classroom approach, (2) the inclusion of students with

developmental disabilities, (3) design implications, and (4) the future of online learning. Recommendations for future research follow.

The impact of intrinsic and extrinsic motivation on student participation in the flipped classroom approach. Early literature searches into my research on the flipped classroom approach revealed the inclusion of Ryan and Deci's self-determination theory (2000). The self-determination theory makes distinctions between intrinsic motivation, that is, participation in an activity out of enjoyment in contrast to extrinsic motivation, completing a task to receive a reward (Deci & Ryan, 2008). The key to developing motivation, according to self-determination theory, is through fostering competence, autonomy, and relatedness. The self-determination motivational theory is remarkably similar to that of Keller and the ARCS theory of motivation, and has been used to analyze the effects of the flipped classroom approach. These include Abeysekera and Dawson's (2014) research into cognitive load management in the flipped classroom, as well as Sergis, Sampson, and Pelliccione (2017) work to expand the investigation into motivation in the flipped classroom approach using the self-determination theory. Their findings indicate that motivation is positively influenced and that learning outcomes of low-performing students are impacted in particular.

These findings are similar to those integrating the ARCS motivational theory. The self-determination theory focuses more on the role of the student and the learning outcomes, and the role of intrinsic vs. extrinsic motivation (Ryan & Deci, 2000). These are especially important for an adolescent learner.

Future research could incorporate this theoretical approach to motivating students. This would help to further examine the influence of extrinsic motivators, like grades,

teacher approval, and social interactions within the active learning framework. This action research did not delineate between intrinsic and extrinsic motivators, though the influence of each is reflected in quantitative and qualitative data. Students did express that grades were a motivator, as well as being able to participate with their classmates. This action research focused on the role of the instructor, instructional materials, and content delivery while considering student performance, learning, and perceptions.

The inclusion of students with developmental disabilities. Students that were subjected to this intervention included two with developmental disabilities. The students had individualized education plans (IEP) that allowed them extended time for homework and large summative assessments. The students were included in the data, as their results were similar to non-disabled students. However, this would make for a good investigation; how does the flipped classroom approach influence the developmentally disabled student? The participation of the students was similar to that of the on-pace learner. Perhaps these students were better at self-regulation and pacing, as oftentimes they had to complete much of the in-class work on their own, with the help of supports outlined in their IEPs. Overall, their results were not significantly different from their classmates. Investigating their motivation, learning outcomes, and perceptions in greater detail would be a service. Future research should focus on how the flipped classroom approach influences those with developmental disabilities. There is no such research at this time.

Design Implications. Action research prevents the generalizability of the results outside this flipped classroom. Triangulation and efforts to maintain reliability and trustworthiness were adhered to, but the small sample size and the limits of semi-

structured interviews to five students impact the results (Mertler, 2017). The intervention was conducted over eight weeks. A longer study lasting the entire semester, or over the course of one year could lead to new insights into the flipped classroom approach (Mok, 2014). Increasing the length of the intervention could shed more light on motivation, learning and perceptions. Furthermore, student motivation and perceptions may have been influenced by the novelty effect of new instructional practices. A longer duration could impact overall perceptions.

A treatment or control group would further differentiate between the experiences of students exposed to flipped classroom approach in comparison to the traditional classroom (Aşıksoy & Özdamlı, 2016; Colakoglu and Akdemir, 2010). This would help compare the motivation, learning, and perception outcomes when exposed to each intervention.

This action research did not include a pre-motivational survey. The study could be improved by determining participants' levels of motivation before the exposure to the flipped classroom approach. Future studies should consider the inclusion of a pre-motivational survey to compare the participants' pre- and post-motivation

In all, this action research could be improved by increasing the number of participants, lengthening the duration, adding a control group with traditional instructional approaches, and adding a pre-intervention survey to measure motivation.

The future of online learning. This research is being finalized amidst the changes to educational practices caused by COVID-19. Instructors that had little to no experience entrusting their students to initiate work totally online were expected to pivot in a very short period of time. This is a transition that must be made in the future, as there

is a likelihood that public and private schools around the globe will be forced to make quick adjustments to their instruction. The transition was especially difficult for students. The expectation for students to instantly interpret the multitude of content surely influenced motivation, learning, and perceptions. Future research should include professional development for instructors when implementing either flipped classroom approaches or other such blended learning strategies that raise expectations for students. The change from passive learner to active learner has to start from the top.

In summary, future research should include further investigations into how intrinsic and extrinsic motivation plays a part in the participation of students. Additionally, it would be useful to research the experiences of developmentally disabled students. The length and breadth of the study should be considered. To conclude, as the world falls victim to pandemics, instructors must enable students with quality content that challenges them to become active learners. This can be cultivated through professional development. Instructors must engage students in worthwhile online experiences that enhance learning experiences rather than add to the burden.

Limitations

This study has its limitations, despite its attention to detail. The limitations of this action research can be attributed to (a) methodological limitations, and (c) the findings.

Methodological Limitations

The findings of action research are not generalizable due to the limits of population, size, and context in which the research is conducted (Mertler, 2017). The instructor chose the participants from her class when utilizing action research. In this case, the high school psychology student was between the ages of fourteen to sixteen.

Since the participants were not randomly selected, the findings of this study may not reflect the experiences of other high school students.

Safeguards have been instituted into this action research to limit the effects of researcher bias. This included the triangulation of quantitative and qualitative data by using a researcher journal, peer debriefing, extensive and intentional member-checking of all experiences (Creswell, 2017). To protect anonymity student pseudonyms were assigned and all data was anonymized. These safeguards, while benevolently and earnestly adhered to, in all likelihood did not address all the researcher bias within.

Participants' motivation was measured after the intervention. Since there was no pre-intervention motivational survey we were not able to compare the changes in motivation as a result of the flipped classroom approach. Therefore, the results should be interpreted with the understanding that participants' motivation may not be significantly affected due to the flipped classroom approach.

Limitations Associated With Findings

Along with the adolescent student population, the participants were providing self-reported experiences. As such, they are providing their recollection of perceptions, and what they may perceive as the desired response (Mertler, 2017). This was especially true for interview data, although safeguards were put into place. The intervention was explained from the beginning, and students knew that their results were being closely monitored. Finally, researcher bias could be reflected in teacher journal entries.

The inclusion of two students with developmental disabilities did not affect the results of the study. However, two students displayed no growth as a result of the intervention

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APPENDIX A

UNIVERSITY INTERNAL REVIEW BOARD APPROVAL LETTER

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
DECLARATION of NOT RESEARCH

Nicole Ritter
820 South Main St.
Columbia, SC 29208 USA

Re: **Pro00089093**

Dear Ms. Nicole Ritter:

This is to certify that research study entitled ***Teaching Psychology in Secondary School: The Flipped Classroom and the ARCS Motivational Model*** was reviewed on **5/16/2019** by the Office of Research Compliance, which is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). The Office of Research Compliance, on behalf of the Institutional Review Board, has determined that the referenced research study is not subject to the Protection of Human Subject Regulations in accordance with the Code of Federal Regulations 45 CFR 46 et. seq.

No further oversight by the USC IRB is required. However, the investigator should inform the Office of Research Compliance prior to making any substantive changes in the research methods, as this may alter the status of the project and require another review.

If you have questions, contact Lisa M. Johnson at [redacted]

Sincerely,
Lisa M. Johnson
ORC Assistant Director and IRB Manager

APPENDIX B

NATIONAL STANDARDS AND INSTRUCTIONAL UNITS

UNIT 1: SCIENTIFIC FOUNDATIONS AND RESEARCH METHODS

Lesson 1: What is Psychology?

Objectives:

- Define psychology as a discipline and identify its goals as a science
- Describe the emergence of psychology as a scientific discipline
- Recognize the role of psychology and other social sciences as a scientific discipline

Lesson 2: History of Psychology

Objectives:

- Define psychology as a discipline and identify its goals as a science.
- Describe the emergence of psychology as a scientific discipline.
- Describe perspectives employed to understand behavior and mental processes.

Lesson 3: Psychological Approaches

Objectives:

- Describe perspectives employed to understand behavior and mental processes
- Recognize the evolving nature of psychology as a scientific discipline.

Lesson 4 & 5: Subfields in Psychology

Objectives:

- Discuss the value of both basic and applied psychological research with human and non-human animals
- Describe the major subfields of psychology
- Identify the important role psychology plays in benefiting society and improving people's lives
- Describe the scientific method and its role in psychology
- Describe and compare a variety of quantitative (e.g., surveys, correlations, experiments) and qualitative (e.g., interviews, narratives, focus groups) research methods

Lesson 6 & 7: Research Methods (Case Study and Naturalistic Observation)

Objectives:

- Identify the important role psychology plays in benefiting society and improving people's lives
- Describe the scientific method and its role in psychology Describe and compare a variety of quantitative (e.g., surveys, correlations, experiments) and qualitative (e.g., interviews, narratives, focus groups) research methods

Lesson 8 &9: Research Methods (Experiments and Correlations)
Objectives:

- Identify the important role psychology plays in benefiting society and improving people's lives
- Describe the scientific method and its role in psychology Describe and compare a variety of quantitative (e.g., surveys, correlations, experiments) and qualitative (e.g., interviews, narratives, focus groups) research methods

UNIT 2: BIOLOGICAL BASES OF BEHAVIOR
Lesson 1: The Nervous System
Objectives:

- Identify the major divisions and subdivisions of the human nervous system
- Identify the parts of the neuron and describe the basic process of neural transmission
- Differentiate between the structures and functions of the various parts of the central nervous system

Lesson 2: The Nervous System
Objectives:

- Identify the major divisions and subdivisions of the human nervous system
- Identify the parts of the neuron and describe the basic process of neural transmission
- Differentiate between the structures and functions of the various parts of the central nervous system

Lesson 3: The Brain - 3 parts
Objectives:

- Differentiate between the structures and functions of the various parts of the central nervous system
- Describe lateralization of brain functions
- Discuss the mechanisms and the importance of plasticity of the nervous system

Lesson 4: The Brain - Cerebral Cortex
Objectives:

- Differentiate between the structures and functions of the various parts of the central nervous system
- Describe lateralization of brain functions
- Discuss the mechanisms and the importance of plasticity of the nervous system

Lesson 5: The Endocrine System
Objectives:

- Describe how the endocrine glands are linked to the nervous system
- Describe the effects of hormones on behavior and mental processes
- Describe hormone effects on the immune system

Lesson 6: Genetics
Objectives:

- Describe concepts in genetic transmission
- Describe the interactive effects of heredity and environment
- Explain how evolved tendencies influence behavior

UNIT 3: SENSATION AND PERCEPTION

Lesson 1: What is sensation? What is perception?

Objectives:

- Discuss processes of sensation and perception and how they interact
- Explain the concepts of threshold and adaptation

Lesson 2: Vision

Objectives:

- List forms of energy for which humans and nonhumans do and do not have sensory receptors
- Describe the visual sensory system
- Describe the auditory sensory system

Lesson 3 : The Other Senses

Objectives:

- Describe other sensory systems, such as olfaction, gustation, and somesthesis (e.g., skin senses, kinesthesis, and vestibular sense)

Lesson 4& 5: Perception

Objectives:

- Explain Gestalt principle of perception
- Describe binocular and monocular depth cues

Lesson 6: Perceptual Constancies

Objectives:

- Describe the importance of perceptual constancies
- Describe perceptual illusions

UNIT 4: LEARNING

Lesson 1: Classical Conditioning

Objectives:

- Describe the principles of classical conditioning
- Describe clinical and experimental examples of classical conditioning
- Apply classical conditioning to everyday life

Lesson 2: Operant Conditioning and Schedules of Reinforcement

Objectives:

- Describe the Law of Effect
- Describe the principles of operant conditioning
- Describe clinical and experimental examples of operant conditioning
- Apply operant conditioning to everyday life

Lesson 3: Cognitive Learning

Objectives:

- Describe the principles of observational and cognitive learning
- Apply observational and cognitive learning to everyday life

UNIT 5: MEMORY

Lessons 1 & 2: Types of Memory and Processes of Memory

Objectives:

- Identify factors that influence encoding
- Characterize the difference between shallow (surface) and deep (elaborate) processing

- Discuss strategies for improving the encoding of memory

Lesson 3: Three Processes of Memory

Objectives:

- Identify factors that influence encoding
- Characterize the difference between shallow (surface) and deep (elaborate) processing
- Discuss strategies for improving the encoding of memory

Lessons 3 & 4: Three Stages of Memory/Forgetting

Objectives:

- Describe the differences between working memory and long-term memory
- Identify and explain biological processes related to how memory is stored

Lesson 5: Forgetting and Eyewitness Testimony

Objectives:

- Discuss types of memory and memory disorders (e.g., amnesia, dementias)
- Analyze the importance of retrieval cues in memory
- Explain the role that interference plays in retrieval
- Discuss the factors influencing how memories are retrieved
- Explain how memories can be malleable

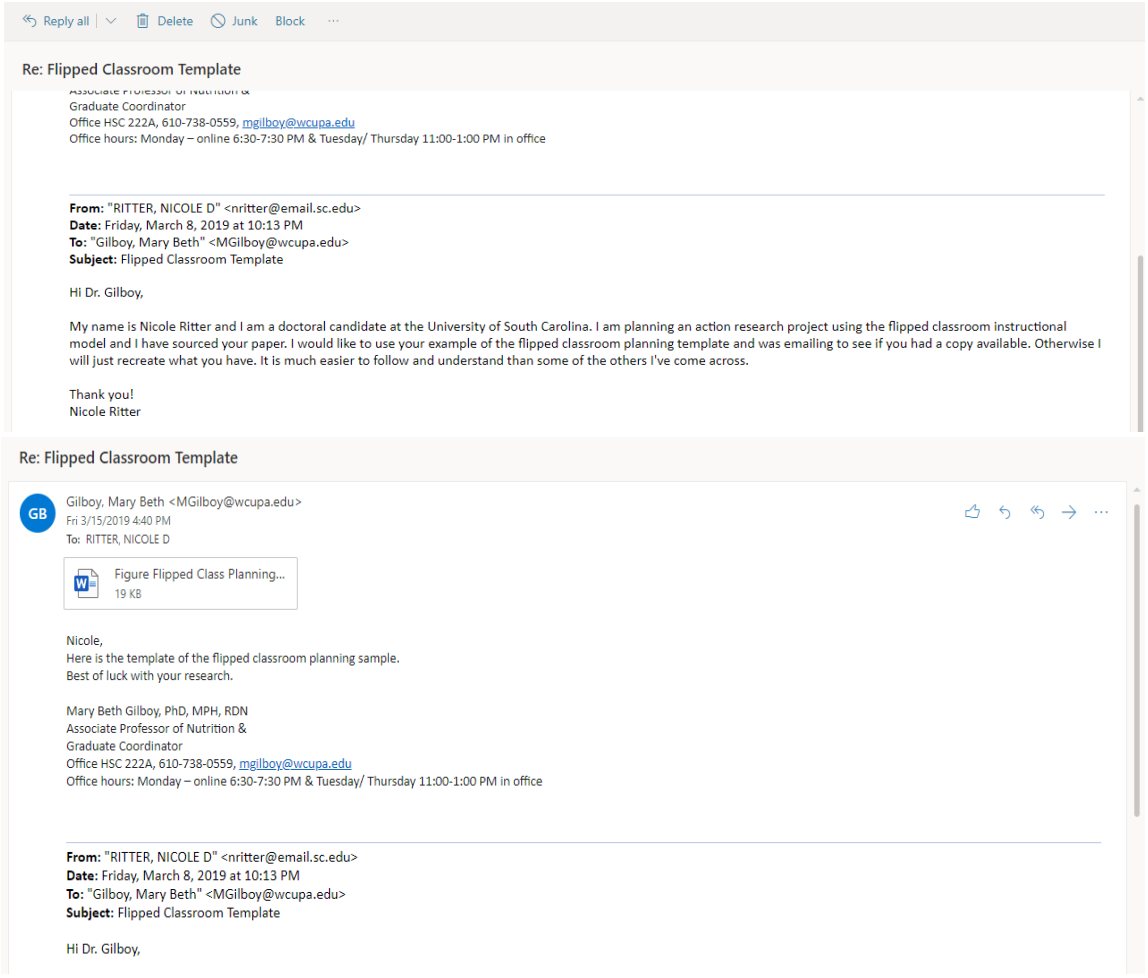
Lesson 6: Improving Memory

Objectives:

- Analyze the importance of retrieval cues in memory
- Explain the role that interference plays in retrieval
- Discuss the factors influencing how memories are retrieved
- Explain how memories can be malleable
- Discuss strategies for improving the retrieval of memories

APPENDIX C

APPROVAL FROM DR. GILBOY TO USE THE THREE-STEP TEMPLATE



Reply all | Delete | Junk | Block | ...

Re: Flipped Classroom Template

Graduate Coordinator
Office HSC 222A, 610-738-0559, mgilboy@wcupa.edu
Office hours: Monday – online 6:30-7:30 PM & Tuesday/ Thursday 11:00-1:00 PM in office

From: "RITTER, NICOLE D" <nritter@email.sc.edu>
Date: Friday, March 8, 2019 at 10:13 PM
To: "Gilboy, Mary Beth" <MGilboy@wcupa.edu>
Subject: Flipped Classroom Template

Hi Dr. Gilboy,

My name is Nicole Ritter and I am a doctoral candidate at the University of South Carolina. I am planning an action research project using the flipped classroom instructional model and I have sourced your paper. I would like to use your example of the flipped classroom planning template and was emailing to see if you had a copy available. Otherwise I will just recreate what you have. It is much easier to follow and understand than some of the others I've come across.

Thank you!
Nicole Ritter

Re: Flipped Classroom Template

GB Gilboy, Mary Beth <MGilboy@wcupa.edu>
Fri 3/15/2019 4:40 PM
To: RITTER, NICOLE D

Figure Flipped Class Planning...
19 KB

Nicole,
Here is the template of the flipped classroom planning sample.
Best of luck with your research.

Mary Beth Gilboy, PhD, MPH, RDN
Associate Professor of Nutrition &
Graduate Coordinator
Office HSC 222A, 610-738-0559, mgilboy@wcupa.edu
Office hours: Monday – online 6:30-7:30 PM & Tuesday/ Thursday 11:00-1:00 PM in office

From: "RITTER, NICOLE D" <nritter@email.sc.edu>
Date: Friday, March 8, 2019 at 10:13 PM
To: "Gilboy, Mary Beth" <MGilboy@wcupa.edu>
Subject: Flipped Classroom Template

Hi Dr. Gilboy,

APPENDIX D

INTERVIEW PROTOCOL AND INTERVIEW QUESTIONS

Good morning/afternoon/evening, thank you for consenting to participate in this interview process. Thank you for also consenting in allowing me to record this interview, so that I can have accurate data recorded. Let's first begin by discussing the purpose of the study. The purpose of this study is to determine how and in what ways the flipped classroom approaches influence motivation, learning, and perceptions in our introductory psychology course. Our interview will cover three topics. The first topic I'd like to discuss is how and in what ways implementing flipped classroom approaches have affected your motivation to learn in our psychology course. The second topic is to discuss how the flipped classroom strategies have affected learning in our course. The third topic regards your perceptions of the flipped classroom in our psychology course. This interview will last 20 to 30 minutes. Do you have any questions before we get started? Let's begin.

Table D1. *Research Questions with Interview Alignment Questions*

Research Questions	**Interview Questions**
RQ1: How and in what ways does implementing flipped classroom approach affect high school students' motivation to learn in an introductory psychology course?	1. Describe the elements of the flipped classroom that motivated you. 2. Describe the elements of the flipped classroom that did not motivate you. 3. Describe your role as a student in the flipped classroom. 4. Describe the role of the instructor in the flipped classroom. a. Give an example of an activity that really motivated you in our flipped classroom. 5. Describe how the videos helped you make connections to our class content and things you've learned about before. 6. How did your flipped classroom experience differ from other classes that you've taken that didn't use the flipped classroom? a. Now that you've experienced the flipped classroom, how would you describe your

	experiences to someone looking to take psychology? 7. How did the flipped classroom inspire curiosity in you? 8. What video experiences made you want to learn more about psychology? 9. Observing your own behavior in our psychology class, could you describe your levels of motivation? 10. Tell me about the innovations in the flipped classroom that motivated you the most. 11. Tell me about the innovations in the flipped classroom that motivated you the least. What did you like the least in our flipped classroom?
RQ2: How does implementing flipped classroom approach affect high school students' learning in an introductory psychology course?	1. In regards to learning the course content, describe how effective flipped classroom methods have been in comparison to traditional classrooms. 2. Describe how effective you feel that participating in flipped classroom methods has been in helping you learn in our course. 3. Tell me about the learning activities that made you feel as though you *really got it.* 4. Overall, describe whether you feel the flipped classroom helped you to learn the objectives included in our instruction.
RQ3: What are high school students' perceptions about the effectiveness of flipped classroom approach to learn the content in an introductory psychology course?	1. Describe your feelings about your classroom experiences regarding activities before, during, and after class. 2. How do you feel that the flipped classroom added to your classroom experience? a. Tell me about your experiences with your collaborative experiences with your classmates. b. Tell me about the amount of work you had to do outside of class. 3. What words would you use to describe the flipped classroom experience? 4. How do you feel about the accessibility of our course content?

a. Was information easy to get to and clear?
b. Was the class online difficult to maneuver and unclear?

5. Describe the active learning strategies that you participated in while in class that helped you learn the material.

6. Describe how effective flipped classroom strategies have been in your overall learning experience.

7. Would you recommend the flipped psychology classroom to others?

8. What are your opinions regarding the flipped learning approach?

This concludes our time discussing your experiences in the flipped classroom. Thank you for participating in this interview. I will review your answers and ask you to confirm your statements once I have completed transcription of this data. Thank you again.

APPENDIX E

INTERVIEW TEMPLATE

Interview Date: _____

Time: _____

Location: _____

Student Interview Questions	
1. Describe the elements of the flipped classroom that motivated you. 2. Describe the elements of the flipped classroom that did not motivate you. 3. Describe your role as a student in the flipped classroom. 4. Describe the role of the instructor in the flipped classroom. a. Give an example of an activity that really motivated you in our flipped classroom. 5. Describe how the videos helped you make connections to our class content and things you've learned about before. 6. How did your flipped classroom experience differ from other classes that you've taken that didn't use the flipped classroom? a. Now that you've experienced the flipped classroom, how would you describe your experiences to someone looking to take psychology? 7. How did the flipped classroom inspire curiosity in you? 8. What video experiences made you want to learn more about psychology? 9. Observing your own behavior in our psychology class, could you describe your levels of motivation?	

Student Interview Questions	
10. Tell me about the innovations in the flipped classroom that motivated you the most. 11. Tell me about the innovations in the flipped classroom that motivated you the least. What did you like the least in our flipped classroom?	
1. In regards to learning the course content, describe how effective flipped classroom methods have been in comparison to traditional classrooms. 2. Describe how effective you feel that participating in flipped classroom methods has been in helping you learn in our course. 3. Tell me about the learning activities that made you feel as though you *really got it.* 4. Overall, describe whether you feel the flipped classroom helped you to learn the objectives included in our instruction.	

Student Interview Questions	
1. Describe your feelings about your classroom experiences regarding activities before, during, and after class. 2. How do you feel that the flipped classroom added to your classroom experience? a. Tell me about your experiences with your collaborative experiences with your classmates. b. Tell me about the amount of work you had to do outside of class. 3. What words would you use to describe the flipped classroom experience? 4. How do you feel about the accessibility of our course content? a. Was information easy to get to and clear? b. Was the class online difficult to maneuver and unclear? 5. Describe the active learning strategies that you participated in while in class that helped you learn the material. 6. Describe how effective flipped classroom strategies have been in your overall learning experience. 7. Would you recommend the flipped Psychology classroom to others? 8. What are your opinions regarding the flipped learning approach?	

APPENDIX F

EXIT SLIP QUESTIONS

Rate the following three statements according to how strongly you agree using the following scale. All statements are in relation to the instructional unit that we most recently concluded in class.

1. = strongly disagree
2. = disagree
3. = undecided
4. = agree
5. = strongly agree

1. The pre-class activities (video lectures, guided notes, introductory materials outside of class) for this instructional unit motivated me to find out more about the topic.
2. The during class activities (group projects, individual projects, evaluations) helped me to learn the material for this instructional unit.
3. After completing the flipped classroom strategies in this learning unit, I feel that I have learned the material.

Please answer the following questions in your own words as completely as possible.

4. What did you do outside of class to help you master this instructional unit? Could you have done more?
5. What activities helped you learn the content the best and why

APPENDIX G

INSTRUCTIONAL MOTIVATION MATERIALS SURVEY

Directions: there are 36 statements in this questionnaire. Please think about each statement in relation to the flipped classroom model you have experienced in our introduction to psychology class, and indicate how true it is. When referring to learning units, this means the instructional units you have participated in during our flipped classroom activities, including pre-class, in-class, and out of class activities. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear. Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements. Record your responses in this Google form and follow any other directions that you come across. Thank you.

1 (or A) = Not true
2 (or B) = Slightly true
3 (or C) = Moderately true
4 (or D) = Mostly true
5 (or E) = Very true

1. When I first looked at the learning objectives, I had the impression that it would be easy for me.
2. There was something interesting at the beginning of these learning units that got my attention.
3. The psychology learning units were more difficult to understand than I would like for it to be.
4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from these learning units.
5. Completing the exercises in these learning units gave me a satisfying feeling of accomplishment.
6. It is clear to me how the content of these learning units are related to things I already know.
7. Many of the videos had so much information that it was hard to pick out and remember the important points.
8. The videos and instructional material are eye-catching.
9. There were stories, pictures, or examples that showed me how this material could be important to some people.
10. Completing these learning units successfully was important to me.

11. The quality of the flipped classroom lessons helped to hold my attention.
12. This subject (psychology) is so abstract that it was hard to keep my attention on it.
13. As I worked on these learning units, I was confident that I could learn the content 14. I enjoyed this class so much that I would like to know more about this topic.
15. The videos of the learning units looked dry and unappealing.
16. The content of these learning units are relevant to my interests.
17. The way the information is arranged helped keep my attention.
18. There are explanations or examples of how people use the knowledge in this lesson
19. The exercises in these learning units were too difficult.
20. The learning units have things that stimulated my curiosity.
21. I really enjoy studying these learning units.
22. The amount of repetition in these learning units caused me to get bored sometimes.
23. The content and style of active learning in class convey the impression that its content worth knowing.
24. I learned some things that were surprising or unexpected.
25. After working on the learning units for awhile, I was confident that I would be able to pass a test on it.
26. The learning units were not relevant to my needs because I already knew most of it.
27. The wording of feedback after the exercises, or of other comments in this lesson, helped me feel rewarded for my effort.
28. The variety of pre-class, in-class, and outside class activities helped keep my attention on the lesson.
29. The style of the learning units is boring.
30. I could relate the content of this lesson to things I have seen, done, or thought about in my own life.
31. There is so much content in each video that it is irritating.
32. It felt good to successfully complete these learning units.
33. The content of this lesson will be useful to me.
34. I could not really understand quite a bit of the material in these learning units.
35. The good organization of the content helped me be confident that I would learn this material.
36. It was a pleasure to work on such well-designed learning units.

APPENDIX H

IMMS COMPARISON WITH INTRODUCTION TO PSYCHOLOGY SURVEY

Table H1. *IMMS Comparison with Introduction to Psychology Survey*

Original IMMS	Introduction to Psychology IMMS
1. When I first looked at this lesson, I had the impression that it would be easy for me.	1. When I first looked at the learning objectives, I had the impression that it would be easy for me.
2. There was something interesting at the beginning of this lesson that got my attention.	2. There was something interesting at the beginning of these learning units that got my attention.
3. This material was more difficult to understand than I would like for it to be.	3. The psychology learning units were more difficult to understand than I would like for it to be.
4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from this lesson.	4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from these learning units.
5. Completing the exercises in this lesson gave me a satisfying feeling of accomplishment.	5. Completing the exercises in these learning units gave me a satisfying feeling of accomplishment.
6. It is clear to me how the content of this material is related to things I already know.	6. It is clear to me how the content of these learning units are related to things I already know.
7. Many of the pages had so much information that it was hard to pick out and remember the important points.	7. Many of the videos had so much information that it was hard to pick out and remember the important points.
8. These materials are eye-catching.	8. The videos and instructional material are eye-catching.
9. There were stories, pictures, or examples that showed me how this material could be important to some people.	9. There were stories, pictures, or examples that showed me how this material could be important to some people.
10. Completing this lesson successfully was important to me.	
11. The quality of the writing helped to hold my attention.	

12. This lesson is so abstract that it was hard to keep my attention on it.
13. As I worked on this lesson, I was confident that I could learn the content.
14. I enjoyed this lesson so much that I would like to know more about this topic.
15. The pages of this lesson look dry and unappealing.
16. The content of this material is relevant to my interests.
17. The way the information is arranged on the pages helped keep my attention.
18. There are explanations or examples of how people use the knowledge in this lesson.
19. The exercises in this lesson were too difficult.
20. This lesson has things that stimulated my curiosity.
21. I really enjoyed studying this lesson.
22. The amount of repetition in this lesson caused me to get bored sometimes.
23. The content and style of writing in this lesson convey the impression that its content is worth knowing.
24. I learned some things that were surprising or unexpected.
25. After working on this lesson for awhile, I was confident that I would be able to pass a test on it.
26. This lesson was not relevant to my needs because I already knew most of it.
27. The wording of feedback after the exercises, or of other comments in this lesson, helped me feel rewarded for my effort.
28. The variety of reading passages, exercises, illustrations, etc., helped keep my attention on the lesson.
29. The style of writing is boring.
30. I could relate the content of this lesson to things I have seen, done, or thought about in my own life.
31. There are so many words on each page that it is irritating.

10. Completing these learning units successfully was important to me.
11. The quality of the flipped classroom lessons helped to hold my attention.
12. This subject (psychology) is so abstract that it was hard to keep my attention on it.
13. As I worked on these learning units, I was confident that I could learn the content
14. I enjoyed this class so much that I would like to know more about this topic.
15. The videos of the learning units looked dry and unappealing.
16. The content of these learning units are relevant to my interests.
17. The way the information is arranged helped keep my attention.
18. There are explanations or examples of how people use the knowledge in this lesson
19. The exercises in these learning units were too difficult.
20. The learning units have things that stimulated my curiosity.
21. I really enjoy studying these learning units.
22. The amount of repetition in these learning units caused me to get bored sometimes.
23. The content and style of active learning in class convey the impression that its content worth knowing.
24. I learned some things that were surprising or unexpected.
25. After working on the learning units for awhile, I was confident that I would be able to pass a test on it.
26. The learning units were not relevant to my needs because I already knew most of it.
27. The wording of feedback after the exercises, or of other comments in

32. It felt good to successfully complete this lesson.
33. The content of this lesson will be useful to me.
34. I could not really understand quite a bit of the material in this lesson.
35. The good organization of the content helped me be confident that I would learn this material.
36. It was a pleasure to work on such a well-designed lesson.

this lesson, helped me feel rewarded for my effort.
28. The variety of pre-class, in-class, and outside class activities helped keep my attention on the lesson.
29. The style of the learning units is boring.
30. I could relate the content of this lesson to things I have seen, done, or thought about in my own life.
31. There is so much content in each video that it is irritating.
32. It felt good to successfully complete these learning units.
33. The content of this lesson will be useful to me.
34. I could not really understand quite a bit of the material in these learning units.
35. The good organization of the content helped me be confident that I would learn this material.
36. It was a pleasure to work on such well-designed learning units

APPENDIX I

PRE AND POSTTEST QUESTIONS AND ANSWERS

1. The psychologist who wrote the first modern book of psychology, *The Principles of Psychology* in 1890 is
a. Wilhelm Wundt
b. John B. Watson
c. William James
d. B.F.Skinner

2. The majority of psychologists are
a. clinical psychologists.
b. school psychologists
c. counseling psychologists
d. developmental psychologists

3. Developmental psychologists are especially concerned with
a. testifying at legal trials
b. changes that occur throughout the life span
c. developing aptitude tests for students
d. all of the above

4. Social psychologists differ from personality psychologists in their focus on
a. external rather than internal influences.
b. behavior rather than cognitive activity.
c. heredity rather than environmental causes for behavior
d. all of the above

5. Training your dog to shake using delicious dog biscuits is related to which psychologists?
a. Sigmund Freud
b. B.F. Skinner
c. John B. Watson
d. William James

6. The modern biological perspective of psychology studies
a. only the behavior of animals
b. the effects of biological factors on our behavior.
c. the effects of the environment on human behavior
d. the impact people have had on their environment

7. What is the research that aims to solve practical problems?
a. applied research
b. basic research
c. Clinical Psychologists
d. Counseling Psychologist

8. By using a random sample of a population for a study, scientists
a. are able to question every member of the target population.
b. use proportionately representative subgroups of the target population.
c. hope to avoid bias in their study
d. are ensured that the study will be easily replicated.

9. The relationship between smoking cigarettes and living a shorter life is an example of a(n)
a. positive correlation.
b. negative correlation.
c. dependent variable.
d. independent variable.

10. Modern psychology was born in the
a. 4th century B.C., with the Greek philosophers
b. 1800s, after the birth of modern science.
c. 1900s, with the founding of psychoanalysis
d. Middle Ages, with tests to determine if a person was possessed.

11. In its early days, the school of psychoanalysis stressed that behavior was caused by
a. heredity rather than environment.
b. environment rather than heredity.
c. unconscious motives and conflicts.
d. conscious choices and self-direction.

12. A researcher studies the effects of brain lesions in rats. This research study reflects which of the following perspectives
a. cognitive
b. behavioral
c. biological
d. humanistic

13. The school of behavior defined psychology as
a. the scientific study of behavior and mental processes.
b. the biological study of the brain and its behavior
c. the sociological study of group behavior.
d. the scientific study of observable behavior.

14. The case-study method of observation was practiced by
a. B.F. Skinner
b. Sigmund Freud.
c. Wilhelm Wundt.
d. John B. Watson.

15. The longitudinal method is concerned with observing
a. the ways in which people change over time.
b. how people behave under controlled conditions.
c. people's views on a particular subject.
d. people's character traits and temperament.

16. The greatest drawback of the longitudinal method is that participants in the study
a. do not know whether they are receiving the treatment,
b. may drop out.
c. may not act the same way outside the laboratory.
d. often display volunteer bias.

17. Observing the way people eat in restaurants is an example of
a. laboratory observation.
b. naturalistic observation.
c. a survey.
d. the longitudinal method.

18. A double-blind study is sometimes needed because researchers
a. may have expectations that affect their observations.
b. cannot control every variable outside a laboratory.
c. may not have time for a longitudinal study
d. are bound by a code of ethics.

19. The visual cortex is located in the
a. occipital lobe.
b. frontal lobe
c. temporal lobe
d. parietal lobe.

20. Which of the following is typically controlled by the left hemisphere?
a. spatial reasoning
b. the left side of the body
c. word recognition
d. perceptual skills

21. Chemical messengers produced by endocrine glands are called
a. agonists
b. hormones
c. neurotransmitters
d. enzymes

22. Ashley just completed a big match. She is so elated that she feels little fatigue or discomfort. Her lack of pain is probably the result of the release of
a. ACh
b. dopamine.
c. endorphins
d. norepinephrine.

23. The technique that uses magnetic fields and radio waves to produce computer images of structures within the brain is called:
a. the EEG.
b. a PET scan
c. a lesion
d. MRI.

24. Unusual drinking and eating behaviors can be caused by damage to the
a. hypothalamus.
b. cerebellum.
c. reticular activating system.
d. pons.

25. The main function of the peripheral nervous system is to
a. relay messages between the brain's right and left hemispheres.
b. transmit information from the central nervous system to other parts of the body.
c. speed up respiration and heart rate to increase alertness.
d. produce growth hormones.

26. David experienced difficulty keeping his balance after receiving a blow to the back of his head. It is likely that he injured his
a. medulla
b. hypothalamus.
c. thalamus.
d. cerebellum.

27. Following a nail gun wound to his head, Daryll became more uninhibited, irritable, dishonest, and profane. It is likely that his personality change was the result of injury to his
a. parietal lobe
b. occipital lobe
c. temporal lobe
d. frontal lobe.

28. Multiple sclerosis is a disease in which the immune system mistakenly destroys some of the myelin wrapped around nerve cell fibers. Which nerve cell fibers are being attacked by this process?
a. Synapses
b. Axons
c. Dendrites
d. Mitochondria

29. Distinguishing between two shades of red is an example of
a. absolute threshold
b. sensory adaptation
c. difference threshold
d. afterimage

30. Light enters the eye through which of the following?
a. pupil
b. cornea
c. lens
d. retina

31. What part of the eye enables people to perceive color?
a. pupil
b. lens
c. cornea
d. cones

32. Convergence is an example of
a. shape constancy.
b. a binocular cue.
c. brightness constancy.
d. a monocular cue.

33. A person's vestibular sense helps control
a. depth perception.
c. the process of eyes adjusting to a darkened room.
b. the perception of pain.
d. balance

34. Even with eyes closed, a person knows about the position and motion of his or her body parts because of
a. visual acuity.
b. monocular cues.
c. kinesthesis.
d. binocular clues.

35. Which of the following is not part of the skin senses?
a. pressure
b. smell
c. temperature
d. pain

36. Ivan Pavlov's experiments with dogs yielded information about
a. operant conditioning
b. classical conditioning
c. counter conditioning
d. all of the above

37. A conditioned response occurs
a. automatically.
b. as a result of pairing an unconditioned stimulus with a conditioned stimulus.
c. after extinction.
d. as a result of all of the above

38. Alfred Bandura showed that we acquire knowledge by observing & imitating others. This is called
a. modeling
c. flooding.
b. partial reinforcement.
d. counterconditioning.

39. A conditioned response may be extinguished when
a. similar stimuli cause the same response.
b. stimuli that are not similar to each other cause a different response
c. a conditioned stimulus is no longer followed by an unconditioned stimulus.
d. the conditioned response is no longer paired with an unconditioned response.

40. The process by which a stimulus increases the chances of a preceding behavior occurring again is called
a. reinforcement.
b. flooding.
c. extinction.
d. systematic autosensitization.

41. What part of the brain fires when performing a certain action, and/or observing a certain action?
a. aversion.
c. monkey genes.
b. pre-frontal lobes
d. mirror neurons

42. Which pioneering learning researcher showed the antisocial effects of aggressive models on children's behavior?
a. Bandura
b. Pavlov
c. Watson
d. Skinner

43. In John B. Watson and Rosalie Rayner's experiment, "Little Albert" began to fear all objects that were white and furry because of
a. discrimination
b. generalization.
c. systematic desensitization
d. all of the above

44. A test is reliable when it
a. measures what it is supposed to measure
b. measures intelligence.
c. gives similar scores every time it is used.
d. measures achievement

45. A test is valid when it
a. measures what it is supposed to measure
b. measures intelligence.
c. gives similar scores every time it is used.
d. measures achievement

46. What is the memory process that locates stored information and returns it to consciousness?
a. retrieval
b. storage
c. encoding
d. interference

47. Chunking is the
a. Elaboration of information in short-term memory storage into long-term memory
b. Process of passing information from sensory memory to short- term memory
c. Actual storage process of information in long-term memory
d. Method used to increase the amount of information one can hold in short-term memory

48. Chunking, mnemonics, and rehearsal are all ways of _____ information.
a. Relearning
c. Encoding
b. Priming
d. Retrieving

49. Memory in which people recall events in great detail is called
a. semantic memory.
b. flashbulb memory.
c. implicit memory.
d. iconic memory.

50. Sad feelings that trigger memories of another sad time are an example of
a. state-dependent memory.
b. echoic memory.
c. context-dependent memory.
d. sensory memory.

Table I1. *Question Number, Unit, and Answers to Pre- and Posttest*

Question	Unit	Answer
1	1	b. William James
2	1	a. clinical psychologists
3	1	b. changes that occur throughout the life span
4	1	a. external rather than internal influences.
5	1	b. B.F. Skinner
6	1	b. the effects of biological factors on our behavior.
7	1	a. applied research
8	1	c. hope to avoid bias in their study
9	1	c. negative correlation.
10	1	c. 1900s, with the founding of psychoanalysis.
11	1	c. unconscious motives and conflicts.
12	1 & 2	b. biological
13	1	d. the scientific study of observable behavior.
14	1	b. Sigmund Freud.
15	1	a. the ways in which people change over time.
16	1	b. may drop out.
17	1	c. naturalistic observation.
18	1	a. may have expectations that affect their observations.
19	2	a. occipital lobe.
20	2	b. word recognition
21	2	b. hormones
22	2	c. endorphins
23	2	d. MRI.
24	2	a. hypothalamus.
25	2	b. transmit information from the central nervous system to other parts of the body.
26	2	d. cerebellum.
27	2	d. frontal lobe.
28	2	b. Axons

29	3	c. difference threshold
30	3	a. pupil
31	3	d. cones
32	3	b. a binocular cue
33	3	d. balance
34	3	c. kinesthesis
35	3	b. smell
36	4	b. classical conditioning
37	4	a. automatically
38	4	a. modeling
39	4	c. a conditioned stimulus is no longer followed by an unconditioned stimulus.
40	4	a. reinforcement
41	4	d. mirror neurons
42	4	a. Bandura
43	4	b. generalization
44	5	a. gives similar scores every time it is used
45	5	c. measures what it is supposed to measure
46	5	a. retrieval
47	5	d. Method used to increase the amount of information one can hold in short-term memory
48	5	c. Encoding
49	5	b. flashbulb memory
50	5	a. state-dependent memory

APPENDIX J

CONSENT/ASSENT FORM

Dear Parent/Guardian(s),

My name is Nicole Ritter and I am a doctoral candidate in the Education Department at the University of South Carolina. I am conducting an action research study as part of the requirements for my degree in Curriculum and Instruction, and I would like your student to participate.

The purpose of my research is to study the effects of an instructional design model known as *flipped classroom.* As a part of our psychology class we will be engaging in flipped classroom lessons. I will be studying how the methods influence student motivation, learning, and perceptions of the instructional experience. Before the instruction begins, students will take a pre-test. At the conclusion of the instructional units students will take this test again so that we can measure their progress. Students will also complete a questionnaire designed to measure their motivation throughout the units. My data collection will conclude with volunteers willing to participate in interviews about the units.

Each student will be requested to complete the survey. This survey is designed to measure the influence of the instructional strategies on student motivation. Along with this survey, I will interview volunteers while on campus at Rohn High School. These interviews should last 30 minutes and will include questions about their perceptions of the instructional design methods. The interview will be audio taped so that I may have an accurate record. This audio recording will only be reviewed by myself and my research team. The recordings will be destroyed after the study is completed.

Participation in this study is confidential and names will be protected. The results of this study may be published or presented professionally, but student identity will remain anonymous.

If you would like to discuss any part of this study with me, I can be reached at the number above or at [redacted] or by email at Nicole.Ritter[redacted]. My faculty advisor at the University of South Carolina, Dr. Arslan-Ari can be reached by email at Arslanai[redacted]

Thank you for joining me on this investigation. Please sign below to allow your student to participate in the instructional methods and surveys. As stated, interviews will be selected on a voluntary basis. Please send back to me with your student.

Sincerely,

Nicole Ritter
Rohn High School

I give permission for my student, _____, to participate

_____

Print Name of Parent

_____ _____

Signature of Parent Date

*For Minors 13-17 years of age:

My participation has been explained to me, and all my questions have been answered. I am willing to participate.

_____ _____

Print Name of Minor Age of Minor

_____ _____

Signature of Minor Date