# THE USE OF GOAL SETTING AND PROGRESS SELF-MONITORING WITH FORMATIVE ASSESSMENT IN COMMUNITY COLLEGE TO INCREASE ACADEMIC ACHIEVEMENT AND SELF-EFFICACY

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ABSTRACT

The study examined the effects of formative assessment on community college students' content-specific vocabulary skills, academic achievement and academic self-efficacy. Sixty-one community college students who were enrolled in Developmental Psychology took part in formative assessment only ($N = 24$), formative assessment in conjunction with goal setting and self-monitoring ($N = 19$) or no formative assessment ($N = 20$). It was hypothesized that students who took part in formative assessment in conjunction with goal setting and self-monitoring would achieve higher content-specific vocabulary skills, academic achievement and academic self-efficacy from pretest to posttest when compared to students who took part in formative assessment only and no formative assessment. Findings indicated that students in both of the formative assessment groups had significantly higher content-specific vocabulary skills from pretest to posttest when compared to the control group. Implications for formative assessment practices with community college students and the lack of support for the hypotheses are discussed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

Statement of the Problem

The current investigation is aimed at understanding the impact of student involvement in their own learning (e.g. setting learning goals and monitoring their own progress) when formative assessment is used in a community college setting. Specifically, it is hypothesized that formative assessment in conjunction with student goal setting and self-monitoring will increase academic achievement and self-efficacy to a greater extent than formative assessment alone. In the proposed research, formative assessment takes the form of a practice known as SAFMEDS, which is used to help students become fluent in course-specific vocabulary. Getting students involved in their own learning can be a struggle for instructors. Therefore, more support for student involvement is needed in order for instructors to utilize the practice with their students. Community college students are the target in the study because of the many academic and environmental barriers that they face.

The past decades have produced a higher education student body that is overall larger and tremendously diverse in terms of age, gender, ethnicity, and socioeconomic status. The number of "traditional" students has declined sharply. Only 16% of the student population is between the ages of eighteen and twenty-two, attends college full-time, and lives on campus (McCabe & Day, 1998). Some common characteristics of the remaining college students who are considered "non-traditional" are those who attend college on a part-time basis, hold down full-time jobs, and are older than 25 years old. Whether "traditional" or "non-traditional", an important additional demographic is that a great deal of the student body are the first generation in their family to attend college.

Recent surveys conducted by the National Center for Educational Statistics found that nearly 37% of undergraduate students were classified as having a disability (U.S. Dept. of Education, 2003 – 2004). Approximately seven years prior, the number of undergraduates with disabilities was only 5% (U.S. Dept. of Education, 1995 – 1996). Learning disabilities make up the majority of disabilities served in higher education (NCES, 1999).

Many students of this new higher education population will begin their college education at a community college. Community colleges offer open student enrollment, therefore; prospective students do not face the grade point average and standardized test score requirements of a four-year college. Unfortunately, it has been suggested that the open door policy of community colleges is more like a revolving door (Roueche & Roueche, 1999). Many students entering community college are academically underprepared, as evidenced by a high percentage (approximately half) requiring remediation in at least one subject to enroll in a college-level course or degree program (McCabe & Day, 1998).

First-generation college students make up a large percentage of community college populations. Being academically underprepared for college is not the only obstacle that these "non-traditional" students face. First-generation students may cope with pressures from family members to succeed in their first-time endeavor. These students are typically economically disadvantaged, they have to face the culture of college of which they have little knowledge, and these obstacles lead to self esteem and self-efficacy being lower among these students (Inman & Mayes, 2009). Moreover, most first-generation students must sustain employment while attending college.

Overall, community college students play many roles in their lives besides being a student. Opposing responsibilities like employment, parenthood, homeownership, caretaking,

and being a spouse are common. Whereas four-year traditional students might juggle their education with part-time employment, community college students tend to take on more responsible roles which can make it difficult for these students to identify with being a college student. Compared to four-year traditional students, community college students cannot commit themselves as much to being a student. It has been shown that employees who do not identify with their work role have lower self-efficacy and motivation for their work and the same is true for community college students (Osborne, 1997). When community college students have difficulty identifying themselves as students, academic difficulties are likely to arise. Therefore, it is postulated in this study that it is advantageous for students to be more involved and aware of their own learning so they can identify more with being a college student.

When academically underprepared students start at a community college most of them are required to take remedial classes before they can register for college-credit courses. As mentioned earlier, most community college students have financial disadvantages and limited time to take courses. The practice of requiring remedial courses for community college students has come under much scrutiny. One reason is that economically disadvantages students need to pay tuition for courses that do not count for credit. Another reason is that there is minimal evidence to support the efficacy of remedial courses actually preparing students for college-level courses (Grimes & David, 1999). Perhaps when students are forced to take courses for which they need to pay but will not count for credit low motivation on the part of the student may result. The result is students being placed into college-level courses who are likely to remain underprepared. Instructors who teach remedial classes have the training to instruct underprepared students but when those students reach college-level courses those instructors have minimal training in pedagogy aimed at students in need. With little support for the

effectiveness of remedial courses on preparing these students, community college instructors may have to alter teaching and assessment methods to accommodate for this. As such, the current investigation will use formative assessment with the intention of providing students with a tool to help them become engaged in their own learning.

Typical placement tests that incoming community college students are required to take are in the areas of reading, writing, and math. Regardless of placement scores and the need for remedial courses, a recent self-report survey indicated that incoming community college students feel least prepared for college in the areas of reading and vocabulary (Byrd & MacDonald, 2005). As students progress through courses they will be introduced to new vocabulary which they will need to master. Community college instructors may need to take the initiative of planning instruction that will aid students in learning the vocabulary of a course since students are entering college with low self-efficacy for vocabulary. Goldstein and Perin (2008) compared the academic success of community college students in psychology courses who took remedial English and those who did not and found that students who took remedial English performed significantly better in the psychology courses. Perhaps the perception of lacking in preparedness for reading and vocabulary takes precedence over actual skills. Therefore, students in content courses who have not taken remedial English could also benefit from instructors integrating instruction on content vocabulary. In this study, student's learning goals will be to become as fluent as possible in the "language" of the course. Academic achievement and self-efficacy for the course should increase when students are more knowledgeable of the vocabulary that is used in a course.

Guffey, Rampp and Masters (1998) suggest a paradigm shift from pedagogy (which is Latin for "child-leading") to andragogy (which is Latin for "man-leading") for underprepared

students. Andragogy is typically executed for adult education. When using andragogy students must: 1) believe that learning is possible, 2) understand that learning is their personal responsibility, 3) understand that learning is a process and builds on what is already known, 4) understand that learning is most likely to occur when it is planned, and 5) allow the instructor to aid in developing specific plans for meeting learning goals. As previously mentioned, the majority of community college students are considered underprepared for higher education learning. Respectively, andragogy seems more applicable to community college students since their life responsibilities are more like adults than children.

It is poignant that the first proposal of andragogy is for students to believe that learning is possible. A student's belief that learning is possible is equated with the concept of self-efficacy. Self-efficacy is a metacognitive thought a student has pertaining to the actual skills one has that are required to perform a task and an estimate of personal competency to perform the task (Bandura, 1997). In order for students to believe that learning is possible they need to have the skills necessary to perform as well as the confidence to achieve. Therefore, self-efficacy contains two necessary components: skill and confidence. When a student is lacking in one or both of these aspects, self-efficacy is low. Since many incoming community college students do not have the academic skills necessary for higher education it is logical that they lack self-efficacy. Academic self-efficacy can be broad or it can be specific. Underprepared students lack global academic self-efficacy but may have high self-efficacy for a specific subject. Students that have high self-efficacy in a specific subject were likely to have succeeded in that subject area in the past. Research indicates that the most significant factor that positively influences self-efficacy is past academic achievement (Zimmerman, 2000). It is not likely for students to have high self-efficacy in an academic area in which they struggled in the past. On the contrary,

students who excelled in a subject like geography in high school are likely to feel prepared to take a geography college-level course since they have succeeded in the past.

Studies have shown that when students have low self-efficacy they tend to avoid tasks for which they lack confidence, be less intrinsically motivated, select goals that are less challenging, disbelieve that they can succeed with more effort, are less likely to disregard faulty learning strategies, persist less when faced with adversity, and are more prone to stress, depression, and anxiety (Bandura, 1997; Schunk, 1996; Zimmerman & Kitsantos, 1999).  Students who have low self-efficacy tend to take part in many academic self-destructive behaviors that can lead to psychological distress.  Therefore, the first task in andragogy is not an easy one.  However, research indicates that an effective means of raising self-efficacy among students is to have students set realistic learning goals, make sure that students are working toward accomplishing those goals, and provide help when adequate progress is not being made (Caprara et al., 2008).  Students will agree upon realistic learning goals with the instructor and will continually monitor their vocabulary progress for gaps between actual and projected learning.

Historically, higher education has been teacher-centered.  A teacher-centered atmosphere is one where the instructor acts as the "sage on the stage", providing subject matter information to students which will then be in the form of a test on a later date.  This type of instruction assumes that the learner has the skills (or will use outside resources to acquire the skills) in order to succeed in the course.  Simply assuming that students (especially students who are early in their higher education) have the skills or will obtain them is negligent and could be setting them up for failure.  As mentioned previously, raising self-efficacy is possible when students set realistic learning goals, work towards those goals, and get help when progress is not being made. This raises the question of what instructors can do to raise the self-efficacy of their students

without completely revamping their instructional techniques. One area where instructors can rethink their teaching in order to promote self-efficacy is the way in which they assess learning.

Assessment of student learning is a purposeful act, generally performed by a teacher or an instructor. Summative assessment occurs when the purpose of assessment is to measure student achievement by way of the instructor testing students after instruction has occurred and then assigning a letter or numerical grade (Snowman & Biehler, 2006). Assessments that are carried out in higher education by instructors typically have the common purpose of measuring student performance after instruction has occurred over a period of time. This type of assessment emphasizes finite learning to students and reinforces students to learn based on a series of performances prescribed to them by the instructor as opposed to develop learning goals for the course and for future learning.

Formative assessment however occurs when the purpose of assessment is to monitor student progress so students and instructors can make informed decisions about future learning and instruction (Snowman & Biehler, 2006). Whereas summative assessments are commonly referred to as assessment of learning, formative assessments are referred to as assessment for learning because formative assessments are used to improve the quality of the learning process (Black & Wiliam, 2003; Torrance & Pryor, 1998). Formative assessments are designed to guide learning and are not utilized as outcome measures. Therefore, they are not graded with numbers or letters. The act of continuously measuring student learning in short intervals is done to make students and instructors aware of discrepancies between what students should know and what they actually do know (Boston, 2002).

A crucial element of formative assessment is feedback. Feedback can take many forms but formative feedback is designed to make students aware of a knowledge gap (the difference

between what a student currently knows and a desired learning objective) and to develop strategies to improve learning to fill that gap (Sadler, 1989). According to Black and Wiliam (1998), the feedback that instructors give to students during summative assessments is directive and the feedback given during formative assessment is facilitative. Directive feedback simply tells a student what is incorrect and what needs to be corrected. Directive feedback makes students aware of the knowledge gap and ends there. Facilitative feedback makes students aware of the knowledge gap by focusing on error correction and provides ideas for strategies to correct the errors. Shute (2008) deems facilitative feedback as formative assessment and in order for feedback to be formative it needs to contain two features, verification and elaboration. The learner is since verification when the instructor makes the judgment of whether knowledge is correct or incorrect and elaboration is since by the instructor to the learner by providing relevant cues to guide the learner toward correcting flawed knowledge. In this study, the quarterly learning goals that students set will be monitored by the instructor. When learning goals are not met the instructor will provide facilitative feedback to aid the student to lessen the gap between what is learned and what remains to be learned.

As mentioned earlier, realistic goal setting is important for students with low self-efficacy. When instructors use formative assessments they do not have to ask students to set achievement goals but when working with students with low self-efficacy goal setting may be beneficial. Student achievement goals should be short-term, highly specified and reasonably challenging (Caprara, et al., 2008). Goal setting when using formative assessment could be a useful way for students to continually compare what they expect to achieve and what they actually achieved and use that information to make an informed decision about how to lessen the gap. Since formative assessment should be carried out often, short-term goals are appropriate.

Also, the instructor can communicate with each student to decide on a specific goal that is challenging enough to cause effort and not be too high to guarantee failure. Therefore, realistic goal setting can certainly be achieved when using formative assessment. But, instructors should be cautious that their formative assessments do not end up being a series of summative assessments. When students do not set goals and are not given opportunities to make decisions based on their assessment performances, facilitative feedback is the least that the instructor needs to provide, otherwise summative assessments are being used.

Besides realistic goal setting, it has also been found that student self-efficacy improves when teachers require them to monitor their own behaviors (studying habits, learning strategies, achievement, etc.) (Ridley, Schutz, Glanz, & Weinstein, 1992). Self-monitoring is a procedure in which students systematically observe and record their own behaviors (Bandura &Locke, 2003). It is possible that students who are required to do both (set goals and monitor their own progress) may feel a greater sense of self-efficacy and have greater academic success when instructors require both while using formative assessment.

In summary, community college students are typically underprepared for higher education and they tend to have a low sense of academic self-efficacy. Higher education classrooms are dominated by teacher-led instruction which does not facilitate enhancing the self-efficacy of students. Although the proposal of a paradigm shift from pedagogy to andragogy exists for instructors who teach community college students, it is not realistic to believe that this shift is going to occur. Instead, a more realistic goal could be to address one of the goals of andragogy which is getting the students to believe that learning can occur. This study proposes that the use of formative assessment coupled with goal setting and progress self-monitoring will

improve academic self-efficacy and academic achievement among community college students to a greater extent than formative assessment alone.

DEFINITION OF TERMS

**Andragogy -** A educational practice which is typically executed in adult education settings where must: 1) believe that learning is possible, 2) understand that learning is their personal responsibility, 3) understand that learning is a process and builds on what is already known, 4) understand that learning is most likely to occur when it is planned, and 5) allow the instructor to aid in developing specific plans for meeting learning goals (Guffey, Rampp and Masters, 1998).

**Formative assessment -** Assessment that is meant to monitor student progress so students and instructors can make informed decisions about future learning and instruction (Snowman & Biehler, 2006).

**SAFMEDS -** A paired association learning technique performed in the form of timed flashcards which promotes fluency of information (Eshleman, 2000).

**Self-efficacy -** A metacognitive thought a student has pertaining to the actual skills one has that are required to perform a task and an estimate of personal competency to perform the task (Bandura, 1997).

**Summative assessment -** Assessment that is meant to measure student achievement by way of the instructor testing students after instruction has occurred and then assigning a letter or numerical grade (Snowman & Biehler, 2006).

CHAPTER TWO

REVIEW OF THE LITERATURE

The current education system in the United States focuses primarily on outcomes. Students are subjected to rigorous testing with the objective of administration focusing on the results of those tests. Starting at the elementary level, teachers administer assessments that focus on the end-product of learning rather than learning progress. This has created a culture of students who focus on end results rather than progress.

Until recently, the majority of research focused on formative assessment was performed in European countries. Since the No Child Left Behind Act became a law in 2002, there has been an increase in demand and implementation of formative assessment in United States schools. No Child Left Behind (NCLB) requires all public schools to administer a state-wide standardized test annually to all students. Each state has proposed a series of staged targets for achieving the overall goal. Each school is judged as making 'adequate yearly progress' (AYP) towards this goal if the proportion of students being judged as 'proficient' on annual state-produced tests exceeds the target percentage for the state for that year. Furthermore, the AYP requirements apply not only to the totality of students in a grade but also to specific subgroups of students (i.e., ethnic group minorities), so that it is not possible for good performance by some student subgroups to offset poor performance in others (Woolfolk, 2008).

Failure to make AYP has severe consequences for schools and, as a result, many schools and districts have invested both time and money in setting up systems for monitoring what the teachers are teaching and what students are learning. There has been an increase in monitoring student progress through the use of regular formal tests that are designed to predict performance on the annual state tests. The idea of such regular testing is that students who are likely to fail

the state test, and may therefore prevent the school from reaching its AYP target, can be identified and given additional support. Monitoring of student progress has been described as formative assessment. In actuality it appears that the process is more like numerous summative assessments with the purpose of having an early warning sign for those who may not pass the annual exam. This seems helpful but little is known whether the progress monitoring has an impact on student learning or whether it simply prepares them to take the annual exam. While teachers appear to have considerable freedom to devise assessment systems that integrate summative and formative uses, the obstacles to doing so are substantial, and well entrenched (Black & Wiliam, 2005). More research is needed to clearly define formative assessment so it can be implemented with students of all grades (elementary, secondary, and beyond) to positively impact student learning for better academic achievement.

*Formative assessment in elementary and secondary education*

As stated earlier, formative assessment research has predominately performed outside of the United States. Also, the populations that this research has investigated are elementary and secondary students. In a six-month study of six schools in England, Wiliam et al. (2004) collaborated with 24 secondary science and math teachers to develop formative assessment techniques for use with their students. The overall goal of the study was to see if supporting teachers to use formative assessment will result in teaching improvement and teacher's attitudes toward formative assessment. Teachers developed and implemented a total of 24 formative assessment activities including teacher questioning, comment-only marking, pupil self-assessment, and group work. Teachers found it time-consuming and challenging to come up with ways to use formative assessment in the classroom. The intervention was considered successful with the majority of teachers believing that the quality of their teaching improved as a

result of using formative assessments and they would continue to use it after the study was completed. Only two of the teachers planned on going back to "normal teaching".

Torrance and Pryor (2001) engaged teacher-researchers in a more enlightening activity. Teacher-researchers videotaped numerous sessions of themselves teaching their students prior to the study. Teacher-researchers viewed their current teaching practices from the previously recorded videos. Many teachers realized that the purposes of classroom activities were not being made clear to students, too much time was being spent on behavioral goals as opposed to learning goals, and students were rarely given opportunities to explore their own understanding of content. The researchers then presented a model of formative assessment to the teacher-researchers and proposed performing formative assessment with students. The model depicts the importance of making task and quality criteria explicit and of using directive feedback. In collaboration with the researchers, teacher-researchers then formulated action plans to use formative assessment in the classroom. Teacher-researchers were asked to continually reflect on their formative assessment practices. Overall, they perceived their teaching to be enhanced in such a way that students were concentrating more time on learning goals and understanding the objectives of classrooms activities. The study was confirmed as a beneficial professional development for the teacher-researchers.

Formative assessment is also useful to teachers to gain information about the entire class in order to make adjustments in future teaching. Cowie and Bell (1999) helped teachers to realize this when they performed a two-year study which asked 10 secondary education teachers in New Zealand to develop formative assessments which focused on obtaining knowledge about the performances of students as a whole class. By aggregating student performance data and using it collectively, teachers were able to use that information for future instructional purposes,

as a way to guide their teaching. Specifically, the feedback that teachers received from the assessments guided teacher's instruction during the present class and also for future classes. When teachers realized patterns in student feedback, the feedback helped them to prepare for instruction of certain content to future students. Teachers also performed a type of formative assessments called interactive. Interactive formative assessment is a social experience where the teacher notices a gap in knowledge and responds immediately usually through verbal communication. Although teachers viewed this type of formative assessment as valuable, it was most successfully executed by veteran teachers. Novice teachers found formative assessment practices difficult to develop and more difficult to execute.

Much research has focused on developing models of formative assessment, realizing the benefits of formative assessment from a pedagogical perspective, and ways to support teachers to engage in formative assessment. The personal perspective of the student is ignored. Students are accustomed to summative assessments in school. The integration of formative assessment into instruction may take some getting used to for students. Cowie (2005) investigated 10 secondary science classes in New Zealand where formative and summative assessments were being used with students. When the researchers asked students specifically about the formative assessments that they take part in, students were overwhelmingly in favor of formative assessment over summative assessment. Notably, directive feedback rather than feedback that focuses on right and wrong seems to facilitate student's respect for the teacher. Respect was reinforced when students asked the teacher a question about the feedback that s/he received and when the teacher was willing to elaborate on the feedback when needed. Overall, students perceived themselves as active and intentional participants in formative assessments.

Perhaps the most salient literature on formative assessment is contained in "Assessment for Learning: Putting it into practice" by Black and Wiliam (2003). For teachers who wish to become more knowledgeable about and use formative assessment with their students, there are not many resources to turn to, but this serves that purpose. Black and his colleagues describe the ways in which 36 teachers developed and carried out formative assessment techniques with their students over a 2-year period. The study reveals an in-depth look at the intricacies of developing formative assessments that meet the needs of various classes, including teacher commentary about the experience. What sets this study apart from others is that the researchers set out to reveal that formative assessment has a direct impact on student achievement. When compared to control classes, the experimental classes that received formative assessment obtained significantly higher scores on standardized achievement tests. Due to the rarity of the study, no further investigations have tried to replicate these findings. But, it does beg for further research.

A recent study of formative assessment in United States schools (Furtak et al., 2008) focused on the implementation of formative assessment by videotaping teachers in a public school. The teachers all professed to use formative assessment with their students. Just as summative assessments can take many forms (written research papers, objective exams, journal writing, etc.) the same is true for formative assessment. Therefore, it is important to see the formative assessment techniques that teachers use and how successfully they are implemented. Teachers were videotaped for a semester to record what kind of formative assessment was implemented and to judge the fidelity of the implementation. It was revealed that low fidelity results when formative assessments take the form of whole class discussions and getting student explanations of concepts. On the contrary, fidelity is more likely to occur and more student learning occurs when formative assessment is explicit. Specifically, teachers who use a pretest-

posttest method of formative assessment are more likely to maintain fidelity in the practice and engage the students in their own learning. Formative assessments needed to be well designed and explicit in order to produce the desired result. Formative assessments tend to become lax when they are simply embedded into teacher-led instruction.

As mentioned earlier, teachers in United States schools are being encouraged to use formative assessment to attempt to catch those students who are in danger of not passing the annual exam for NCLB. Unfortunately, some teachers may not have the proper understanding of what formative assessment is and how to implement it. Even when teachers are given explicit instructions of how to embed formative assessment into instruction, it is not always accomplished. Yin et al., (2008) provided teachers with explicit formative assessment techniques to embed into instruction with the intention of comparing how students who were exposed to formative assessment would be different in terms of motivation, conception, and achievement. Results indicated that no significance was found for those variables between students who were exposed to formative assessment and students who were not exposed to formative assessment. It was explained that this result was likely due to teachers not being able to properly execute formative assessment with their students.

The lack of pre-service teacher training in formative assessment is recognized particularly by experienced teachers who mentor new teachers. This recognition has led researchers to investigate how mentors can help new teachers become more skilled in the practice of formative assessment. Athanases and Achinstein (2003) followed a group of mentor/new teacher pairs for two years. As suspected, most new teachers used summative assessments and had not considered using formative assessments. The bothersome part was that new teachers continued to use summative assessments even after it was evident that students

were not benefiting (i.e., giving graded quizzes each week that continually resulting in poor performance). New teachers seemed to be most frustrated with students who were low-performing and seemed to need specialized instruction. In such times of frustration, mentors suggested and trained the new teachers to use formative assessment techniques with these students or with the class as a whole. Not surprisingly, new teachers found formative assessment to be challenging but helpful. Mentors viewed the new teachers as being in survival mode for the first year and more able to use formative assessment in the second year. Overall, the study revealed that whether or not new teachers were trained in formative assessment as a pre-service teacher, many did not use it. Unfortunately, if new teachers do not use formative assessment they may not utilize it as time progresses. Therefore, when given the proper support from a more experienced teacher, new teachers may bring formative assessment into their classrooms.

Formative assessment may be more challenging for novice teachers because most of their assessment training focuses on summative assessment. The first time that most education majors read about assessment is during their first educational psychology course. A recent review of the most widely used educational psychology textbooks revealed a great deal of inconsistent coverage of formative assessment (Wininger & Norman, 2005). Firstly, formative assessment is sometimes referred to as formative evaluation. Regardless of the term used, definitions of what makes assessment or evaluation formative differed from text to text. Most definitions contained common elements, but one text defined it solely as a diagnostic tool. Importantly, the value that is given to formative assessment differed among texts. Some texts described it as helpful and useful while others described it as essential. More importantly, across all texts the amount of coverage of summative assessment greatly exceeded that of formative assessment. While formative assessment received on average a few paragraphs of coverage, summative assessment

received the remainder of the assessment chapter.  With the assessment emphasis clearly on summative assessment, this may lead pre-service teachers into the preconceived notion that formative assessments are less important and should be used infrequently.

*Formative assessment in higher education*

Higher education instructors do not face the same accountability issues that teachers in the United States face.  Higher education instructors are experts in their field, as a result of having an advanced degree and experience in their field.  Unlike teachers they do not go through years of rigorous teacher training.  Instructors do take part in professional development which is at the discretion of the instructor.  Professional development can range from learning how to incorporate technology in the classroom to publishing a journal article.  Therefore, implementing formative assessment in higher education is a great challenge because assessment is dominated by summative practices and instructors have not been trained to use formative assessment.

Higher education institutions are filled with students who are there for various reasons, but the majority of students are there because they are seeking a credential.  Attending a higher education institution to obtain a credential is not out of want but out of need.  A college or technical degree is a prerequisite for nearly every job in today's market.  Therefore, students may perceive higher education as a forced necessity rather than a learning experience, meant to prepare them for a career.  It has been suggested that higher education may be reinforcing student's mentality by being overly concerned with grades and performance goals rather than learning (Taras, 2002).  Without a doubt, this factor alone makes formative assessment difficult to execute in a higher education setting.  Because formative assessments should not be graded, students may be less likely to take seriously assignments that do not count toward a final grade.

Graded summative assessments may support finite learning. Summative assessments typically do not build upon one another which may lead students to leave previous learning behind as a course moves forward.

Instructors who rely solely on summative evaluations may create authoritarian atmospheres in their classrooms. Students are aware that the instructor has power over them by creating graded assignments which are only used for assessing their learning after instruction has occurred. Instructors have to be authority figures to a certain degree in order to maintain order in a classroom, but in terms of assessment, there is an alternative. Instructors can share their power with their students by using formative assessment. Instructors can empower students by providing feedback regarding how to fill that gap between what they know and what they need to know, ultimately placing accountability onto the student (Black & Wiliam, 1998). Feedback given to students which focuses on how students can improve performance (task-oriented) is favorable to feedback that focuses only on what they have accomplished (ego-oriented) because the attribution of student performance becomes more internal (Wiliam, 1999). Formative assessment in higher education may aid students in becoming more self-regulated learners (Ames, 1992). Formative assessments help instructors and students take a proactive approach to learning. When the gap exists, feedback is given to the student to direct further learning to close the gap. Summative evaluations are merely reactive to learning.

Education in general has undergone a change in focus from teacher-centered to student-centered over the past few decades, with buzz words like authentic learning and life-long learning particularly in higher education. Formative assessments, which empower students and help teachers instructionally, could help to create a student-centered atmosphere in higher

education.  Even among healthcare training programs which advocate authentic and lifelong learning in higher education rely heavily on summative assessment (Rushton, 2005).

A shift to completely using formative assessment in higher education is neither realistic nor necessary.  Both formative and summative assessments serve important functions in higher education, which may be the shift that is needed to be recognized and implemented.  Roberts et al. (2005) used formative and summative assessments to measure competence of psychology majors preparing to graduate.  It is widely recognized that knowledge is not the only tool that students needs in order to become a professional once they finish college.  Therefore, the researchers used a combination of assessments to measure the construct of competence.  Students were made aware of the criterion in terms of the knowledge, skills, and habits that needed to be demonstrated.  The researchers used explicit self-assessment with the students as formative assessment.  The purpose of explicit self-assessment was to get the students to continuously assess their own progress, to continue to use self-assessment as a professional, and to prepare students for summative assessments.  The study revealed a model for future use but it was unclear of the effects of formative assessment.

Bonwell (1997) suggests that in order for formative assessment to be successful in higher education, assessment criteria must be made explicit and students need to be trained on how and when they will be used.  It is erroneous to assume that all college students have the metacognitive skills to perform self-assessments successfully.  Guidance is essential in formative assessment.  It is nerve-wracking enough to students when an assessment is not graded; imagine how they react if they do not understand the objective behind an assessment.  On the bright side, having students assess themselves against a criterion may lessen some anxiety in seeing what the instructor deems important.

*Progress self-monitoring*

Early literature on formative assessment states that when an instructor is performing formative assessment with students, the ultimate goal is to transition from the instructor continuously giving feedback to the students continuously performing self-monitoring, so as to not sustain student's dependence on the instructor (Sadler, 1989). In order for the transition to occur, "the learner has to (a) possess a concept of the standard (or goal, or reference level) being aimed for, (b) compare the actual (or current) level of performance with the standard, and (c) engage in appropriate action which leads to some closure of the gap" (Sadler, p.121). Plainly, students must be aware of an objective or a goal that needs to be met, have multiple opportunities to compare personal progress to the goal, and select a strategy to bring their own performances closer to the goal. Students should learn how to self-monitor not only for the current class which they are in but self-monitoring is a skill that instructor's can prepare students to use in the future or other classes.

Support for progress self-monitoring comes especially from studies with learning disabled students. Sawyer, Graham, and Harris (1992) found that strategy instruction with explicit self-monitoring improved fifth and sixth grader's writing composition more than direct instruction or strategy instruction alone. Importantly, self-monitoring made a significant difference in writing performance for both learning disabled students and for normally achieving students. Self-monitoring is a technique that can benefit both disabled and normally achieving students. Teachers and instructors who are searching for an instructional technique that fits diverse intellectual abilities in one class could use self-monitoring.

Self-monitoring has also been shown to be associated with more improvements in achievement even when compared to teacher- or peer- monitoring. McCurdy and Shapiro (1992)

found it highly effective for students to set their own learning goals for themselves and to continually monitor their progress toward the goal. Students' progress increased when they were being monitored by someone else (the teacher or the peers) but the overall effect of self-monitoring was larger. It is possible that if students are given the liberty to set their own learning goals that are not based on grades the motivation for achieving the learning goals becomes internalized which may facilitate students to achieve for themselves rather than for someone else. Santi and Vaughn (2007) recently reviewed the literature on progress monitoring and declared progress monitoring as an essential part of instruction. Progress monitoring, whether it is performed by the students or the teachers, provides real-time data that should be used to make pedagogical decisions by teachers and learning decisions by students.

*SAFMEDS*

The acronym SAFMEDS stands for: Say All Fast a Minute Every Day Shuffled. SAFMEDS is similar to flashcards but the objective of using SAFMEDS is not to promote memorization of facts; rather the technique is used to help students recall information quickly by holding timed drills with cards. SAFMEDS are a "paired-association" learning technique (Eshleman, 2000). Students receive a deck of cards that generally range between 50 – 100 cards that were constructed by the instructor. The object is to "pair" the object or statement on the front of the card with the answer on the back of the card. A simple example would be SAFMEDS designed to get children to learn animal names. These cards would have an image of an animal on the front and the written name on the back. During SAFMEDS, students see what is on the front of a card, say what is on the back and then quickly move on to the next card. SAFMEDS are performed in brief, timed sessions, no more than one minute. The beginning

objective is to build student's speed and accuracy. The overall goal is to obtain stable, fluent performance on SAFMEDS.

SAFMEDS are an activity associated with concept of precision teaching (Lindsley, 1990). Precision teaching is a method that enforces students to become fluent in material as well as monitor progress. Traditionally, precision teaching has been executed with learning disabled students. Byrnes, Macfarlane, Young, and West (1990) used SAFMEDS with secondary-level disabled students as a way to teach them minimum vocabulary. Students' vocabulary knowledge significantly increased as evidenced by the high number of students who were able to pass the minimum skills vocabulary test. A poignant study to support fluency exercises comes from Stump et al. (1992). Researchers used a similar fluency exercise like SAFMEDS to increase vocabulary mastery for students in grades 8 through 12 of all ability levels. There was an overall increase in vocabulary skills among all students, not just disabled students. Moreover, teachers who were trained to use the fluency exercise with their students indicated that they could see the improvements students made because of taking part in the fluency exercise. The teachers indicated that they were committed to continue using fluency exercises with future students.

*Academic self-efficacy*

Academic self-efficacy is the belief a student has pertaining to the actual skills one has that are required to perform a task and an estimate of personal competency to perform the task (Bandura, 1997). Academic self-efficacy contains two necessary components: skill and confidence. The first year of college is typically an adjustment period for students regardless of whether students are attending college directly after high school or are returning after many years of not being in school. The first year students need to build skills and confidence in their academic abilities. Higher education institutions typically pay close attention to first year

students because it is well known that it is a time of difficult transition. Many institutions offer support services to first year students to cope with the transition. Academic self-efficacy is typically lowest during the first year of college due to the new responsibilities that come with being a college student. Chemers, Hu, and Garcia (2001) followed a group of students throughout their first year of college to find factors related to success during that first critical year. Students with higher academic self-efficacy were more likely to have higher academic performance, be more optimistic, live a healthier lifestyle, and remain in college. It is also important for first year students to feel a sense of belonging to a school in order to remain committed to learning. This can be particularly difficult for community college students, given the transient atmosphere. It has been shown that sense of belonging to a class as well as school in general are more likely to occur for students who have higher academic self-efficacy (Freeman, Anderman, & Jensen, 2007). Therefore, any attempts that can be made to increase student's academic self-efficacy would be potentially beneficial to students.

It is important to build student academic self-efficacy early so they will be confident in future academic tasks and courses. Students who have confidence may be more adept to work toward the competence that is needed in future classes and ultimately in a career. In a recent study of nursing students, students with higher academic self-efficacy were more likely to have higher grades and remain in the program (McLaughlin, Moutray, & Muldoon, 2007). Striving toward academic self-efficacy should be a goal that educators have early in education. It is possible that those students who lack the confidence and competence obtain lower grades which may result in students who are more difficult to reach.

An unexpected benefit of academic self-efficacy is the prevention of academic dishonesty. Various studies support the notion that college students who have lower academic

self-efficacy are more likely to cheat (Finn & Frone, 2004; Marsden, Carroll, & Neill, 2005). Academic dishonesty taking the form of plagiarism, falsification, cheating on tests, copying another student's homework, and having homework done by someone else have been shown to be higher when students have low academic self-efficacy. Perhaps when students feel a lack of confidence and competence in their academic skills they resort to unethical methods.

Adult students returning to school tend to have lower academic self-efficacy than their counterparts. Community colleges have an abundance of students who are age 25 and older. For this reason, it is especially important for institutions to be aware of their students' academic self-efficacy when they enter college. Lundberg, McIntire, and Creasman (2008) found that adult students who were closer to finishing their program had higher academic self-efficacy than students who were just beginning their educational program. Such results seem obvious yet beg for further research into what can be done to help those students who are just starting college to feel the same sense of academic self-efficacy that more seasoned students do.

Perhaps the most noteworthy finding regarding academic self-efficacy is the recent meta-analysis of 109 studies which revealed that academic self-efficacy is a strong predictor of college grade point average and retention in school (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). Overall, research indicates that higher self-efficacy is related to higher academic performance, more sense of belonging, less academic dishonesty, and more student retention. Research is lacking methods for raising college students' sense of academic self-efficacy. With the abundance of research pointing to the benefits of academic self-efficacy there is a call for better understanding of how academic self-efficacy can be raised among college students. The current study will attempt to increase student academic self-efficacy by using formative assessment with goal setting and self-monitoring in a community college.

*Hypotheses*

Hypothesis 1:

Students who take part in formative assessment with goal setting and progress self-monitoring will perform better on SAFMEDS posttest compared to the control group and students who take part in formative assessment alone.

Hypothesis 2:

Students who take part in formative assessment with goal setting and progress self-monitoring will achieve higher course grades than the control group and students who take part in formative assessment alone.

Hypothesis 3:

Students who take part in formative assessment with goal setting and progress self-monitoring will have higher academic self-efficacy from pretest to posttest compared to the control group and students who take part in formative assessment alone.

CHAPTER THREE

METHODS

*Participants*

Students enrolled in undergraduate Developmental Psychology courses at Bucks County Community College during the Spring 2010 semester participated in the study. The following demographic information was collected from participants: gender, age, number of hours worked each week, number of children, number of credits attempting in the current semester, number of credits completed, current grade point average, and academic major.

*Procedure*

Two sections of Developmental Psychology were used as the experimental groups and one section was used as a control group. One experimental group received formative assessment only. The other experimental group received formative assessment plus goal setting and progress self-monitoring. A control group was used for the purpose of a manipulation check. The formative assessment plus goal setting and progress self-monitoring group met on Tuesdays and Thursdays from 9:30 a.m. to 10:45 a.m. The formative assessment only group met on Tuesdays and Thursdays from 11:00 a.m. to 12:15 p.m. The control group met on Tuesdays from 6:30 p.m. to 9:00 p.m.

At the first class meetings of the semester, the researcher provided students in all groups with an 8x10 manila envelope. The envelopes contained a consent form (See Appendix A), a demographic information sheet (See Appendix B), the SELF (See Appendix C), and the SAFMEDS pretest (See Appendix D). The groups were told that the researcher was conducting a study on assessment practices during the 16-week semester. Furthermore, the groups were informed of the assessment procedure that they might encounter (formative assessment only,

formative assessment plus goal setting with self-monitoring, or no formative assessment) during the 16-week semester. Students were asked to sign the consent form indicating whether or not they agreed to participate in the study and return the form to the envelope. Students were given 30 minutes to fill out the demographic sheet and the SELF and return those items to the envelope. The SAFMEDS pretest was administered last for 10 minutes. At the end of 10 minutes, students placed all materials back into the envelope and sealed it. The researcher then collected the envelopes.

Students in the FA only group received a set of SAFMEDS cards (See Appendix E) along with an instruction sheet (See Appendix F). It was explained to the group that at the start of each class students would collaborate as pairs and perform one-minute fluency drills with one another. Students were told that the SAFMEDS exercise was to gain fluency of the language of the course and it was not a graded exercise.

Students in the FA plus group also received a set of SAFMEDS cards and an instruction sheet. It was also explained to the group that at the start of each class students would pair up and drill one another for one-minute. In addition, the FA plus group received a progress monitoring graph (See Appendix G). On the graph, students were told to document the number of times they identified a term correctly and incorrectly during each drill. Furthermore, at the start of the semester, students had to set quarterly achievement goals for themselves. The prescribed achievement goals were the highest number correct a student expected to obtain when performing a one-minute SAFMEDS drill by each quarter. Students were told that the SAFMEDS exercise was meant to gain fluency of the language of the course and it was not a graded exercise.

The first pieces of data that were placed on the student's graphs were their achievement goals. Goal lines were drawn on the graph so students could visibly see how many correct they were working toward for each quarter. Each time a fluency drill was performed, students plotted the number correct and the number incorrect (cards that were not able to be used in one minute are not counted). Accuracy and speed were encouraged when performing drills. As the course progressed, students began to connect the plotted number correct and the number incorrect to allow for visualization of progress.

To maintain integrity of the manipulation, student graphs were collected after each drill and returned at the beginning of class for the next drill. This was done to eliminate the possibility of students losing the graphs, maximizing student participation in the exercise, and minimizing the possibility of students entering false data. Both groups kept the SAFMEDS throughout the semester. Backup SAFMEDS were brought to class in case students neglected to bring the SAFMEDS with them.

At the end of the semester, a similar procedure was followed. All groups received a manila envelope with the following materials: a SAFMEDS posttest and the SELF. In addition to these two items, the experimental groups received a four item survey (See Appendix H) with questions pertaining to their experience using SAFMEDS. As with the pretest, students were allowed only 10 minutes to complete the SAFMEDS posttest. When students were finished completing the materials they returned them to the envelope, sealed it, and the researcher collected them.

*Materials*

The SAFMEDS cards are 50 terms that are generally learned in a Developmental Psychology course. On the front of each card is a statement containing a blank line. On the back

of each card is the correct term that fills in the blank. Students received an instruction sheet informing them how to perform a SAFMEDS drill. A blank graph was provided for students to plot their data after each drill. To measure mastery of SAFMEDS terms, a pretest and a posttest was given to all of the groups. To avoid testing effects, 25 of the 50 SAFMEDS terms were randomly selected for the pretest and the posttest.

*Academic self-efficacy*

Academic self-efficacy was measured using the Self-Efficacy for Learning Form (SELF) (Zimmerman & Kitsantas, 2005). The SELF contains 57 academic scenarios. Participants are asked to respond by stating percentages: 0% (definitely cannot do it), 30% (probably cannot do it), 50% (maybe can do it), 70% (probably can do it), and 100% (definitely can do it). Higher overall scores indicate higher overall self-efficacy. The SELF contains five sub-scales: reading, note-taking, writing, studying, and test-taking. The SELF has a high level of internal reliability (Cronbach's alpha = .96). Alpha values for the five sub-scales are not stated in the literature. Predictive validity is high when predicting students' grade point average ($r = .68$) and their judgments of their responsibility for their academic outcomes ($r = .71$) (Zimmerman & Kitsantas, 2005).

*Purpose and Hypotheses*

The study evaluated the impact of formative assessment alone and formative assessment plus goal setting and self-monitoring on student academic achievement and academic self-efficacy. Past research indicates that formative assessment can increase academic achievement. Moreover, formative assessment in conjunction with goal setting and self-monitoring has resulted in higher student academic achievement. Currently, research has not compared outcomes for these two types of assessment.

The major question this study sought to answer was: "Will community college students who take part in formative assessment in conjunction with goal setting and self-monitoring have higher academic achievement and self-efficacy compared to community college students who take part in formative assessment without goal setting and self-monitoring?" This question is important for college instructors who wish to introduce formative assessment into their courses but are unsure if the benefits outweigh the cost. The cost of doing formative assessment is mainly time for the instructor. Instructors have demanding schedules to cover the required materials for each course. Using formative assessment and formative assessment with goal setting and self-monitoring can be a timely task. It is also an important question for students. College students are hesitant to give their full effort to tasks that are not tied to a grade. Since formative assessments should not be graded, it is important to make it known to students the benefits of taking formative assessments seriously.

Hypothesis 1:

Students who take part in formative assessment with goal setting and progress self-monitoring will perform better on SAFMEDS posttest compared to the control group and students who take part in formative assessment alone.

Hypothesis 2:

Students who take part in formative assessment with goal setting and progress self-monitoring will achieve higher course grades than the control group and students who take part in formative assessment alone.

Hypothesis 3:

Students who take part in formative assessment with goal setting and progress self-monitoring will have higher academic self-efficacy from pretest to posttest compared to the control group and students who take part in formative assessment alone.

CHAPTER FOUR

RESULTS

Descriptive Data

There were two experimental groups (formative assessment only and formative assessment plus progress self-monitoring and goal-setting) and a control group.  The two experimental groups began with thirty participants each.  Due to attrition and unusable data, the final number of participants in the formative assessment only group was 24 and the formative assessment plus group was 19.  The control group began with 20 participants, but, resulted in 18 participants.  The number of females in the study was disproportionate to males.  The formative assessment only group had 18 (75%) females and 6 (25%) males.  The formative assessment plus group had 18 (95%) females and 1 (5%) male.  The control group contained 12 (67%) females and 6 (33%) males.  Overall, there were 48 (79%) female and 13 (21%) male participants in the study.

Forty-three participants (71%) were nursing majors and 6 (10%) were psychology majors.  The remaining participants did not provide a major.  Fifteen (25%) participants came into the class with an advanced degree.  Three (5%) participants in the formative assessment only group had a degree.  Two (3%) had a bachelor's degree and 1 (2%) had an associated degree.  Five (8%) participants in the formative assessment plus group had a degree.  Four (6%) had a bachelor's degree and 1 (2%) had an associate's degree.  Seven (12%) participants in the control group had a degree, all holding bachelor's degrees.  Table 1 presents descriptive data for each group.  Due to outlying data, medians are used instead of means.

Table 1.  Descriptive Data for each Group

|  | FA only | FA+ | Control |
|---|---|---|---|
|  | *Md(SD)* | *Md(SD)* | *Md(SD)* |
| Gender | 75% F 25% M | 95% F 5% M | 67% F 33% M |
| Age | 20.00(6.89) | 21.00(10.27) | 25.00(3.33) |
| Semester credits | 13.00(2.00) | 10.00(3.34) | 6.00(1.28) |
| Total credits earned | 38.00(22.01) | 32.00(20.29) | 27.00(9.11) |
| Employment hours per week | 20.00(10.86) | 21.00(14.27) | 40.00(7.64) |
| Grade point average | 3.23(.59) | 3.00(.63) | 3.23(.66) |

Hypothesis 1:

To address hypothesis 1, a 3 (Group: FA, FA+, Control) x 2 (Time: Pretest and Posttest) mixed repeated measures analysis of variance using scores on the SAFMEDS terms pretest and posttest as the dependent variables.  The means for each group at the pretest and the posttest are presented in Table 2 and the ANOVA summary table is presented in Table 3.

Table 2.  Pretest and Posttest Means on SAFMEDS Vocabulary

|  | Pretest Mean | Posttest Mean |
|---|---|---|
| FA only | 9.87 | 16.33 |
| FA + | 10.11 | 19.72 |
| Control | 9.66 | 12.00 |

Table 3.  ANOVA Summary Table on SAFMEDS Vocabulary

| Source | Df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|
| Group | 2 | 150.818 | 4.332 | **.018** | .132 |
| Error | 57 | 34.81 | | | |
| Time | 1 | 1108.349 | 69.339 | **.000** | .549 |
| Time by Group | 2 | 120.024 | 7.509 | **.001** | .209 |
| Error | 57 | 911.118 | 15.985 | | |

As demonstrated in Table 3, there is a significant main effect for Group and Time and a

significant interaction. A graph of the significant interaction is presented in Figure 1.
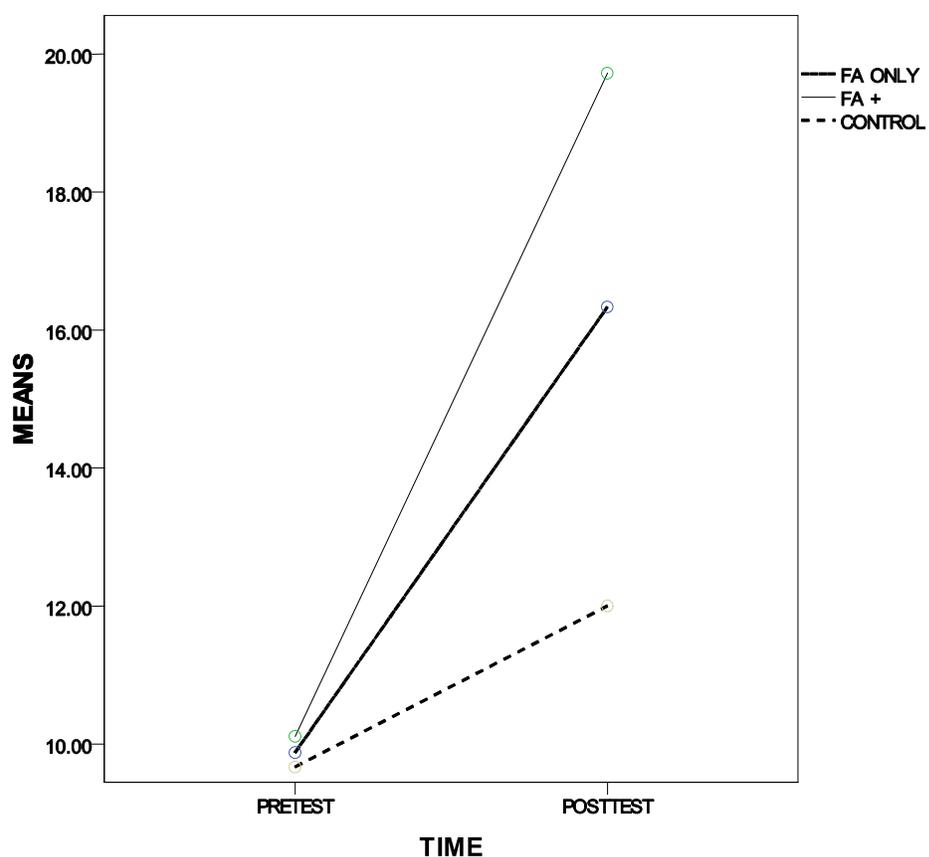


Figure 1.  Interaction of Group and Time on SAFMEDS Vocabulary

Bonferroni post hoc analyses were used to follow-up on the main effects of Group and Time. The FA + group ($M = 14.91$) had a significantly higher average than the FA only ($M = 13.10$) and the control ($M = 10.83$) groups. SAFMEDS posttest results ($M = 16.02$) were significantly higher than SAFMEDS pretest results ($M = 9.88$).

To explain the interaction of Group and Time, Tukey HSD post hoc analyses were used. The FA only group ($M = 16.33$) and the FA + group ($M = 19.72$) performed significantly ($p < .05$) better on the posttest than the control group ($M = 12.00$). The FA only group significantly ($p < .05$) improved from pretest ($M = 9.78$) to posttest ($M = 16.33$). The FA+ group significantly ($p < .05$) improved from pretest ($M = 10.11$) to posttest ($M = 19.72$). These results do not support the hypothesis. Results indicate that formative assessment only and formative assessment plus self monitoring with goal-setting yielded the same results. Both groups demonstrated significant vocabulary improvement but improvements in vocabulary did not differ between the groups. It was hypothesized that the formative assessment plus self-monitoring with goal-setting would yield higher vocabulary skills when compared to the formative assessment only and the control groups from pretest to posttest.

Hypothesis 2:

A one-way analysis of variance was conducted to reveal if course grades differed among the three groups. Results indicated that the groups' course grades did not differ, $F(2,58) = 2.07$, $p = .14$. The control group had the highest average course grade ($M = .88$, $SD = .07$), followed by the FA only group ($M = .84$, $SD = .16$), then the FA + group ($M = .83$, $SD = .08$). Course grades took into account exams, attendance, and write-ups from observations. To analyze academic achievement in a different way, a 3 (Group: FA only, FA + and Control) x 3 (Time: Exam 1, Exam 2 and Exam3) mixed repeated measures analysis of variance was conducted. The

means for each group for Exam 1, Exam 2 and Exam3 are presented in Table 4 and the repeated

measures ANOVA summary table is presented in Table 5.

Table 4.  Means for Exams by Group

|            | Exam 1 | Exam 2 | Exam 3 |
|------------|--------|--------|--------|
| FA only    | 69.67  | 80.83  | 83.96  |
| FA +       | 68.89  | 75.42  | 82.21  |
| Control    | 74.11  | 83.67  | 90.17  |

Table 5.  ANOVA Summary Table on Exams

| Source            | df  | Mean Square | F     | Sig. | Partial Eta Squared |
|-------------------|-----|-------------|-------|------|---------------------|
| Group             | 2   | 721.72      | 2.00  | .144 | .065                |
| Error(Group)      | 58  | 360.15      |       |      |                     |
| Time              | 2   | 3234.80     | 37.31 | **.000** | .561            |
| Time by Group     | 4   | 40.30       | .46   | .76  | .022                |
| Error(Time)       | 116 | 911.118     |       |      |                     |

Figure 2 illustrates the main effect of Time.
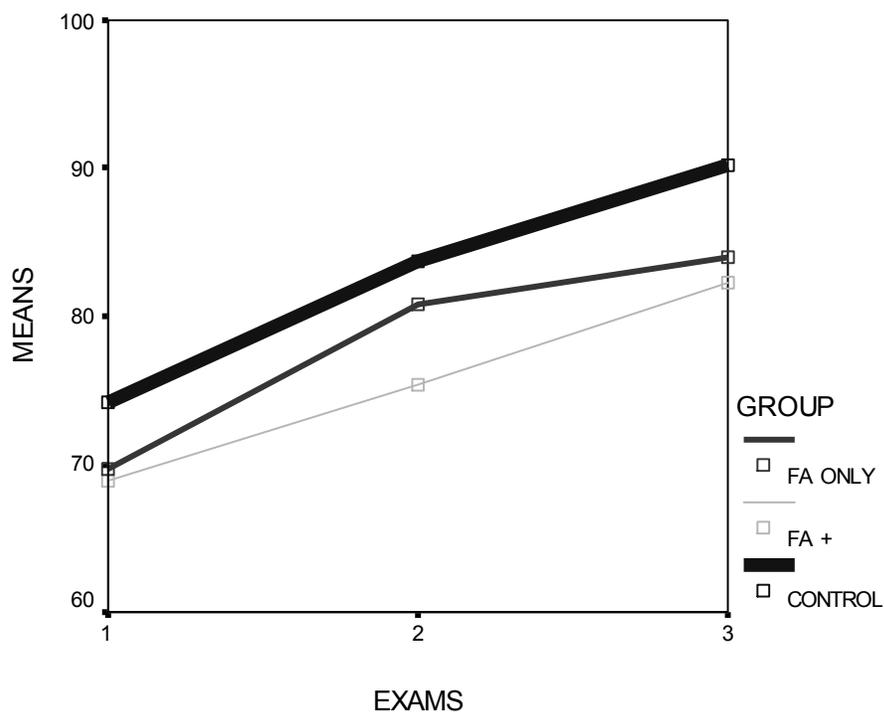


Figure 2.  Main Effect of Time on Exams

Bonferonni post hoc analyses indicated that regardless of group, exam grades significantly increased from Exam 1 ($M = 70.89$) to Exam 2 ($M = 80.00$) to Exam 3 ($M = 85.45$). This finding does not support the hypothesis, but, it does display student progress throughout the semester.

Hypothesis 3:

The third hypothesis of the study was that the students in the formative assessment plus group would have higher academic self-efficacy from pre to posttest compared to the control and the formative assessment only groups.  The SELF measured five categories of academic self-efficacy: note-taking skills, reading skills, test preparation skills, writing skills, and studying skills.  A combined total of all of the categories was calculated as well.  Academic self-efficacy was measured at the start of the semester and again at the end of the semester.  Table 6 presents

the means and standard deviations for each category of academic self-efficacy at the beginning

and at the end of the semester for each group.

Table 6.  Means for Pre-Self-efficacy and Post-Self-efficacy by Group

| | PreReading PostReading | PreWriting PostWriting | PreTestPrep PostTestPrep | PreNotes PostNotes | PreStudying PostStudying | PreTotal PostTotal |
|---|---|---|---|---|---|---|
| | *M(SD)* | *M(SD)* | *M(SD)* | *M(SD)* | *M(SD)* | *M(SD)* |
| FA Only | 65.30(16.03) 66.95(13.55) | 71.83(16.07) 71.13(15.61) | 67.70(14.91) 70.14(16.22) | 64.65(16.78) 71.95(15.79) | 67.78(16.98) 71.18(15.63) | 68.47(14.72) 70.42(14.86) |
| FA + | 72.89(12.56) 72.00(12.61) | 80.84(16.51) 78.89(17.14) | 73.95(11.62) 73.33(15.10) | 77.47(9.88) 75.83(13.57) | 76.05(12.37) 74.00(15.55) | 75.94(10.46) 74.95(13.09) |
| Control | 87.06(8.13) 88.56(8.51) | 83.78(9.45) 85.56(9.07) | 86.06(8.87) 86.72(10.03) | 84.44(9.81) 86.06(9.72) | 84.83(10.29) 86.44(9.95) | 85.50(9.11) 86.56(9.44) |

A 3 (Group: FA+, FA only & Control) x 2 (Time: Pre Total Self-Efficacy and Post Total

Self-Efficacy) mixed repeated measures ANOVA was performed.  There were no main effects or

interaction found.  The error variances of the pre self-efficacy ($p$ = .06) and post self-efficacy ($p$

= .11) were equal across groups according to Levene's test of equality of error variances.

Figure 3 illustrates difference in pre and post total self-efficacy among the three groups.
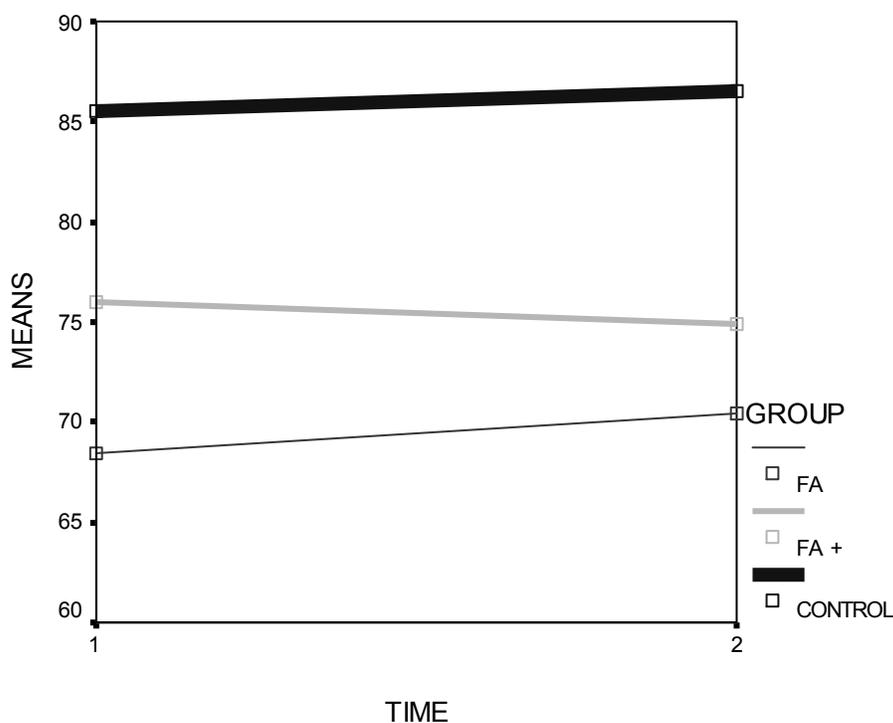
Figure 3. Pre Total Self-Efficacy and Post Total Self-Efficacy by Group

   Mixed repeated measures ANOVAs were conducted on all other categories of academic

self-efficacy.  The only category that produced a significant result was reading.  There was a

main effect of Group, $F(2, 54) = 19.41$, $p < .01$.  Bonferroni post hoc analyses indicated that the

control group ($M = 87.81$) had a higher level of reading self-efficacy than the FA ($M = 66.24$)

and the FA+ ($M = 72.17$) groups.  The error variances of the pre reading self-efficacy (p = .10)

and the post reading self-efficacy ($p = .28$) were equal across groups according to Levene's test

of equality of error variances.  These results do not support the hypothesis that the formative

assessment plus self monitoring and goal-setting would achieve higher academic self-efficacy

from pre to posttest compared to formative assessment only and the control groups.

*SAFMEDS feedback*

At the end of the semester feedback about the SAFMEDS was obtained from the students who took part in the experimental groups.  Students were presented with four statements.  For each statement, students were asked to rate on a Likert scale how strongly they agreed (5) with a statement and how strongly they disagreed (1) with a statement.  Table 7 displays the means for each statement.

Table 7.  SAFMEDS Feedback Means

| | FA only | FA+ |
|---|---|---|
| | *M(SD)* | *M(SD)* |
| It is likely that performing SAFMEDS had a significant affect on my overall performance in the class. | 3.73(.70) | 3.78(1.00) |
| It is likely that performing SAFMEDS significantly improved my vocabulary knowledge for the course. | 4.18(.66) | 4.28(1.07) |
| I wish that SAFMEDS were integrated into other classes. | 4.27(.78) | 4.17(.79) |
| I would make my own SAFMEDS for classes in the future. | 3.64(.90) | 4.17(.86) |

Follow-up independent t-tests for each statement did not reveal any significant differences between the groups.  The last statement was nearly significant, $t(38) = -1.90, p = .06$.  Overall, the formative assessment plus self-monitoring and goal setting group agree more strongly with three of the four statements.

CHAPTER FIVE

DISCUSSION

The study examined the effects of formative assessment on community college students' content-specific vocabulary skills, academic achievement and academic self-efficacy. Community college students took part in formative assessment only, formative assessment in conjunction with goal setting and self-monitoring, or no formative assessment. It was hypothesized that students who took part in formative assessment in conjunction with goal setting and self-monitoring would achieve higher content-specific vocabulary skills, academic achievement and academic self-efficacy from pretest to posttest when compared to students who took part in formative assessment only and no formative assessment.

A major finding of the study is that the utilization of formative assessment significantly increased community college students' content-specific vocabulary skills. Although it was hypothesized that students who were exposed to formative assessment in conjunction with goal setting and self-monitoring would achieve higher content-specific vocabulary skills from pretest to posttest, the current finding is important because compared to students who did not take part in formative assessment, being exposed to formative assessment (in either modality) significantly increased vocabulary skills. This is particularly valuable for community college students since incoming students enter college feel least prepared in the areas of vocabulary and reading skills (Byrd & MacDonald, 2005).

The two groups that took part in formative assessment (regardless of modality) had significantly lower self-efficacy for reading skills compared to the group that did not take part in formative assessment. Interestingly, the two groups that had lower reading self-efficacy performed significantly better on content-specific vocabulary when compared to the group that

had higher reading self-efficacy. Exposure to formative assessment resulted in higher content-specific vocabulary skills when students come into a class with low self-efficacy for reading. Moreover, this finding raises the possible need to embed vocabulary and reading into community college courses since the current uncertainty of remedial courses ability in preparing students for college-level courses (Grimes & David, 1999).

The current findings confirm Stump et al. (1992); SAFMEDS can improve vocabulary skills. The lack of significant difference between the formative assessment only and the formative assessment in conjunction with goal setting and self-monitoring groups for content-specific vocabulary skills has great implications for teacher practices. From teacher's viewpoints, the practice of formative assessment is viewed as time consuming and challenging, which results in the continuation of avoiding the practice (Wiliam et al. 2004). Teachers who believe that vocabulary is an important aspect of their classes should consider constructing SAFMEDS and using them with students since the drills take a mere two minutes.

Santi and Vaughn (2007) explained that progress self-monitoring is an essential component for the learning process. Unfortunately, the typical college student is more concerned with grades and performance than learning (Taras, 2002). This regrettable bit of information makes formative assessment difficult to practice in higher education since the assessments are not graded. This may explain the lack of significance between the formative assessment only group and the formative assessment in conjunction with goal setting and progress self-monitoring group. Students who were in the goal setting and progress self-monitoring group needed to dedicate more time to the process. It is possible that students did not view the amount of time taken to set learning goals and to monitor their progress as "worth it" since there was not a grade attached to those efforts.

Academic achievement and academic self-efficacy did not differ among the groups from pretest to posttest. Research indicates that the most significant factor that positively influences self-efficacy is past academic achievement (Zimmerman, 2000). Participants in the current study who had high levels of academic self-efficacy at the start of the semester were older ($r = .37$, $p < .01$), had higher grade point averages ($r = .36$, $p < .01$) and had already obtained an advanced degree ($r = .44$, $p < .01$). Furthermore, students with higher levels of academic self-efficacy also achieved higher course grades ($r = .30$, $p < .05$). Because academic self-efficacy is so highly influenced by academic achievement, the use of formative assessment in the current investigation may not have been enough to reach students' global academic self-efficacy and academic achievement in the course.

Upon review of the students' feedback about the SAFMEDS, students rated the impact of SAFMEDS on their overall performance in the class as 3.75 on a 5 point scale. On average, students did not agree that SAFMEDS had an impact on their academic performance. Students did agree that SAFMEDS improved their vocabulary knowledge of the course by providing a rating of 4.23 out of 5. Interestingly, results indicated that formative assessment increased content-specific vocabulary and not academic achievement. As was discussed earlier, college students are preoccupied with grades and due to no grade attachment to SAFMEDS, students may have perceived the SAFMEDS as a way to increase academic achievement. In addition, student's academic self-efficacy could have been influenced by achievement in other courses. Students agreed that SAFMEDS should be integrated into other courses by rating that statement 4.23 out of 5. Lastly, the groups did not agree that they would make their own SAFMEDS for other classes (3.88 out of 5). In closing, it appears that students would be willing to take part in SAFMEDS for future classes due to the perception that it increases their vocabulary skills.

*Limitations*

The students in the two experimental groups (formative assessment only and formative assessment in conjunction with goal-setting and progress self-monitoring) were mostly "traditional" students and demographically similar.  The comparisons of the two groups are valid since the high degree of similarity.  On the other hand, the students in the control group were mostly "non-traditional" students.  The control group had significantly higher academic self-efficacy because they were more experienced (as evidenced by older age and more education).  Because the control group differed demographically from the experimental groups, comparing those groups may not have been invalid.

The overall sample size was small.  The maximum class size is 30 students for the community college where the research was conducted.  The findings may not be generalizable for large class sizes.    Unfortunately, with the sample size being small, the attrition rates were important.  The formative assessment only group ($N = 24$) contained 6 more students than the control group ($N = 18$) and 5 more than the formative assessment plus group ($N = 19$).  These differences seem small, but with an already small sample size, it may have made a difference in the results.   Lastly, the sample was not diverse with respect to ethnicity or gender.

*Future Research*

The present study left unanswered questions and curiosity about academic self-efficacy. To study academic self-efficacy in a similar study in the future it may be advantageous to question students about self-efficacy for the particular class rather than global academic self-efficacy.  It is clear that other variables affect global academic self-efficacy.  It is possible that formative assessment may affect self-efficacy for only the course subject.  It also appears that experience plays a key role in global academic self-efficacy.  To study global academic self-

efficacy in more depth, obtaining information from participants about their life responsibilities (children, home ownership, relationships, type of employment, etc.) may support the role of experience in global academic self-efficacy further.

With so much past research supporting goal-setting and progress self-monitoring it is worth performing formative assessment with the aforementioned practices with a larger sample size.  As mentioned earlier, college students are resistant to perform tasks that are not tied to a grade, but results may be positive when working with a larger more diverse sample.  Formative assessments are not grade-related so some form of incentive may have to be employed to get students to take part in goal setting and progress self-monitoring.

Lastly, the current research would be appropriate for a longitudinal study.  It is possible that the use of formative assessment over time could increase academic achievement and academic self-efficacy.  For instance, the majority of the students in the study were nursing majors.  Nursing majors need to learn a large amount of terms for all of their classes.  If a nursing program began to integrate formative assessment into the courses, it might be found that academic achievement and academic self-efficacy increase when compared to students who do not receive formative assessment.

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APPENDIX A
CONSENT FORM

TITLE
The Use of Goal Setting and Progress Self-Monitoring with Formative Assessment in Community College to Increase Academic Achievement and Self-Efficacy

INVESTIGATOR
Tiffany Andrews, M.A.

PURPOSE
The purpose of the study is to increase community college students' academic achievement and self-efficacy by using various assessments of learning.  You are being asked to participate in the study because the investigator wishes to examine how assessment of student learning influences academic achievement and self-efficacy among community college students.

PROCEDURES
The duration of the study is the 16-week spring 2010 semester.  As a participant you will be asked to provide the following information at the beginning of the semester: answer a series of questions pertaining to personal information about yourself, answer a series of questions regarding your preparedness for learning, and answer a series of questions in order to indicate your knowledge of Developmental Psychology terms.  You will also take part in a variation of formative assessment during the Developmental Psychology course.  Formative assessment is an assessment of student learning that is meant to continually make students aware of their own learning while taking part in a course.  At the end of the semester you will be asked again to answer the same series of questions regarding your preparedness for learning and a series of questions to indicate your knowledge of Developmental Psychology terms.

CONFIDENTIALITY
Individual student data will not be analyzed.  Data will be combined to form whole class data for the purpose of comparing classes rather than individual students.  All data collected will be held in the strictest of confidence.  Subjects will create an identity for themselves that should not be shared with anyone.  Only the investigator has access to the information provided.  All data will be entered onto a personal computer that does not have an internet connection.  This is done to lessen the possibility of data being seen by anyone other than the investigator.  The personal computer is password protected and only the investigator has the password.

CONSENT

I understand the purpose of the study.

I understand the procedures of being a participant in the study.

I understand how confidentiality of my data will be maintained.

I understand that there are no known risks to taking part in the study.

I understand that the potential benefit of taking part in the study is to gain an understanding of how formative assessment can enhance my academic achievement and self-efficacy for learning.

I understand that I may refuse consent or withdraw from the study at any time.

I understand that I will not receive any type of compensation for taking part in the study.

I understand the results of this study may be published.

I understand that I may contact the investigator, Tiffany Andrews, to ask questions by phoning (215) 504-8608.

I understand that if I wish further information regarding my rights as a research subject, I may contact Mr. Richard Throm, Program Manager and Coordinator at Office of the Vice President for Research of Temple University by phoning (215) 707-8757.

I understand that by signing my name below I am indicating that I have read and understand the contents of this consent form and agree to take part in the study.


_____

Subject's Signature                                                                      Date


_____

Investigator's Signature                                                               Date

APPENDIX B
DEMOGRAPHIC INFORMATION SHEET

Please provide the following information about yourself:

1) Please create an Identity for yourself by doing the following, indicate your least favorite vegetable followed by the number of pets you have (example: onion3): _____ Please REMEMBER your Identity since you will be filling out forms again at the end of the semester.

2) Gender: Male    or    Female

3) Age: _____

4) Number of credits attempting this semester: _____

5) Number of credits already achieved: _____

6) Number of hours of employment per week: _____

7) Current Grade Point Average: _____

8) Academic Major: _____

9) How many college-level courses have you already taken? _____

10) Do you have a degree beyond a high school diploma?    Yes    or    No

11) If yes, what degree(s) do you have? _____

APPENDIX C
SELF-EFFICACY FOR LEARNING FORM (SELF)

| Definitely Cannot Do it | Probably Cannot Do it | Maybe Can | Probably Can Do it | Definitely Can Do It |
|---|---|---|---|---|
| 0% | 30% | 50% | 70% | 100% |

**Choose a percentage to indicate your answer**

_____ 1. When you notice you are having trouble concentrating on a reading assignment, can you refocus your attention and learn the material? (R)

_____ 2. When you don't understand a paragraph you have just read, can you clarify it by careful rereading? (R)

_____ 3. When you have trouble recalling key facts in a reading assignment, can you find a way to remember all of these two weeks later? (R)

_____ 4. When you have trouble remembering complex definitions from a textbook, can you redefine them so that you will recall them? (S)

_____ 5. When you feel very anxious before taking a test, can you remember all the material you studied? (T)

_____ 6. When you have tried unsuccessfully to study for an hour, can you set and attain an important study goal during your remaining time? (S)

_____ 7. When you are given an extensive reading assignment to cover before class the next day, can you set aside enough time in your schedule to finish it? (R)

_____ 8. When you don't understand your teacher, can you ask the right question to clarify matters? (N)

_____ 9. When your teacher gives a rambling disorganized lecture, can you reorganize and rewrite your notes before the next class meeting? (N)

_____ 10. When you find your homework assignments vary greatly in length each day, can you adjust your time schedule to complete them? (S)

_____ 11. When you notice that your notes are much less complete than another student's, can you write down all the teacher's points during the next lecture? (N)

_____ 12. When you notice that you are getting behind in your homework during the week, can you catch up during the next weekend? (S)

_____ 13. When another student asks you to study together for a course in which you are experiencing difficulty, can you be an effective study partner? (S)

_____ 14. When you have missed several classes, can you make up the work within a week? (S)

_____ 15. When you find the assignment you are reading doesn't make sense, can you interpret it by using text clues, such as headings or italics? (R)

_____ 16. When you miss a class, can you find another student who can explain the lecture notes as clearly as your teacher did? (N)

_____ 17. When problems with friends and peers conflict with school work, can you keep up with your assignments? (S)

_____ 18. When the assigned reading is boring, can you find a way to motivate yourself to learn it fully? (R)

_____ 19. When a homework assignment, such as learning vocabulary words, is

repetitive and uninteresting, can you make it into an exciting challenge? (S)

_____20. When an assigned reading is poorly written, can you figure out its meaning so you can explain it well on an essay test? (R)

_____21. When a teacher's lecture is over your head, can you find a way to get the information clarified before the next class meeting? (N)

_____22. When your teacher's lecture is very complex, can you write an effective summary of your original notes before the next class? (N)

_____23. When you are having trouble understanding assigned reading material, can you find a classmate who can explain everything clearly to you? (R)

_____24. When you feel moody or restless during studying, can you focus your attention well enough to finish your assigned work? (S)

_____25. When you are trying to understand a new topic, can you associate new concepts with old ones sufficiently well to remember them? (S)

_____26. When a lecture is especially boring, can you motivate yourself to keep good notes? (N)

_____27. When you are having trouble comprehending a reading assignment, can you find key sentences that will help you understand each paragraph? (R)

_____28. When you have to take a test in a school subject you dislike, can you find a way to motivate yourself to earn a good grade? (T)

_____29. When you have time available between classes, can you motivate yourself to use it for studying? (S)

_____ 30. When you had trouble understanding your instructor's lecture, can you clarify the confusion before the next class meeting by comparing notes with a classmate? (N)

_____31. When you feel anxious during an exam and have trouble controlling information, can you relax and concentrate well enough to remember it? (T)

_____32. When you are feeling depressed about a forthcoming test, can you find a way to motivate yourself to do well? (T)

_____33. When you are tired, but have not finished writing a paper, can you find a way to motivate yourself until it is completed? (W)

_____34. When you suddenly realize that you can't remember any material you have read during the last half hour, can you create self-questions to help you review the material successfully? (R)

_____35. When you find yourself putting off writing of an assigned paper, can you motivate yourself to begin the task immediately? (W)

_____36. When you have trouble recalling an abstract concept, can you think of a good example that will help you remember it on a test? (T)

_____37. When your friends want to see a movie when you need to study for a test, can you find a way to decline without offending them? (T)

_____38. When your last test results were poor, can you figure out potential questions before the next test that will improve your score greatly? (T)

_____39. When you are taking a course covering a huge amount of material, can you condense your notes down to just the essential facts? (N)

_____40. When you find yourself getting increasingly behind in a new course, can you increase your study time sufficiently to catch up? (S)

_____41. When you are struggling to remember technical details of a concept for

a test, can you find a way to associate them together that will ensure recall? (T)

_____42. When your teacher lectures so rapidly you can't write everything down, can you record all the important points in your notes? (N)

_____43. When you are angry about a course because of a teacher's demanding requirements, can you find a way to channel your anger to help you succeed? (S)

_____44. When your concentration wanders while writing an important paper, can you refocus it sufficiently to finish the paper on time? (W)

_____45. When describing a complex principle in a written paper, can you create an analogy that a reader will understand? (W)

_____46. When you find that your first draft of a paper is wordy, ungrammatical, or confusing, can you revise it so that it is completely clear and grammatical? (W)

_____47. When you are asked to write a concise, well-organized paper over night, can you find a way to do it? (W)

_____48. When you are dissatisfied with an important paper you are writing, can you find another person who will show you how to remove all the problems? (W)

_____49. When you are asked to write a paper on an unfamiliar topic, can you find good enough information to please your teacher? (W)

_____50. When you learn that a paper you just finished writing is confusing and needs to be completely rewritten, can you delay your other plans for a day to revise it? (W)

_____51. When you discover that your homework assignments for the semester are much longer than expected, can you change your other priorities to have enough time for studying? (S)

_____52. When you think you did poorly on a test you just finished, can you go back to your notes and locate all the information you had forgotten? (T)

_____53. When you are struggling to remember the details of a complex reading assignment, can you write summary notes that will greatly improve your recall? (R)

_____ 54. When you find that you had to "cram" at the last minute for a test, can you begin your test preparation much earlier so you won't need to cram the next time? (T)

_____55. When other students from your class emphasize parts of the teacher's lecture that you excluded from your notes, can you correct this omission before the next class meeting? (N)

_____56. When you are struggling to understand a body of information for a test, can you diagram it or chart it so you will remember it all two weeks later? (T)

_____57. When you have trouble studying your class notes because they are incomplete or confusing, can you revise and rewrite them clearly after every lecture? (N)

R = reading item
S = study item
T = test preparation item
N = note-taking item
W = writing item

APPENDIX D
SAFMEDS PRETEST

Match these terms and definitions by placing the correct letter of each definition in front of each term.

|  | Term | Definition |
|---|---|---|
|  | CORRELATION | A. ORGANIZED WAY OF MAKING SENSE OF EXPERIENCE. |
|  | PRESBYCUSIS | B. ANY ENVIRONMENTAL AGENT THAT CAUSES DAMAGE DURING PREGNANCY. |
|  | GENERATIVITY | C. BIOLOGICAL AGING. |
|  | SCHEMA | D. OBSERVABLE CHARACTERISTICS THAT ARE DETERMINED BY GENES AND THE ENVIRONMENT. |
|  | ANDROGYNY | E. CELL DIVISION THAT FORMS GAMETES. |
|  | METACOGNITION | F. IDENTITY THAT IS LOW IN COMMITMENT AND EXPLORATION. |
|  | MEIOSIS | G. LOSS OF HIGH FREQUENCIES AROUND AGE 50. |
|  | SENSORIMOTOR | H. "THINKING" WITH OUR SENSES DURING THE FIRST 2 YEARS OF LIFE. |
|  | TERATOGEN | I. SENSE OF COMPETENCE AND USEFULNESS. |
|  | EPIPHYSES | J. WHEN CHILDREN MOVE OUT OF THEIR PARENT'S HOME. |
|  | INDUSTRY | K. STRIVING TO GIVE TO AND GUIDE THE NEXT GENERATION. |
|  | SOCIAL CLOCK | L. ASSESSES A NEWBORN BABY'S PHYSICAL CONDITION. |
|  | CONSERVATION | M. JUDGEMENT OF YOUR OWN WORTH. |
|  | LAUNCHING | N. AWARENESS OF ONE'S OWN THOUGHTS. |
|  | SENESCENCE | O. LYMPHOCYTES THAT ATTACK ANTIGENS DIRECTLY. |
|  | THEORY | P. A RELATIONSHIP BETWEEN VARIABLES. |
|  | APGAR SCALE | Q. A SET OF STATEMENTS THAT DESCRIBES, EXPLAINS, AND PREDICTS BEHAVIOR. |
|  | PLASTICITY | R. GAPS IN A NEWBORN'S SKULL. |
|  | T CELL | S. IDENTIFICATION WITH BOTH MASCULINE AND FEMININE CHARACTERISTICS. |
|  | MORATORIUM | T. AGE-GRADED EXPECTATIONS FOR LIFE EVENTS. |
|  | EGALITARIAN | U. EATING DISORDER CHARACTERIZED BY STARVING ONESELF. |
|  | PHENOTYPE | V. DETERIORATION OF CARTILAGE ON THE ENDS OF BONES AND JOINTS. |
|  | OSTEOARTHRITIS | W. UNDERSTANDING THAT WHEN PHYSICAL CHARACTERISTICS CHANGE THE OBJECT REMAINS THE SAME. |
|  | ANOREXIA | X. SHARING POWER AND AUTHORITY IN A RELATIONSHIP. |
|  | SELF-ESTEEM | Y. WHEN ONE AREA OF THE BRAIN CAN COMPENSATE FOR A DAMAGED AREA. |

APPENDIX E
SAMFMEDS CARDS

**correlation**                              **theory**

**gender identity**              **independent variable**

**neuron**                              **metacognition**

**A proposition that attempts to explain a phenomenon is a _____.**

**A relationship between variables is a _____.**

**The experimenter manipulates the _____.**

**Sense of being male or female is one's _____.**

**Awareness of one's own thoughts is _____.**

**The basic unit of the nervous system is the _____.**

APPENDIX F
INSTRUCTIONS FOR SAFMEDS

**S**ay
**A**ll
**F**ast
**M**inute
**E**very
**D**ay
**S**huffled


The **FRONT of the SAFMEDS** cards contains a definition.
The **BACK of the SAFMEDS** cards contains a term.

At the start of each class, you will get a partner to perform a SAFMEDS drill with you.

**The Giver:**  Shuffle the SAFMEDS cards.  As the giver you will hold each SAFMEDS card in front of you so you can read the back of the card and the receiver can read the front.  Make sure to have the front of the card facing the receiver!  When the instructor says start, the giver shows the first SAFMEDS card to the receiver.  The receiver has only 2 – 3 seconds for each card. When the receiver says the correct term place the card in the HIT pile, when the receiver says pass place the card in the PASS pile (if the receiver does not say pass but has gone over 2 – 3 seconds automatically put the card in the PASS pile), when the receiver says an incorrect term place the card in the MISS pile.  Continue showing the receiver the cards and placing them into piles until the instructor says stop.

**The Receiver:**  For 1 minute you will be drilled on your knowledge of the SAFMEDS terms. The giver will hold up each card so you can see the definition.  You will need to say the correct term for the definition within 2 – 3 seconds.  When you say the correct term your partner places the card on a HIT pile, when you say an incorrect term your partner places the card in a MISS pile, if you don't know the correct term, say pass out loud and your partner will place the card in a PASS pile.  If you don't say anything within 2 - 3 seconds, your partner will place the card in the PASS pile.  This is a fluency exercise so it is important to be accurate and fast with your responses.  When the instructor says stop, count the number of cards in the HIT, MISS, and PASS piles.  Cards that were not used do not need to be counted.

# APPENDIX G
## PROGRESS MONITORING GRAPH

**SAFMEDS PROGRESS GRAPH**

| Drill | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hits | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Misses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

4 WEEK GOAL: _____     8_WEEK GOAL: _____     12_WEEK GOAL: _____     16 WEEK GOAL: _____

APPENDIX H
SAFMEDS SURVEY

| SAFMEDS FEEDBACK | | | | | |
|---|---|---|---|---|---|
| | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** |
| **1. It is likely that performing SAFMEDS had a significant affect on my overall performance in the class.** | 5 | 4 | 3 | 2 | 1 |
| **2. It is likely that performing SAFMEDS signicantly improved my vocabulary knowledge for the course.** | 5 | 4 | 3 | 2 | 1 |
| **3. I wish that SAFMEDS were integrated into other classes.** | 5 | 4 | 3 | 2 | 1 |
| **4. I would make my own SAFMEDS for classes in the future.** | 5 | 4 | 3 | 2 | 1 |