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LinguaFolio Goal Setting Intervention and Academic Achievement: Increasing Student Capacity for Self-Regulated Learning

By

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A DISSERTATION

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LINGUAFOLIO GOAL SETTING INTERVENTION AND ACADEMIC ACHIEVEMENT: INCREASING STUDENT CAPACITY FOR SELF-REGULATED LEARNING

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University of Nebraska, 2013

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In the last few decades there has been a shift from thinking less about teaching and more about learning. Such a paradigm shift from teacher-centered to student-centered instruction requires students to think about their own learning and to monitor their own learning development and language achievement. Researchers have identified goal setting and self-regulated learning as crucial factors that affect academic achievement. Goal setting improves student performance and enhances achievement by allocating attention, activating effort, increasing persistence and motivation which in turn leads to the development of self-regulation skills. With this belief, LinguaFolio was integrated into foreign language classrooms to support language learners in setting and achieving goals for learning languages and implementing self-regulated learning strategies.

The purpose of this study designed as an ex post facto examination of the relationship between goal setting and achievement was to determine whether foreign language study that included LinguaFolio participation led to increased student capacity for self-regulated learning that resulted in a difference in student academic achievement. This quantitative group comparison attempted to identify whether students who

experienced LinguaFolio as an intervention in their second language classrooms had higher achievement and performed better in other subject content areas in comparison to students who were not exposed to LinguaFolio.

The population of the study included 618 students (LinguaFolio students = 454 and non-LinguaFolio students = 164) who graduated from three Nebraska high schools between 2006 and 2010. The performance of the students was measured by ACT scores (English, reading, math, science) and graduating GPA.

All statistical analyses were conducted via SPSS IBM version 21 software. Four statistical procedures were used to analyze the data. The overall effect of foreign language study that included LinguaFolio participation was students' improved performance as measured by ACT scores and graduating GPA. Multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) revealed that LinguaFolio students had significantly higher GPA and ACT scores in math, science, English, and reading. Multivariate regression and simple linear regression analyses indicated that with each additional year of participation in LinguaFolio students' graduating GPA and ACT scores were increasing. In addition, these findings supported the conclusion that foreign language study that included LinguaFolio goal setting intervention promoted the development of students' self-regulation skills.

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CHAPTER 1: INTRODUCTION

Context of the Study

There has been considerable research evidence demonstrating that goal setting affects student performance and enhances achievement (Boekaerts, 2002; Edwins, 1995; Griffee & Templin, 1997; Moeller, Theiler, & Wu, 2012; Moriarity, Pavelonis, Pellouchoud, & Wilson, 2001; Schunk, 2003; etc.). Goals influence the greater feeling of self-control and commitment, and thus, they lead to better performance. Also goals that focus on learning are associated with deep-level processing, persistence and higher effort that in turn contributes to increased achievement (Covington, 2000). Goals allow learners to be dynamically and actively engaged in cognitive and motivational processes of learning during which they are responsible for controlling their task resources as well as cognitive and motivational conditions (Azevedo, Ragan, Cromley, & Pritchett, 2002).

Goal setting is commonly regarded as one of the strategies that enhances self-regulated learning (Locke, Shaw, Saari, & Latham, 1981; Schunk, 2001), particularly, goals can help learners to structure their learning process. Self-regulation is defined as "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2000, p. 453). Nowadays when pedagogy has moved from being teacher-centered to student-centered, the ability of the student to set learning goals and organize their own learning activity has become even more important. A consistent finding from research conducted in the last twenty years has shown that one of the differences between

the highest and lowest achievers is the degree to which a person becomes a self-regulating learner (Edwins, 1995; Zimmerman, 1990, 2002). "High achievers engage in goal setting, planning, self-interrogating, and self-monitoring" (Edwins, 1995, p. 16). Students take their first step towards developing the ability to take charge of their own learning when they accept full responsibility for the learning process acknowledging that success in learning depends crucially on themselves rather than on other people. In formal educational contexts, self-regulated learning entails reflective involvement in planning, implementing, monitoring, and evaluating processes.

LinguaFolio

LinguaFolio is a formative assessment instrument that has been designed to support foreign language learners in setting and achieving goals for learning languages. This learner-centered three-fold approach is based on the European Language Portfolio (ELP) that is an action-oriented framework for language teaching, learning, and assessment (Common European Framework (CEF) (n.d.). Retrieved April 6, 2012, from: http://www.coe.int/t/dg4/ linguistic/Source/Framework_EN.pdf). The European Language Portfolio is organized around two major aims: 1) to promote students' motivation and engagement by acknowledging their efforts in order to enhance and diversify their language skills at all levels. Enhanced student motivation improves students' ability to communicate in a foreign language, become interested in other languages, and pursue new intercultural experiences; 2) to provide records of the learners' acquired skills (e.g., linguistic, cultural, etc.) that allows them to see their progress as they are moving to a higher learning level. It helps the learners to establish

clear objectives, identify ways to accomplish them, and plan their learning all of which fosters them to become autonomous learners leading to success in language learning (Common European Framework (CEF) (n.d.). Retrieved April 6, 2012, from http://www.coe.int/t/DG4/Portfolio/?L=E&M=/main_pages /introduction.html).

In the United States, LinguaFolio was adopted by the National Council of State Supervisors of Foreign Languages (NCSSFL) as an official project in 2004 which is aligned with the American Council of the Teachers of Foreign Languages Performance and Proficiency Guidelines. LinguaFolio allows language learners of different ages and levels to record their language learning process as they move towards becoming proficient in a foreign language. LinguaFolio is used to promote and support language learning not only between levels but also in or outside school. The purpose of LinguaFolio is to enable learners to progress in language learning from one level to the next through formal language instruction as well as active independent language learning. With this goal in mind, LinguaFolio promotes student responsibility for their own learning and developing language proficiency.

Collaboration of teachers and learners in LinguaFolio allows teachers to develop a common language through which they articulate their course demands, in other words, what level of proficiency is expected of students to succeed in the course, and it allows learners to demonstrate what they are able to do through meaningful articulation. It is important to emphasize that LinguaFolio helps the development of the capacity for independent language learning, i.e. students develop language learning skills that they use to meet their individual needs. Therefore, LinguaFolio promotes learner autonomy,

becomes the property of the learner and whatever support is provided by teachers, the learner is responsible for planning, monitoring, and assessing their learning.

LinguaFolio projects have been piloted in a number of states across the United States of America. Nebraska has been one of those states that have been especially active in the implementation of LinguaFolio. LinguaFolio Nebraska derives from the objectives and principles of the European Language Portfolio but accommodates the needs and requirements of the US educational system. According to Moeller, Scow, and Van Houten (2005), LinguaFolio Nebraska is developed to help students become engaged in the processes of reflection and analysis of their own learning through the means of a language journal that provides a series of checklists of language and cultural knowledge, skills, and proficiency levels.

LinguaFolio Nebraska consists of three components that are similar across all LinguaFolio projects – *My Language Journey*, *Passport*, and a *Dossier of Evidence*.

In *My Language Journey* students provide reflective analysis on language learning process in a form of a journal. In particular, they record their language progress, set goals, and indicate their language abilities. *My Language Journey* helps students understand and examine their current and previous experiences with a foreign language and its culture as well as present learning strategies (*LinguaFolio Nebraska Teacher Guide*, n.d.). Students keep a language journal during the entire course of their language studies.

Language Passport consists of checklists which identify learner's language knowledge, cultural understanding, proficiency levels and language skills. In other words, learners describe the level of proficiency reached in the second language as well as their native language. Competency levels according to which students measure their language skills and knowledge are adapted from the ACTFL (American Council on the Teaching of Foreign Languages) Proficiency Guidelines, the Nebraska Foreign Language Frameworks, the Nebraska K-16 Foreign language Frameworks, and the Council of Europe. In addition, in the *Language Passport* students provide information on the type and length of the learning process, any immersion opportunities, language diplomas, certificates as well as any other experiences they have had with the language (*LinguaFolio Nebraska Users Guide*, n.d.). The *Language Passport* component engages students in creating self-assessment statements in the form of "I can" statements that help the learners visualize what they can do with the language.

In *Dossier of Evidence* learners collect examples of their best work which illustrate language growth year-by-year. The *Dossier* includes learner's products that vary from a hands-on to tangible collection of the best work, e.g., projects, compositions, narratives, dialogues, etc. The *Dossier* assists students in understanding their language growth through the processes of goal creations, evidence collection and reflections on the learning experiences (*LinguaFolio Nebraska Teacher Guide*, n.d.).

LinguaFolio Goal Setting Process

The LinguaFolio goal setting process (the Dossier of Evidence component) requires students to write goals and track their progress towards goal achievement. In the

beginning of a new chapter/unit/etc. students are asked to write goals in one or more skills such as listening, speaking, writing, and reading. First, a teacher provides an overview of the chapter/unit/etc. and demonstrates examples of at least two goals for the entire class. Students need to choose one of these goals and record it in their goal sheet. Next, the students write their own personal goals and establish a plan of action identifying the tasks they will complete in order to achieve their goal. By doing so the students realized that writing goals requires higher level of processing in order to make goals specific rather than basic. As the students work their way through the chapter/unit/etc., they regularly return to their goals and collect evidence illustrating that they have met them. At the end of the chapter/unit/etc., the students review their goals and the collected work and then analyze their work in terms of whether it represents the achievement of the goals. Students may also provide a brief written reflection on why they think a particular piece of evidence demonstrates goal achievement. Work that does not represent evidence of achieving goals is eliminated. When students revisit the goals at the end of the chapter/unit/etc., they are encouraged to make SMART (specific, measurable, attainable, realistic, time bound) goals SMARTER by adding evaluation and reflection. Writing a structured reflection on whether the goals have been achieved is especially important because students learn to examine the quality of their work and evaluate their progress.

The cycle of goal setting, evidence collection, and reflection continues throughout the year and starts again at the beginning of a new year. During this process a student creates a folder in which they gather collections of paper categorized by chapters that represent goals, pieces of evidence, and reflection. Therefore, the ultimate objective of

LinguaFolio goal setting process is to help learners become engaged in the processes of goal setting, reflection, and analysis of their own learning.

Research Problem

European Language Portfolio (ELP) and LinguaFolio programs have been proven to be successful in foreign language classrooms.

The results from the ELP pilot study (1998) conducted in the Czech Republic indicated that students' learning motivation increased and they felt more confident interacting in the target language because the focus of instruction was on communication rather than mastery of grammar rules. In addition, the students were able to see how they could use their L2 skills outside the classroom.

In the United States, the studies conducted by Moeller, Theiler, and Wu (2012) and Ziegler and Moeller (2012) have demonstrated that LinguaFolio has a positive impact on student achievement and it reaches the overall objective of *Standards for Foreign Language Learning in the 21st century* (National Standards in Foreign Language Education Project, 1999) – to prepare students "who can use the language in meaningful ways, in real life situations" (p. 15).

Moeller, Theiler, and Wu (2012) conducted a five-year longitudinal quasi-experimental study that explores the relationship between LinguaFolio goal setting and student achievement in high school Spanish language classrooms. A correlational analysis of the goal setting and student achievement in second language across time at the individual student and teacher levels identified a statistically significant relationship

between the goal setting process and language achievement ($p < .01$). In addition, hierarchical linear modeling analyses (HLM) revealed that a significant relationship exists between goal setting and language proficiency growth ($p < .001$). The finding from HLM analyses indicated that the LinguaFolio students benefit from the goal setting process throughout the entire duration of the foreign language learning experience. The overall implication from this study suggests that LinguaFolio "can serve as an effective tool for promoting self-regulation in learners through structured goal setting" (Moeller et al., 2012, p. 168).

Ziegler and Moeller (2012) further investigated the effect of LinguaFolio intervention on student motivation, learning, achievement and the development of student ability for self-regulation in learning. The quantitative study was conducted in first-year French and Spanish classes in a Midwestern university. The findings revealed that LinguaFolio students experienced increased intrinsic motivation, task-value, and more accurate self-assessment of their learning. Although due to the correlative nature of the study causality cannot be claimed, nonetheless it is evident that LinguaFolio serves as an effective approach that helps increase self-regulated learning.

Recent research evidence (e.g., Moeller et al., 2012; Ziegler & Moeller, 2012) has clearly demonstrated that LinguaFolio as an intervention accomplishes its pedagogical purpose and helps produce positive outcomes in foreign language learning through self-assessment, goal setting, strategy instruction, and reflection on achievement. However, to date, there has been no systematic analysis that examines whether foreign language study that includes LinguaFolio goal setting intervention makes a difference in student

achievement in other content areas as well as overall academic performance. In an attempt to move in this direction, this study will address the obvious gap in the research regarding the effects of foreign language study that includes LinguaFolio goal setting process on student achievement in other content areas besides foreign language as measured by secondary education metrics. Since self-regulated learning during which learners set their goals for learning and then attempt to plan, monitor, and control their motivation, cognition, behavior, and context (Pintrich, 2000; Zimmerman, 2002) has long been one of the most important aims of education, the need exists to better understand whether students who were exposed to LinguaFolio become more self-regulated learners and are capable of utilizing the goal-setting skill beyond a foreign language classroom.

Purpose of the Study

The purpose of this study is to identify whether students who experienced foreign language study that included LinguaFolio as an intervention in their second language classrooms had higher achievement and performed better in other subject content areas in comparison to students who were not exposed to LinguaFolio. Research underscores that in order for goal setting to improve performance and enhance achievement, students need to participate in setting their own goals (Azevedo et al., 2002; Tubbs, 1986). It has been found that goal setting influences performance through a self-regulatory process by directing attention, mobilizing effort and choosing and activating effective task related strategies (Locke & Latham, 1990). Therefore, this quantitative group comparison study designed as an ex post facto examination of the relationship between goal setting and achievement attempts to determine if the goal setting skills integrated in the foreign

language classroom increased student capacity for self-regulated learning that resulted in a difference in student academic achievement. The performance of the students in three high schools in southeast Nebraska is measured by ACT scores (English, reading, math, science) and graduating GPA.

In order to gain a better understanding of the impact of foreign language study that includes LinguaFolio goal setting on student achievement in other subject matters, a group comparison between LinguaFolio students (experiment group) and non-LinguaFolio students (control group) was made. This group comparison examines the experiences of the students in terms of achievement in English, math, science and reading measured by ACT, and overall achievement measured by graduating GPA. The investigation was limited to high school students who graduated between 2006 and 2010. The schools recruited for this study implemented LinguaFolio from 2005 to 2010 and participated in research conducted by Moeller, Theiler, and Wu (2012). The use of GPA to measure overall achievement was logical, and performance in English, math, reading, and science was measured by ACT.

Research Questions

Three overarching research questions guided the study:

I. What is the effect of foreign language study that includes LinguaFolio goal setting intervention on high school students' achievement?

II. Does significant difference in achievement exist between LinguaFolio and non-LinguaFolio students?

III. Does foreign language study that includes LinguaFolio goal setting intervention help develop self-regulated learning?

Specific testable questions for the study included:

1. Does LinguaFolio goal setting have an effect on ACT math, science, English, and reading scores in three schools?
2. How does the number of years of participating in LinguaFolio affect students' ACT scores in three schools?
3. Does LinguaFolio goal setting have an effect on ACT math, science, English, and reading scores in each school individually?
4. How does the number of years of participating in LinguaFolio affect students' ACT scores in each of the three schools individually?
5. Does LinguaFolio goal setting have an effect on GPA in three schools?
6. Does LinguaFolio goal setting have an effect on graduating GPA in each school individually?
7. How does the number of years of participating in LinguaFolio affect students' graduating GPA in three schools?
8. How does the number of years of participating in LinguaFolio affect students' graduating GPA in each of the three schools individually?
9. Does LinguaFolio goal setting have an effect on ACT scores and graduating GPA combined in three schools?
10. How does the number of years of participating in LinguaFolio affect students' ACT scores and graduating GPA in three schools?

11. How does the number of years of participating in LinguaFolio affect students' ACT scores and GPA in each of the three schools individually?

Data Collection

Administrators of three schools located in southeast Nebraska provided necessary data to carry out this study. The schools kept students' records and they provided access to the data. The research involves the collection of existing data that include students' ACT scores and graduating GPA.

First, Institutional Approval was secured from the superintendents of three school districts. As soon as the Institutional Approvals was secured, they were submitted to the IRB office. Once IRB granted final approval (#: 20120512609 EX), I contacted the principals of the schools via email inviting them to participate in the research study by providing me with the students' data that were collected from 2006 to 2010. No personally identifying information about students was requested by the rese3archer or provided by the schools.

The population of the study included 618 (454 LinguaFolio students and 164 non-LinguaFolio students) students who graduated from three Nebraska schools between 2006 and 2010. The selection of participants was guided by the purpose of this study that attempts to understand whether students who experienced LinguaFolio as an intervention in their second language classrooms had higher achievement and performed better in other subject content areas and therefore developed capacity for self-regulated learning in comparison to students who were not exposed to LinguaFolio. The population was made

up of two distinct groups: LinguaFolio students and non-LinguaFolio students from three Nebraska schools. Since all students' information requested by the researcher was provided by schools, it was assumed to be accurate and valid and thus no attempts have been made to verify the records.

Definition of Terms

Below I will operationally define the key terms in order to establish a consistent and common meaning throughout the study.

LinguaFolio Nebraska – "is a student centered self-assessment tool that consists of three important characteristics: it helps develop reflective and autonomous learning; demonstrates the value of multi-purpose language learning, heritage languages, and interculturality; and provides common criteria for evaluating language competence" (Moeller et al., 2005, p. 135).

LinguaFolio Goal Setting Process - is a process that was developed to help students become engaged in the processes of goal setting, reflection and analysis of their own learning through the means of a language portfolio that provides a series of checklists of language and cultural knowledge, skills, and proficiency levels.

Goal – "is what an individual is trying to accomplish; it is the object or aim of an action" (Locke et al., 1981, p. 126).

LinguaFolio Students - students who experienced LinguaFolio as an intervention in their second language classrooms.

Non-LinguaFolio Students - students who did not experience LinguaFolio as an intervention in their second language classrooms.

One-year LinguaFolio Students - students who experienced LinguaFolio as an intervention in their second language classrooms during one academic year.

Two-year LinguaFolio Students - students who experienced LinguaFolio as an intervention in their second language classrooms during two academic years.

Three-year LinguaFolio Students - students who experienced LinguaFolio as an intervention in their second language classrooms during three academic years.

Four-year LinguaFolio Students - students who experienced LinguaFolio as an intervention in their second language classrooms during four academic years.

Ex Post Facto Study - "is systematic empirical inquiry in which the researcher does not have direct control of the independent variable because the variable has already occurred" (Hoy, 2010, p. 17).

Assumptions

The following assumptions regarding the nature of this project need to be identified and discussed:

- Due to the fact that rural school districts across Nebraska are largely homogeneous in nature, it is assumed that students making up the student population in three schools participating in this study are essentially the same in terms of their socio-economic status, ethnicity, and general demographic make-up

of their districts. The data were aggregated and no allowances were made for "wealthy" or "poor" areas.

- The data examined in this study were requested and provided by the school authorities. All data were assumed to be accurate and no attempts were made to further validate the data.

Limitations of the Study

Limitations identify potential weaknesses and restrictions created by the chosen methodology that might produce inaccurate and mistaken conclusions (Bryant, 2004). The limitations of this study are inherent in the ex post facto research.

- Due to the use of the ex post facto design, only tentative causal inferences can be made. The relative causative factor might be included among many other factors involved in the study that were not recognized or observed.

- All data were gathered retrospectively and the treatment had occurred before the beginning of the study, thus establishing precedence of cause retrospectively may be difficult. Particularly, the investigator did not have control over the independent variable and could not manipulate the variables that had an influence on the facts.

- Ex post facto research did not allow for assignment of the subjects into groups. For this study, I located existing groups of participants who were similar in all respects except for the exposure to one variable.

- Ex post facto design presents a threat to internal validity. Another intervention might have occurred during the time of the experiment that might have caused the difference in student achievement.

Delimitations of the Study

Delimitations identify factors that prevent a researcher from claiming that the findings are true for all people in all places and times (Bryant, 2004) or, in other words, delimitations are used "to narrow the scope of a study" (Creswell, 2003, p. 148). The following delimitations were recognized for this study:

- The research study was limited to the analysis of the data from the students who were attending small rural high schools in southeast Nebraska. Therefore, these results may not be generalizable to other regions in the United States.

- The study was designed to gather data from only those students who attended schools in which LinguaFolio was used as an intervention in foreign language classrooms.

- The study examines whether LinguaFolio students became more self-regulated learners and utilized goal setting skill learned in foreign language classrooms in other content areas that made a difference in their achievements. Many other factors could obviously contribute to achievement but were excluded from the investigation.

Significance of the Study

I anticipate that the results of the study will draw attention and help educators and students to better understand the importance of goal setting on a classroom level. By answering the question what effect foreign language study that includes LinguaFolio goal setting process has on student achievement, I hope to gain sense of whether LinguaFolio supports students in the development of the capacity of becoming self-regulated learners.

The research will be useful to all because it will investigate the relationship between goal setting and achievement in the educational setting. Teachers need to understand the importance of implementing goal setting in their classrooms on a regular basis, and encourage students to set weekly, monthly, etc. goals. Goal setting is beneficial for student learning because it not only leads to academic success but also serves as a useful tool to developing student capacity for self-regulated learning in which they measure their progress, find a way to learn better, and reflect on their own learning (Koda-Dallow & Hobbs, 2005). Dornyei (2001) points out that it is important that teachers explain how to set goals and ask every student to commit themselves to a particular goal, also specifying the level of effort they are ready to expend.

Furthermore, the findings will be used to encourage schools and foreign language teachers across the country to employ LinguaFolio in their classrooms to improve the curriculum by incorporating goal setting strategies. Hopefully, future research will use the same model or a similar one to examine other states that adopted LinguaFolio in order to investigate what difference it has made in student achievement. Eventually, a convincing body of evidence will accumulate and will help promote LinguaFolio and goal setting process across the country and disciplines.

CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter focuses on theoretical foundation and research literature on goal setting, self-regulated learning and performance. First, I will provide the main definition and essential elements of goal setting theory that serves as a theoretical basis for the current study. Then, I will present an overview of research on goal setting followed by the review of the major studies that emphasize the importance of self-set goals on student performance. Next, I will provide a review of the studies that investigate the difference between two goal orientations – mastery versus performance. Finally, I will review research that examines self-regulated learning and student achievement.

Theoretical Foundation – "Goal Theory"

Using the goal theory as a theoretical framework for analyzing student achievement is not a novel idea. It provides a sufficient model to conceptualize the current study.

The idea of goal-setting emerged from the interest of this phenomenon in work because it significantly increases productivity. Goal setting theory was formulated based of the research conducted by Ryan (1970) that stated that conscious goals affect action. A goal according to Ryan (1970) is the aim or object of a particular action set in order to achieve a specific level of proficiency within a certain time period. Organizational psychologist Locke (1968a) elaborated and formalized goal setting processes into a goal

setting theory that suggests that human action is caused by purpose, and for action to take place specific and difficult goals have to be set and pursued by choice.

> The focus of goal setting theory is on the core properties of an effective goal. These properties are as follows: specificity and difficulty level; goal effects at the individual, group, and organization levels; the proper use of learning versus performance goals; mediators of goal effects; the moderators of goal effects; the role of goals as mediators of other incentives; and the effect of goal source (e.g., assigned vs. self-set vs. participatively set) (Locke & Latham, 2002, p. 714).

Goal theory comprises four essential elements (Locke & Latham, 2002): the mechanisms by which goals operate; moderators of goals effects; the relationship of goals and satisfaction; and the role of personal goals as mediators of incentives.

Goal Mechanisms

Locke and Latham (2002) identify four mechanisms through which goals affect performance. First, goals direct attention toward the goal-relevant activities and thus goals serve a directive function. Research (e.g., Rothkopf & Billington, 1979) has clearly demonstrated that students who have specific learning goals pay more attention to the goal-relevant information than the goal-irrelevant information. The second function of goals is energizing, i.e. high goals are conducive to greater effort. It is true for both physical effort (Bandura & Cervone, 1983) and cognitive effort (Bryan & Locke, 1967a). Third, goals influence persistence. The findings from the research studies (e.g., LaPorte & Nath, 1976) in which individuals were allowed to control the time that they could spend on a task indicated that hard goals prolonged their effort. Finally, goals have been

found to affect action indirectly, particularly “by leading to the arousal, discovery, and/or use of task-relevant knowledge and strategies” (Locke & Latham, 2002, p. 707).

Moderators

1) Goal commitment. When people are committed to their goals, the relationship between the goals and the performance is the strongest. Goals that are difficult lead to higher commitment because people need to put more effort in order to achieve such goals. Two important factors are associated with goal commitment: a) importance of goal attainment and outcomes. Goal attainment is important when a public commitment to the goals has been made; a leader or supervisor provides support; an individual participates in formulating the goals; there are monetary incentives and other practical outcomes; b) self-efficacy or, in other words, people’s belief that they can achieve the goal. According to Locke, Motowidlo, and Bobko (1986), people with high self-efficacy set higher self-goals than people with lower self-efficacy. In addition, the former are more committed to achieving the goals and respond more positively to negative feedback than those with the low self-efficacy (Locke & Latham, 1990; Seijts & Latham, 2001).

2) Feedback. In order the goals to be effective, feedback that communicates progress in relation to the goals is essential. If a person does not know how he/she is progressing toward the goal attainment, they cannot adjust the direction or level of their effort and as a result they cannot change their performance strategies that could be more beneficial to goal achievement. A number of studies (Bandura & Cervone, 1983; Becker, 1978; Strang, Lawrence, & Fowler, 1978) identify that the combination of goals and feedback is more effective than situations in which feedback is not provided.

3) Task complexity. The task complexity moderator indicates that the increase of task complexity leads to the automatization of higher level skills and strategies in order to find more appropriate task strategies. In addition, the use of proximal goals and feedback can help facilitate performance on a complex task.

Satisfaction

Goals besides being an outcome to aim for also provide a standard for judging satisfaction. Locke and Latham (2002) describe this process by stating that when a person is trying to achieve a particular goal, he/she will not be satisfied unless this goal is achieved. Therefore, a goal plays a role of a reference standard for satisfaction. People with difficult goals produce more because they are not satisfied with easy goals and thus they are motivated to set high goals. The reason why people set high goals lies in the psychological and practical outcomes they expect when the goals are attained.

Tubbs (1986) conducted meta-analyses to measure the amount of empirical support for the major hypotheses of the goal theory (Locke, 1968a; Locke et al., 1981) that include: goal difficulty, goal specificity, feedback and participation in goal setting. Eighty seven studies were located that tested these hypotheses with a total of one hundred and forty seven usable results. The reviewed research studies revealed that the results of the selected well-controlled studies were supportive of each of the hypotheses. When the studies directly measured goal-setting properties, strong support was obtained "for three of the major goal-setting propositions: goal difficulty, goal specificity, and participation in the goal-setting process" (Tubbs, 1986, p. 479). In addition, sources of variation in findings were identified and included the setting of a study and the way in which goal

setting factors were operationalized. The results from Tubbs' (1986) study are consistent with the findings from a comprehensive review earlier conducted by Locke et al. (1981).

Goal setting theory has been tested in different countries and in multiple settings and it has been concluded that "goal-setting theory is among the most valid and practical theories of employee motivation in organizational psychology" (Locke & Latham, 2002, p. 714) as well as educational setting.

Goal Setting and Performance

Research on goal setting is proliferating. The effect of goal setting as one of the crucial factors that affects achievement (West & Thorn, 2001) and performance has been investigated in a variety of areas, including academics (Schunk, 1991), business and organizational management (Bandura, 1997; Lee, Locke, & Latham, 1989; Locke, 1968a; Locke & Latham, 1990), and athletics (Bandura, 1997; Locke & Latham, 1990).

Locke, Shaw, Saari and Latham (1981) conducted a comprehensive review of laboratory and field studies on the effects of goal setting on task performance and various factors that influence the effectiveness of goal setting between 1969 and 1980. The authors concluded that in the 90% of the studies specific and difficult assigned goals led to higher performance than easy goals or no goals. It was proved that goal setting enhances task performance when goals are specific and challenging, an individual has sufficient ability, feedback regarding progress is provided, rewards for attaining the goals are given, and the assigned goals are accepted by an individual. Evidently goals improve

performance by allocating attention, activating effort, increasing persistence and developing motivation.

Another meta-analytic study that examined the effects of goal setting on task performance from 1966 to 1984 was conducted by Mento, Steel and Karren (1987). The researchers analyzed two major groups of studies – those contrasting difficult goals versus easy goals, and those comparing specific difficult goals versus general easy or no goals - with the purpose to empirically determine the relationship between different types of goals and performance. The analysis of the studies demonstrated, as expected, that stronger relationship existed between difficult and specific goals and performance across a variety of tasks in both laboratory and field settings rather than between easy and general or no goals and performance. In addition, when hard and specific goals were coupled with feedback, the performance was further enhanced. The results from Locke et al. (1981) and Mento et al. (1987) meta-analytic studies provided clear support that utilizing goal setting as a motivational technique enhanced task performance and achievement.

Past research (Locke et al., 1981; Mento et al., 1987) documented that participation in setting one's own goals led to greater goal acceptance and self-set goals predicted performance better than assigned goals. A statistical meta-analysis of eighty seven studies on goal setting (Tubbs, 1986) indicated that difficult, specific and self-set goals have direct influence on performance. Similar to Tubbs' (1986) study, Mento et al. (1987) in their meta-analysis identified seven quantitative studies that demonstrated positive effect of participation in goal selection, particularly, "the participative goal-

setting groups performed at higher levels than individuals in the assigned goal-setting conditions" (p. 73). More recent evidence (e.g., Azevedo et al., 2002) also suggests that self-set goals affect performance in a greater way than assigned goals. When people participate in the process of decision making, i.e. setting goals, they set higher goals and as a result have higher performance than those people who have goals assigned for them.

Research indicates that the major difference between high and low achievers is the extent to which they are self-regulated learners (Edwins, 1995). It is due to the fact that high achievers participate in the process of goal setting, planning for learning, self-monitoring (Biemiller & Meichenbaum, 1992) and reflection. Such learners are motivated to learn rather than to get a better grade. "When students set their own goals, they create their own maps for achievement" (Edwins, 1995, p. 14) and demonstrate enhanced commitment to achieving them that is crucial in order goals to affect performance (Azevedo, 2002). Social cognitive researchers have concluded that self-set goals that are proximal and difficult tend to promote students' self-efficacy, enhance achievement and motivation (Schunk, 2001; Winne, 2001).

Edwins (1995) conducted a study that investigated the effect of setting one's own goals and reflective writing on students' achievement. The study was carried out over a period of twelve weeks with thirty one high-ability sixth-grade students in a math class. The students were engaged in goal setting and reflective writing activities each day. At the end of the twelfth week the student took part in peer conferencing, reviewing their goals, discussing, and reflecting on the achieved goals. Overall, the research findings revealed that goal-setting and reflection produced an increase in student achievement in

math. The students were enthusiastic about setting their own goals, writing reflection and evaluating their results. Two major results were achieved by the completion of the study. First, a twenty-percent increase in goal achievement was recorded over twelve weeks. It's important to mention, that twenty nine percent of the participants showed an increase by twenty five percent or better. Second, the sixth-grade students participated in the study demonstrated a twenty-percent increase in their ability to write reflectively. In their reflections, the students indicated positive and rewarding effects of goal setting. The research has proved that reflective writing helped the students become more responsible for their goals and better understand their accomplishments.

Edwins (1995) concluded that students "must be in the driver's seat […] to have ownership for working up to their potential" (p. 1). Teachers need to help students with goal setting by modeling this process, however, students need to be responsible for setting their own goals and identifying effective strategies to achieve them. Reflection and self-evaluation help students to develop intrinsic motivation for further improvement and overall success.

Rogers and Renard (1999) pointed out that reluctant and inactive learners become more involved in learning when they contribute to planning and setting their own goals. Moriarity, Pavelonis, Pellouchoud and Wilson (2001) continued the research in this direction. In particular, the rationale for their study was grounded in identifying the reasons for student low participation and interest in learning. According to Moriarity et al. (2001), "because inactive learners do not set and accomplish goals, they miss the satisfying experience of achievement" (p. 12). The purpose of their action research

project was to investigate the effects of different instructional strategies on student motivation in elementary classes. These strategies focused on cross-curricular activities, cooperative learning and teacher designed activities to engage the student in goal setting and reflection. It was predicted that such activities would help promote student participation and interaction as well as interest in learning which would be translated in academic growth.

Second and fourth grade students from a large Midwestern public school participated in the study during a fifteen-week period. The data were collected from student and parent surveys, classroom observations, and students' writings. Among important findings of the Moriarity et al.'s (2001) study was that the students' attitudes toward school and learning became more positive and their participation in the classroom increased when they participated in setting their own goals and reflection. The analysis of the data also demonstrated that when students achieved their personal goals, the level of their learning motivation increased that resulted in academic growth. The research has proved that allowing students to set individual goals and write reflection has a positive motivational and academic effect on student learning and achievement.

Griffee (1994) also explored the importance of self-set goals but in foreign language learning. He investigated whether students were able to generate their own goals for a university level conversation foreign language course and what strategies were helpful and effective in student goal setting process. Goal setting is commonly regarded as one of the essential processes in language learning that helps increase student proficiency (Kroehler, 1993). Higher results are achieved if goals are specific,

measurable and challenging (Dörnyei, 2001), and not unrealistic or outside the student's capacity. According to Oxford and Shearin (1994), "goal-setting can have exceptional importance in stimulating L2 [second language] learning motivation, and it is therefore shocking that so little time and energy are spent in the L2 classroom on goal-setting" (Oxford & Shearin, p. 19). However, even when teachers set specific goals or teaching purposes for each class, these goals can be quite distinct from the goals the students are pursuing during the same class. In fact, it has been found that most students do not really understand how and why they are involved in the language learning activity. Thus, it is a common situation when an "official class goal" (Dornyei, 2001, p. 59) is not the same for the class group's goal or even a goal of a particular student.

In order to examine whether students in a university language course can set their own learning goals, 50 second year Japanese English conversation students studying at a Japan university (experiment group) and 10 high school exchange students from Canada (comparison group) were recruited. The researcher administered two goal exercises to the participants in both groups. The first exercise introduced the students to the concept of goal setting and asked them to generate goals for the language learning. The second exercise refined this concept providing examples and asked the students to revise their goals. The analysis of data revealed that the majority of Japanese students could create their own learning goals. They had some understanding of the goals and their importance, and how they functioned prior to instruction. In the first exercise, their goals were vague and unrealistic, in contrast in the second exercise the students with teacher's help were able to revise their goals making them more specific and realistic. One of the implications from this pilot study as formulated by Griffee (1994) was that students need to be

encouraged to set specific goals rather than vague goals. It is specific goals that provide immediate motivation and help a learner to structure their language learning process.

While the above research focused on the role of self-set goals, a study conducted by Boekaerts (2002) was aimed at investigating performance of the students who accepted teacher-set goals as their own goals. Boekaerts (2002) emphasizes that students who learn in order to acquire and master a new skill tend to use more effective learning strategies than students who perform a task because they want to demonstrate success or to hide failure. The case study analysis of four children indicated that when the students valued a subject, they invested more effort and enjoyed improving their skills in this area. In addition, they valued teacher's feedback because it allowed them to choose new strategies in order to achieve their goals.

Boekaerts (2002) reports that students who accept teacher-set goals as their own goals demonstrate a commitment to a desired goal. On the contrary, if students simply comply with the teachers' goals and expectations, they do not exhibit commitment to achieving the goal. Therefore, the author believes that when the goals are agreed upon by both the teacher and the students, there is a better chance that they will be accomplished because both parties are going to invest their effort.

When learners set their own goals or accept teachers' goals as their own, they are responsible for choosing a motivation strategy that will be conducive to goal attainment, e.g., they need to create effective learning environment that will not be distracting. It is worth noting that students who have self-set goals usually do not need as much encouragement from others to start work and they discover "cues in the environment that

elicit further interest and confidence in their own capacity to do the task" (Boekaerts, 2002, p. 18). Also Boekaerts (2002) emphasizes that students need to be persistent in order to achieve their self-set goals. Persistence can be sustained if students are capable of creating a solution plan when they experience a problem and identifying "whether it is fruitful to continue with a solution plan (persistence), or whether it is better to give it up because it will lead nowhere (disengagement)" (Boekaerts, 2002, p. 20).

Another topic that emerged from the literature review is the relationship between self-set goals and achievement for university students. For instance, Litmanen, Hirsto and Lonka (2010) examined the kinds of goals students had at the beginning of their studies and how these goals related with academic achievement during the first three years at university. Primarily, the study aimed at investigating how students evaluated their study-related self-set personal goals and what reasons motivated them to achieve those goals. The participants were 133 first-year students who were majoring in theology. The data were collected with the help of a questionnaire that focused on study-related goals. Upon completion of data analysis using statistical procedures, the researchers were able to identify three distinct clusters of students: self-fulfillers, committed and non-committed. The non-committed students viewed their goals as stressful and they indicated slow progress in achieving them. The committed students also described their goals as stressful but they were able to achieve them and thus were making academic progress. Finally, self-fulfillers did not describe their self-set goals as stressful and they saw themselves as capable of attaining them. Among other findings of the research is that self-fulfillers reported setting more goals related to the study process than students in two other groups. In terms of academic achievement, the committed student and self-fulfillers demonstrated

better results and after three years in the program they took more credits than the non-committed and thus they advanced more rapidly in their studies. Also, the students in the committed and self-fulfillers clusters indicated that they valued intrinsic reasons to striving for a goal. Litmanen et al. (2010) concluded that the students who perceived progress and had intrinsic reasons for their self-set goals demonstrated higher academic achievement.

Cheng and Chiou (2010) attempted to gain further insight in how self-set goals affect performance in a higher education setting. One of the purposes of their study was to investigate whether there was a correlation between goal setting and accounting achievement of college students. It was hypothesized that high achievement goals would lead to higher performance on a test. Data were collected from 124 freshmen enrolled in three sections of a first-year college accounting course. Students' performance was measured by a standardized accounting test three times during the year, at the beginning and end of the first semester and at the end of the second semester. After the participants took the first test and received their scores, they were helped to interpret them and asked to set goals for later tests. The results indicated that goal setting scores and achievement test scores had statistically significant positive correlations. Cheng and Chiou (2010) emphasize that in order to enhance accounting achievement, students need to participate in a goal setting process. It was noted that "failing to set goals often leads to the abandonment of planning and monitoring, [thus] setting goals might help surmount many difficulties" (Cheng & Chiou, 2010, p. 61). The results also showed that students with higher (more challenging) goals demonstrated better test performance than students with lower (easier) goals.

Koda-Dallow and Hobbs (2005) were also interested in the effect of goal setting on student achievement in a higher education setting. The authors employed a mixed methods research approach to examine the relationship between personal goal setting and autonomy or level of responsibility in a foreign language context. Autonomy has been considered as a long-term aim of education and one of the most important factors in successful language learning (Spratt, Humphreys, & Chan, 2002). Considerable research on autonomy (e.g., Zimmerman, 1989) suggests that students who develop autonomy – the ability to take responsibility for one's learning, are more successful in school because they are generally interested in the topic, prepare for classes, and participate in class discussions by asking questions and generating ideas. Twenty five freshmen and sophomore students who were taking Japanese course participated in the study over a five-week period. The students assigned to a treatment group were asked to set weekly personal goals for Japanese learning whereas the students in a control group did not set any goals. Although the quantitative analysis did not show any statistically significant difference that goal setting affected the students' beliefs regarding taking responsibility of their own learning, the analysis of the qualitative data from the interviews and students' written reports revealed that students who set goals for themselves developed autonomy while learning Japanese. The students who set personal goals reported that they used them to measure their progress, find effective learning strategies and reflect on their learning (Koda-Dallow & Hobbs, 2005).

While the above research studies focus on the role of self-set goals in an educational setting, Erez and Arad (1986) examined the relationship between goal setting and increased performance in a work setting. In particular, three explanation of this

phenomenon were investigated - the social factor of group discussion, the motivational factor of involvement in goal setting, and the cognitive factor of information sharing. The participants of the study were 96 white-collar employees who worked on a personnel selection task. They were given a simulated task that required them to evaluate how suitable a certain job application form was to particular job descriptions. According to the results of a 2x2x2 experimental factorial design, all three components had some effect on performance. The social factor of group discussion significantly affected performance quantity, incidental learning, goal acceptance, group commitment and satisfaction, but not the quality measure. On the contrary, the cognitive factor significantly contributed to performance quality rather than quantity. However, the motivational factor contributed to significantly increased performance quantity and quality as well as work attitudes. It is noteworthy that participants' involvement in the goal setting process had a significant effect on performance. Based on these findings, Erez and Arad (1986) concluded that "the three components of the process of participation - group discussion, involvement in goal-setting, and information, differentially contribute to performance quantity and quality and to work attitudes and that the combination of the three factors leads to the highest level of performance" (p. 597).

West and Thorn (2001) took a different perspective in the exploration of self-set goals. The purpose of their study was to identify how self-set goals and provided feedback were related to memory performance and self-efficacy of younger and older adults. According to goal theory (Locke, 1968a), feedback has a role of a moderator of goal effects. Research has identified that individuals who receive feedback on the progress regarding goal attainment perform better than when either or both are absent

(Bandura, 1989; Lee et al., 1989). West and Thorn (2001) identified two distinct groups of participant: seventy eight younger adults ranging from 17 to 26 years old in the first group and 68 older adults ranging in age from 63 to 81 in the second group. Half of the participants within each group were given direction to set a performance goal before the experiment, whereas the other half were not given any specific directions. In addition, one half of the participants within each goal setting group were provided feedback after the experiment. The researchers employed recall of categorized shopping lists as the primary task. Individuals in the study were asked to study the list until they felt like they had learned as many items as they could. The Memory Self-Efficacy Questionnaire (MSEQ; Berry, West, & Dennehy, 1989) was provided to the participants to identify whether they could remember particular grocery items from the list. West and Thorn (2001) found that young adult participants who were instructed to set goals demonstrated increase in self-efficacy but there was no effect on performance. The motivational impact of goals and feedback was weaker for the older adults than for the younger adults. Among other findings of the research was that younger adults were increasing the difficulty of their goals for every experiment trial unlike older adults. Although in this study goal setting and feedback did not make a difference in performance, goals as a dependent variable were related to performance and self-efficacy. In addition, goals were related to goal success, i.e. setting goals and observing the disparity between the goal and performance motivated the participants to increase their effort.

The research study conducted by Azevedo, Ragan, Cromley, and Pritchett (2002) was aimed at comparing self-set and assigned goals and their effects on students understanding. In particular, the authors examined the role and effect of different goal-

setting instructional interventions on high school students' ability for self-regulated learning of a complex scientific topic using a Web-based simulation hypermedia environment. Sixteen high school students (grades 11 and 12) were randomly assigned to one of the two instructional conditions – learner-generated sub-goals (LGSG) and teacher-set goals (TSG). In the learner-generated sub-goals condition, the students were allowed to set their own learning goals to learn about the scientific topic. In contrast, the students assigned for the teacher-set goals condition were given a detailed script of teacher-set goals that could help them better understand the difficult issues involved in the scientific concept. In order to get an in-depth understanding of different goal-setting conditions of students' ability to regulate their learning and as a result understanding of a scientific topic, the researchers collected multiple sources of data - fifteen hours of video and audio, students' notebooks, prediction statements, pretests, posttests, and concept maps.

Qualitative and quantitative analyses of data revealed that the students who set their own learning goals were able to better understand the scientific concepts than did the students who used teacher-set goals. Students from the LGSG group were able to develop very complex argument structures as they were trying to comprehend the information of a new scientific concept. Also, these students when experiencing difficulties were engaged in help-seeking behavior from a teacher and peers. Most importantly, the analysis of the qualitative data indicated that the students who were required to set their own learning goals were metacognitively aware of their performance and reflected on their progress by reviewing their answers and problem solving steps. In addition, the LGSG students utilized more effective learning strategies and were more

effective in dealing with various task difficulties and demands. In contrast, the students from the teacher-set goals condition were not engaged in planning, monitoring, and regulating their learning during their knowledge construction activity. From the data it was evident that they did not demonstrate help-seeking behavior when they were experiencing problems with understanding the material. This study contributes to the existing literature on the importance of self-set goals on performance and the results are consistent with previous research (e.g., Schunk, 2001) that indicates that self-set goals are conducive to enhanced understanding and achievement.

Mastery Goals versus Performance Goals

A considerable number of research studies have focused on describing how different goals affect learners' motivational patterns and as a result their performance. Two types of achievement goals - mastery goals and performance goals (Ames & Archer, 1987, 1988) - have received particular attention in the literature. These two types of goals have different underlying conceptions of success and reasons for participating in achievement activities as well as different ways of thinking about the task and its outcome.

> Central to a mastery goal is a belief that effort and outcome covary, and it is this attributional belief pattern that maintains achievement-directed behavior over time (Weiner, 1979, 1986).
>
> Central to a performance goal is a focus on one's ability and sense of self-worth (e.g., Covington, 1984; Dweck, 1986; Nicholls, 1984b), and ability is evidenced by doing better than others, by surpassing normative-based standards, or by achieving success with little effort (Ames, 1984b; Covington, 1984).

When students adopt a mastery goal orientation, they are intrinsically focused on learning and improving, that is they are genuinely interested in developing new skills, trying to accomplish something challenging and gaining more understanding. Such students are more likely to see the connection between their effort and the results that in turn helps them persist and work even harder. In contrast, when students adopt a performance goal orientation they have an extrinsic focus on getting good grades or rewards, doing better than other students, etc. In other words, these students are concerned about how their ability is judged by others and they seem more likely to attribute their success or failure to a level of their ability.

Research (e.g., Dweck & Elliot, 1983; Maehr & Nicholls, 1980) emphasizes that goals motivate students to engage in achievement activities. Goals serve as behavioral intentions that a learner uses in order to approach and engage in various learning activities (Meece, Hoyle, & Blumenfeld, 1988). Students choose to attain goals depending on their goal orientation - mastery or performance, different individual needs, and various demands of the task. The importance of a chosen goal can affect learner's choice of achievement tasks and learning strategies that in turn influences academic success (Ames, 1984b). Meece et al. (1988) examined the validity of a goal mediation model for conceptualizing the influence of individual and situational variables on students' goals and cognitive engagement in the classroom. The researchers identified three goal orientations – task-mastery goals, ego/social goals, and work-avoidant goals - in order to find out how each of them affects students' level of cognitive engagement in science activities. Mastery goals are those in which the learners choose to master and understand the material independently. Ego goals refer to those in which students wanted

to demonstrate their ability or to please a teacher. Finally, students who choose work-avoidant goals are mostly concerned with putting minimum amount of effort to get work done. The researcher selected and observed 100 fifth-grade and 175 sixth-grade students during science lessons. Students' goal orientation and cognitive engagement in six different learning activities were measured by the Science Activity Questionnaire. The results revealed that students' goal orientation related mostly directly to their cognitive engagement, i.e. students who placed the strongest emphasis on task-mastery goals reported more active cognitive engagement in the classroom activities. In addition, it was found that they used self-regulation strategies to monitor their learning. On the contrary, students who chose ego/social goals or work-avoidant goals reported lower forms of engagement in classroom activities. As for intrinsic motivation variable, students with greater intrinsic motivation emphasized the importance of task-mastery goals, whereas students with less intrinsic motivation were oriented towards pleasing the teacher, gaining recognition of their abilities or minimizing their effort.

Ames and Archer (1988) investigated how different motivational patterns were related to the importance of mastery and performance goals in a classroom. Specifically, the researchers sought to explore how students' perceptions of classroom goals related to their use of effective learning strategies. The participants of the study were one hundred seventy six high school students who were identified as academically advanced. The questionnaire was designed to assess students' perceptions of the mastery and performance classroom goals and the use of learning strategies. The major findings revealed that "students' perceptions of mastery and performance goals showed different patterns of relation with learning strategies, preference for challenging tasks, attitude

toward the class, and beliefs about the causes of success and failure" (Ames & Archer, 1988, p. 264). The authors argued that the mastery goal orientation rather than performance goal orientation of the classroom setting helped the students to stay involved in the learning process as well as pursue more tasks to enhance their learning. When the students identified their classroom environment as mastery-goal oriented, they reported using more effective strategies to learn and they preferred more challenging tasks. On the contrary, performance-oriented classroom environment made the students focus more on judging their ability as lower and implicating it as a cause of failure.

Elliott and Dweck (1988) continued the discussion about mastery and performance goals in relation to student performance and achievement. In their study, 101 fifth-grade students were assigned to four different conditions – the learning (mastery) goal-low ability, the learning (mastery) goal-high ability, the performance goal-low ability, and the performance goal-high ability. The participants were given a choice of tasks that were either performance-goal oriented or mastery-goal oriented. Both goals were made available for all the students no matter what condition they had been assigned to. Allowing students to choose a task helped the researchers to mimic the real world situation when individuals must choose one goal that is of higher value than the other. Among important findings is the fact that different types of achievement goals have different influence on students' task choice, performance during difficulty, and spontaneous verbalization during difficulty. Elliott and Dweck (1988) concluded that each of the achievement goals resulted in different cognitive, affective and behavioral consequences that in turn made a difference in student performance.

The study conducted by Linnenbrink (2005) investigated goal setting orientation and student achievement, specifically how personal goals related to students' motivation, emotional well-being, help seeking, cognitive engagement, and achievement outcomes. Two hundred and thirty seven upper elementary students participated in the study and were assigned to three different classroom goal conditions. First, the mastery goal condition stressed the importance of understanding, learning, and improvement. Second, the performance goal conditions emphasized the importance of high scores. Finally, the combined mastery/performance conditions included the elements from two previously described conditions. In addition, the students were required to set personal mastery and performance-approach goals. A math exam was used as pretest, posttest, and follow-up measures of achievement. The omnibus MANCOVA test revealed significant main effects of mastery personal goals on students' achievement. Particularly, students who strongly endorsed mastery goals demonstrated higher scores on math exams than students with performance-approach goals. These results supported the importance of mastery-goal orientation found in the previous research (Ames & Archer, 1988; Meece et al., 1988). Although it was expected that the greatest results in student achievement would be found when personal and classroom goals matched, the data analysis indicated that students' responses to different classroom goal conditions did not vary on the basis of their personal goals.

Self-Regulated Learning and Performance

In this part of the literature review I will provide a definition of self-regulation and describe its main components. Also I will present a review of the major studies on

self-regulated learning and achievement and the ways that classroom teachers can provide self-regulatory opportunities for students. The goal of such instruction is not only to introduce the students to various self-regulatory strategies but help them make conscious use of these strategies in different situations.

Self-regulation research and theory emerged in the literature of health psychology, educational psychology, and organizational psychology in the mid-80s to identify how individuals become masters of their own learning process. Despite multiple attempts and continuous efforts to define the term “self-regulation”, researchers have not yet come up with a single agreed-upon definition. In a recent article, Boekaerts and Corno (2005) concluded that there is no one straightforward definition of self-regulation and those that exist often differ on the basis of a researcher’s theoretical orientation. However, according to Zimmerman (1990), all definitions of self regulation in one way or another define self-regulated learners as “metacognitively, motivationally, and behaviorally active participants in their own learning” (p. 4) who identify their own goals and strategies from the information available in the learning environment and in their background knowledge.

The definition of self-regulation that I will be using and constantly referring to emanates from the work of a prominent educational psychologist and researcher Pintrich (2000) who identified self-regulation as

> an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment" (Pintrich, p. 453).

This definition was chosen because in the context where the study takes place, I hypothesize that LinguaFolio students were able to set their own goals for learning in other disciplines besides foreign language, and they monitored their progress towards goal achievement that could have a positive effect on their performance.

Self-regulated learning requires students to become actively engaged in the learning activity, exhibit "personal initiative, perseverance, and adaptive skill" (Zimmerman & Schunk, 2001, p. 1) rather than view learning as an event happening to them. Although all learners use regulatory strategies to some degree, the major difference is that self-regulated learners are aware of the existence of effective strategies to learn and the relationship between using these strategies and academic outcomes.

According to Paris and Paris (2001), every student develops their own theory of self-regulation. This theory can be very basic and naïve or carefully designed and detailed. Students can develop their understanding of self-regulated learning, for example, indirectly through their experience, i.e. students' school experience can induce self-regulation. For instance, students may realize that checking their work leads to greater accuracy and thus can positively influence their grade. On the other hand, self-regulation can be acquired directly through explicit instruction, i.e. teachers design instruction that involves students in the process of setting learning goals, allocating motivation and selecting effective strategies to achieve these goals. In addition, self-regulation can be elicited through practice that involves situations in which self-regulation is blended into the nature of a given task. Collaborative learning projects are the example of such task as they require each student to contribute to the project. Paris

and Paris (2001) noted that it is rarely that a student acquires self-regulation in only one of these manners rather all of them are conducive for the development of student's self-regulation ability.

Self-regulated students not only develop specific strategies that enhance their performance but they also learn to ask themselves "Does this strategy work for me in this situation?" Generally, these self-regulated strategies fall into three categories (Zimmerman, 1989): personal, behavioral, and environmental. Personal strategies include organization and interpretation of information, goal setting, time management, keeping records, etc. The behavioral strategies involve student's actions such as self-evaluation, self-motivation, and self-reinforcement. Finally, environmental strategies involve seeking assistance and structuring of the physical study environment, i.e. selecting or arranging the physical setting, isolating/eliminating or minimizing distractions, breaking up study periods and spreading them over time.

Researchers (e.g., Pintrich, 2000; Zimmerman, 2000, 2002) distinguish four cyclical phases of self-regulated learning: 1) forethought, planning and activation; 2) monitoring; 3) control; and 4) self-reflection and reaction. Although these four phases have a time-ordered sequence, there is no proof that they are linear-structured, i.e. first phase must always occur before the second, etc. (Pintrich, 2000). In the first phase, individuals analyze the task and set goals to achieve this task. Self-regulated learners identify both proximal goals and long-term goals that help maintain their motivation and increase self-efficacy and intrinsic interest. Having analyzed the task, students select effective strategies that will help them enhance performance in order to attain the goal.

They monitor their effort, motivation, cognition, time, and need for help. During the control phase, learners are engaged in a performance control process during which they select and adapt cognitive strategies for learning and thinking, decide whether to increase or decrease their effort, and change or renegotiate the task. Finally, in the self-reflection phase, learners evaluate their performance, identify reasons for their behavior, effort, and outcome. Also, they decide what needs to be changed in the future in order to attain better results.

One of the most important components of self-regulation is the presence of goals. Most theories on self-regulation emphasize its connection with goals, particularly the fact that goals influence self-regulation and serve as a standard or criterion against which individuals assess their progress (Pintrich, 2000). According to Zimmerman (1989) goals are involved across all four phases of self-regulation discussed above. Since the main assumption of self-regulated learning is that goals guide performance and learning process (Pintrich, 2000), research on self-regulation similar to goal setting research takes into consideration two types of goals discussed earlier in this literature review – mastery and performance (Ames, 1992). Mastery goal orientation (in self-regulation literature it is also discussed under the purpose or learning goals) in the self-regulation process refers to *why* individuals want to achieve the specific result when approaching a task (Pintrich, 2000). If an individual decides that the standard for a task is learning, then as they monitor, control and regulate their performance, this standard guides them towards the use of more self-regulatory strategies. Zimmerman (1989) suggests that self-regulated learners with mastery goal orientation tend to see the intrinsic value of learning and they feel more confident in achieving learning goals than students who do not possess self-

regulation skills. Also students demonstrate a high level of persistence when they have difficult tasks, and they tend to use more effective learning strategies. The *why*-factor distinguishes mastery goal orientation from performance goal orientation (also discussed as task-specific goals) which is characterized by an individual's desire to demonstrate their superiority over others in terms of grades or getting a specific score, avoiding failure, etc. In other words, performance goal orientation includes qualitatively different monitoring and control processes involved in self-regulation processes. A vast number of research studies suggests that "students who adopt or endorse an approach-mastery goal orientation do engage in more self-regulated learning than those who do not adopt or endorse to a lesser extent a mastery goal (Ames, 1992; Pintrich & Schrauben, 1992; Pintrich & Schunk, 1996)" (Pintrich, 2000, p. 480). In addition, studies have reported that students with mastery goals show more attempts to self-monitor their cognition and search for ways to improve their understanding and learning (e.g., Ames & Archer, 1988; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; etc.).

Goals enhance self-regulation through the effects on motivation, learning, self-efficacy (perceived capabilities for learning or performing actions at given levels), and self-evaluation progress (Bandura, 1997; Schunk, 1990). Goals motivate individuals to make every effort necessary to meet the demands of a task. In addition, goals help students focus on the task, select and apply appropriate strategies, and monitor goal progress. When earlier goals are achieved, self-regulated learner's motivation increases that leads to setting higher learning goals (Bandura, 1989). Particularly, when students successfully complete a task, they have emotional reactions to the results as well as they reflect on the reasons for the outcome. Individuals who focus on learning tend to be more

likely to view performance feedback in terms of progress that in turn supports their motivation and self-efficacy (Pintrich, 2000). For instance, a research study conducted by Wolters (1998) aimed at investigating students' efforts at regulating their motivation. In particular, three research questions guided the study: What strategies do students use to regulate their motivation? Is the use of these strategies dependent on contextual factors? How is motivational regulation related to other aspects of self-regulated learning and achievement? The participants of the study were 115 college students enrolled in an introductory psychology course in a large Midwestern university. The questionnaire was used to identify students' strategies for regulating motivation; a survey was used to assess students' goal orientations and the use of cognitive strategies; and final course grades were collected from instructors. In regard to the first research question, results indicated that students possessed a number of strategies designed to regulate their effort and persistence. From students' responses it was evident that they used various strategies to control their motivational as well as cognitive engagement. In regard to the second questions, student's self-regulation strategies varied across different tasks. For instance, "more students seemed to report using a strategy focused on performance goals when asked about studying for a test than when asked about attending a lecture, reading a textbook, or writing a paper" (Wolters, 1998, p. 233). This result supports the idea that self-regulated students select and modify a strategy in order to fit specific demands. With regard to the third question, the students who used more intrinsic regulation strategies reported a stronger learning goal orientation than the students who reported more extrinsic goal orientation. Overall the results from this study "support a model of self-regulation in which students monitor and regulate their motivation for completing

academic tasks as well as the effectiveness of their cognitive strategies" (Wolters, 1998, p. 234).

Considerable research evidence demonstrates that self-regulated learning is a key to success in school whereas the lack of self-regulation leads to academic underachievement (e.g., Borkowski & Thorpe, 1994; Zimmerman & Martinez-Pons, 1986). For instance, Zimmerman and Martinez-Pons (1986) argued that high-achieving students use more self-regulatory strategies for their learning than low-achieving students. Pintrich and De Groot (1990) reported that the students who used self-regulatory strategies demonstrated higher levels of intrinsic motivation, self-efficacy, and achievement. Later, Schunk and Zimmerman (1994) conducted a review of a number of studies and identified that self-regulated students tend to have better cognitive, motivational and achievement results than those students who do not self-regulate.

The study conducted by Paterson (1996) presents an analysis of students' achievement under conditions of self-regulation and traditional instruction. In particular, the study investigated whether senior high school biology students who were exposed to self-regulated instruction in the classroom demonstrated enhanced academic achievement in comparison to students in the classroom with teacher-regulated classroom instruction. The students in the experiment group were offered a greater degree of learner autonomy, i.e. they had control over the self-regulated learning strategies (e.g., strategic planning for the lesson, self-monitoring, self-evaluation of the progress) that they could use. They were not coached in these strategies, however, guidelines were given to facilitate learning in the self-regulated learning setting. On the contrary, the control group was exposed to

traditional instruction in which a teacher developed the content, initiated whole class discussions, guided student practice, provided corrective feedback, etc. Consistent with the previous research findings (Nist, Simpson, Olejnik & Mealey 1991; Pintrich & De Groot, 1990), the results from Paterson's (1996) study demonstrated that self-regulated group had significantly greater achievement in biology than the traditional group. Particularly, "higher measures of reported self-regulation were significantly associated with higher academic performance scores after self-regulated instruction than after traditional instruction" (Paterson, 1996, p. 1).

Ablard and Lipschultz (1998) further investigated the relationship between self-regulated learning and achievement in 222 high-achieving seventh-grade students, particularly their use of self-regulated learning strategies and mastery and/or performance achievement goals. The findings from the questionnaire revealed that the students frequently used various self-regulated learning strategies such as organizing notes, seeking assistance from teachers, self-evaluation, goal-setting, planning, etc. Although all of the students were high-achievers, they ranged widely in the use of self-regulated learning strategies. Some students used only one strategy whereas others utilized almost all fourteen self-regulated learning strategies identified by the researchers. The majority of participating students reported that the use of mastery goal orientation helped them persist despite challenges. On the other hand, performance goal orientation did not correlate linearly to self-regulated learning, i.e. students with the lowest levels of self-regulated learning were those who chose performance goals.

Schloemer and Brenan (2006) continued the discussion with the emphasis on the process of developing self-regulation skills. It has been well documented that advising and teaching students about self-regulated learning positively affects students' performance and helps students become more active participants in the learning process that in turn results in higher academic achievement. In Schloemer and Brenan's (2006) study students enrolled in two semesters of accounting were introduced and taught basic elements of self-regulated learning. They included teacher-students collaboration on creating learning goals, monitoring of learning activities and progress, teachers' feedback, and identifying strategies for improvement. For this study, the researchers developed methodology for encouraging self-regulated learning. Students started with creating learning goals with the help of the instructor. After some practice, they proceeded with writing goal on their own that they believed would help them develop competencies. In order to motivate the students to monitor their progress, they had to complete surveys each week that asked them to estimate the amount of time they put in the completing of the assignments and identify examples that illustrated the achievement of a certain competence. According to the researchers, such activity helped the students to consider which techniques were more or less successful based on the amount of time invested and progress made towards improving the competencies. Overall the students reported increased motivation and enthusiasm for taking the accounting course. Also their comments consistently showed that they gained a better understanding of various accounting issues. From the analysis of students' ratings of the self-assessment, it was evident that the students were able to "make fairly objective assessments of their progress and take the development of competencies seriously" (Schloemer & Brenan, 2006, p. 83).

Students' daily logs of time devoted to accounting demonstrated that they were able to modify their learning behaviors and spend more time to prepare for assignments that were more difficult than others. These results suggested that a process of developing self-regulated skills that included goal setting, frequent and extensive monitoring and modification of learning strategies in order to encourage self-regulated learning proved itself effective (Schloemer & Brenan, 2006). Self-regulated learning leads to improved performance and development of a life-long skill necessary for success in any career.

Van den Hurk (2006), on the other hand, examined the relationship between two specific self-regulation strategies - time planning and self-monitoring - and achievement in problem-based learning. In problem-based learning (PBL) students are responsible for their own self-regulated learning process. Teachers engage students in discussion of the problems, formulating new ideas, independent learning, etc. Students actively participate in the learning process by setting goals, planning their study time, selecting appropriate learning strategies, monitoring their progress, etc. It has been found that students in PBL instruction develop self-regulation skills (van den Hurk, 2006). Van den Hurk (2006) was particularly interested in how time-planning (time-management, scheduling, planning) and self-monitoring (goal setting, attention focusing, progress monitoring) aspects of self-regulated learning were related to cognitive achievement. The participants of the study were 165 first-year psychology students who were enrolled in a problem-based curriculum. Data included students' responses to a questionnaire and scores from two cognitive achievement tests. The results indicated that students who were better time-planners and who were engaged in self-monitoring demonstrated higher scores on cognitive tests. Particularly, such students were more efficient in identifying the amount

of time needed to accomplish an assignment, preparing for tutorial group meetings, etc. Also, "students who are highly skilled in monitoring their study activities seem to benefit more than less skilled students in terms of efficiency and cognitive achievement" (van den Hurk, 2006, p. 164). The evidence from this study contributed to the existing literature (e.g., Pintrich & Garcia, 1991) on self-regulation and achievement in that students who set goals and monitor their progress towards goal achievement tend to perform higher on cognitive tests in comparison to students who are not self-regulated learners.

Similar to Schloemer and Brenan's (2006) and van den Hurk's (2006) investigation of self-regulated learning, Eilam, Zeidner and Aharon (2009) were interested in the role of self-regulated learning in academic achievement. The researchers conducted an exploratory study that focused on the relation between the trait of conscientiousness, self-regulated learning and achievement in science for junior high school students. Particularly, Eilam and others (2009) looked at the role of self-regulated learning in mediating the relationship between conscientiousness and students' performance. As identified in research, conscientiousness – the dimension that includes person's ambition, energy, diligence, carefulness - is a predictor of achievement from early childhood to adulthood (Chamorro-Premuzic & Furnham, 2003; De Fruyt & Mervielde, 1996; Matthews, Zeidner, & Roberts, 2006; Shiner, Masten, & Roberts, 2003) and a significant characteristic of successful students (Chamorro-Premuzic & Furnham, 2003; De Raad & Schouwenburg, 1996). Since consciousness contains attributes that are also part of the self-regulated learning (e.g., goal-orientation, self-monitoring, self-organization, etc.) it is expected that it should be strongly associated with self-regulation.

In addition, it has been previously found (Pintrich, 2000) that students with high consciousness succeed academically because they select mastery goals that contribute to their comprehension of the material. Statistical analysis of the data collected from multiple sources over one academic year supported Eilam et al.'s (2009) hypothesis that significant relationship exists between conscientiousness and self-regulated learning and self-regulated learning and achievement. Moreover, the research has proved that self-regulated learning "mediates the relationship between conscientiousness and student achievement" (Eilam et al., 2009, p. 429).

Perels, Dignath, and Schmitz (2009) investigated the effects of self-regulated training integrated in the sixth-grade math class on student achievement as measured by a math test. Students in the control group were exposed to a regular sixth-grade math curriculum whereas instruction in the experiment group was combined with self-regulative strategies in order to support student achievement. Besides effects on achievement, Perels et al. (2009) also aimed at determining how successfully students could be trained to become more self-regulated learners in a regular classroom. In this study self-regulation training occurred during regular math lessons in which the students were given greater responsibility over their learning during all phases of self-regulated learning, i.e. forethought, performance, and reflection. The results of the pretest-posttest evaluation indicated that the students in the experimental group demonstrated self-regulation strategies and higher achievement in math than the students in the control group. Perels and others (2009) concluded that including self-regulated learning in a regular curriculum is beneficial for student learning and results in better performance. The results from Perels et al.'s (2009) study adds to research "as it realizes this

combination in a regular classroom situation, so that it is possible to directly influence school-based learning with cross-curricular self-regulation strategies" (p. 27).

Research studies reviewed above concentrate on self-regulated learning that occurred through active and deliberate learning strategies. Schapiro and Livingston (2000) took a different approach on self-regulation as an internally driven or dynamic disposition to learn. They argue that active and self-conscious self-regulation is not sufficient and individuals also need internally driven disposition to learn. Self-regulated learners need to filter out competing factors as well as social, personal and occupational concerns before they identify appropriate strategies to learn (Schapiro & Livingston, 2000). This requires dynamic form of self-regulation (Iran-Nejad & Chissom, 1992). Active self-regulation can be characterized as deliberate control over cognitive processes whereas deliberate self-regulation "involves an internal disposition that drives interest, curiosity, risk-taking, enthusiasm, and persistence as means for stimulating learning" (Schapiro & Livingston, 2000, p. 24). Dynamic self-regulation has been found to influence achievement to a greater extent than active self-regulation (Iran-Nejad & Chissom, 1992), however, researchers have rarely examined dynamic self-regulation as a separate phenomenon. Schapiro and Livingston (2000) hypothesized that students who were high-dynamic would have a higher GPA in comparison to students who were low-dynamic regardless of their level of self-regulation. Another purpose of the study was to identify whether dynamic self-regulation could be taught and thus improve students' academic achievement. The participants were 342 students enrolled in the Methods of Inquiry course over four semesters. The course was designed to develop self-regulated learning skills and critical thinking in a supportive environment that could help improve

academic achievement. The participants completed a pre- and post-questionnaire on active and dynamic learning. The results from the statistical analysis of data supported the first hypothesis, i.e. low-dynamic students had lower GPA in comparison to high-dynamic students. As for the second hypothesis whether dynamic self-regulation could be taught, the researchers found that 50% of the students who were low-dynamic in the beginning of the semester became high-dynamic by the end of the semester with the help of the course. Evidently, dynamic self-regulation can be taught and teachers should be encouraged to include necessary elements that promote dynamic self-regulation in their instruction.

Research views self-regulated learning as a set of skills that can be taught explicitly in the classroom when teachers provide necessary information and opportunities for students of different ages and abilities that can help them become more motivated and autonomous learners (Paris & Paris, 2001). As a result, a large number of studies have investigated the benefits of explicit self-regulatory instruction in different academic settings. The results from these studies have shown that students who are taught different self-regulation strategies become more aware of their learning that results in higher performance. A number of research studies discuss self-regulatory learning strategies as a curriculum-embedded approach for teaching self-regulation (Randi & Corno, 2000) in which students are instructed the strategies explicitly within the subject matter curriculum, whereas other studies describe teaching of self-regulation apart from any subject matter, e.g., as a separate course. Although some researchers (e.g., Hattie, Biggs, & Purdie, 1996) argue that for instruction of self-regulation to be effective it has to be linked to some factual content, it is noteworthy that findings from research studies

that describe courses or programs specifically targeted at teaching self-regulatory skills indicate similar benefits for students.

Researchers (e.g., Zimmerman, 1989; Pintrich, 2000) have agreed on the importance of self-regulated learning for students at all academic levels, and for a teacher it is essential to remember that self-regulation can be taught, learned and controlled. Since self-regulation is a learned skill, educators can create necessary environment conducive to the development of this skill in students. Instructors have begun to search for ways to equip their students with strategies that will enable them to become self-regulated learners. For instance, Zusho and Edwards (2011) suggested an academic course targeted at introducing students to self-regulation strategies. Such developmental courses "aim to improve students' strategic knowledge, awareness, and monitoring of their thinking, goal setting, and time management (Hofer, Yu, & Pintrich, 1998; Weinstein, Husman, & Dierking, 2000)" (Zusho & Edwards, 2011, p. 27).

Paris and Paris (2001) summarized the principles for teachers to design activities in the classroom that help promote students' self-regulated learning around four categories: 1) Self-appraisal leads to a deeper understanding of learning, i.e. students need to analyze their personal learning styles and strategies, become engaged in periodic self-assessment and monitoring their progress. 2) Self-management of thinking, effort, and affect promotes flexible approaches to problem solving that are adaptive, persistent, self-controlled, strategic, and goal-oriented, i.e. students need to set appropriate learning goals that are attainable but at the same time challenging. They also need to learn to manage time and resources by setting priorities and persisting to goal achievement. 3)

Self-regulation can be taught in diverse ways. Teachers can help the students become more self-regulated learners by engaging them in metacognitive discussions, directed reflection, reflective analysis of learning, and assessment of personal growth. 4) Self-regulation is woven into the narrative experiences and the identity strivings of each individual.

Another strategy to promote self-regulated learners in high school and college students is software programs such as STUDY (Winne & Stockley, 1998), and CoNoteS2 (Hadwin & Winne, 2001) "which assist college students in monitoring perceptions of when and how they apply learning strategies while studying" (Zusho & Edwards, 2011, p. 28). Yet another way to instruct students in self-regulation is a Learning Academy Model (Zimmerman, Bonner, & Kovach, 1996). This Model helps students focus on behavior and it emphasizes expert and peer modeling, direct social feedback for performance efforts, and practice routines that involve goal-setting and self-monitoring. A great reliance is placed on tutoring and coaching during actual performance. Students are taught to control their learning processes by engaging in such activities as evaluating current level of mastery; analyzing the learning task; setting learning goals; choosing appropriate strategies to master material; and monitoring their own performance.

Cooper, Horn, and Strahan (2005) conducted a study that examined the ways used by seven high school teachers to promote higher levels of self-regulation. The researchers met with the teachers once a week during three months to help them create higher-order reasoning questions, review student's responses and design instructional strategies. The results from the analysis of students' homework logs and interviews with the students and

teachers regarding the intervention designed to enhance student motivation for the subject and improve the quality of assignments demonstrated that students became aware of the importance of self-regulation and goal setting. Homework logs helped the students to become more successful in self-regulated learning because they could keep track of their progress. Overall the researchers concluded that "high school students can learn the language of self-regulation and can communicate it" (Cooper et al., 2005, p. 20). In addition, the teachers played a crucial role in developing students' self-regulation skill. They engaged the students in classroom activities that required higher-order thinking skills, encouraged students to monitor their progress and effort they invested in achieving the goals. Also the teachers modeled the ways to track the progress and supported students in more difficult tasks.

Summary of the Literature Review

The literature review has demonstrated the link between self-regulated learning, goal-setting and positive educational outcomes (e.g., Alexander & Judy, 1988; Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1986, 1990).

"The beneficial effect of goal setting on task performance is one of the most robust and replicable findings in the psychological literature" (Locke et al., 1981, p. 145). Empirical studies conducted in field and laboratory settings as well as non-experimental studies reviewed above indicated that there is a positive effect of goal setting on performance. Individuals with specific and difficult goals perform better than those with easy goals or no goals at all. The research has also demonstrated that this effect is found just as reliable for both self-set goals (e.g., Hom & Murphy, 1985; Schunk, 1985) as well

as assigned goals (Bandura & Schunk, 1981; Manderlink & Harackiewicz, 1984). However, although assigned goals have a positive effect on performance assuming that individuals accept the goals, the literature review conducted above strongly supports the importance of self-set goals. It is noteworthy that self-set goals tend to predict performance better than assigned goals (Azevedo et al., 2002). Students who participate in setting their own goals demonstrate higher levels of performance than students who have goals set for them (Azevedo et al., 2002; Mento et al., 1987) and they develop self-regulatory skills. Self-regulated learning requires active control of various cognitive strategies for learning such as deep processing strategies; available resources (e.g., time, study environment, etc.); motivational beliefs (e.g., goal-orientation, self-efficacy); and emotions (Zimmerman, 1989). The development of self-regulatory skills supports the achievement of personal goals in changing learning environments.

This study seeks to learn about the effects of self-set goals on student academic achievement and development of the capacity for self-regulated learning. Particularly, this study investigates whether the goal setting skill taught in foreign language classrooms might be transferred to other subject areas that results in enhanced achievement in other content areas as well as overall academic achievement.

CHAPTER 3: METHODS

Quantitative Approach

The quantitative approach was identified as appropriate for this study since the current research includes the examination and analysis of the existing numerical data (i.e. students' records) of the postpositivist worldview.

According to Creswell (2008), "worldviews are the broad philosophical assumptions researchers use when they conduct studies" (p. 554). Creswell and Plano Clark (2011) distinguish between four major worldviews: postpositivism, constructivism, transformative/participatory, and pragmatism. Each of these worldviews is associated with different research approaches. While constructivist and participatory worldviews are typically associated with qualitative approaches and pragmatism can be characterized as being particularly associated with mixed methods research, postpositivist worldview is associated with quantitative approach.

> Postpositivism reflects a determinist philosophy in which causes probably determine effects or outcomes. Thus, the problems studied by postpositivists reflect a need to examine causes that influence outcomes, such as issues examined in experiments. It is also reductionistic in that the intent is to reduce the ideas into a small, discrete set of ideas to test, such as the variables that constitute hypotheses and research questions. The knowledge that develops through the positivist lens is based on careful observation and measurement of objective reality that exists "out there" in the world (Creswell, 2003, p. 6).

Ex Post Facto Design

Ex post facto research is typical in education and in the behavioral and social sciences due to the fact that it is difficult and not always possible to randomly assign

students to different programs. It is frequently used to address the problem of what people learned in different circumstances or in other words it aims to investigate understanding of differences which could be generalizable (Anderson, 1998).

Ex post facto or nonexperimental research is defined as

> research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependents variable or variables. He then studies the independent variables in retrospect for their possible relations to, and effects on, the dependent variable or variables (Kerlinger, 1964, p. 360).

The current study does not make an attempt to establish causality from the available data because cause and effect relationship can only be determined from experimental research designs. Instead, this study is quasi-experimental and it aims at determining whether an intervention has the intended effect on the participants but it lacks random assignment of the participants to experiment and control conditions.

Although "the quasi-experimental design has the advantage of utilizing existing groups in educational settings" (Creswell, 2008, p. 314), it presents threats to internal validity. Due to the fact that the researcher does not randomly assign participants to control and experimental groups, "the potential threats of maturation, selection, mortality, and the interaction of selection with other threats are possibilities" (Creswell, 2008, p. 314). In addition, a control group may be different from the treatment condition in many ways other than the presence of the treatment. These differences might go uncontrolled by the researcher and as a result many of them might be explanations for the observed effect (Shadish, Cook, & Campbell, 2002).

The data in the current study were analyzed to demonstrate the existence of a relationship (or the degree of association) between goal setting and performance but the analysis is not able to provide an explanation for this relationship or claim true cause and effect relationships.

Purpose and Research Questions

Purpose of the Study

The purpose of this quantitative group comparison study designed as an ex post facto examination of the relationship between goal setting and achievement is to investigate if the goal setting skills integrated in the foreign language classroom helped students make a difference in academic achievement and increased the capacity for self-regulated learning in three high schools in southeast Nebraska. Student achievement was defined in terms of graduating GPA and ACT scores. The term self-regulated learning for the purpose of this study is defined as students' ability to set goals for learning and then attempt to plan, monitor, and control their motivation, cognition, behavior, and context of learning.

Research Questions

Three overarching research questions guided the study:

I. What is the effect of foreign language study that includes LinguaFolio goal setting intervention on high school students' achievement?

II. Does significant difference in achievement exist between LinguaFolio and non-LinguaFolio students?

III. Does LinguaFolio goal setting intervention help develop self-regulated learning?

Specific testable questions for the study included:

1. Does LinguaFolio goal setting have an effect on ACT math, science, English, and reading scores in three schools?
2. How does the number of years of participating in LinguaFolio affect students' ACT scores in three schools?
3. Does LinguaFolio goal setting have an effect on ACT math, science, English, and reading scores in each school individually?
4. How does the number of years of participating in LinguaFolio affect students' ACT scores in each of the three schools individually?
5. Does LinguaFolio goal setting have an effect on GPA in three schools?
6. Does LinguaFolio goal setting have an effect on graduating GPA in each school individually?
7. How does the number of years of participating in LinguaFolio affect students' graduating GPA in three schools?
8. How does the number of years of participating in LinguaFolio affect students' graduating GPA in each of the three schools individually?
9. Does LinguaFolio goal setting have an effect on ACT scores and graduating GPA combined in three schools?

10. How does the number of years of participating in LinguaFolio affect students' ACT scores and graduating GPA in three schools?
11. How does the number of years of participating in LinguaFolio affect students' ACT scores and GPA in each of the three schools individually?

Population

Statewide Nebraska schools student population is estimated at 305,773 in 2010-2011. There are 548 public school districts with 1,307 schools, and 234 private schools. Although public school revenue and expenditures differ by school districts, Nebraska public schools spend approximately $8,084 per student each year. This ranks Nebraska schools number 15 nationally. Student teacher ratio in Nebraska public schools averages 10:1 and 6:1 in private schools. In addition, Nebraska high schools average a student body population of 273 (Retrieved May 27, 2012 from http://www.schoolsk-12.com/Nebraska/).

The population of the study includes 618 (454 LinguaFolio students and 164 non-LinguaFolio students) high school students who graduated from three Nebraska schools between 2006 and 2010. The selection of participants is guided by the purpose of this study that attempts to understand whether students who experienced LinguaFolio as an intervention in their second language classrooms had higher achievement and performed better in other subject content areas in comparison to students who were not exposed to LinguaFolio and therefore developed capacity for self-regulated learning. The population was limited to 618 students and was made up of two distinct groups: LinguaFolio

students (experiment group), n = 454, and non-LinguaFolio students (control group), n = 164.

The three schools were purposefully selected because they implemented LinguaFolio from 2005 to 2010 and participated in research conducted by Moeller, Theiler, and Wu (2012). IRB has granted approval (#: 20120512609 EX) to conduct the research prior to data collection.

Nebraska Department of Education provided general information for each of the three schools. According to the data, in School 1 the total number of students was 237 while there were 20 teachers in 2010. Teacher-student ratio averaged approximately 1:12. Gender composition of the student population included 47% male students and 53% female students. In terms of the racial composition, 92% were White, 5.9% were Hispanic, 0.8% was Black, 0.8% was Asian/Pacific Islander, and another 0.8% was American Indian. Thirty eight percent of student qualified for a free/reduced-price lunch program. School 1 median household income was $38,873 in 2006-2010.

In School 2, the total number of teachers was 18 while the total number of students was 194 in 2010. Teacher-student ratio averaged 1:11. The total student population was comprised of approximately 49% male students and 51% female students. In terms of racial composition, the vast majority of students, i.e. 96.4%, were White, 2.6% were Hispanic, and 1% was Black. Approximately 40% of all students were eligible for a free/reduced-price lunch program. School 2 median household income was $53,750 as of 2006-2010.

In 2010, there were 302 students enrolled in School 3. The average teacher-student ratio was 1:12. Male students comprised approximately 54% in comparison to 46% female students. In terms of the racial composition, 89.7% of students were White, 7.9% were Hispanic, and 1.3% was Black. The percentage of students eligible for a free/reduced-price lunch program was 43%. School 3 median household income was $38,081 in 2006-2010.

Description of Data

The study involves the analysis of non-publicly available data. Each school provided students' records which include ACT scores in math, science, reading, English, and cumulative; graduating GPA, and number of academic years in Spanish. This information was collected between 2006 and 2010 in three Nebraska schools.

Ethical Consideration

According to Creswell (2008), "data collection should be ethical and it should respect individuals and sites" (p. 179). All the potential ethical issues as well as summary of the procedures, the purpose of the study, the data collection processes were indicated in the IRB application. The data collection began after IRB granted final approval.

I was working with data that had already been collected, therefore the research presented no risks to participants. However, since "participant confidentiality is of utmost importance" (Creswell, 2008, p. 240), the data received from the principals of the schools included no identifiable information such as students' names or school ID numbers in the

students' records. It was requested that each student is assigned a random number which is different from their school ID number.

All data are kept confidential and stored in my personal computer. The students' records will not be shared with the individuals outside of the project. No reference will be made in written or oral materials that could identify a particular individual and no specific mention of the school will appear on any reports of the research.

Participation in this study is completely voluntary, and any school may choose to remove itself from participation at any time.

Statistical Procedures

The measurable research questions were answered by analyzing the data provided by three Nebraska schools. The data included students' graduating GPA and ACT scores in English, math, science, and reading. Four statistical procedures will be used to analyze the data: multivariate analysis of variance (MANOVA), multivariate regression, analysis of variance (ANOVA), and simple linear regression. The results will be calculated and reported via SPSS IBM version 21 software.

A multivariate analysis of variance (MANOVA) was used to determine whether there is a significant difference in the linear combination of the dependent variable (GPA and ACT scores) for the LinguaFolio versus non-LinguaFolio (control) groups. It is important to mention that some of the multivariate models included GPA and ACT, while others only included the ACT subject tests (i.e., math, science, reading, and English). This method is appropriate because it tests for the difference in the vectors of means.

Since there are several correlated dependent variables, it is important to perform a single overall statistical test on the set of variables instead of performing multiple individual tests. Accordingly, MANOVA is a proper method to determine whether or not significant differences exist between the groups.

After establishing that the multivariate effects are significant, the univariate results will be investigated through the analysis of variance (ANOVA). In addition, when number of years of participating in LinguaFolio is used to predict students' graduating GPA, simple linear regression will be performed. Furthermore, when the number of years in LinguaFolio is used to predict ACT or the combination of ACT and GPA to measure overall students' academic achievement, a multivariate regression will be performed. Only significant effect will be reported.

CHAPTER 4: RESULTS

In chapter three I presented the design of the study, the research questions and the nature of the data to be examined. This chapter includes a restatement of the purpose of the study, analysis of the data, and the results. Each testable research question is individually addressed through data analysis.

Overview

Before introducing the research results, I will review the purpose of the study and the research questions. Furthermore, I analyze each question individually in consideration of research findings. The focus of the study was to determine whether students who experienced LinguaFolio as an intervention in the foreign language classrooms achieved higher academic outcomes as measured by cumulative GPA and ACT scores in math, science, reading, and English in comparison to students who were not exposed to LinguaFolio. This quantitative group comparison was designed as an ex post facto examination of the relationship between goal setting and academic achievement in order to identify if the goal setting skill integrated in the foreign language intervention increased student academic achievement that in turn resulted in the development of the capacity for self-regulated learning. Anonymous student data were provided by three schools being examined. All data were assumed to be accurate and no attempts were made to further validate the data. The population of the study included students from three Nebraska high schools who graduated between 2006 and 2010. The population included N = 618 students (LinguaFolio students = 454 and non-LinguaFolio students = 164).

The following types of data were collected:

SCHOOL ID	NUMBER OF PARTICIPANTS	TYPES OF DATA
School 1	225	Cumulative GPA, ACT (math, science, reading, English)
School 2	162	
School 3	231	

This chapter will discuss statistical analysis of each research question using four statistical procedures: multivariate analysis of variance (MANOVA), multivariate regression, analysis of variance (ANOVA), and simple linear regression. All data were used for the purpose of investigating eleven testable research questions that guided the study.

Analyses of the Testable Research Questions

Below I present a summary of the results of the analysis for each testable question independently.

Question 1

Does LinguaFolio goal setting have an effect on ACT math, science, English, and reading scores in three schools?

A one way between-subject multivariate analysis of variance (MANOVA) was performed on four dependent variables (DV) which included ACT math scores, ACT English scores, ACT reading scores, and ACT science scores. The independent variable

(IV) was LinguaFolio goal setting intervention. Total number of N = 618 was reduced to 375 with the deletion of the cases of the students who did not take ACT.

The Wilks' Lambda = .911, F (4, 370) = 9.077, p = .000, revealed that LinguaFolio goal setting has a significant effect on ACT scores, partial η^2 = .089. That means that 8.9% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. Students who participated in LinguaFolio performed better on ACT exam in all four sections (math, science, reading, and English) compared to students who did not participate in LinguaFolio.

When interpreting the univariate analyses, a Bonferroni correction was employed (i.e., α_{fw}/p) where α_{fw} corresponds to the family-wise error rate and p is the number of tests. This correction is necessary because the within-group correlation among the dependent variables is not zero; Tabachnick and Fidell (2007) state that within-group correlations are never zero unless the dependent variables are formed by a principal component analysis. In this case, the Bonferroni correction is .05/4 = .0125. Therefore, the p values were compared to .0125 instead of .05. However, after employing the Bonferroni adjustment the effect for all four dependent variables was significant. For ACT reading scores, F (1, 373) = 16.285, p = .000, partial η^2 = .042. For ACT science scores, F (1, 373) = 21.302, p = .000, partial η^2 = .054. For ACT math scores, F (1, 373) = 26.627, p = .000, partial η^2 = .067. For ACT English scores, F (1, 373) = 32.601, p = .000, partial η^2 = .080.

Question 2

How does the number of years of participating in LinguaFolio affect students' ACT scores in three schools?

Question 2 examined whether the number of years in LinguaFolio affected students' performance on ACT exam. It was hypothesized that the longer the students participated in LinguaFolio, the better ACT scores they produced.

The Wilks' Lambda = .886, F (4, 370) = 11.917, p = .000, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four section of ACT exam (English, math, science, and reading) combined, partial η^2 = .114. That means that 11.4% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. In other words, the more years the students participated in LinguaFolio, the better ACT scores they produced.

When interpreting the univariate analyses, a Bonferroni correction was employed (i.e., α_{fw}/p) where α_{fw} corresponds to the family-wise error rate and p is the number of tests. In this case, the Bonferroni correction is .05/4 = .0125. Therefore, the p values were compared to .0125 instead of .05. However, after employing the Bonferroni adjustment the effect for all four dependent variables was significant. For ACT reading scores, F (1, 373) = 26.406, p = .000, partial η^2 = .066. For ACT science scores, F (1, 373) = 25.884, p = .000, partial η^2 = .065. For ACT math scores, F (1, 373) = 29.230, p = .000, partial η^2 = .073. For ACT English scores, F (1, 373) = 46.659, p = .000, partial η^2 = .111.

The parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.091; the ACT science score is predicted to increase by .801; the ACT math score is predicted to increase by .941, and the ACT English score is predicted to increase by 1.307.

Question 3

Does LinguaFolio goal setting have effect on ACT math, science, English, and reading scores in each school individually?

Question 3 examined whether participation in LinguaFolio affected students' ACT scores (math, science, reading, and English) in each of the three schools individually. Even though significant results were found when data from all three schools were combined (see question 1), it was important to investigate the effect of LinguaFolio in each school separately. MANOVA was performed on four dependent variables (DV), i.e., ACT math scores, ACT English scores, ACT reading scores, and ACT science scores.

Before presenting the results for each individual school, it is important to mention that when broken apart by school, the sample of students who did not participate in LinguaFolio but did take ACT exam was relatively small and included only four students in School 1, twenty one students in School 2, and twenty students in School 3. In addition, when interpreting the univariate analyses for each school, a Bonferroni correction was employed (i.e., α_{fw}/p) where α_{fw} corresponds to the family-wise error rate

and p is the number of tests. In this case, the Bonferroni correction is .05/4 = .0125. Therefore, the *p* values were compared to .0125 instead of .05.

a) School 1

The Wilks' Lambda = .905, *F* (4, 109) = 2.856, *p* = .027, revealed that LinguaFolio goal setting has significant effect on ACT scores, partial η^2 = .095. That means that 9.5% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. Overall, students who participated in LinguaFolio performed better on ACT exam compared to students who did not participate in LinguaFolio.

After employing the Bonferroni adjustment (05/4 = .0125), ACT scores in English, science, and reading were the measures that revealed a significant difference. For ACT reading scores, *F* (1, 112) = 6.568, *p* = .012, partial η^2 = .055. For ACT science scores, *F* (1, 112) = 9.514, *p* = .003, partial η^2 = .078. For ACT English scores, *F* (1, 112) = 8.707, *p* = .004, partial η^2 = .072. ACT math scores (*F* (1, 112) = 4.098, *p* = .045, partial η^2= .035) were not significantly different between LinguaFolio and non-LinguaFolio students after employing the Bonferroni correction.

b) School 2

The Wilks' Lambda = .870, *F* (4, 122) = 4.577, *p* = .002, revealed that LinguaFolio goal setting has significant effect on ACT scores, partial η^2 = .130. That means that 13% of the variance in the best linear combination of the four dependent

variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. Overall, students who participated in LinguaFolio performed better on ACT exam compared to students who did not participate in LinguaFolio.

When interpreting the univariate analyses, a Bonferroni correction (05/4 = .0125) was employed. However, after employing the Bonferroni adjustment the effect for all four dependent variables was significant. In other words, LinguaFolio students outperformed non-LinguaFolio students in four sections of ACT - English, science, math, and reading. For ACT reading scores, F (1, 125) = 9.515, p = .003, partial η^2 = .071. For ACT science scores, F (1, 125) = 13.589, p = .000, partial η^2 = .098. For ACT math scores, F (1, 125) = 13.518, p = .000, partial η^2 = .098. For ACT English scores, F (1, 125) = 14.707, p = .000, partial η^2 = .105.

c) School 3

The Wilks' Lambda = .872, F (4, 129) = 4.734, p = .001, revealed that LinguaFolio goal setting has significant effect on ACT scores, partial η^2 = .128. That means that 12.8% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. Overall, students who participated in LinguaFolio performed better on ACT exam compared to students who did not participate in LinguaFolio.

However, after employing the Bonferroni adjustment (05/4 = .0125), ACT scores in math and English were the measures that revealed a significant difference. For ACT math scores, F (1, 132) = 11.489, p = .001, partial η^2 = .080. For ACT English scores, F (1, 132) = 12.945, p = .000, partial η^2 = .089. ACT reading scores (F (1, 132) = 3.084, p = .081, partial η^2 = .023) and science scores (F (1, 132) = 3.107, p = .080, partial η^2 = .023) were not significantly different between LinguaFolio and non-LinguaFolio students after employing the Bonferroni correction. Therefore, although the students who experienced LinguaFolio goal setting intervention in School 3 demonstrated higher scores on math and English sections of ACT exam, they did not outperform non-LinguaFolio students on ACT science and reading sections.

Question 4

How does the number of years of participating in LinguaFolio affect students' ACT scores in each of the three schools individually?

Previous analysis (see Question 2) identified that with each additional year of LinguaFolio goal setting intervention students were improving their scores in all four sections of ACT exam, i.e. English, math, science, and reading. These results were found when data from three participating schools were combined. Therefore, in question four an attempt was made to determine whether each additional year of LinguaFolio intervention increased students' ACT scores in each school.

a) School 1

The Wilks' Lambda = .899, F (4, 109) = 3.056, p = .020, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four section of ACT exam (English, math, science, and reading) combined, partial η^2 = .101. That means that 10.1% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. In other words, the more years the students participated in LinguaFolio, the better ACT scores they produced.

After employing the Bonferroni adjustment (05/4 = .0125), ACT scores in English, science, and reading were the measures that revealed a significant difference. For ACT reading scores, F (1, 112) = 8.963, p = .003, partial η^2 = .074. For ACT science scores, F (1, 112) = 7.195, p = .008, partial η^2 = .060. For ACT English scores, F (1, 112) = 10.635, p = .001, partial η^2 = .087. ACT math scores (F (1, 112) = 3.989, p = .048, partial η^2 = .034.) were not significantly different between LinguaFolio and non-LinguaFolio students after employing the Bonferroni correction.

The parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.345; the ACT science score is predicted to increase by .914, and the ACT English score is predicted to increase by 1.327.

b) School 2

The Wilks' Lambda = .767, F (4, 122) = 9.284, p = .000, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance

on all four section of ACT exam (English, math, science, and reading) combined, partial η^2 = .233. That means that 23.3% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. In other words, the more years the students participated in LinguaFolio, the better ACT scores they produced.

When interpreting the univariate analyses, a Bonferroni correction (05/4 = .0125) was employed. After employing the Bonferroni adjustment the effect for all four dependent variables was significant. For ACT reading scores, F (1, 125) = 16.035, p = .000, partial η^2 = .114. For ACT science scores, F (1, 125) = 22.655, p = .000, partial η^2 = .153. For ACT math scores, F (1, 125) = 20.240, p = .000, partial η^2 = .139. For ACT English scores, F (1, 125) = 32.695, p = .000, partial η^2 = .207.

The parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.496; the ACT science score is predicted to increase by 1.195; the ACT math score is predicted to increase by 1.386, and the ACT English score is predicted to increase by 1.901.

c) School 3

The Wilks' Lambda = .874, F (4, 129) = 4.659, p = .020, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four section of ACT exam (English, math, science, and reading) combined, partial η^2 = .126. That means that 12.6% of the variance in the best linear combination of the four dependent variables is accounted for by LinguaFolio. This effect reveals that there is

a significant difference on the combined dependent variables. In other words, the more years the students participated in LinguaFolio, the better ACT scores they produced.

After employing the Bonferroni adjustment (05/4 = .0125), ACT scores in English, math, and reading were the measures that revealed a significant difference. For ACT reading scores, F (1, 132) = 6.582, p = .011, partial η^2 = .047. For ACT math scores, F (1, 132) = 12.770, p = .000, partial η^2 = .088. For ACT English scores, F (1, 132) = 13.306, p = .000, partial η^2 = .092. ACT science scores (F (1, 132) = 3.265, p = .073, partial η^2 = .024) were not significantly different between LinguaFolio and non-LinguaFolio students after employing the Bonferroni correction.

The parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by .818; the ACT math score is predicted to increase by .927, and the ACT English score is predicted to increase by 1.043.

Question 5

Does LinguaFolio goal setting have an effect on GPA in three schools?

In addition to ACT, cumulative GPA was another variable that measured student overall achievement. GPA's were recorded from the total of 618 students (*M = 3.37, SD = .417*) from three participating schools. This total was comprised of 454 LinguaFolio students (*M = 3.44, SD = .400*) and 164 non-LinguaFolio students (*M = 3.19, SD = .414*).

To determine whether statistically significant differences existed between the performance of LinguaFolio and Non-LinguaFolio groups, the mean GPA's of each group were compared and analyzed via ANOVA procedure. The dependent variable was the mean cumulative GPA, the independent variable was LinguaFolio status, i.e. whether the students participated in LinguaFolio goal setting intervention.

The analysis revealed that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 616) = 43.065, p = .000, partial η^2 = .065). That means that 6.5% of the variance in the dependent variable is accounted for by LinguaFolio. Therefore, the analysis indicated that LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing Non-LinguaFolio students (LinguaFolio students M = 3.44, non-LinguaFolio students M = 3.19).

Question 6?

Does LinguaFolio goal setting have an effect on graduating GPA in each school individually?

Question 6 examined how participation in LinguaFolio affected students' GPA in each of the three schools. Even though significant results were found when data from all three schools were combined (see question 5), it was important to investigate the effect of LinguaFolio in each school separately. ANOVA was performed on one dependent variables (DV), i.e., graduating GPA. The independent variable (IV) was LinguaFolio goal setting intervention.

Before presenting the data analysis for this question, it is important to mention that the Levene's test for equality of error variances was performed for all MANOVA and ANOVA analyses. It was only violated when an ANOVA was used to determine the effect of LinguaFolio on students' graduating GPA in Schools 2 and 3. Thus a smaller α level (i.e., .025) was used for these cases.

a) School 1

GPA's were collected from the total of 225 students (*M = 3.49, SD = .243*). This total was comprised of 171 LinguaFolio students (*M = 3.52, SD = .238*) and 54 non-LinguaFolio students (*M = 3.37, SD = .224*).

The ANOVA analysis revealed that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 223) = 16.578, p = .000, partial η^2 = .069). That means that 6.9% of the variance in the dependent variable is accounted for by LinguaFolio. The analysis indicated that LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing non-LinguaFolio students (LinguaFolio students M = 3.52, non-LinguaFolio students M = 3.37).

b) School 2

In School 2, GPA's were recorded from the total of 162 students (*M = 3.01, SD = .585*). This total was comprised of 120 LinguaFolio students (*M = 3.14, SD = .587*) and 42 non-LinguaFolio students (*M = 2.64, SD = .395*).

The ANOVA analysis indicated that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 160) = 25.701, p = .000, partial η^2 = .138). That means that 13.8% of the variance in the dependent variable is accounted for by LinguaFolio. The analysis indicated that LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing non-LinguaFolio students (LinguaFolio students M = 3.14, non-LinguaFolio students M = 2.64).

c) School 3

In School 3, GPA's were collected from the total of 231 students (*M = 3.52, SD = .208*). This total was comprised of 163 LinguaFolio students (*M = 3.57, SD = .207*) and 68 non-LinguaFolio students (*M = 3.39, SD =.155).*

The ANOVA analysis revealed that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 229) = 37.696, p = .000, partial η^2 = .141). That means that 14.1% of the variance in the dependent variable is accounted for by LinguaFolio. The analysis indicated that LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing Non-LinguaFolio students (LinguaFolio students M = 3.57, non-LinguaFolio students M = 3.39).

<u>Question 7</u>

How does the number of years of participating in LinguaFolio affect students' graduating GPA in three schools?

Question 7 examined whether the number of years of participating in LinguaFolio affected students' cumulative GPA. It was hypothesized that the longer the students experienced LinguaFolio, the higher cumulative GPA was recorded.

A simple linear regression was performed on the data from the three schools combined, F (1, 616) = 83.230, p = .000, R Square = .119. That means that 11.9% of the variance in students' GPA is accounted for by LinguaFolio. In addition, with each additional year of participating in LinguaFolio, students were predicted to have a .101 (p = .000) increase in GPA.

Question 8

How does the number of years of participating in LinguaFolio affect students' graduating GPA in each of the three schools individually?

Previous analyses identified that with each additional year of LinguaFolio goal setting intervention students were improving their graduating GPA. These results were found when data from three participating schools were combined. Therefore, in question 8 an attempt was made to determine whether each additional year of LinguaFolio intervention increased students' GPA in each school.

a) School 1

A simple linear regression revealed that each additional year of participation in LinguaFolio resulted in higher graduating GPA, F (1, 223) = 47.989, p = .000, R Square = .177. That means that 17.7% of the variance in students' GPA is accounted for by

LinguaFolio. Furthermore, for every year of participating in LinguaFolio, students were predicted to have a .075 (p = .000) increase in GPA.

b) School 2

A simple linear regression revealed that each additional year of participation in LinguaFolio resulted in higher graduating GPA, F (1, 160) = 37.313, p = .000, R Square = .189. That means that 18.9 % of the variance in students' GPA is accounted for by LinguaFolio. Furthermore, for every year of participating in LinguaFolio, students were predicted to have a .075 (p = .000) increase in GPA.

c) School 3

A simple linear regression revealed that each additional year of participation in LinguaFolio resulted in higher graduating GPA, F (1, 229) = 69.990, p = .000, *R Square* = .234. That means that 23.4 % of the variance in students' GPA is accounted for by LinguaFolio. Furthermore, for every year of participating in LinguaFolio, students were predicted to have a .065 (p = .000) increase in GPA.

Question 9

Does LinguaFolio goal setting have an effect on ACT scores and graduating GPA combined in three schools?

Question 9 explored whether there is significant difference in achievement as measured by GPA and ACT between LinguaFolio and non-LinguaFolio students when data from three schools were combined. A one way between-subject multivariate analysis

of variance (MANOVA) was performed on five dependent variables (DV) which included ACT math scores, ACT English scores, ACT reading scores, ACT science scores, and graduating GPA. The independent variable (IV) was LinguaFolio goal setting intervention.

The Wilks' Lambda = .865, F (5, 369) = 11.486, p = .000, revealed that LinguaFolio goal setting has significant effect on ACT scores and GPA, partial η^2 = .135. That means that 13.5% of the variance in the best linear combination of the five dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. Students who participated in LinguaFolio performed better on ACT exam in all four sections (i.e. math, science, reading, and English) and produced higher cumulative GPA's compared to students who did not participate in LinguaFolio.

When interpreting the univariate analyses, a Bonferroni correction was employed (i.e., α_{fw}/p) where α_{fw} corresponds to the family-wise error rate and p is the number of tests. This correction is necessary because the within-group correlation among the dependent variables is not zero (Tabachnick & Fidell, 2007). In this case, the Bonferroni correction is .05/5 = .01. Therefore, the p values were compared to .01 instead of .05. However, after employing the Bonferroni adjustment the effect for all five dependent variables was significant. For ACT reading scores, F (1, 373) = 16.285, p = .000, partial η^2 = .042. For ACT science scores, F (1, 373) = 21.302, p = .000, partial η^2 = .054. For ACT math scores, F (1, 373) = 26.627, p = .000, partial η^2 = .067. For ACT English scores, F (1, 373) = 32.601, p = .000, partial η^2 = .080. For GPA, F (1, 373) = 41.668, p =

.000, partial η^2 = .100. The Levene's test for quality of variances was violated for GPA; however, the p-value for the LinguaFolio effect was less than .00001 and remained significant.

Question 10

How does the number of years of participating in LinguaFolio affect students' ACT scores and graduating GPA in three schools?

Question 10 was asked to determine whether the number of years in LinguaFolio affected students' GPA and performance on ACT exam. It was hypothesized that longer participation in LinguaFolio resulted in higher GPA and ACT scores.

The Wilks' Lambda = .814, F (5, 369) = 16.860, p = .000, revealed that the increase in the number of years in LinguaFolio resulted in higher GPA and better students' performance on all four section of ACT exam (English, math, science, and reading) combined, partial η^2 = .186. That means that 18.6% of the variance in the best linear combination of the five dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. In other words, the more years the students participated in LinguaFolio, the higher ACT scores and GPA they produced.

When interpreting the univariate analyses, a Bonferroni correction (.05/5 = .01) was employed. However, after employing the Bonferroni adjustment the effect for all five dependent variables was significant. For ACT reading scores, F (1, 373) = 26.406, p = .000, partial η^2 = .066. For ACT science scores, F (1, 373) = 25.884, p = .000, partial η^2 =

.065. For ACT math scores, F (1, 373) = 29.230, p = .000, partial η^2= .073. For ACT English scores, F (1, 373) = 46.659, p = .000, partial η^2= .111. For GPA, F (1, 373) = 63.325, p = .000, partial η^2= .145.

The parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.091; the ACT science score is predicted to increase by .801; the ACT math score is predicted to increase by .941, the ACT English score is predicted to increase by 1.307, and GPA is predicted to increase by .121.

Question 11

How does the number of years of participating in LinguaFolio affect students' ACT scores and GPA in each of the three schools individually?

Previous analysis (see Question 10) identified that with each additional year of LinguaFolio goal setting intervention students had higher graduating GPA and improved their scores in all four sections of ACT exam, (English, math, science, and reading). These results were found when data from all three participating schools were combined. Therefore, in question 11 an attempt was made to determine whether each additional year of LinguaFolio intervention could increase students' GPA and ACT scores in three schools individually.

a) School 1

The Wilks' Lambda = .868, F (5, 108) = 3.299, p = .008, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance

on all four section of ACT exam (English, math, science, and reading) and GPA combined, partial η^2 = .132. That means that 13.2 % of the variance in the best linear combination of the five dependent variables is accounted for by LinguaFolio.

When interpreting the univariate analyses, a Bonferroni correction was employed. After employing the Bonferroni adjustment (05/5 = .01), ACT scores in English, science, and reading were the measures that revealed a significant difference. For ACT reading scores, F (1, 112) = 8.963, p = .003, partial η^2 = .074. For ACT science scores, F (1, 112) = 7.195, p = .008, partial η^2 = .060. For ACT English scores, F (1, 112) = 10.635, p = .001, partial η^2 = .087. For GPA, F (1, 112) = 13.433, p = .000, partial η^2 = .107. ACT math scores (F (1, 112) = 3.989, p = .048, partial η^2 = .034) were not significantly different between LinguaFolio and non-LinguaFolio students after employing the Bonferroni correction.

The table of parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.345; the ACT science score is predicted to increase by .914; the ACT English score is predicted to increase by 1.327 and GPA is predicted to increase by .060.

b) School 2

The Wilks' Lambda = .737, F (5, 121) = 8.649, p = .000, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four section of ACT exam (English, math, science, and reading) and GPA combined, partial η^2 = .263. That means that 26.3% of the variance in the best linear

combination of the five dependent variables is accounted for by LinguaFolio. This effect reveals that there is a significant difference on the combined dependent variables. In other words, the more years the students participated in LinguaFolio, the higher GPA and better ACT scores they produced.

When interpreting the univariate analyses, a Bonferroni correction (05/5 = .01) was employed. After employing the Bonferroni adjustment the effect for all five dependent variables was significant. For ACT reading scores, F (1, 125) = 16.035, p = .000, partial η^2 = .114. For ACT science scores, F (1, 125) = 22.655, p = .000, partial η^2 = .153. For ACT math scores, F (1, 125) = 20.240, p = .000, partial η^2 = .139. For ACT English scores, F (1, 125) = 32.695, p = .000, partial η^2 = .207. For GPA, F (1, 125) = 22.346, p = .000, partial η^2 = .152.

The parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.496; the ACT science score is predicted to increase by 1.195; the ACT math score is predicted to increase by 1.386, the ACT English score is predicted to increase by 1.901, and GPA is predicted to increase by .164.

c) School 3

The Wilks' Lambda = .755, F (5, 128) = 8.313, p = .000, revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four section of ACT exam (English, math, science, and reading) and GPA

combined, partial η^2 = .245. The LinguaFolio effect explained 24.5% of the variance in the best linear combination of the five dependent variables.

When interpreting the univariate analyses, a Bonferroni correction was employed. After employing the Bonferroni adjustment (05/5 = .01), GPA and ACT scores in English and math were the measures that revealed a significant difference. For GPA, F (1, 132) = 30.294, p = .000, partial η^2 = .187. For ACT math scores, F (1, 132) = 12.770, p = .000, partial η^2 = .088. For ACT English scores, F (1, 132) = 13.306, p = .000, partial η^2 = .092. However, ACT reading scores (F (1, 132) = 6.582, p = .011, partial η^2 = .047) and ACT science scores (F (1, 132) = 3.265, p = .073, partial η^2= .024) were not significantly different between LinguaFolio and non-LinguaFolio students after employing the Bonferroni correction.

The table of parameter estimates revealed that with each additional year of participation in LinguaFolio the ACT math score is predicted to increase by .927; the ACT English score is predicted to increase by 1.043; and GPA is predicted to increase by .054.

Summary

This chapter examined each testable research question asked in the study and presented the results of the data analysis. Eleven research questions that were the focus of this study were each covered and analyzed using one of the four statistical procedures: multivariate analysis of variance (MANOVA), multivariate regression, analysis of variance (ANOVA), and simple linear regression. The findings, conclusions, limitations,

and implications for future research that emerged from the statistical analyses performed in this chapter will be discussed in chapter 5.

CHAPTER 5: DISCUSSION (FINDINGS, LIMITATIONS, IMPLICATIONS, SUGGESTIONS FOR FUTURE RESEARCH)

Presentation of the Results

Chapter 4 provided a statistical analysis of the data based on eleven testable research questions. This chapter will present the summary of the study and discuss the significance of what was found as well as provide conclusions based on the research questions. In addition, limitations and implications will be provided, as well as future research suggestions for further study.

Summary of the Study

Over the past several decades, researchers have been interested in investigating goal setting as one of the crucial factors that affects academic achievement. Findings from numerous research studies (Azevedo et al., 2002; Bandura & Schunk, 1981; Cheng & Chiou, 2010; Hom & Murphy, 1985; Manderlink & Harackiewicz, 1984) indicate that goals improve student performance by allocating attention, activating effort, increasing persistence and motivation. Researchers have argued that engaging students in goal-setting, which involves participation in establishing one's own specific difficult goals, enhances task performance and achievement. With this belief, LinguaFolio was created to support foreign language learners in setting and achieving goals for learning languages. Recent research evidence (Moeller et al., 2012, Ziegler & Moeller, 2012) demonstrates that foreign language study that includes LinguaFolio participation produces positive outcomes in foreign language learning through goal-setting, self-assessment, and reflection, and serves as an effective approach that helps increase self-regulated learning. What has been lacking is published empirical research that demonstrates whether

LinguaFolio goal setting intervention transfers as regards student achievement in other content areas (e.g. math, science) as well as on overall academic performance.

Researchers argue that the development of self-regulated learners who engage in goal-setting and are responsible for their own success need to be viewed as one of the most important objectives in education. According to Zimmerman and Martinez-Pons (2006), self-regulated learners are metacognitively, motivationally, and behaviorally active participants in their process of learning. These learners are aware of various strategies for planning, monitoring, and altering strategies for learning to be successful. When students are self-regulated, they analyze an activity or task and create their personal goals for learning. Then, they create strategies on how to accomplish the task, determine what method to choose, and actively monitor how effective these strategies are while using them.

The purpose of this study was to collect evidence illustrating student academic achievement as measured by graduating GPA and ACT (math, science, reading, and English) scores while participating in the LinguaFolio intervention in their foreign language classroom. It was hypothesized that students who experienced LinguaFolio in their foreign language classes would learn to set goals, plan, monitor, and control their learning process that would positively affect achievement. Furthermore, it was hypothesized that when students set and achieve their personal goals they in turn would develop the capacity for self-regulated learning.

The research study started with the literature review that demonstrated a clear link between goal-setting, positive educational outcomes, and self-regulated learning. The results from a number of empirical studies (e.g., Barnard-Brak, Lan, & Paton, 2010; Eom

& Reiser, 2000; Lewis & Litchfield, 2006) conducted in the field and in laboratory settings analyzed in the literature review indicated that individuals who set their own goals demonstrate higher levels of performance than those who have goals set for them. In addition, the former develop self-regulatory skills that require active control of various cognitive strategies for learning, motivational beliefs and emotions. Research findings demonstrated that the development of self-regulatory skills supports the achievement of personal self-set goals in changing learning environments.

The literature review served as a foundation for this study and influenced the research design. In the methodology section a detailed description of the population (N = 618) was provided in which the participants were divided based on their participation in LinguaFolio foreign language intervention (LinguaFolio students, n = 454, and non-LinguaFolio students, n = 164). In addition, data were identified which included students' ACT scores in math, science, reading, and English, and graduating GPA. All data were collected between 2006 and 2010 in three high schools across Nebraska.

Findings

Goal setting has been shown to increase student achievement (Covington, 2000; Dörnyei, 2001; Edwins, 1995; Elliott & Dweck, 1988; Griffee & Templin, 1997; Koda-Dallow & Hobbs, 2005; Linnenbrick, 2005; Seijts & Latham, 2001). The analyses conducted in this study confirmed this finding. MANOVA and ANOVA analyses revealed that LinguaFolio students had significantly higher GPA and ACT scores in math, science, English, and reading. Further, multivariate regression and simple linear regression analyses indicated that with each additional year of participation in LinguaFolio students' graduating GPA and ACT scores were increasing.

In the research problem section of the dissertation it was noted that there has been no systematic analyses that examines whether foreign language study that includes LinguaFolio goal setting intervention makes a difference in student overall achievement as well as achievement in content areas other than foreign language. The results of this study indicate that student academic achievement as well as performance in other content areas as measured by graduating GPA and ACT scores in math, science, English, and reading was significantly improved if they participated in foreign language study that includes LinguaFolio intervention. These findings are closely aligned with research studies concerning goal setting and student performance in other disciplines (Azevedo et al., 2002; Cheng & Chiou, 2010; Cooper et al., 2005; Edwins, 1995; Litmanen et al., 2010; Paterson, 1996; Perels et al., 2009; Schunk, 2003; Strang et al., 1978).

The findings that emerged from the statistical testing of the eleven testable questions were derived from the three overarching research questions that guided the study. The findings below are organized first by school and then by an achievement indicator, i.e. ACT scores; cumulative GPA; ACT scores and GPA combined. Findings pertaining to the three overarching research questions are discussed in the General Conclusions section.

Findings by school

School 1

The population of school 1 included two hundred twenty five students. However, this number was reduced to one hundred fourteen students since the cases of the students who did not take ACT were excluded from the analyses. First, I examined whether LinguaFolio affected students' ACT scores in math, science, reading, and English. The

data were analyzed through the application of MANOVA that was performed on four dependent variables (ACT math scores, ACT English scores, ACT reading scores, and ACT science scores). The results revealed that foreign language study that included LinguaFolio goal setting had a significant effect on ACT scores combined (F (4, 109) = 2.856, p = .027). Overall, students who participated in LinguaFolio performed better on ACT exam compared to students who did not participate in LinguaFolio. However, when scores in four ACT sections were analyzed separately, it was found that LinguaFolio students performed better in reading (F (1, 112) = 6.568, p = .012), science (F (1, 112) = 9.514, p = .003), and English (F (1, 112) = 8.707, p = .004) but not in math (F (1, 112) = 4.098, p = .045).

Next, data were analyzed to examine whether each additional year of participating in LinguaFolio goal setting intervention helped students improve their ACT scores. The application of multivariate regression statistical procedures revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four sections of the ACT exam (English, math, science, and reading) combined (F (4, 109) = 3.056, p = .020). This effect reveals that the more years the students participated in LinguaFolio, the better ACT scores they produced. In addition, the scores in each section of the ACT exam were examined separately in relation to the number of years of participation in LinguaFolio. It was found that ACT scores in English (F (1, 112) = 10.635, p = .001), science (F (1, 112) = 7.195, p = .008) and reading (F (1, 112) = 8.963, p = .003) were the measures that revealed a significant difference. However, the length of LinguaFolio experience did not make a difference in students' scores on the ACT math section (F (1, 112) = 3.989, p = .048). With each additional year of participation in

LinguaFolio the ACT reading score is predicted to increase by 1.345; the ACT science score is predicted to increase by .914; and the ACT English score is predicted to increase by 1.327.

Since students' achievement was also measured by graduating GPA, an examination of whether LinguaFolio goal setting had an effect on cumulative GPA was conducted. GPAs were analyzed for 225 students who graduated from School 1 between 2006 and 2010 (LinguaFolio students = 171, non-LinguaFolio students = 54). GPAs were analyzed through the application of Univariate Analysis of Variance (ANOVA) statistical procedures. The results indicated that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 223) = 16.578, p = .000). The analysis demonstrated that LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing non-LinguaFolio students (LinguaFolio students M = 3.52, non-LinguaFolio students M = 3.37). A simple linear regression analysis further revealed that each additional year of participation in LinguaFolio resulted in higher GPA (F (1, 223) = 47.989, p = .000). In addition, with every year of participating in LinguaFolio, students were predicted to have a .075 (p = .000) increase in GPA.

The study presented evidence that foreign language study that included LinguaFolio influenced students' achievement as measured by ACT scores and GPA separately. However, using a multivariate analysis of variance (MANOVA) it was discovered that LinguaFolio goal setting has a significant effect on ACT scores and GPA combined in all three schools. Moreover, the increase in the number of years in

LinguaFolio resulted in better students' performance in all four sections of the ACT exam (English, math, science, and reading) and GPA combined (F (5, 108) = 3.299, p = .008)

School 2

The total population of School 2 was one hundred sixty two students between 2006 and 2010. The first set of results identified whether foreign language study that included LinguaFolio goal setting made a difference on students' ACT scores. Out of one hundred sixty two students, one hundred thirty seven students took the ACT exam. The data were analyzed through the application of a multivariate analysis of variance (MANOVA). The results revealed that LinguaFolio goal setting has a significant effect on ACT scores combined (F (4, 122) = 4.577, p = .002). This effect reveals that there is a significant difference on the combined dependent variables. Overall, students who participated in LinguaFolio performed better on the ACT exam compared to students who did not participate in LinguaFolio. In addition, it is important to mention that LinguaFolio students outperformed non-LinguaFolio students in all four sections of ACT – English (F (1, 125) = 14.707, p = .000), science (F (1, 125) = 13.589, p = .000), math (F (1, 125) = 13.518, p = .000), and reading (F (1, 125) = 9.515, p = .003).

Furthermore, multivariate regression analysis was performed to examine whether the length of participating in LinguaFolio (as measured by the number of years) contributed to higher ACT scores. It was determined that the increase in the number of years in LinguaFolio resulted in better students' performance on all four section of the ACT exam (English, math, science, and reading) combined (F (4, 122) = 9.284, p = .000). Therefore, with each additional year of participating in LinguaFolio, students ACT scores increased. When investigating the scores from each ACT section separately, it was

found that the effect for the scores in each section, i.e. reading (F (1, 125) = 16.035, p = .000), science (F (1, 125) = 22.655, p = .000), math (F (1, 125) = 20.240, p = .000), and English (F (1, 125) = 32.695, p = .000), was significant. Particularly, with each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by 1.496; the ACT science score is predicted to increase by 1.195; the ACT math score is predicted to increase by 1.386, and the ACT English score is predicted to increase by 1.901.

Next, student achievement was examined by comparing LinguaFolio and non-LinguaFolio students' graduating GPAs. The GPA records of all 162 students who graduated between 2006 and 2010 were analyzed through the application of ANOVA. The results were significant at the level .000 of statistical significance (F (1, 160) = 25.701, p = .000). The analysis indicated that LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing non-LinguaFolio students (LinguaFolio students M = 3.14, non-LinguaFolio students M = 2.64). Furthermore, a simple linear regression was used to determine whether each additional year of LinguaFolio intervention increased students' GPA. It was revealed that the longer participation in LinguaFolio resulted in higher graduating GPA (F (1, 160) = 37.313, p = .000). In addition, for every year of participation in LinguaFolio, students were predicted to have a .075 (p = .000) increase in GPA.

Previous analyses determined that LinguaFolio had a significant effect on ACT scores and GPA separately. However, when examined together through the application of MANOVA, foreign language study that included LinguaFolio goal setting also had a

significant effect on ACT scores and GPA in three schools combined (F (5, 369) = 11.486, p = .000). Moreover, through the application of multivariate analysis, it was found that the longer participation in LinguaFolio resulted in better students' performance on all four sections of the ACT exam (English, math, science, and reading) and GPA combined (F (5, 121) = 8.649, p = .000).

School 3

The total student population in school 3 was two hundred thirty one students between 2006 and 2010. First, LinguaFolio and non-LinguaFolio students were compared in terms of their performance on the ACT exam. MANOVA revealed that LinguaFolio goal setting has a significant effect on ACT scores (F (4, 129) = 4.734, p = .001). This effect indicates that there is a significant difference on the combined dependent variables (i.e., all ACT scores). In general, students who participated in foreign language study that included LinguaFolio performed better on ACT exam compared to students who did not participate in LinguaFolio. However, when examining the scores in each section individually, it was found that LinguaFolio makes a significant difference on students' ACT math scores (F (1, 132) = 11.489, p = .001) and English scores (F (1, 132) = 12.945, p = .000). However, ACT reading scores (F (1, 132) = 3.084, p = .081) and science scores (F (1, 132) = 3.107, p = .080) were not significantly different between LinguaFolio and non-LinguaFolio students. Even though the students who participated in LinguaFolio goal setting intervention demonstrated better performance on the ACT exam in general, when looking closely at each section only math and English scores were higher in comparison to non-LinguaFolio students.

Furthermore, the question was asked to investigate whether the duration of participation in LinguaFolio goal setting intervention resulted in higher ACT scores. According to multivariate regression computations, the increase in the number of years in LinguaFolio resulted in better students' performance on all four sections of the ACT exam (English, math, science, and reading) combined (F (4, 129) = 4.659, p = .020). Longer LinguaFolio experience contributed to higher ACT scores. However, the examination of the scores from each ACT section separately revealed that the scores in English (F (1, 132) = 13.306, p = .000), math (F (1, 132) = 12.770, p = .000), and reading (F (1, 132) = 6.582, p = .011) were significantly higher for LinguaFolio students, whereas ACT science scores (F (1, 132) = 3.265, p = .073) were not increasing despite longer participation in LinguaFolio. With each additional year of participation in LinguaFolio the ACT reading score is predicted to increase by .818; the ACT math score is predicted to increase by .927, and the ACT English score is predicted to increase by 1.043.

Next, it was determined whether a difference existed between LinguaFolio and non-LinguaFolio students' achievement as measured by cumulative GPA. GPAs of 231 students were analyzed through the application of ANOVA. The results revealed that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 229) = 37.696, p = .000). LinguaFolio status was a significant main effect influencing student performance as measured by cumulative GPA with the estimated mean GPA of LinguaFolio students surpassing non-LinguaFolio students (LinguaFolio students M = 3.57, non-LinguaFolio students M = 3.39). Another interesting finding was that each additional year of participation in LinguaFolio resulted in higher graduating

GPA (F (1, 229) = 69.990, p = .000). For every year of participating in LinguaFolio, students were predicted to have a .065 (p = .000) increase in GPA.

Along with discovering that foreign language study that included LinguaFolio made a difference in student achievement as measured separately by ACT and GPA, it was further identified that LinguaFolio goal setting had a significant effect on ACT scores and GPA combined in three schools together (F (5, 369) = 11.486, p = .000). Additionally, multivariate regression revealed that the increase in the number of years in LinguaFolio resulted in better students' performance on all four sections of the ACT exam (English, math, science, and reading) and GPA combined (F (5, 128) = 8.313, p = .000).

Findings by achievement indicator

The findings of this study lead to three general conclusions about the overall impact of foreign language study that includes LinguaFolio goal setting intervention on high school student achievement. For clarity, the conclusions regarding each achievement indicator are listed under the headings of LinguaFolio and ACT; LinguaFolio and GPA; and LinguaFolio and ACT and GPA.

LinguaFolio and ACT

One of the goals of the study was to measure the impact of foreign language study that includes LinguaFolio goal setting intervention on students' ACT scores in four areas: math, science, reading, and English. Students who participated in LinguaFolio were compared to students who did not experience LinguaFolio in all three schools combined. The analyses of the data regarding ACT scores revealed that LinguaFolio goal setting had a significant effect on ACT scores (F (4, 370) = 9.077, p = .000), i.e. students who

participated in LinguaFolio performed better on the ACT exam in all four sections (math, science, reading, and English) compared to students who did not participate in LinguaFolio. Scores in all four ACT sections revealed significant differences favoring LinguaFolio students. In addition, for those students who participated in LinguaFolio longer time, ACT scores in all for sections were predicted to increase.

LinguaFolio and GPA

In this section, a description of the impact of foreign language study that includes LinguaFolio goal setting intervention on students' graduating GPA's is presented. The data indicated that LinguaFolio goal setting intervention had a significant effect on students' cumulative GPA (F (1, 616) = 43.065, p = .000). The data examined in the study led to the conclusion that foreign language study that includes LinguaFolio participation was a significant main effect influencing students' cumulative GPA's with the estimated mean GPA of LinguaFolio students surpassing non-LinguaFolio students (LinguaFolio students M = 3.44, non-LinguaFolio students M = 3.19). Furthermore, the results of the analysis regarding the effect of the duration of LinguaFolio on GPA indicated that with each additional year of participation in LinguaFolio, students were predicted to have a .101 (p = .000) increase in GPA.

LinguaFolio and ACT and GPA

The final set of analyses examined the impact of foreign language study that includes LinguaFolio on achievement by analyzing student grade point averages (GPA's) and ACT scores. The data were limited to only those students who took ACT and had records of graduating GPA (n = 375). From the data examined in the study, it can be concluded that students who participated in LinguaFolio performed better on the ACT

exam in all four sections (i.e. math, science, reading, and English) and produced higher cumulative GPA's compared to students who did not participate in LinguaFolio (F (5, 369) = 11.486, p = .000). Specifically, LinguaFolio students had better overall achievement than their non-participating counterparts. In addition, the increase in the number of years in LinguaFolio resulted in higher GPA and better student performance on all four sections of the ACT exam (English, math, science, and reading) combined (F (5, 369) = 16.860, p = .000). Therefore, the data indicated significant differences in the aggregated students' GPA's and ACT scores that measured overall achievement between LinguaFolio and non-LinguaFolio students.

General Conclusions

As stated in Chapter 2, the theoretical underpinnings of this study rest on Goal Theory, which as identified by Locke (1968a), suggests that human action is caused by purpose, and for action to take place specific goals have to be set and pursued by choice. Based on the conducted analyses, the conclusions that emerged from this study support this theory. The study provided support for the critical role of goal setting on student achievement. According to West and Thorn (2001), "goal setting is an important element in sustained achievement" (p. 41). Taken together the findings support the fact that goal setting implemented in LinguaFolio resulted in a positive difference in student achievement which in turn may have led to the development of student capacity for self-regulated learning.

Three overarching research questions guided the study:

I. What is the effect of foreign language study that includes LinguaFolio goal setting intervention on high school students' achievement?

The overall effect of foreign language study that includes LinguaFolio goal setting intervention was students' improved performance as measured by ACT scores and graduating GPA. The results from the eleven testable questions that were analyzed using ANOVA, MANOVA, multivariate regression and simple linear regression analyses indicated that LinguaFolio influenced student achievement that resulted in higher ACT scores and GPA. The detailed description of the effect of LinguaFolio on student achievement is provided in the question below.

II. Does significant difference in achievement exist between LinguaFolio and non-LinguaFolio students?

The results indicated a statistically significant difference in achievement between LinguaFolio and non-LinguaFolio students. Study findings also indicate that foreign language study that included LinguaFolio made a difference in student achievement when measured separately by ACT and graduating GPA and when measured by both. In general, students who participated in LinguaFolio performed better on the ACT exam in all four sections (math, science, reading, and English) compared to students who did not participate in LinguaFolio. Moreover, students who participated in LinguaFolio had higher cumulative GPA's than their non-participating counterparts. Further results showed that the increase in the number of years in LinguaFolio resulted in higher GPA and better student performance on all four sections of the ACT exam (English, math, science, and reading) combined. When the effect of the duration of participation in LinguaFolio was examined for ACT and GPA separately, the results were similar to the ones that were achieved when such an effect was examined for ACT and GPA combined. That is, for those students who participated in LinguaFolio a longer time, ACT scores in

all four sections were predicted to increase. In addition, students were predicted to have an increase in GPA with each additional year of participating in LinguaFolio. Consequently, these findings support the premise that instructional programs that include goal-setting strategies may contribute to the development of student's self-regulated learning skills which in turn enhances academic achievement.

However, it is important to report that while in School 2 students who participated in LinguaFolio performed significantly better in each section of the ACT exam, and the increase in the number of years in LinguaFolio resulted in better students' performance in each ACT section, the results in School 1 and 3 were slightly different. Particularly, when scores in four ACT sections were analyzed separately in School 1, it was found that LinguaFolio students performed better in reading, science, and English but not in math. Additionally, the length of LinguaFolio experience did not make a difference in students' scores in the ACT math section. On the other hand, students who participated in LinguaFolio goal setting intervention in School 3 demonstrated better performance in ACT math and English sections, but not in reading and science sections. Moreover, ACT science scores were not increasing despite longer participation in LinguaFolio. Evidently, LinguFolio goal setting intervention alone was not sufficient to produce improved achievement in School 1 and School 3. These findings ran counter to Goal Theory presumption that students who set goals would naturally produce improved ACT scores. These results may have been closely related to demographic variables, pre-existing academic abilities and motivation levels of LinguaFolio students than it was to the LinguaFolio goal setting program itself. It is important to note that these factors were not controlled in the statistical analyses.

III. Does LinguaFolio goal setting intervention help develop self-regulated learning?

Overall results suggested that participation in LinguaFolio intervention did significantly enhance student achievement as measured by GPA as well as achievement in math, science, reading, and English as measured by ACT. These findings are relevant in consideration of studies reporting that the implementation of goal setting enhances student performance and self-regulated learning. The analyses carried out in this study confirmed previous findings that present the evidence demonstrating the effect of goal setting on performance and development of self-regulation skills (Azevedo et al., 2002; Boekaerts & Corno, 2005; Cheng & Chiou. 2010; Locke et al., 1981; Schunk, 2001; West & Thorn, 2001; Winne, 2001; etc.). Zimmerman and Martinez-Pons (1986) suggested that learners with a high level of self-regulated learning demonstrated higher levels of academic achievement. However, students are more likely to implement self-regulated learning strategies if classroom instruction provides opportunities to structure their learning process, be engaged in self-assessment, etc. Clearly, LinguaFolio foreign language classrooms provide such a learning environment.

Also the results in this study are similar to the findings by Ziegler and Moeller (2012) that LinguaFolio promoted self-regulation in learners through structured goal setting that in turn had a positive impact on student achievement in foreign language classrooms. Since no studies have been located that explore the effect of LinguaFolio goal setting intervention on student academic achievement in other subject areas besides foreign language, the results found in this study help to develop an understanding of LinguaFolio goal setting and how it relates to student achievement.

Discussion

Undoubtedly, students who participated in foreign language study that included LinguaFolio goal setting intervention achieved significantly higher results on the ACT test and demonstrated higher cumulative GPA as compared to students who were not enrolled in LinguaFolio foreign language classes. However, it is unclear what role LinguaFolio goal setting component played in these improved results. It could be argued that these improved results for LinguaFolio students were due to the added instruction in goal setting that was part of foreign language education and helped them develop goal setting skill and acquire control over their learning, that is the students learned to set goals not only for a foreign language class but also beyond that in turn increased their capacity for self-regulated learning (as the goal setting theory predicted).

On the other hand, the results could be attributed to other factors. First, it is possible that more highly motivated and academically gifted students were taking foreign language classes, that is their performance on the ACT test and higher GPA was not a result of foreign language study that included LinguaFolio goal setting intervention. It could also be argued that the LinguaFolio foreign language program simply attracted students who strategically chose to take a foreign language course in order to be able to apply to college since in Nebraska two years of the same foreign language is considered as one of the admission requirements to college, and better achievement and test scores were again necessary for future educational opportunities. In other words, it could have simply been that LinguaFolio foreign language intervention attracted students who planned to go to college from early on.

It is important to mention that all students in three schools had an option to take a foreign language course and participate in LinguaFolio. However, not everyone took this

opportunity. This may have been closely related to the pre-existing motivation levels, academic abilities and the lack of desire of applying to college. After all, these were the students who were fortunate enough to attend high schools that offered LinguaFolio foreign language classes, but for one reason or another did not participate. It would be beneficial for future research to investigate the causes associated with non-participation by students who had it readily available to them.

Although the study controlled for the impact of LinguaFolio goal setting intervention, it is clear that such factors as gender, socio economic status, minority status could have been important contributors in student performance and achievement. However, these factors are present for both LinguaFolio and non-LinguaFolio students alike.

On the other hand, it could have been a combination of all these different factors that led to the results reported in this study. Again, it could simply have been that students who were planning to apply to college elected to take a foreign language class which happened to incorporate LinguaFolio, and those who were not striving for college did not. Nevertheless, irrespective of the cause, the data made clear that students who participated in LinguaFolio outperformed their non-participating counterparts and recorded higher cumulative GPA and superior ACT scores. In fact, significant differences were found between LinguaFolio and non-LinguaFolio students in all three schools combined. Frankly, these findings might be used to encourage schools and foreign language teachers across the country to employ LinguaFolio in their classrooms. In addition, perhaps one of the most significant findings was the fact that the more years the students participated in LinguaFolio the better ACT scores and GPA they demonstrated

than their non-participating counterparts. This finding was true for combined data from all three schools. Student motivation, persistence, and perhaps the fact that these were previously successful students may have played a role. However, this would seem to be more than simply a coincidence and makes the topic worthwhile of further research to investigate whether actual causes can be established.

Limitations

Limitations of this study involve the use of ex post facto design, generalizability, sampling of the schools, individual student differences, demographic variables, student opinions, and type of instruction in other but LinguaFolio classrooms. Ex post facto research, or a "natural experiment", is typical in education due to the fact that it is difficult and not always possible to randomly assign students to different programs. The treatment, in this case LinguaFolio, occurred naturally and the effect was observed after the fact. Therefore, establishing precedence of cause retrospectively may be difficult and only tentative causal inferences can be made.

As for generalizability, the results of this research study are not intended to suggest that if another school were to employ LinguaFolio intervention, similar results could be expected. Therefore, generalization can be made as long as the demographic and school factors are taken into consideration.

Although the total number of participants was six hundred eighteen students in all three schools, when achievement was measured by ACT scores, students who did not take ACT were excluded from the analysis leaving the researcher with only three hundred seventy five students. In addition, when data were broken down for each school, the numbers of students who did not take ACT or did not participate in LinguaFolio were

even lower. The relatively small number of participants involved in this study is seen as a major limitation to its validity. A study conducted with a greater and more statistically significant number of participants would be required to obtain more definitive answers to research questions. The results found in this study should be replicated before firmly concluding that goal setting skill may be transferred across disciplines.

In addition, individual student differences need to be acknowledged. That is, even though non-LinguaFolio students were not directly exposed to goal setting, they might have developed their own goal setting strategies throughout school years. On the other hand, individual LinguaFolio students might have been differently affected by the goal setting intervention that might have resulted in the lack of the development of goal setting skills. Personal styles and preferences might affect attitude to goal setting differently.

Furthermore, demographic variables (e.g., race, SES, gender) were not taken into consideration. Since the schools were not able to provide such information, it was assumed that the study participants were similar in all respects except for the exposure to one variable. More studies are needed to identify how students' perception of goal setting differs based on the demographic variables and how that in turn influences achievement. Furthermore, before making any theoretical conceptualizations and predicted associations, more studies are needed that explore LinguaFolio goal setting intervention an academic achievement in other subject areas.

Another limitation pertains to the fact that the findings were not derived from student opinions. Students are in an optimal position to witness and comment upon many of the investigated factors, e.g., their experience with goal setting. Therefore, a desirable strategy in a future study would involve interviews with students.

A further limitation of this study was that the researcher did not have any information on the type of instruction used in other classrooms besides foreign language classrooms. It was assumed that the teachers in other subject areas did not utilize any strategies that were conducive to the development of self-regulated learning skills. Future studies need to address the affordances and constraints various classroom environments provided for the development of self-regulation skills.

These methodological concerns should be given proper consideration in future studies of students' self-set goals, achievement, and self-regulated learning.

Implications

Although there has been extensive research on goal-setting, self-regulated learning and student academic achievement over the years (e.g., Alexander & Judy, 1988; Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1986, 1990), there has been no known published work that looked at whether students who learned to set goal goals in one subject area were able to transfer this skill to other areas that resulted in a positive difference in their achievement. This research represents the first effort into providing insights into this phenomenon. A number of implications for practice can be drawn.

First and foremost, the results of the present study suggest that goal setting incorporated in a foreign language curriculum had a positive effect on student overall achievement. In order to encourage student achievement, teachers need to create instruction which contains a goal setting component.

The findings also suggest that goal setting skill can be transferred to other disciplines. Therefore, goal-setting interventions that are aimed at getting students to establish realistic but challenging goals, monitor their learning process, engage in self-

assessment and reflection need to be incorporated across disciplines to elicit maximum results.

In conclusion, educators agree that a learning process involves students actively integrating and organizing new information, creating meaning, monitoring their understanding, and assessing their progress. To augment previous research findings, the most important question that this study poses is how educators can encourage students to become invested in their studies and actively engaged in learning. Educators always look for ways to get students to work at their educational potential. Since research recognizes the importance of goal setting, it becomes the responsibility of every teacher to incorporate it in their instruction. I anticipate that the results of this study will encourage educators to begin implementing goal setting in their classrooms and providing students with the opportunities to engage in creating personal goals and reflecting on their progress. It is important to create a learning environment that encourages participation in the goal setting process.

With regard to the goal theory, the current findings suggest that goal setting incorporated in one subject area may be beneficial for achievement in other areas as well as overall academic achievement. This result implies practical consequences for schools. Based on the findings, it is evident that foreign language study that includes LinguaFolio participation has a positive effect on student achievement not only in foreign language classroom (Moeller et al., 2012) but also in other subject areas as well as overall academic achievement. It is recommended that LinguaFolio be used at the classroom level as an intervention as it clearly allows students to develop goal setting skills and capacity for self-regulated learning. This finding is also consistent with prior research

that compared students who received training in self-regulated learning with those who did not receive such training. Generally, more positive effects on achievement were observed in students who received the training.

The findings of the present study may also have important implications for structuring classroom instruction that requires high degrees of self-regulation in students and engages them in goal setting, independent learning, and reflective assessment. Since self-regulated learning has been linked to success not only in secondary education but also in higher education and career (Boekaerts, 1999), it becomes especially important to help high school students develop skills for lifelong learning. In order to be successful in college, students graduating from high school need to be able to adapt to a new post secondary setting or work environment that requires the ability to direct the learning process independently. It has been found that students are more likely to drop out of college when they are not prepared to tackle an academically rigorous curriculum (Zusho & Edwards, 2011). LinguaFolio students become active participants in the learning process and are able to identify and create strategies that aid in building new understanding, knowledge, and skills. This ability is particularly important when students enter college.

Overall, this study is significant for it provided insights into the relationship between goal-setting and achievement of high school students enrolled in LinguaFolio foreign language program. Although the aforementioned findings need to be viewed in consideration of study limitations, this research implies that goal setting taught in foreign language classrooms can enhance student achievement in other content areas.

Future Research

In this section the study will be concluded by offering suggestions for future research that were uncovered during the course of this examination. These suggestions are offered in the hope that other researchers will conduct further investigation of LinguaFolio goal setting, self-regulated learning and achievement ultimately leading to a large body of knowledge regarding this intervention. This will allow educators to make data driven decision regarding the promotion of LinguaFolio program and similar interventions that help develop student capacity for self-regulated learning.

This study raised several issues for future research. Suggested are nine areas for future research investigations.

1. Can these results be replicated with the students from other schools that implemented LinguaFolio? In other words, a study similar to this one needs to be conducted in another state and an urban area to see if the results are similar to those obtained in a rural setting in Nebraska. The results may be much different in a school located in a large metropolitan area.
2. Will these results hold true if goal setting was implemented through interventions other than LinguaFolio? Future studies are necessary to tease apart the aspects of the learning environment that might have affected the observed results.
3. How do students generate goals (Griffee, 1995) in LinguaFolio compared with their self-set goals in other subject areas?
4. Although this study found statistical evidence to correlate goal-setting and achievement beyond the language learning context, a qualitative analysis (e.g., interviews) would provide a deeper understanding of students' goal-setting skills.

In other words, extending the study to qualitative data could further support the results of the current research and produce more in-depth implications.

5. Further investigation is needed into what instructional strategies are conducive to the development of the capacity for self-regulated learning that results in improved achievement.
6. Further research should investigate what kinds of methods could evaluate whether transfer of goal setting skills from one content area to other areas is successful.
7. A study should be carried out in order to identify why some teachers elect to implement LinguaFolio in their classrooms while others do not when the program is readily available to all teachers across the state.
8. A longitudinal study of the performance of LinguaFolio versus non-LinguaFolio student should be conducted to examine whether the initial differences identified in the present study remain with the students throughout their college careers.
9. In conclusion, an experimental approach can be used to determine causal relationship among the variables.

According to the existing body of knowledge as well as the findings from this study, potential research efforts could include the above mentioned questions that will further measure the effectiveness of LinguaFolio goal setting process and student achievement. Student experiences could also provide insights into how they utilized the knowledge of goal setting in other disciplines. In order to enhance the potential for generalizability, future studies could involve more schools with different demographic and institutional characteristics. In addition, to enhance internal validity, other researchers might consider the revision in methodology chosen in this study.

Summary

In the last few decades, the nature of classroom instruction has shifted from being teacher-centered to student-centered that emphasizes reflective and scaffolded instruction (Paris & Paris, 2001). With demands to increase student academic achievement, educators and researchers are searching for ways to maximize instruction while helping students become independent learners. Therefore, much research has focused on how teachers can design instruction that promotes independent learning that includes the opportunities for students to make their choices, control their learning, set challenging yet attainable goals, construct their meaning and participate in self-assessment. Such instruction promotes student self-regulated learning that, as demonstrated by research, improves student performance and increases achievement.

One of the key elements of self-regulated learning is goal setting. Students who are self-regulated learners begin their learning process by setting appropriate learning goals. According to Locke et al. (1981), "the beneficial effect of goal setting on task performance is one of the most robust and replicable findings in the psychological literature" (p. 145). Approximately ninety percent of all existent studies on goal setting indicate positive effects both in field setting and in the laboratories (Locke et al., 1981). A complex reciprocal relationship between goal setting, self-regulated learning and achievement has been discussed extensively in research (e.g., Alexander & Judy, 1988; Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1986, 1990). However, a comprehensive review of the research literature found no studies that investigated student goal setting, academic achievement, and self-regulation outside of a foreign language classroom environment. This study was the first to examine whether students who

experienced foreign language study that included LinguaFolio as an intervention performed better in other subject content areas in comparison to students who were not exposed to LinguaFolio. This dissertation provides the first published effort examining foreign language study that includes LinguaFolio goal setting intervention and its effectiveness in enhancing student academic performance. This study will also add to the existing body of research on self-regulation and achievement. LinguaFolio has been proven to be a successful intervention program in which teachers provide the students with learning strategies that help develop self-regulation (Ziegler & Moeller, 2012). This study provided further support for the use of LinguaFolio in that the goal setting skill might be transferred to other subject areas that results in better academic achievement. In foreign language study that included LinguaFolio, self-regulation occurred through the practice of active, deliberate learning strategies such as goal setting and self-reflection. These results support findings from prior research (e.g., Pintrich, 2000).

The results in this study underscore that it is important to create instructional strategies that are conducive to the development of self-regulation skills. Specifically, educators should use opportunities to build support for their students. In foreign language study that includes LinguaFolio, students are encouraged to take responsibility for their own self-regulated learning process. Independent and active learning is stimulated by engaging the students in goal-setting and self-assessment that foster metacognitive processes in students about what they need to improve and also why they are doing it. These metacognitive processes guide the students to independent learning. Students take control in choosing appropriate and effective learning resources and strategies, planning their learning time, and monitoring their cognitive activities. According to Ziegler and

Moeller's (2012) study, these processes are helpful in the development of student self-regulated learning skills. When students participate in foreign language study that includes LinguaFolio they are faced with the environment in which they can set and meet their goals and interests through self-regulated learning.

In conclusion, this research provides support for achievement behavior that emphasizes setting personal goals and developing a capacity for self-regulated learning. It is evident that students are able to transfer the skills across disciplines that supports the notion of the dynamic nature of self-regulation. This study has exciting prospects for classroom instruction that includes goal setting. Such instruction helps students to face the increasing educational demands and develop necessary lifelong skills. Goal setting and self-regulated learning help students to be ready to face these demands.

This chapter presented a summary of the study and provided an overview of the research. All findings were discussed, and statistical analyses were reviewed. Furthermore, study conclusions as well as limitations and implications of this research were provided. Finally, future research suggestions based on the limitations and implications were stated. It is the hope of this author that the data in this document will be used to improve curriculum by incorporating goal setting strategies across disciplines to benefit student learning and achievement.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD MATERIALS

E-mail Notice to Accompany Mailing of Institutional Approval Letter

Dear Superintendent's name,

During the academic years of 2005-2010, (name of teacher), a Spanish teacher in your district used LinguaFolio as an intervention in her classroom. A detailed analysis of student proficiency data from (name of teacher)'s classroom revealed a statistically significant relationship between the goal setting process and language achievement.

The reason for this e-mail today is to let you know you will be receiving a Request for Institutional Approval Form in the mail shortly related to a study I am conducting here at the University of Nebraska-Lincoln that investigates whether students who experienced LinguaFolio as an intervention in their second language classrooms performed better in other subject matters in comparison to students who were not exposed to LinguaFolio.

There is no cost for participation in this study. In fact, teachers and administrators may benefit through an enhanced understanding of the factors involved in producing high levels of student achievement. All participation in research-related activities will be voluntary. You may choose to remove yourself from the study at any time.

Prior to formally approaching any individuals for participation in this research, institutional approval must be secured from each organization associated with this study. It is for this reason that you are being contacted regarding this study.

I am attaching a copy of the letter you will be receiving and also the Institutional Approval Form to this e-mail for your convenience. Should you have any questions pertaining to the research associated with this study or regarding the institutional approval process, please do not hesitate to contact me.

Sincerely,

Oxana Dema

Goal Setting and Achievement Staff

Oxana Dema, PhD candidate

Principal Investigator

Graduate Assistant, Teaching Learning and Teacher Education, UNL

110C Henzlik Hall, University of Nebraska-Lincoln, 68588-0355

Phone: 402.570.7560

E-mail: oxana.dema@huskers.unl.edu

Dr. Aleidine Moeller, PhD

Secondary Investigator

Department of Teaching, Learning and Teacher Education, UNL

115a Henzlik Hall, University of Nebraska-Lincoln, NE 68588-0355

Phone: 402-472-2024

E-mail: amoeller2@unl.edu

Letter of Institutional Approval

April, 2012

Name of Superintendent,

During the academic years of 2005-2010, (name of teacher), a Spanish teacher in your district used LinguaFolio as an intervention in her classroom. LinguaFolio was adopted by the National Council of State Supervisors of Foreign Languages (NCSSFL) as an official project in 2004 which is aligned with the American Council of the Teachers of Foreign Languages Performance and Proficiency Guidelines. LinguaFolio is developed to help students become engaged in the processes of goal setting reflection and analysis of their own learning through the means of a language journal that provides a series of checklists of language and cultural knowledge, skills, and proficiency levels. A detailed analysis of student proficiency data from (name of teacher)'s classroom revealed a statistically significant relationship between the goal setting process and language achievement.

It is because of the outstanding performance of (name of teacher) and her students that you are being contacted. A study is being conducted to provide quantitative research to identify whether students who experienced LinguaFolio as an intervention in their second language classrooms performed better in other subject matters in comparison to students who were not exposed to LinguaFolio. The purpose of this study is to answer the question of whether LinguaFolio students were able to transfer goal setting skill across disciplines that resulted in a difference in student achievement. Research underscores that in order

for goal setting to improve performance and enhance achievement, student need to participate in setting their own goals (Azevedo, Ragan, Cromley, & Pritchett, 2002; Tubbs, 1986, as cited in Griffee & Templi, 1997). It has been found that students who create their own goals perform at higher levels than students who have goals set for them (Mento, Steel, & Karren, 1987, as cited in Griffee & Templi, 1997). This study attempts to offer these very insights through a deliberate and thorough investigation of goal setting and student achievement.

Student performance will be measured by ACT scores in math, reading, English and science, and cumulative GPA. When Institutional Approvals is secured, I will contact the principals of your school district via email inviting them to participate in the research study by providing me with the students' data that were collected from 2006 to 2010.

All participation in these activities will be voluntary. You may choose to remove yourself from participation at any time. There is no cost for participation in this study.

Prior to formally approaching any individuals for participation in this research, Institutional Approval must be secured from each organization associated with this study. Please complete the attached Institutional Approval Form (two copies) enclosed in this mailing, and return the forms to project staff using the envelope provided.

Should you have any questions pertaining to the research associated with this study or regarding the institutional approval process, please do not hesitate to contact any of the research staff as listed on the next page.

Thank-you.

LinguaFolio Goal Setting Intervention and Academic Achievement: Increasing Student Capacity for Self-Regulated Learning

Institutional Approval Form

Please complete the following in order to reflect whether your organization grants institutional approval.
Should you not have the accompanying envelope for this form, feel free to send it to:

Oxana Dema
118 Henzlik Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0355

Yes, _____grants institutional approval for the conduction of this research.

Title of institution

No, _____does not grant institutional approval for the conduction of this research. Title of institution

_____ _____ _____

Signature Position/Title
Date

_____

Printed Name

<u>Goal Setting and Achievement Staff</u>

Oxana Dema, PhD candidate
Principal Investigator
Phone: 402-570-7560
E-mail: oxana.dema@huskers.unl.edu

Dr. Aleidine Moeller, PhD
Secondary Investigator
Phone: 402-472-2024
E-mail: amoeller2@unl.edu

E-mail Invitation to Participate in Research – School Principal

Dear School Principal Name,

During the academic years of 2005-2010, (name of teacher), a Spanish teacher in your district used LinguaFolio as an intervention in her classroom. A detailed analysis of student proficiency data from (name of teacher)'s classroom revealed a statistically significant relationship between the goal setting process and language achievement.

At this time, I am pursuing research that will help identify whether students who experienced LinguaFolio as an intervention in their second language classrooms performed better in other subject matters in comparison to students who were not exposed to LinguaFolio.

LinguaFolio is developed to help students become engaged in the processes of goal setting, reflection and analysis of their own learning through the means of a language portfolio that provides a series of checklists of language and cultural knowledge, skills, and proficiency levels. Research underscores that in order for goal setting to improve performance and enhance achievement, students need to participate in setting their own goals (Azevedo, Ragan, Cromley, & Pritchett, 2002; Tubbs, 1986, as cited in Griffee & Templi, 1997). It has been found that students who create their own goals perform at higher levels than students who have goals set for them (Mento, Steel, & Karren, 1987, as cited in Griffee & Templi, 1997). Therefore, in my study I attempt to answer the question of whether LinguaFolio students were able to transfer goal setting skills across disciplines that resulted in a difference in student achievement.

The reason for this e-mail today is to invite you to participate in this study designed to help me better understand the factors involved in producing high levels of student achievement. Participation would involve providing me with the students' records that include year of graduation; ACT scores in math, reading, science, and English; graduating GPA; and academic years in Spanish of all the students who graduated from your school in the academic years of 2006-2010. Please do not include any identifiable information such as students' names or school ID numbers in the students' records. Each student must be assigned a random number which is different from their school ID number.

Participation in this study is completely voluntary, and you may choose to remove yourself from participation at any time. Institutional Approval has been secured from the superintendent in your district (please see attached copy).

There is no cost for participation in this study. In fact, you may benefit through an enhanced understanding of the factors involved in producing high levels of student achievement.

Please reply to this e-mail, indicating whether you are interested in participating in this study. Once you indicate interest in participating, I will contact you to begin the research process.

If you have any questions at all, do not hesitate to ask. You are welcome to contact me via email or at my phone at 402.570.7560. I would be happy to answer any and all questions.

Thank you for your time, and I very much look forward to hearing from you,

Sincerely,

Oxana Dema

Goal Setting and Achievement Staff

Oxana Dema, PhD candidate

Principal Investigator

Graduate Assistant, Teaching Learning and Teacher Education, UNL

110C Henzlik Hall, University of Nebraska-Lincoln, 68588-0355

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115a Henzlik Hall, University of Nebraska-Lincoln, NE 68588-0355

Phone: 402.472.2024

E-mail: amoeller2@unl.edu

E-mail Reminder for a Form Not Returned Within 10 Days of Mailing (Institutional Approval or Consent Form from Principals)

Greetings Superintendent/School Principal Name,

I hope that this e-mail finds you enjoying a wonderful week.

I recently sent you an e-mail concerning the mailing of an institutional approval form related to a study on Goal Setting and Student Achievement. I am contacting you because the form has not yet been received. If you did not receive the forms in the mail or would like an additional copy, please let me know, and I will immediately send a second copy. If you have any questions or concerns about the procedures involved, please feel free to e-mail or call me at any time.

I appreciate your assistance,

Oxana Dema

Oxana Dema, PhD candidate

Principal Investigator

Graduate Assistant, Teaching Learning and Teacher Education, UNL

110C Henzlik Hall, University of Nebraska-Lincoln, 68588-0355

Phone: 402.570.7560

E-mail: oxana.dema@huskers.unl.edu

IRB Approval Letter

May 14, 2012

Oxana Dema

Teaching, Learning and Teacher Education

Aleidine Moeller

Teaching, Learning and Teacher Education

115 HENZ, UNL, 68588-0355

IRB Number: 20120512609 EX

Project ID: 12609

Project Title: The effect of LinguaFolio goal setting intervention on student achievement.

Dear Oxana:

This letter is to officially notify you of the conditional certification of exemption of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as Exempt Category 4.

You are authorized to implement this study as of the Date of Exemption Determination: 05/14/2012.

1. Your approval is conditional. School/district approvals need to be submitted to the IRB as they are received for documentation of approval. You do not need to submit all approvals at once. This can be added to the project on a site by site basis. Once I have one school district approval, I will revise your letter to indicated final approval rather than conditional.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;

* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;

* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;

* Any breach in confidentiality or compromise in data privacy related to the subject or others; or

* Any complaint of a subject that indicates an unanticipated risk or that cannot be

resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

Becky R. Freeman

Becky R. Freeman, CIP

for the IRB

APPENDIX B: DESCRIPTIVE STATISTICS

0 = non-LinguaFolio students

1= LinguaFolio students

		N
LinguaFolio	0	164
	1	454

LinguaFolio and ACT

Students who took ACT in three schools combined (total n = 375)

		N
LinguaFolio	0	45
	1	330

LinguaFolio		Mean	Std. Deviation	N
ACT_reading	0	19.49	4.650	45
	1	22.92	5.439	330
	Total	22.51	5.461	375
ACT_science	0	20.13	3.727	45
	1	23.02	3.969	330
	Total	22.68	4.047	375
ACT_math	0	18.64	3.688	45
	1	22.21	4.428	330
	Total	21.78	4.494	375
ACT_English	0	17.93	4.250	45
	1	22.33	4.917	330
	Total	21.80	5.043	375

School 1:

		N
LinguaFolio	0	4
	1	110

LinguaFolio		Mean	Std. Deviation	N
ACT_reading	0	15.75	1.708	4
	1	22.90	5.549	110
	Total	22.65	5.614	114
ACT_science	0	16.75	1.258	4
	1	23.15	4.124	110
	Total	22.92	4.224	114
ACT_math	0	17.25	3.594	4
	1	21.79	4.427	110
	Total	21.63	4.467	114
ACT_English	0	14.50	3.786	4
	1	21.94	4.979	110
	Total	21.68	5.117	114

School 2:

		N
LinguaFolio	0	21
	1	106

LinguaFolio		Mean	Std. Deviation	N
ACT_reading	0	19.62	4.307	21
	1	23.65	5.667	106
	Total	22.98	5.654	127
ACT_science	0	19.90	3.754	21
	1	23.17	3.699	106
	Total	22.63	3.889	127
ACT_math	0	19.05	3.398	21
	1	23.01	4.693	106
	Total	22.35	4.730	127
ACT_English	0	18.43	3.682	21
	1	23.06	5.273	106
	Total	22.29	5.320	127

School 3:

		N
LinguaFolio	0	20
	1	114

LinguaFolio		Mean	Std. Deviation	N
ACT_reading	0	20.10	5.170	20
	1	22.26	5.066	114
	Total	21.94	5.121	134
ACT_science	0	21.05	3.706	20
	1	22.77	4.081	114
	Total	22.51	4.061	134
ACT_math	0	18.50	4.085	20
	1	21.87	4.102	114
	Total	21.37	4.258	134
ACT_English	0	18.10	4.745	20
	1	22.03	4.459	114
	Total	21.44	4.699	134

LinguaFolio and GPA

LinguaFolio	Mean	Std. Deviation	N
0	3.19639	.414903	164
1	3.43808	.400346	454
Total	3.37394	.417802	618

School 1:

LinguaFolio	Mean	Std. Deviation	N
0	3.37596	.224964	54
1	3.52537	.238148	171
Total	3.48952	.243119	225

School 2:

LinguaFolio	Mean	Std. Deviation	N
0	2.64224	.395001	42
1	3.13761	.587907	120
Total	3.00918	.585338	162

School 3:

LinguaFolio	Mean	Std. Deviation	N
0	3.39606	.155995	68
1	3.56771	.207240	163
Total	3.51718	.208532	231

APPENDIX C: STATISTICAL PROCEDURES USED TO ANALYZE TESTABLE RESEARCH QUESTIONS

Research Question 1: Does LinguaFolio goal setting have an effect on ACT math, science, English, and reading scores in three schools?

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.930	1229.363[b]	4.000	370.000	.000	.930
	Wilks' Lambda	.070	1229.363[b]	4.000	370.000	.000	.930
	Hotelling's Trace	13.290	1229.363[b]	4.000	370.000	.000	.930
	Roy's Largest Root	13.290	1229.363[b]	4.000	370.000	.000	.930
LinguaFolio	Pillai's Trace	.089	9.077[b]	4.000	370.000	.000	.089
	Wilks' Lambda	.911	9.077[b]	4.000	370.000	.000	.089
	Hotelling's Trace	.098	9.077[b]	4.000	370.000	.000	.089
	Roy's Largest Root	.098	9.077[b]	4.000	370.000	.000	.089

b. Exact statistic

Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
ACT_reading	2.548	1	373	.111
ACT_science	.000	1	373	.988
ACT_math	3.131	1	373	.078
ACT_English	1.786	1	373	.182

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	466.521[a]	1	466.521	16.285	.000	.042
	ACT_science	330.951[b]	1	330.951	21.302	.000	.054
	ACT_math	503.185[c]	1	503.185	26.627	.000	.067
	ACT_English	764.545[d]	1	764.545	32.601	.000	.080

Intercept	ACT_reading	71225.220	1	71225.220	2486.338	.000	.870
	ACT_science	73758.023	1	73758.023	4747.492	.000	.927
	ACT_math	66092.849	1	66092.849	3497.381	.000	.904
	ACT_English	64188.289	1	64188.289	2737.051	.000	.880
LinguaFolio	ACT_reading	466.521	1	466.521	16.285	.000	.042
	ACT_science	330.951	1	330.951	21.302	.000	.054
	ACT_math	503.185	1	503.185	26.627	.000	.067
	ACT_English	764.545	1	764.545	32.601	.000	.080
Error	ACT_reading	10685.196	373	28.647			
	ACT_science	5795.006	373	15.536			
	ACT_math	7048.884	373	18.898			
	ACT_English	8747.455	373	23.452			
Total	ACT_reading	201153.000	375				
	ACT_science	198974.000	375				
	ACT_math	185462.000	375				
	ACT_English	187727.000	375				
Corrected Total	ACT_reading	11151.717	374				
	ACT_science	6125.957	374				
	ACT_math	7552.069	374				
	ACT_English	9512.000	374				

a. R Squared = .042 (Adjusted R Squared = .039)

b. R Squared = .054 (Adjusted R Squared = .051)

c. R Squared = .067 (Adjusted R Squared = .064)

d. R Squared = .080 (Adjusted R Squared = .078)

Estimated Marginal Means

				95% Confidence Interval	
Dependent Variable		Mean	Std. Error	Lower Bound	Upper Bound
ACT_reading	0	19.489	.798	17.920	21.058
	1	22.921	.295	22.342	23.501
ACT_science	0	20.133	.588	18.978	21.289
	1	23.024	.217	22.598	23.451

ACT_math	0	18.644	.648	17.370	19.919
	1	22.209	.239	21.739	22.680
ACT_English	0	17.933	.722	16.514	19.353
	1	22.327	.267	21.803	22.851

Pairwise Comparisons

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
ACT_reading	0	1	-3.432*	.851	.000	-5.105	-1.760
	1	0	3.432*	.851	.000	1.760	5.105
ACT_science	0	1	-2.891*	.626	.000	-4.123	-1.659
	1	0	2.891*	.626	.000	1.659	4.123
ACT_math	0	1	-3.565*	.691	.000	-4.923	-2.206
	1	0	3.565*	.691	.000	2.206	4.923
ACT_English	0	1	-4.394*	.770	.000	-5.907	-2.881
	1	0	4.394*	.770	.000	2.881	5.907

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Box's Test of Equality of Covariance Matrices

Box's M	10.611
F	1.026
df1	10
df2	26040.918
Sig.	.418

Research Question 2: How does the number of years of participating in LinguaFolio affect students' ACT scores in three schools?

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.868	608.647	4.000	370.000	.000	.868
	Wilks' Lambda	.132	608.647	4.000	370.000	.000	.868
	Hotelling's Trace	6.580	608.647	4.000	370.000	.000	.868
	Roy's Largest Root	6.580	608.647	4.000	370.000	.000	.868
YEARSinLinguaFolio	Pillai's Trace	.114	11.917	4.000	370.000	.000	.114
	Wilks' Lambda	.886	11.917	4.000	370.000	.000	.114
	Hotelling's Trace	.129	11.917	4.000	370.000	.000	.114
	Roy's Largest Root	.129	11.917	4.000	370.000	.000	.114

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	737.269[a]	1	737.269	26.406	.000	.066
	ACT_science	397.515[b]	1	397.515	25.884	.000	.065
	ACT_math	548.814[c]	1	548.814	29.230	.000	.073
	ACT_English	1057.574[d]	1	1057.574	46.659	.000	.111
Intercept	ACT_reading	33321.039	1	33321.039	1193.414	.000	.762
	ACT_science	36265.766	1	36265.766	2361.398	.000	.864
	ACT_math	32092.874	1	32092.874	1709.297	.000	.821

	ACT_English	29346.138	1	29346.138	1294.719	.000	.776
YEARSinLinguaFolio	ACT_reading	737.269	1	737.269	26.406	.000	.066
	ACT_science	397.515	1	397.515	25.884	.000	.065
	ACT_math	548.814	1	548.814	29.230	.000	.073
	ACT_English	1057.574	1	1057.574	46.659	.000	.111
Error	ACT_reading	10414.448	373	27.921			
	ACT_science	5728.442	373	15.358			
	ACT_math	7003.256	373	18.775			
	ACT_English	8454.426	373	22.666			
Total	ACT_reading	201153.000	375				
	ACT_science	198974.000	375				
	ACT_math	185462.000	375				
	ACT_English	187727.000	375				
Corrected Total	ACT_reading	11151.717	374				
	ACT_science	6125.957	374				
	ACT_math	7552.069	374				
	ACT_English	9512.000	374				

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.902	.576	34.546	.000	18.769	21.035	.762
	YEARSinLinguaFolio	1.091	.212	5.139	.000	.674	1.509	.066
ACT_science	Intercept	20.763	.427	48.594	.000	19.923	21.603	.864
	YEARSinLinguaFolio	.801	.157	5.088	.000	.492	1.111	.065
ACT_math	Intercept	19.532	.472	41.344	.000	18.603	20.461	.821
	YEARSinLinguaFolio	.941	.174	5.407	.000	.599	1.284	.073
ACT_English	Intercept	18.677	.519	35.982	.000	17.657	19.698	.776
	YEARSinLinguaFolio	1.307	.191	6.831	.000	.931	1.683	.111

Research Question 3: Does LinguaFolio goal setting have effect on ACT math, science, English, and reading scores in each school individually?

School 1:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.780	96.536[c]	4.000	109.000	.000	.780
	Wilks' Lambda	.220	96.536[c]	4.000	109.000	.000	.780
	Hotelling's Trace	3.543	96.536[c]	4.000	109.000	.000	.780
	Roy's Largest Root	3.543	96.536[c]	4.000	109.000	.000	.780
LinguaFolio	Pillai's Trace	.095	2.856[c]	4.000	109.000	.027	.095
	Wilks' Lambda	.905	2.856[c]	4.000	109.000	.027	.095
	Hotelling's Trace	.105	2.856[c]	4.000	109.000	.027	.095
	Roy's Largest Root	.105	2.856[c]	4.000	109.000	.027	.095

Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
ACT_reading	3.930	1	112	.050
ACT_science	3.284	1	112	.073
ACT_math	.852	1	112	.358
ACT_English	.439	1	112	.509

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	197.315[b]	1	197.315	6.568	.012	.055
	ACT_science	157.867[c]	1	157.867	9.514	.003	.078
	ACT_math	79.585[d]	1	79.585	4.098	.045	.035
	ACT_English	213.437[e]	1	213.437	8.707	.004	.072
Intercept	ACT_reading	5765.631	1	5765.631	191.922	.000	.631
	ACT_science	6143.200	1	6143.200	370.227	.000	.768
	ACT_math	5882.849	1	5882.849	302.941	.000	.730
	ACT_English	5124.103	1	5124.103	209.029	.000	.651

LinguaFolio	ACT_reading	197.315	1	197.315	6.568	.012	.055
	ACT_science	157.867	1	157.867	9.514	.003	.078
	ACT_math	79.585	1	79.585	4.098	.045	.035
	ACT_English	213.437	1	213.437	8.707	.004	.072
Error	ACT_reading	3364.650	112	30.042			
	ACT_science	1858.423	112	16.593			
	ACT_math	2174.941	112	19.419			
	ACT_English	2745.555	112	24.514			
Total	ACT_reading	62042.000	114				
	ACT_science	61909.000	114				
	ACT_math	55598.000	114				
	ACT_English	56519.000	114				
Corrected Total	ACT_reading	3561.965	113				
	ACT_science	2016.289	113				
	ACT_math	2254.526	113				
	ACT_English	2958.991	113				

Parameter Estimates

						95% Confidence Interval			
Dependent Variable		B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared	Observed Power[c]
ACT_reading	Intercept	22.900	.523	43.820	.000	21.865	23.935	.945	1.000
	[LinguaFolio=0]	-7.150	2.790	-2.563	.012	-12.678	-1.622	.055	.719
	[LinguaFolio=1]	0[b]							
ACT_science	Intercept	23.145	.388	59.593	.000	22.376	23.915	.969	1.000
	[LinguaFolio=0]	-6.395	2.073	-3.084	.003	-10.504	-2.287	.078	.864
	[LinguaFolio=1]	0[b]							
ACT_math	Intercept	21.791	.420	51.863	.000	20.958	22.623	.960	1.000
	[LinguaFolio=0]	-4.541	2.243	-2.024	.045	-8.985	-.097	.035	.519
	[LinguaFolio=1]	0[b]							
ACT_English	Intercept	21.936	.472	46.468	.000	21.001	22.872	.951	1.000
	[LinguaFolio=0]	-7.436	2.520	-2.951	.004	-12.430	-2.443	.072	.833
	[LinguaFolio=1]	0[b]							

c. Exact statistic

Estimated Marginal Means

			95% Confidence Interval	
Dependent Variable	Mean	Std. Error	Lower Bound	Upper Bound

ACT_reading	0	15.750	2.741	10.320	21.180
	1	22.900	.523	21.865	23.935
ACT_science	0	16.750	2.037	12.714	20.786
	1	23.145	.388	22.376	23.915
ACT_math	0	17.250	2.203	12.884	21.616
	1	21.791	.420	20.958	22.623
ACT_English	0	14.500	2.476	9.595	19.405
	1	21.936	.472	21.001	22.872

School 2:

Box's Test of Equality of Covariance Matrices

Box's M	11.626
F	1.075
df1	10
df2	5643.954
Sig.	.378

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.951	593.298[c]	4.000	122.000	.000	.951
	Wilks' Lambda	.049	593.298[c]	4.000	122.000	.000	.951
	Hotelling's Trace	19.452	593.298[c]	4.000	122.000	.000	.951
	Roy's Largest Root	19.452	593.298[c]	4.000	122.000	.000	.951
Lingafolio	Pillai's Trace	.130	4.577[c]	4.000	122.000	.002	.130
	Wilks' Lambda	.870	4.577[c]	4.000	122.000	.002	.130
	Hotelling's Trace	.150	4.577[c]	4.000	122.000	.002	.130
	Roy's Largest Root	.150	4.577[c]	4.000	122.000	.002	.130

c. Exact statistic

Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
ACT_reading	2.888	1	125	.092
ACT_science	.002	1	125	.961
ACT_math	3.020	1	125	.085
ACT_English	3.373	1	125	.069

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	284.931[b]	1	284.931	9.515	.003	.071
	ACT_science	186.853[c]	1	186.853	13.589	.000	.098
	ACT_math	275.112[d]	1	275.112	13.518	.000	.098
	ACT_English	375.417[e]	1	375.417	14.707	.000	.105
Intercept	ACT_reading	32816.711	1	32816.711	1095.925	.000	.898
	ACT_science	32520.964	1	32520.964	2365.157	.000	.950
	ACT_math	31002.671	1	31002.671	1523.357	.000	.924
	ACT_English	30165.276	1	30165.276	1181.727	.000	.904
LinguaFolio	ACT_reading	284.931	1	284.931	9.515	.003	.071
	ACT_science	186.853	1	186.853	13.589	.000	.098
	ACT_math	275.112	1	275.112	13.518	.000	.098
	ACT_English	375.417	1	375.417	14.707	.000	.105
Error	ACT_reading	3743.037	125	29.944			
	ACT_science	1718.753	125	13.750			
	ACT_math	2543.943	125	20.352			
	ACT_English	3190.803	125	25.526			
Total	ACT_reading	71119.000	127				
	ACT_science	66944.000	127				
	ACT_math	66283.000	127				
	ACT_English	66673.000	127				
Corrected Total	ACT_reading	4027.969	126				
	ACT_science	1905.606	126				
	ACT_math	2819.055	126				
	ACT_English	3566.220	126				

b. R Squared = .071 (Adjusted R Squared = .063)

c. R Squared = .098 (Adjusted R Squared = .091)

d. R Squared = .098 (Adjusted R Squared = .090)

e. R Squared = .105 (Adjusted R Squared = .098)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	23.651	.532	44.498	.000	22.599	24.703	.941
	[LinguaFolio=0]	-4.032	1.307	-3.085	.003	-6.619	-1.445	.071
	[LinguaFolio=1]	0[b]						
ACT_science	Intercept	23.170	.360	64.332	.000	22.457	23.883	.971
	[LinguaFolio=0]	-3.265	.886	-3.686	.000	-5.018	-1.512	.098
	[LinguaFolio=1]	0[b]						
ACT_math	Intercept	23.009	.438	52.512	.000	22.142	23.877	.957
	[LinguaFolio=0]	-3.962	1.078	-3.677	.000	-6.094	-1.829	.098
	[LinguaFolio=1]	0[b]						
ACT_English	Intercept	23.057	.491	46.984	.000	22.085	24.028	.946
	[LinguaFolio=0]	-4.628	1.207	-3.835	.000	-7.016	-2.240	.105
	[LinguaFolio=1]	0[b]						

b. This parameter is set to zero because it is redundant.

Estimated Marginal Means

Dependent Variable		Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
ACT_reading	0	19.619	1.194	17.256	21.982
	1	23.651	.532	22.599	24.703
ACT_science	0	19.905	.809	18.303	21.506
	1	23.170	.360	22.457	23.883
ACT_math	0	19.048	.984	17.099	20.996
	1	23.009	.438	22.142	23.877
ACT_English	0	18.429	1.103	16.247	20.611
	1	23.057	.491	22.085	24.028

School 3:

Box's Test of Equality of Covariance Matrices	
Box's M	5.950
F	.548
df1	10
df2	4993.273
Sig.	.857

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.942	527.596[c]	4.000	129.000	.000	.942
	Wilks' Lambda	.058	527.596[c]	4.000	129.000	.000	.942
	Hotelling's Trace	16.360	527.596[c]	4.000	129.000	.000	.942
	Roy's Largest Root	16.360	527.596[c]	4.000	129.000	.000	.942
LinguaFolio	Pillai's Trace	.128	4.734[c]	4.000	129.000	.001	.128
	Wilks' Lambda	.872	4.734[c]	4.000	129.000	.001	.128
	Hotelling's Trace	.147	4.734[c]	4.000	129.000	.001	.128
	Roy's Largest Root	.147	4.734[c]	4.000	129.000	.001	.128

c. Exact statistic

Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
ACT_reading	.118	1	132	.732
ACT_science	.026	1	132	.872
ACT_math	.054	1	132	.817
ACT_English	.166	1	132	.684

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	79.617[b]	1	79.617	3.084	.081	.023
	ACT_science	50.450[c]	1	50.450	3.107	.080	.023
	ACT_math	193.056[d]	1	193.056	11.489	.001	.080
	ACT_English	262.301[e]	1	262.301	12.945	.000	.089
Intercept	ACT_reading	30535.617	1	30535.617	1182.750	.000	.900
	ACT_science	32674.808	1	32674.808	2012.615	.000	.938
	ACT_math	27727.683	1	27727.683	1650.140	.000	.926
	ACT_English	27396.092	1	27396.092	1352.023	.000	.911

Lingafolio	ACT_reading	79.617	1	79.617	3.084	.081	.023
	ACT_science	50.450	1	50.450	3.107	.080	.023
	ACT_math	193.056	1	193.056	11.489	.001	.080
	ACT_English	262.301	1	262.301	12.945	.000	.089
Error	ACT_reading	3407.905	132	25.817			
	ACT_science	2143.020	132	16.235			
	ACT_math	2218.026	132	16.803			
	ACT_English	2674.721	132	20.263			
Total	ACT_reading	67992.000	134				
	ACT_science	70121.000	134				
	ACT_math	63581.000	134				
	ACT_English	64535.000	134				
Corrected Total	ACT_reading	3487.522	133				
	ACT_science	2193.470	133				
	ACT_math	2411.082	133				
	ACT_English	2937.022	133				

b. R Squared = .023 (Adjusted R Squared = .015)

c. R Squared = .023 (Adjusted R Squared = .016)

d. R Squared = .080 (Adjusted R Squared = .073)

e. R Squared = .089 (Adjusted R Squared = .082)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	22.263	.476	46.782	.000	21.322	23.205	.943
	[LinguaFolio=0]	-2.163	1.232	-1.756	.081	-4.600	.273	.023
	[LinguaFolio=1]	0[b]						
ACT_science	Intercept	22.772	.377	60.343	.000	22.025	23.518	.965
	[LinguaFolio=0]	-1.722	.977	-1.763	.080	-3.654	.210	.023
	[LinguaFolio=1]	0[b]						
ACT_math	Intercept	21.868	.384	56.960	.000	21.109	22.628	.961
	[LinguaFolio=0]	-3.368	.994	-3.390	.001	-5.334	-1.403	.080
	[LinguaFolio=1]	0[b]						
ACT_English	Intercept	22.026	.422	52.245	.000	21.192	22.860	.954
	[LinguaFolio=0]	-3.926	1.091	-3.598	.000	-6.085	-1.768	.089
	[LinguaFolio=1]	0[b]						

b. This parameter is set to zero because it is redundant.

Estimated Marginal Means

Dependent Variable		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
ACT_reading	0	20.100	1.136	17.853	22.347
	1	22.263	.476	21.322	23.205
ACT_science	0	21.050	.901	19.268	22.832
	1	22.772	.377	22.025	23.518
ACT_math	0	18.500	.917	16.687	20.313
	1	21.868	.384	21.109	22.628
ACT_English	0	18.100	1.007	16.109	20.091
	1	22.026	.422	21.192	22.860

Research Question 4: How does the number of years of participating in LinguaFolio affect students' ACT scores in each of the three schools individually?

School 1:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.814	119.330[c]	4.000	109.000	.000	.814
	Wilks' Lambda	.186	119.330[c]	4.000	109.000	.000	.814
	Hotelling's Trace	4.379	119.330[c]	4.000	109.000	.000	.814
	Roy's Largest Root	4.379	119.330[c]	4.000	109.000	.000	.814
YEARSinLinguaFolio	Pillai's Trace	.101	3.056[c]	4.000	109.000	.020	.101
	Wilks' Lambda	.899	3.056[c]	4.000	109.000	.020	.101
	Hotelling's Trace	.112	3.056[c]	4.000	109.000	.020	.101
	Roy's Largest Root	.112	3.056[c]	4.000	109.000	.020	.101

c. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	263.928[b]	1	263.928	8.963	.003	.074
	ACT_science	121.717[c]	1	121.717	7.195	.008	.060
	ACT_math	77.530[d]	1	77.530	3.989	.048	.034
	ACT_English	256.615[e]	1	256.615	10.635	.001	.087
Intercept	ACT_reading	6762.741	1	6762.741	229.660	.000	.672
	ACT_science	7775.065	1	7775.065	459.633	.000	.804
	ACT_math	7171.937	1	7171.937	368.975	.000	.767
	ACT_English	6125.964	1	6125.964	253.891	.000	.694
YEARSinLinguaFolio	ACT_reading	263.928	1	263.928	8.963	.003	.074
	ACT_science	121.717	1	121.717	7.195	.008	.060

	ACT_math	77.530	1	77.530	3.989	.048	.034
	ACT_English	256.615	1	256.615	10.635	.001	.087
Error	ACT_reading	3298.037	112	29.447			
	ACT_science	1894.573	112	16.916			
	ACT_math	2176.996	112	19.437			
	ACT_English	2702.377	112	24.128			
Total	ACT_reading	62042.000	114				
	ACT_science	61909.000	114				
	ACT_math	55598.000	114				
	ACT_English	56519.000	114				
Corrected Total	ACT_reading	3561.965	113				
	ACT_science	2016.289	113				
	ACT_math	2254.526	113				
	ACT_English	2958.991	113				

b. R Squared = .074 (Adjusted R Squared = .066)

c. R Squared = .060 (Adjusted R Squared = .052)

d. R Squared = .034 (Adjusted R Squared = .026)

e. R Squared = .087 (Adjusted R Squared = .079)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.179	1.266	15.155	.000	16.672	21.687	.672
	YEARSinLinguaFolio	1.345	.449	2.994	.003	.455	2.236	.074
ACT_science	Intercept	20.565	.959	21.439	.000	18.664	22.465	.804
	YEARSinLinguaFolio	.914	.341	2.682	.008	.239	1.589	.060
ACT_math	Intercept	19.751	1.028	19.209	.000	17.714	21.788	.767
	YEARSinLinguaFolio	.729	.365	1.997	.048	.006	1.453	.034
ACT_English	Intercept	18.254	1.146	15.934	.000	15.984	20.524	.694
	YEARSinLinguaFolio	1.327	.407	3.261	.001	.521	2.133	.087

School 2:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.901	278.372[c]	4.000	122.000	.000	.901

	Wilks' Lambda	.099	278.372[c]	4.000	122.000	.000	.901
	Hotelling's Trace	9.127	278.372[c]	4.000	122.000	.000	.901
	Roy's Largest Root	9.127	278.372[c]	4.000	122.000	.000	.901
YEARSinLinguaFolio	Pillai's Trace	.233	9.284[c]	4.000	122.000	.000	.233
	Wilks' Lambda	.767	9.284[c]	4.000	122.000	.000	.233
	Hotelling's Trace	.304	9.284[c]	4.000	122.000	.000	.233
	Roy's Largest Root	.304	9.284[c]	4.000	122.000	.000	.233

c. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	457.952[b]	1	457.952	16.035	.000	.114
	ACT_science	292.377[c]	1	292.377	22.655	.000	.153
	ACT_math	392.854[d]	1	392.854	20.240	.000	.139
	ACT_English	739.393[e]	1	739.393	32.695	.000	.207
Intercept	ACT_reading	13901.177	1	13901.177	486.734	.000	.796
	ACT_science	14271.660	1	14271.660	1105.830	.000	.898
	ACT_math	13344.081	1	13344.081	687.499	.000	.846
	ACT_English	11853.124	1	11853.124	524.136	.000	.807
YEARSinLinguaFolio	ACT_reading	457.952	1	457.952	16.035	.000	.114
	ACT_science	292.377	1	292.377	22.655	.000	.153
	ACT_math	392.854	1	392.854	20.240	.000	.139
	ACT_English	739.393	1	739.393	32.695	.000	.207
Error	ACT_reading	3570.016	125	28.560			
	ACT_science	1613.229	125	12.906			
	ACT_math	2426.202	125	19.410			
	ACT_English	2826.827	125	22.615			
Total	ACT_reading	71119.000	127				
	ACT_science	66944.000	127				
	ACT_math	66283.000	127				
	ACT_English	66673.000	127				
Corrected Total	ACT_reading	4027.969	126				
	ACT_science	1905.606	126				

ACT_math	2819.055	126
ACT_English	3566.220	126

b. R Squared = .114 (Adjusted R Squared = .107)

c. R Squared = .153 (Adjusted R Squared = .147)

d. R Squared = .139 (Adjusted R Squared = .132)

e. R Squared = .207 (Adjusted R Squared = .201)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.910	.902	22.062	.000	18.124	21.696	.796
	YEARSinLinguaFolio	1.496	.374	4.004	.000	.757	2.235	.114
ACT_science	Intercept	20.173	.607	33.254	.000	18.973	21.374	.898
	YEARSinLinguaFolio	1.195	.251	4.760	.000	.698	1.692	.153
ACT_math	Intercept	19.507	.744	26.220	.000	18.034	20.979	.846
	YEARSinLinguaFolio	1.386	.308	4.499	.000	.776	1.995	.139
ACT_English	Intercept	18.385	.803	22.894	.000	16.795	19.974	.807
	YEARSinLinguaFolio	1.901	.332	5.718	.000	1.243	2.559	.207

School 3:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.869	213.837[c]	4.000	129.000	.000	.869
	Wilks' Lambda	.131	213.837[c]	4.000	129.000	.000	.869
	Hotelling's Trace	6.631	213.837[c]	4.000	129.000	.000	.869
	Roy's Largest Root	6.631	213.837[c]	4.000	129.000	.000	.869
YEARSinLinguaFolio	Pillai's Trace	.126	4.659[c]	4.000	129.000	.002	.126
	Wilks' Lambda	.874	4.659[c]	4.000	129.000	.002	.126
	Hotelling's Trace	.144	4.659[c]	4.000	129.000	.002	.126

	Roy's Largest Root	.144	4.659[c]	4.000	129.000	.002	.126

c. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	165.630[b]	1	165.630	6.582	.011	.047
	ACT_science	52.945[c]	1	52.945	3.265	.073	.024
	ACT_math	212.680[d]	1	212.680	12.770	.000	.088
	ACT_English	268.942[e]	1	268.942	13.306	.000	.092
Intercept	ACT_reading	11715.976	1	11715.976	465.551	.000	.779
	ACT_science	13527.324	1	13527.324	834.191	.000	.863
	ACT_math	10732.172	1	10732.172	644.398	.000	.830
	ACT_English	10485.968	1	10485.968	518.780	.000	.797
YEARSinLinguaFolio	ACT_reading	165.630	1	165.630	6.582	.011	.047
	ACT_science	52.945	1	52.945	3.265	.073	.024
	ACT_math	212.680	1	212.680	12.770	.000	.088
	ACT_English	268.942	1	268.942	13.306	.000	.092
Error	ACT_reading	3321.893	132	25.166			
	ACT_science	2140.525	132	16.216			
	ACT_math	2198.402	132	16.655			
	ACT_English	2668.081	132	20.213			
Total	ACT_reading	67992.000	134				
	ACT_science	70121.000	134				
	ACT_math	63581.000	134				
	ACT_English	64535.000	134				
Corrected Total	ACT_reading	3487.522	133				
	ACT_science	2193.470	133				
	ACT_math	2411.082	133				
	ACT_English	2937.022	133				

b. R Squared = .047 (Adjusted R Squared = .040)

c. R Squared = .024 (Adjusted R Squared = .017)

d. R Squared = .088 (Adjusted R Squared = .081)

e. R Squared = .092 (Adjusted R Squared = .085)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared

ACT_reading	Intercept	19.857	.920	21.577	.000	18.037	21.678	.779
	YEARSinLinguaFolio	.818	.319	2.565	.011	.187	1.450	.047
ACT_science	Intercept	21.337	.739	28.882	.000	19.876	22.799	.863
	YEARSinLinguaFolio	.463	.256	1.807	.073	-.044	.969	.024
ACT_math	Intercept	19.005	.749	25.385	.000	17.524	20.486	.830
	YEARSinLinguaFolio	.927	.260	3.574	.000	.414	1.441	.088
ACT_English	Intercept	18.786	.825	22.777	.000	17.155	20.418	.797
	YEARSinLinguaFolio	1.043	.286	3.648	.000	.477	1.609	.092

Research Question 5: Does LinguaFolio goal setting have an effect on GPA in three schools?

Levene's Test of Equality of Error Variances

Dependent Variable: GPA

F	df1	df2	Sig.
.472	1	616	.492

Tests of Between-Subject Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.038[a]	1	7.038	43.065	.000	.065
Intercept	5303.025	1	5303.025	32450.807	0.000	.981
LinguaFolio	7.038	1	7.038	43.065	.000	.065
Error	100.665	616	.163			
Total	7142.695	618				
Corrected Total	107.703	617				

Parameter Estimates

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	3.438	.019	181.215	0.000	3.401	3.475	.982
[LinguaFolio =0]	-.242	.037	-6.562	.000	-.314	-.169	.065
[LinguaFolio =1]	0[a]						

Research Question 6: Does LinguaFolio goal setting have an effect on graduating GPA in each school individually?

School 1:

Levene's Test of Equality of Error Variances

Dependent Variable:	GPA		
F	df1	df2	Sig.
.332	1	223	.565

Tests of Between-Subjects Effects

Dependent Variable:	GPA					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.916[b]	1	.916	16.578	.000	.069
Intercept	1954.672	1	1954.672	35370.121	.000	.994
LinguaFolio	.916	1	.916	16.578	.000	.069
Error	12.324	223	.055			
Total	2753.002	225				
Corrected Total	13.240	224				

b. R Squared = .069 (Adjusted R Squared = .065)

Estimated Marginal Means

			95% Confidence Interval	
LinguaFolio	Mean	Std. Error	Lower Bound	Upper Bound
0	3.376	.032	3.313	3.439
1	3.525	.018	3.490	3.561

School 2:

Levene's Test of Equality of Error Variances[b]

Dependent Variable:	GPA		
F	df1	df2	Sig.
8.364	1	160	.004

b. Design: Intercept + LinguaFolio

Tests of Between-Subjects Effects

Dependent Variable:	GPA					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.634[b]	1	7.634	25.701	.000	.138
Intercept	1039.317	1	1039.317	3498.827	.000	.956
LinguaFolio	7.634	1	7.634	25.701	.000	.138
Error	47.528	160	.297			
Total	1522.098	162				
Corrected Total	55.162	161				

b. R Squared = .138 (Adjusted R Squared = .133)

Estimated Marginal Means

			95% Confidence Interval	
LinguaFolio	Mean	Std. Error	Lower Bound	Upper Bound
0	2.642	.084	2.476	2.808
1	3.138	.050	3.039	3.236

School 3:

Levene's Test of Equality of Error Variances[b]

Dependent Variable:	GPA

F	df1	df2	Sig.
5.710	1	229	.018

b. Design: Intercept + LinguaFolio

Tests of Between-Subjects Effects

Dependent Variable: GPA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.414[b]	1	1.414	37.696	.000	.141
Intercept	2326.873	1	2326.873	62046.162	.000	.996
LinguaFolio	1.414	1	1.414	37.696	.000	.141
Error	8.588	229	.038			
Total	2867.596	231				
Corrected Total	10.002	230				

b. R Squared = .141 (Adjusted R Squared = .138)

Estimated Marginal Means

LinguaFolio	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
0	3.396	.023	3.350	3.442
1	3.568	.015	3.538	3.598

Research Question 7: How does the number of years of participating in LinguaFolio affect students' graduating GPA in three schools?

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.345[a]	.119	.118	.392467

a. Predictors: (Constant), YEARSinLinguaFolio

b. Dependent Variable: GPA

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.820	1	12.820	83.230	.000[b]
	Residual	94.883	616	.154		
	Total	107.703	617			

a. Dependent Variable: GPA

b. Predictors: (Constant), YEARSinLinguaFolio

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.192	.025		125.707	0.000
	YEARSinLinguaFolio	.101	.011	.345	9.123	.000

a. Dependent Variable: GPA

Research Question 8: How does the number of years of participating in LinguaFolio affect students' graduating GPA in each of the three schools individually?

School 1:

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.421[b]	.177	.173	.221038

b. Predictors: (Constant), YEARSinLinguaFolio

c. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.345	1	2.345	47.989	.000[c]
	Residual	10.895	223	.049		
	Total	13.240	224			

b. Dependent Variable: GPA

c. Predictors: (Constant), YEARSinLinguaFolio

Coefficients[b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.362	.024		142.626	.000
	YEARSinLinguaFolio	.075	.011	.421	6.927	.000

b. Dependent Variable: GPA

School 2:

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.435[b]	.189	.184	.528739

b. Predictors: (Constant), YEARSinLinguaFolio

c. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.432	1	10.432	37.313	.000[c]
	Residual	44.730	160	.280		
	Total	55.162	161			

b. Dependent Variable: GPA

c. Predictors: (Constant), YEARSinLinguaFolio

Coefficients[b]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.678	.068		39.228	.000
	YEARSinLinguaFolio	.189	.031	.435	6.108	.000

b. Dependent Variable: GPA

School 3:

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.484[b]	.234	.231	.182898

b. Predictors: (Constant), YEARSinLinguaFolio

c. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.341	1	2.341	69.990	.000[c]
	Residual	7.660	229	.033		
	Total	10.002	230			

b. Dependent Variable: GPA

c. Predictors: (Constant), YEARSinLinguaFolio

Coefficients[b]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.390	.019		175.199	.000
	YEARSinLinguaFolio	.065	.008	.484	8.366	.000

b. Dependent Variable: GPA

Research Question 9: Does LinguaFolio goal setting have an effect on ACT scores and graduating GPA combined in three schools?

Box's Test of Equality of Covariance Matrices

Box's M	17.367
F	1.110
df1	15
df2	23109.175
Sig.	.341

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.971	2488.049[b]	5.000	369.000	.000	.971
	Wilks' Lambda	.029	2488.049[b]	5.000	369.000	.000	.971
	Hotelling's Trace	33.713	2488.049[b]	5.000	369.000	.000	.971
	Roy's Largest Root	33.713	2488.049[b]	5.000	369.000	.000	.971
LinguaFolio	Pillai's Trace	.135	11.486[b]	5.000	369.000	.000	.135
	Wilks' Lambda	.865	11.486[b]	5.000	369.000	.000	.135
	Hotelling's Trace	.156	11.486[b]	5.000	369.000	.000	.135
	Roy's Largest Root	.156	11.486[b]	5.000	369.000	.000	.135

b. Exact statistic

Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
ACT_reading	2.548	1	373	.111
ACT_science	.000	1	373	.988
ACT_math	3.131	1	373	.078
ACT_English	1.786	1	373	.182
GPA	8.868	1	373	.003

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	466.521[a]	1	466.521	16.285	.000	.042
	ACT_science	330.951[b]	1	330.951	21.302	.000	.054
	ACT_math	503.185[c]	1	503.185	26.627	.000	.067
	ACT_English	764.545[d]	1	764.545	32.601	.000	.080
	GPA	6.289[e]	1	6.289	41.668	.000	.100
Intercept	ACT_reading	71225.220	1	71225.220	2486.338	.000	.870
	ACT_science	73758.023	1	73758.023	4747.492	.000	.927
	ACT_math	66092.849	1	66092.849	3497.381	.000	.904
	ACT_English	64188.289	1	64188.289	2737.051	.000	.880
	GPA	1729.594	1	1729.594	11459.291	.000	.968
LinguaFolio	ACT_reading	466.521	1	466.521	16.285	.000	.042
	ACT_science	330.951	1	330.951	21.302	.000	.054
	ACT_math	503.185	1	503.185	26.627	.000	.067
	ACT_English	764.545	1	764.545	32.601	.000	.080
	GPA	6.289	1	6.289	41.668	.000	.100
Error	ACT_reading	10685.196	373	28.647			
	ACT_science	5795.006	373	15.536			
	ACT_math	7048.884	373	18.898			
	ACT_English	8747.455	373	23.452			
	GPA	56.298	373	.151			
Total	ACT_reading	201153.000	375				
	ACT_science	198974.000	375				
	ACT_math	185462.000	375				
	ACT_English	187727.000	375				
	GPA	4541.176	375				
Corrected Total	ACT_reading	11151.717	374				
	ACT_science	6125.957	374				
	ACT_math	7552.069	374				
	ACT_English	9512.000	374				
	GPA	62.587	374				

a. R Squared = .042 (Adjusted R Squared = .039)
b. R Squared = .054 (Adjusted R Squared = .051)
c. R Squared = .067 (Adjusted R Squared = .064)
d. R Squared = .080 (Adjusted R Squared = .078)
e. R Squared = .100 (Adjusted R Squared = .098)

Parameter Estimates

Dependent Variable		B	Std. Error	T	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	22.921	.295	77.796	.000	22.342	23.501	.942

	[LinguaFolio=0]	-3.432	.851	-4.036	.000	-5.105	-1.760	.042
	[LinguaFolio=1]	0[a]						
ACT_science	Intercept	23.024	.217	106.113	.000	22.598	23.451	.968
	[LinguaFolio=0]	-2.891	.626	-4.615	.000	-4.123	-1.659	.054
	[LinguaFolio=1]	0[a]						
ACT_math	Intercept	22.209	.239	92.807	.000	21.739	22.680	.958
	[LinguaFolio=0]	-3.565	.691	-5.160	.000	-4.923	-2.206	.067
	[LinguaFolio=1]	0[a]						
ACT_English	Intercept	22.327	.267	83.754	.000	21.803	22.851	.950
	[LinguaFolio=0]	-4.394	.770	-5.710	.000	-5.907	-2.881	.080
	[LinguaFolio=1]	0[a]						
GPA	Intercept	3.504	.021	163.828	0.000	3.462	3.546	.986
	[LinguaFolio=0]	-.399	.062	-6.455	.000	-.520	-.277	.100
	[LinguaFolio=1]	0[a]						

a. This parameter is set to zero because it is redundant.

Estimated Marginal Means

				95% Confidence Interval	
Dependent Variable		Mean	Std. Error	Lower Bound	Upper Bound
ACT_reading	0	19.489	.798	17.920	21.058
	1	22.921	.295	22.342	23.501
ACT_science	0	20.133	.588	18.978	21.289
	1	23.024	.217	22.598	23.451
ACT_math	0	18.644	.648	17.370	19.919
	1	22.209	.239	21.739	22.680
ACT_English	0	17.933	.722	16.514	19.353
	1	22.327	.267	21.803	22.851
GPA	0	3.105	.058	2.991	3.219
	1	3.504	.021	3.462	3.546

Pairwise Comparisons

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
ACT_reading	0	1	-3.432*	.851	.000	-5.105	-1.760
	1	0	3.432*	.851	.000	1.760	5.105
ACT_science	0	1	-2.891*	.626	.000	-4.123	-1.659
	1	0	2.891*	.626	.000	1.659	4.123
ACT_math	0	1	-3.565*	.691	.000	-4.923	-2.206
	1	0	3.565*	.691	.000	2.206	4.923
ACT_English	0	1	-4.394*	.770	.000	-5.907	-2.881
	1	0	4.394*	.770	.000	2.881	5.907
GPA	0	1	-.399*	.062	.000	-.520	-.277
	1	0	.399*	.062	.000	.277	.520

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's trace	.135	11.486[a]	5.000	369.000	.000	.135
Wilks' lambda	.865	11.486[a]	5.000	369.000	.000	.135
Hotelling's trace	.156	11.486[a]	5.000	369.000	.000	.135
Roy's largest root	.156	11.486[a]	5.000	369.000	.000	.135

a. Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
ACT_reading	Contrast	466.521	1	466.521	16.285	.000	.042
	Error	10685.196	373	28.647			
ACT_science	Contrast	330.951	1	330.951	21.302	.000	.054
	Error	5795.006	373	15.536			
ACT_math	Contrast	503.185	1	503.185	26.627	.000	.067
	Error	7048.884	373	18.898			
ACT_English	Contrast	764.545	1	764.545	32.601	.000	.080

	Error	8747.455	373	23.452			
GPA	Contrast	6.289	1	6.289	41.668	.000	.100
	Error	56.298	373	.151			

Research Question 10: How does the number of years of participating in LinguaFolio affect students' ACT scores and graduating GPA in three schools?

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.945	1277.911[b]	5.000	369.000	.000	.945
	Wilks' Lambda	.055	1277.911[b]	5.000	369.000	.000	.945
	Hotelling's Trace	17.316	1277.911[b]	5.000	369.000	.000	.945
	Roy's Largest Root	17.316	1277.911[b]	5.000	369.000	.000	.945
YEARSinLinguaFolio	Pillai's Trace	.186	16.860[b]	5.000	369.000	.000	.186
	Wilks' Lambda	.814	16.860[b]	5.000	369.000	.000	.186
	Hotelling's Trace	.228	16.860[b]	5.000	369.000	.000	.186
	Roy's Largest Root	.228	16.860[b]	5.000	369.000	.000	.186

b. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	737.269[a]	1	737.269	26.406	.000	.066
	ACT_science	397.515[b]	1	397.515	25.884	.000	.065
	ACT_math	548.814[c]	1	548.814	29.230	.000	.073
	ACT_English	1057.574[d]	1	1057.574	46.659	.000	.111
	GPA	9.083[e]	1	9.083	63.325	.000	.145
Intercept	ACT_reading	33321.039	1	33321.039	1193.414	.000	.762
	ACT_science	36265.766	1	36265.766	2361.398	.000	.864
	ACT_math	32092.874	1	32092.874	1709.297	.000	.821
	ACT_English	29346.138	1	29346.138	1294.719	.000	.776
	GPA	843.467	1	843.467	5880.185	.000	.940
YEARSinLinguaFolio	ACT_reading	737.269	1	737.269	26.406	.000	.066
	ACT_science	397.515	1	397.515	25.884	.000	.065
	ACT_math	548.814	1	548.814	29.230	.000	.073
	ACT_English	1057.574	1	1057.574	46.659	.000	.111

	GPA	9.083	1	9.083	63.325	.000	.145
Error	ACT_reading	10414.448	373	27.921			
	ACT_science	5728.442	373	15.358			
	ACT_math	7003.256	373	18.775			
	ACT_English	8454.426	373	22.666			
	GPA	53.504	373	.143			
Total	ACT_reading	201153.000	375				
	ACT_science	198974.000	375				
	ACT_math	185462.000	375				
	ACT_English	187727.000	375				
	GPA	4541.176	375				
Corrected Total	ACT_reading	11151.717	374				
	ACT_science	6125.957	374				
	ACT_math	7552.069	374				
	ACT_English	9512.000	374				
	GPA	62.587	374				

a. R Squared = .066 (Adjusted R Squared = .064)

b. R Squared = .065 (Adjusted R Squared = .062)

c. R Squared = .073 (Adjusted R Squared = .070)

d. R Squared = .111 (Adjusted R Squared = .109)

e. R Squared = .145 (Adjusted R Squared = .143)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.902	.576	34.546	.000	18.769	21.035	.762
	YEARSinLinguaFolio	1.091	.212	5.139	.000	.674	1.509	.066
ACT_science	Intercept	20.763	.427	48.594	.000	19.923	21.603	.864
	YEARSinLinguaFolio	.801	.157	5.088	.000	.492	1.111	.065
ACT_math	Intercept	19.532	.472	41.344	.000	18.603	20.461	.821
	YEARSinLinguaFolio	.941	.174	5.407	.000	.599	1.284	.073
ACT_English	Intercept	18.677	.519	35.982	.000	17.657	19.698	.776
	YEARSinLinguaFolio	1.307	.191	6.831	.000	.931	1.683	.111
GPA	Intercept	3.166	.041	76.682	.000	3.085	3.248	.940
	YEARSinLinguaFolio	.121	.015	7.958	.000	.091	.151	.145

Research Question 11: How does the number of years of participating in LinguaFolio affect students' ACT scores and GPA in each of the three schools individually?

School 1:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.988	1787.345[c]	5.000	108.000	.000	.988
	Wilks' Lambda	.012	1787.345[c]	5.000	108.000	.000	.988
	Hotelling's Trace	82.747	1787.345[c]	5.000	108.000	.000	.988
	Roy's Largest Root	82.747	1787.345[c]	5.000	108.000	.000	.988
YEARSinLinguaFolio	Pillai's Trace	.132	3.299[c]	5.000	108.000	.008	.132
	Wilks' Lambda	.868	3.299[c]	5.000	108.000	.008	.132
	Hotelling's Trace	.153	3.299[c]	5.000	108.000	.008	.132
	Roy's Largest Root	.153	3.299[c]	5.000	108.000	.008	.132

c. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	263.928[b]	1	263.928	8.963	.003	.074
	ACT_science	121.717[c]	1	121.717	7.195	.008	.060
	ACT_math	77.530[d]	1	77.530	3.989	.048	.034
	ACT_English	256.615[e]	1	256.615	10.635	.001	.087
	GPA	.519[f]	1	.519	13.433	.000	.107
Intercept	ACT_reading	6762.741	1	6762.741	229.660	.000	.672
	ACT_science	7775.065	1	7775.065	459.633	.000	.804
	ACT_math	7171.937	1	7171.937	368.975	.000	.767
	ACT_English	6125.964	1	6125.964	253.891	.000	.694
	GPA	218.805	1	218.805	5662.611	.000	.981
YEARSinLinguaFolio	ACT_reading	263.928	1	263.928	8.963	.003	.074

	ACT_science	121.717	1	121.717	7.195	.008	.060
	ACT_math	77.530	1	77.530	3.989	.048	.034
	ACT_English	256.615	1	256.615	10.635	.001	.087
	GPA	.519	1	.519	13.433	.000	.107
Error	ACT_reading	3298.037	112	29.447			
	ACT_science	1894.573	112	16.916			
	ACT_math	2176.996	112	19.437			
	ACT_English	2702.377	112	24.128			
	GPA	4.328	112	.039			
Total	ACT_reading	62042.000	114				
	ACT_science	61909.000	114				
	ACT_math	55598.000	114				
	ACT_English	56519.000	114				
	GPA	1485.334	114				
Corrected Total	ACT_reading	3561.965	113				
	ACT_science	2016.289	113				
	ACT_math	2254.526	113				
	ACT_English	2958.991	113				
	GPA	4.847	113				

b. R Squared = .074 (Adjusted R Squared = .066)

c. R Squared = .060 (Adjusted R Squared = .052)

d. R Squared = .034 (Adjusted R Squared = .026)

e. R Squared = .087 (Adjusted R Squared = .079)

f. R Squared = .107 (Adjusted R Squared = .099)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.179	1.266	15.155	.000	16.672	21.687	.672
	YEARSinLinguaFolio	1.345	.449	2.994	.003	.455	2.236	.074
ACT_science	Intercept	20.565	.959	21.439	.000	18.664	22.465	.804
	YEARSinLinguaFolio	.914	.341	2.682	.008	.239	1.589	.060
ACT_math	Intercept	19.751	1.028	19.209	.000	17.714	21.788	.767
	YEARSinLinguaFolio	.729	.365	1.997	.048	.006	1.453	.034
ACT_English	Intercept	18.254	1.146	15.934	.000	15.984	20.524	.694
	YEARSinLinguaFolio	1.327	.407	3.261	.001	.521	2.133	.087
GPA	Intercept	3.450	.046	75.250	.000	3.359	3.541	.981
	YEARSinLinguaFolio	.060	.016	3.665	.000	.027	.092	.107

School 2:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.929	317.690[c]	5.000	121.000	.000	.929
	Wilks' Lambda	.071	317.690[c]	5.000	121.000	.000	.929
	Hotelling's Trace	13.128	317.690[c]	5.000	121.000	.000	.929
	Roy's Largest Root	13.128	317.690[c]	5.000	121.000	.000	.929
YEARSinLinguaFolio	Pillai's Trace	.263	8.649[c]	5.000	121.000	.000	.263
	Wilks' Lambda	.737	8.649[c]	5.000	121.000	.000	.263
	Hotelling's Trace	.357	8.649[c]	5.000	121.000	.000	.263
	Roy's Largest Root	.357	8.649[c]	5.000	121.000	.000	.263

c. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	457.952[b]	1	457.952	16.035	.000	.114
	ACT_science	292.377[c]	1	292.377	22.655	.000	.153
	ACT_math	392.854[d]	1	392.854	20.240	.000	.139
	ACT_English	739.393[e]	1	739.393	32.695	.000	.207
	GPA	5.479[f]	1	5.479	22.346	.000	.152
Intercept	ACT_reading	13901.177	1	13901.177	486.734	.000	.796
	ACT_science	14271.660	1	14271.660	1105.830	.000	.898
	ACT_math	13344.081	1	13344.081	687.499	.000	.846
	ACT_English	11853.124	1	11853.124	524.136	.000	.807
	GPA	278.002	1	278.002	1133.728	.000	.901
YEARSinLinguaFolio	ACT_reading	457.952	1	457.952	16.035	.000	.114
	ACT_science	292.377	1	292.377	22.655	.000	.153
	ACT_math	392.854	1	392.854	20.240	.000	.139
	ACT_English	739.393	1	739.393	32.695	.000	.207

	GPA	5.479	1	5.479	22.346	.000	.152
Error	ACT_reading	3570.016	125	28.560			
	ACT_science	1613.229	125	12.906			
	ACT_math	2426.202	125	19.410			
	ACT_English	2826.827	125	22.615			
	GPA	30.651	125	.245			
Total	ACT_reading	71119.000	127				
	ACT_science	66944.000	127				
	ACT_math	66283.000	127				
	ACT_English	66673.000	127				
	GPA	1297.775	127				
Corrected Total	ACT_reading	4027.969	126				
	ACT_science	1905.606	126				
	ACT_math	2819.055	126				
	ACT_English	3566.220	126				
	GPA	36.131	126				

b. R Squared = .114 (Adjusted R Squared = .107)

c. R Squared = .153 (Adjusted R Squared = .147)

d. R Squared = .139 (Adjusted R Squared = .132)

e. R Squared = .207 (Adjusted R Squared = .201)

f. R Squared = .152 (Adjusted R Squared = .145)

Parameter Estimates

						95% Confidence Interval		
Dependent Variable		B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.910	.902	22.062	.000	18.124	21.696	.796
	YEARSinLinguaFolio	1.496	.374	4.004	.000	.757	2.235	.114
ACT_science	Intercept	20.173	.607	33.254	.000	18.973	21.374	.898
	YEARSinLinguaFolio	1.195	.251	4.760	.000	.698	1.692	.153
ACT_math	Intercept	19.507	.744	26.220	.000	18.034	20.979	.846
	YEARSinLinguaFolio	1.386	.308	4.499	.000	.776	1.995	.139
ACT_English	Intercept	18.385	.803	22.894	.000	16.795	19.974	.807
	YEARSinLinguaFolio	1.901	.332	5.718	.000	1.243	2.559	.207
GPA	Intercept	2.816	.084	33.671	.000	2.650	2.981	.901
	YEARSinLinguaFolio	.164	.035	4.727	.000	.095	.232	.152

School 3:

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.994	4378.496[c]	5.000	128.000	.000	.994
	Wilks' Lambda	.006	4378.496[c]	5.000	128.000	.000	.994
	Hotelling's Trace	171.035	4378.496[c]	5.000	128.000	.000	.994
	Roy's Largest Root	171.035	4378.496[c]	5.000	128.000	.000	.994
YEARSinLinguaFolio	Pillai's Trace	.245	8.313[c]	5.000	128.000	.000	.245
	Wilks' Lambda	.755	8.313[c]	5.000	128.000	.000	.245
	Hotelling's Trace	.325	8.313[c]	5.000	128.000	.000	.245
	Roy's Largest Root	.325	8.313[c]	5.000	128.000	.000	.245

c. Exact statistic

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	ACT_reading	165.630[b]	1	165.630	6.582	.011	.047
	ACT_science	52.945[c]	1	52.945	3.265	.073	.024
	ACT_math	212.680[d]	1	212.680	12.770	.000	.088
	ACT_English	268.942[e]	1	268.942	13.306	.000	.092
	GPA	.719[f]	1	.719	30.294	.000	.187
Intercept	ACT_reading	11715.976	1	11715.976	465.551	.000	.779
	ACT_science	13527.324	1	13527.324	834.191	.000	.863
	ACT_math	10732.172	1	10732.172	644.398	.000	.830
	ACT_English	10485.968	1	10485.968	518.780	.000	.797
	GPA	360.024	1	360.024	15173.953	.000	.991
YEARSinLinguaFolio	ACT_reading	165.630	1	165.630	6.582	.011	.047
	ACT_science	52.945	1	52.945	3.265	.073	.024
	ACT_math	212.680	1	212.680	12.770	.000	.088
	ACT_English	268.942	1	268.942	13.306	.000	.092
	GPA	.719	1	.719	30.294	.000	.187
Error	ACT_reading	3321.893	132	25.166			
	ACT_science	2140.525	132	16.216			
	ACT_math	2198.402	132	16.655			

	ACT_English	2668.081	132	20.213
	GPA	3.132	132	.024
Total	ACT_reading	67992.000	134	
	ACT_science	70121.000	134	
	ACT_math	63581.000	134	
	ACT_English	64535.000	134	
	GPA	1758.067	134	
Corrected Total	ACT_reading	3487.522	133	
	ACT_science	2193.470	133	
	ACT_math	2411.082	133	
	ACT_English	2937.022	133	
	GPA	3.851	133	

b. R Squared = .047 (Adjusted R Squared = .040)

c. R Squared = .024 (Adjusted R Squared = .017)

d. R Squared = .088 (Adjusted R Squared = .081)

e. R Squared = .092 (Adjusted R Squared = .085)

f. R Squared = .187 (Adjusted R Squared = .180)

Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared
ACT_reading	Intercept	19.857	.920	21.577	.000	18.037	21.678	.779
	YEARSinLinguaFolio	.818	.319	2.565	.011	.187	1.450	.047
ACT_science	Intercept	21.337	.739	28.882	.000	19.876	22.799	.863
	YEARSinLinguaFolio	.463	.256	1.807	.073	-.044	.969	.024
ACT_math	Intercept	19.005	.749	25.385	.000	17.524	20.486	.830
	YEARSinLinguaFolio	.927	.260	3.574	.000	.414	1.441	.088
ACT_English	Intercept	18.786	.825	22.777	.000	17.155	20.418	.797
	YEARSinLinguaFolio	1.043	.286	3.648	.000	.477	1.609	.092
GPA	Intercept	3.481	.028	123.183	.000	3.425	3.537	.991
	YEARSinLinguaFolio	.054	.010	5.504	.000	.035	.073	.187