

SELF-DETERMINATION: THE INFLUENCE OF COURSE SELECTION ON THE
INTRINSIC MOTIVATION OF HIGH SCHOOL STUDENTS

by

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(Under the Direction of Wanda Stitts-Gohdes)

ABSTRACT

This study utilized a causal-comparative design as a means to collect quantifiable information from participants to compare the level of intrinsic motivation of high school students in required classes with the level of intrinsic motivation of high school students in elective classes through the lens of Self-determination Theory. The results of the study indicated that the participants displayed a statistically significant higher level of intrinsic motivation in elective classes when compared to required classes. Moreover, there was a statistically significant higher level of intrinsic motivation in classes in which students demonstrated personal choice in the selection process regardless of whether the class was required or elective.

Intrinsic motivation can be a valuable tool in increasing the academic achievement of students. There are opportunities to increase the level of intrinsic motivation of secondary students by enhancing the contextual factors that effect intrinsic motivation. These contextual factors include choice, autonomy, relationships, and competence. Intrinsic motivation can be a catalyst to overcoming many of the challenges that face our educational system.

INDEX WORDS: Intrinsic motivation, Extrinsic motivation, Self-determination, Competence, Relatedness, Autonomy, Internalization, Choice, Secondary school, Required class, Elective class, Class selection

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DEDICATION

This dissertation is dedicated to my wife, Holly Ward, who encouraged and supported me throughout the process all the while maintaining her status as the world's best wife and mother.

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CHAPTER 1

INTRODUCTION

High schools in the United States are faced with numerous challenges. Approximately one-quarter of high school students read below basic levels (Grigg, Daane, Jin, & Campbell, 2003), and over 30% of high school students fail to graduate (Swanson, 2004). Policy-makers and educators are in a continual search for means to overcome the challenges to student success. However, one of the essential factors in producing student success is far too often overlooked by policy-makers and educators when making decisions with regard to improving education. That factor is student motivation.

Educators are constantly challenged with improving the motivation of their students to achieve, yet fail to escape the status quo of traditional concepts and methods with regard to motivation (Kohn, 1999). Educators understand the importance of engaging students and creating a learning environment in which the students' natural inquiry is heightened (Mendler, 2000), but far too often create impersonal, autocratic learning environments. Educators continually experience the exhilaration of engaged, motivated students and the frustration of apathetic, unmotivated students (Rogers, Ludington, & Graham, 1999). Roger, et al. stated the dilemma that educators face is not that students are unmotivated to learn, but that students are not motivated to learn what they are being taught.

A factor in creating this dilemma has been the incessant drive by policy-makers and educators to measure student success by constant assessment. Rigid curricula of traditional courses that students are required to take as a means of successfully completing the next

assessment stage dominate the landscape of our secondary institutions (Kohn, 1999). Policy-makers and educators have answered the call for higher academic achievement with the creation of strict graduation tracks that provide minimal options for students. Students are relegated to fulfilling numerous requirements in traditional academic courses such as language, mathematics, science, social studies, and foreign language in order to meet graduation requirements. Nominal choices in fine arts, career and technical, and other elective areas provide the only alternatives for students in the curricula of our secondary schools.

Policy-makers and educators have placed minimal emphasis upon the construct of intrinsic motivation and the factors that heighten an individual's intrinsic motivation as a means of improving student achievement. Intrinsic motivation is a desire to engage in an activity for its own sake (Pintrich & Schunk, 2002). Deci (1980) explained that all students are intrinsically motivated with an innate desire to learn and achieve academically. Wlodkowski (1984) affirmed that students are intrinsically motivated and consider the value of the activity as the primary reason for performance. The level of intrinsic motivation a student possesses with regard to a subject or activity is helpful in explaining the student's level of achievement (Rogers, et al., 1999). It is not that students possess a limited degree of motivation, but that contextual factors enhance or stymie students' intrinsic desire to learn (Kohn, 1993).

Kohn (1993) maintained that despite the vast potential of intrinsic motivation, the majority of educational practices and strategies are based on extrinsic motivational theories. Terms such as reinforcement, conditioning, and stimulus-response compose the vernacular in today's educational circles when discussing motivation (Trumpsky, 2001). Educators consistently ignore the value of intrinsic motivation on student achievement and instead place

emphasis on external motivation as the primary means of improving student achievement (Ruenzel, 2000).

Deci and Ryan (1985a) asserted that educators can enhance student motivation by focusing on intrinsic motivational factors such as autonomy, competence, and relatedness with regard to student learning. Mendler (2000) agreed that the key to motivating unmotivated students is for educators to understand and use dynamics of intrinsic motivation to cultivate student performance. Therefore, gaining a better comprehension of the construct of intrinsic motivation is extremely important in the quest to improve student achievement.

Deci and Ryan (1985a) stated that intrinsic motivation provides educators an avenue to maximize students' innate curiosity and desire to learn. Intrinsic motivation is a natural well-spring of learning and achievement that can be systematically catalyzed by educators (Ryan & Stiller, 1991). White (1959) maintained that traits such as curiosity and inquiry are woven into our internal fabric and provide impetus for behavior even in the absence of external stimuli or rewards. Deci and Ryan's Self-Determination Theory states that intrinsic motivation is an innate property of all humans and is tapped into when individuals are placed in appropriate conditions. Strong, Silver, and Robinson (1995) maintained that fostering favorable conditions for students by providing choices, minimizing pressures, and promoting alternate solutions are means of achieving desired conditions for intrinsic motivation.

Self-determination theory (SDT) purports that competence, autonomy, and relatedness facilitate intrinsic motivation in students; in addition, SDT cultivates internalization in which the student identifies with the value of an activity and is intrinsically motivated accordingly (Deci, Eghrari, Patrick, & Leone, 1994). Deci and Ryan (1985a) concluded that students who perceive themselves as possessing competence for a given subject, exercising autonomy in choosing a

subject, and experiencing a sense of relatedness in the classroom environment demonstrate higher levels of intrinsic motivation. Furthermore, autonomy, choice, and competence produce a higher degree of internalization of the value of the subject (Grolnick & Ryan, 1989). Studies consistently indicate that choice and the opportunity for self-direction are essential for students to maximize their level of intrinsic motivation (Zuckerman, Porac, Lathin, Smith, & Deci, 1978).

Statement of Purpose

The purpose of this study was to compare high school students' intrinsic motivation to succeed academically in required and elective classes. The primary independent variable was course enrollment, either required or elective. Additional independent variables were gender, grade, and whether or not the students were in classes by choice or not by choice. The dependent variable was the level of the student's intrinsic motivation as measured by the instrument. The results of this study will provide educators with information concerning student motivation, specifically as to whether self-determination in selecting classes influences the student's level of intrinsic motivation to achieve academically.

Research Questions

1. How does the intrinsic motivation of high school students enrolled in a required class compare with the intrinsic motivation of high school students enrolled in an elective class?
2. Does the intrinsic motivation of high school students differ with regard to grade levels when comparing students enrolled in required classes and students enrolled in elective classes?
3. Does the intrinsic motivation of high school students differ with regard to gender when comparing students enrolled in required classes and students enrolled in elective classes?

4. Does the intrinsic motivation of high school students differ with regard to choice and the interaction of choice and class selection when comparing students enrolled in required classes and students enrolled in elective classes?

Theoretical Framework of Study

There is agreement as to the value of intrinsic motivation, but no consensus as to how to best utilize a student's natural self-motivation for learning and inquiry (Deci, 1980). This study is framed by the self-determination theory (SDT) of Ryan and Deci (2000a).

Ryan and Deci (2000a) asserted that self-determination theory is founded on the social-contextual conditions that facilitate or hinder the natural process of intrinsic motivation. SDT is based on an organismic-dialectical meta-theory, which begins with the assumption that people are active organisms, with innate tendencies toward psychological growth and development, who strive to master ongoing challenges and to integrate their experiences into a coherent sense of self (Deci & Ryan, 1985a).

Self-determination theory states that curiosity and self-motivation are common to all humans. The degree to which curiosity and self-motivation are exemplified varies by individual and circumstance (Ryan & Deci, 2000b). Ryan and Deci (2000a) maintained that essential factors such as autonomy, competence, and relatedness determine the level of an individual's intrinsic motivation. Deci and Ryan (1985b) stated that intrinsic motivation requires continual support from the social environment in order to function effectively. Social context can either support or thwart the natural tendencies toward active engagement and psychological growth.

Ryan and Deci (2000a) maintained that the self-determination theory is supported by the cognitive evaluation theory (CET), the organismic integration theory (OIT), the causality orientations theory (COT), and the basic needs theory (BNT). CET specifies that there are factors

in social contexts such as competence and autonomy that produce various levels of intrinsic motivation. CET emphasizes that feelings of competence must be accompanied by a sense of autonomy in order to have a positive effect on intrinsic motivation. These factors must work in tandem and not be mutually exclusive in order to have the desired effect on intrinsic motivation. Ryan and Deci determined that individuals must experience satisfaction of the needs for both competence and autonomy in a given task to demonstrate high levels of intrinsic motivation.

Organismic integration theory maintains that a combination of extrinsic stimuli and contextual factors affect an individual's perception of the value of a task or his/her level of internalization (Ryan & Deci, 2000a). External stimuli can be positive or negative based on the context in which it is applied, and the contexts in which external factors are applied directly affect the level of motivation. For example, a student's level of motivation for a task will depend on whether the environment is one of choice or compliance in the performance of the task. The student will respond with higher levels of intrinsic motivation in situations in which choice exists; contrarily, Ryan and Deci (2000a) stated that situations in which students are limited in choice will result in limited levels of intrinsic motivation.

Causality orientations theory describes differences in individuals' tendencies toward self-determined behavior (Ryan & Deci, 2000a). The ability of choice produces more intrinsic motivation, in that choices are made on the basis of interests and values. The interest and values of individuals will vary and differ; thus, there will be discrepancies in individual levels of intrinsic motivation for a given task. In addition, COT states that individuals who are relegated to strict guidelines and few choices tend to feel pressured and stymied in their effort because of the inability to make choices on the basis of interests and values (Neighbors & Knee, 2003).

Deci and Ryan (2000) stated that basic universal needs must be satisfied before individuals can demonstrate proper levels of intrinsic motivation. The failure to satisfy these needs result in poor performance regardless of contextual factors. Deci and Ryan concluded that BNT affects both the physical and psychological well-being of individuals.

Significance of Study

The significance of fully understanding student motivation as a vital component to the improvement of our educational system is paramount (Kohn, 1993). Intrinsic motivation can be the resource that is the catalyst to overcoming many of the challenges that face our educational system such as low achievement and apathy. Ryan and Deci (2000b) concluded that all students possess an innate desire to learn and achieve; however, Kohn (1999) maintained the lack of choice and the inability to recognize a sense of value hinder the intrinsic motivation of students.

Ryan and Deci (2000a) determined that autonomy, competence, and relatedness enhance the level of students' intrinsic motivation. Educators and policy-makers must determine the means by which these factors can become integral components of the educational process for students – especially at the secondary level where student apathy and low achievement is prevalent (Kohn, 1999).

CHAPTER 2

REVIEW OF RELATED LITERATURE

Motivation affects all activities in education because it can influence the learning of new behaviors and performance of previous learned behaviors (Pintrich & Schunk, 2002). However, the construct of motivation is extremely broad in nature. This section will include a historical perspective of motivational theories; an examination of the differences between extrinsic and intrinsic motivation; an analysis of self-determination theory; a overview of the application of self-determination theory in research; a review of factors that affect the class selection process of high school students; and a summary of factors that influence the selection of career and technical classes by high school students.

Historical Perspective of Motivational Theories

The historical perspective of motivational theories is presented in the following sections: early motivational theories, behavioral motivational theories, cognitive motivational theories, need motivational theories, social motivational theories, and management-based motivational theories.

Early Motivational Theories

The term motivation is derived from the Latin verb *movere* which means to move (*The American Heritage Dictionary of the English Language*, 2004). Many of the early theories of motivation focused on human will and instinct. Wegner and Wheatley (1999) explained that will refers to an individual's desire, want, or purpose; and the act of using will is volition. Wegner

and Wheatley also stated that instincts refer to one's innate characteristics that become behavior. Examples of instincts are anger, sympathy, and imitation.

Freud (1966) viewed motivation as psychical energy and force within one's own psyche. He used the term *trieb* which is a German term meaning moving force (*The American Heritage Dictionary of the English Language*, 2004). In contemporary terminology *trieb* refers to one's drive (Hunt, 1993). Freud maintained that each person's psychical energy builds up in the id. The id is the personality structure that is designed to satisfy one's basic needs. The existence of needs create energy and one's *trieb* produces the energy to satisfy the needs.

Behavioral Motivational Theories

Viewing motivation in terms of conditioning became prominent in the United States in the early twentieth century. Conditional motivational theories contrasted with the unobservable causes of motivation in Freudian psychological theories. Thorndike (1913) and Pavlov (1928) provided the groundwork for conditioning theories. Thorndike stated that an individual is motivated to learn by the connection of sensory experiences and neural impulses. The connectionism theory of motivation maintained that learning is a result of experiencing various responses and selecting the one with the most agreeable consequence. Pavlov based his classical conditioning theory on the premise that conditioning involves presenting an unconditioned stimulus to obtain an unconditioned response. A neutral stimulus is then introduced and soon becomes a conditioned stimulus to produce a conditioned response.

Hull's (1943) systematic behavior theory suggested that an individual's habit strength and inhibition were factors in motivation. Habit strength increases the number of stimulus-response pairings, and inhibition describes the fatigue that results in responding and the reinforcement in not responding. Hull stated that motivation is the initiation of learned patterns

of movement or behavior. Hull (1951) refined his theory by concluding that larger rewards led to increased motivation and that stronger habits were developed when large rewards were made immediately after goal attainment. Hull's incentive theory of motivation viewed motivation as a performance rather than a learning variable.

Skinner (1953) maintained that reinforcement increased the rate of response, and a desired response could be achieved by applying a positive or negative stimulus. His operant conditional theory is a foundational component with regard to the emphasis that is placed on external stimuli in education today (Kohn, 1999). Skinner (1954) believed that educational progress could be enhanced by incorporating reinforcers into instructional practices. In addition, Skinner (1953) concluded that punishments may be used as a stimulus to achieve a desired level of performance. Operant conditioning viewed punishment as a means of motivation by either removing the positive stimulus or applying a negative stimulus to achieve a behavior. Skinner's (1954) advocacy for the use of operant conditional theory in education continues to influence educational practices and strategies today. Familiar characteristics of instruction based on Skinner's beliefs include behavioral objectives, rewarding achievement with praise and recognition, and applying negative stimuli when student achievement is not made.

Cognitive Motivational Theories

Cognitive motivational theories emphasize the cognitive and relational abilities of humans. Cognitive motivational theories are based on the belief that motivation is internal and is a process instead of a product of external stimuli. Different cognitive motivational theories stress attributes such as perception of competence, values, affects, goals, and social comparisons as having the greatest influence on an individual's motivation.

Tolman (1932) rejected the ideas of conditioning and drive theories to suggest that environmental stimuli provide means for the attainment of goals. Tolman emphasized that an individual's goals must be taken into account in order to properly assess stimuli-responses, and that individual expectancies are necessary in the motivation for the attainment of goals.

Heider (1946) described the need for students to have positive relations in regard to people, situations, and events in order to achieve desired levels of motivation. Heider's balance theory maintained the normality of people being motivated to restore cognitive balance through relationships, and that imbalance in relations adversely affected motivation.

Festinger (1957) determined that students needed to achieve a level of consistency in their beliefs and attitudes in order to demonstrate proper levels of motivation. Festinger's cognitive dissonance theory described relationships in terms of being consonant, irrelevant, or dissonant. The interaction between individuals with regard to their belief and attitudes determine the type of relationship and its effect on motivation. Dissonance in a relationship provides motivation to bring the relationship into a consonant state.

Mowrer (1960) viewed emotions as intervening variables that bridge the relation between stimuli and responses. Mowrer determined that there were four primary emotions of fear, relief, hope, and disappointment that affected motivation. Fear is a result of the increased drive brought on by adverse conditions or shock. Relief is a product of the reduction of fear by a response that removes the individual from the situation causing fear. Hope produces a decrease in drive because of the belief that the desired response is imminent. Disappointment occurs when hope is decreased by a consequence to a response.

Need Motivational Theories

Murray (1938) concluded that certain needs were common to all humans and directly affected motivation. He stated that environmental factors, both real and perceived, in the context of satisfying specific needs determined the level of motivation an individual would exhibit. Murray defined the relationship between the factor and the need as a *thema*, and developed a taxonomy of 20 needs that were common to all individuals.

Maslow (1954) developed a categorical hierarchy of human needs as the basis of motivation. Maslow's hierarchy stated that the level of motivation was dependent upon the level of need. Maslow stated that human needs are separated into levels consisting of basic physiological needs that were necessary for the sustenance of life; safety needs that included the need for security and protection from pain, fear, etc.; the need for belongingness, affection, and love; esteem needs for achievement, approval, and recognition; and self-actualization needs that are realized by the fulfillment of one's potential and capabilities. Maslow's hierarchy stated that each level of need provided a unique form of motivation for the individual, and that the higher level needs cannot be realized until the basic lower level needs are satisfied.

Social Motivational Theories

Rogers (1969) stated that meaningful, experiential learning is achieved when the student perceives relevance to the whole person. This process involves the student's cognitive and emotional make up and is a result of intrinsic initiative. Conversely, learning that is initiated by others appeals to only a specific aspect of the learner's being, and does not lead to the learner being vested in the importance of the activity.

Rotter (1954) maintained that the major influences on motivation are learned from social situations and are linked with the need for approval. Social learning theory is based on four

factors. First, the behavioral potential is the possibility that an individual will behave in a certain way as opposed to other behavior. Secondly, expectancy refers to the individual's belief that certain action will follow certain behaviors. Next, the reinforcement value describes how much the individual values a particular outcome in relation to other outcomes. Finally, the context of the situation producing the behavior affects the expectancy and reinforcement value of the behavior on motivation.

Management-based Motivational Theories

McClelland (1987) developed theories on achievement motivation in the context of the workplace. McClelland's achievement-based motivational theory advocated competency-based assessments and tests instead of traditional IQ and personality-based tests (McClelland, 1987). In addition, he stated that most people possess and exhibit motivational needs; and these motivational needs affect their behavior, especially in the workplace. McClelland suggested that individuals are motivated by a need for achievement, authority, and/or affiliation. The degree to which each factor motivates a person influences the individual's motivation and behavior in his/her environment.

Herzberg (1967) demonstrated that satisfaction and dissatisfaction at work is a product of different factors. His hygiene theory maintained that certain factors truly motivate, these factors are referred to as motivators; whereas, other factors tend to lead to dissatisfaction, these factors are referred to as hygiene needs. Herzberg believed individuals have two sets of needs: one as an animal to avoid pain, and the second as a human being to grow psychologically. His research demonstrated that individuals will strive to achieve hygiene needs because they are unhappy without them, but the satisfaction from hygiene needs is temporary. Examples of hygiene needs

in the workplace are policy, work conditions, salary, status, and security. True motivators are factors such as the work itself, responsibility, advancement, and personal growth.

McGregor's (1960) XY Theory was central to organizational development and improving organizational culture. McGregor maintained that there are two fundamental approaches to managing people. First, managers who believe that individuals dislike work and must be forced with the threat of punishment in order to achieve organizational objectives are categorized as Theory X managers. McGregor stated that Theory X managers are authoritarian and generally achieve less than desirable results. Second, managers categorized as Theory Y managers are participatory in nature and believe that individuals will apply self-direction in the pursuit of organizational objectives, without external control or the threat of punishment; contrarily, Theory Y managers are autonomy-supportive and tend to achieve desirable organizational results.

Theory Z is often referred to as the Japanese management style, and advocates a combination of all that is good about Theory Y and modern Japanese management (Mann & Goetz, 2002). Theory Z places a large amount of freedom and trust with workers, and assumes that workers have a strong loyalty and interest in teamwork and the organization. Theory Z places more confidence in the attitude and responsibilities of the workers, whereas McGregor's XY theory is mainly focused on management's perspective of motivating employees to perform.

Extrinsic Motivation and Intrinsic Motivation

Motivation is defined as being moved to do something (Ryan & Deci, 2000a), and educators continually strive to improve student motivation to succeed academically (Kohn, 1993). There are two general distinctions regarding motivation – extrinsic motivation and intrinsic motivation. Ryan and Deci (2000b) concluded that extrinsic motivation exists whenever

an activity is performed in order to attain some separable outcome; whereas, intrinsic motivation is defined as the doing of an activity for its inherent satisfaction rather than for some separable consequence.

Ryan and Deci (2000b) maintained that intrinsic and extrinsic motivation should not be viewed as opposite ends of the motivation continuum. A high level of extrinsic motivation does not constitute a low level of intrinsic motivation. For any given task, extrinsic and intrinsic motivation can both be high, low, or any combination of levels. Ryan and Deci asserted that intrinsic and extrinsic motivation are also dependent on time and context. The level of extrinsic or intrinsic motivation for an activity is subject to change over time, and the environmental context of the situation has a direct effect on both extrinsic and intrinsic motivation.

Extrinsic motivation in education is motivation to engage in an activity as a means to an end (Ryan & Deci, 2000a). Kohn (1993) stated that many educators believe that students complete assignments, demonstrate proficiency, or meet assessment standards solely because of a desirable outcome. Extrinsic motivation is perceived to be a means to achieve desired educational objectives, and educators have incessantly employed extrinsic motivational tools in order to motivate students to achieve stated objectives (Kohn, 1993). Deci, Koestner, and Ryan (2001) maintained that extrinsic motivational techniques impose a negative effect on student motivation for academic success and curbs the students' level of inquiry and curiosity.

White (1959) was one of the first researchers to see the value of intrinsic motivation in education. White believed individuals possess an innate need to feel competent and interact in an effective manner with their environment. White stated that this need for competence motivated individuals toward mastery, and the need to interact effectively with the environment led to personal growth. Harter (1978) suggested that the degree of task difficulty, the roles of

socializing agents, and the rewards available must also be considered when viewing the role of intrinsic motivation in behavior.

The perceived control over a task or environment is integral in viewing intrinsic motivation. Rotter (1966) stated that locus of control is the generalized belief about the extent to which behaviors influence outcomes and individuals with an internal locus of control perceive that they have control of circumstances. Individuals possessing an internal locus of control demonstrate intrinsic motivation in completing assignments and academic achievement. Locus of control is subject to time and context. Individuals may demonstrate an internal locus of control in one context and not in another.

Personal causation refers to the innate effort by an individual to produce change in their environment. DeCharms (1968) stated that individuals are “causal agents” and engage in activities they value, believing the outcome is dependent upon their behaviors. DeCharms maintained that intrinsic motivation in students could be enhanced by providing activities that challenge students’ knowledge and skills in an environment in which the student perceived a sense of autonomy and control. Zahorsky (2004) stated that intrinsic motivation gives the individual a sense of purpose, competence, and progress.

Self-Determination Theory

Deci and Ryan (2000) stated that educators face the challenge of tapping into the vast potential of intrinsic motivation, and that intrinsic motivation provides educators the avenue to maximize students’ innate curiosity and desire to learn. Deci and Ryan’s (1985a) self-determination theory maintained that intrinsic motivation was an innate property of all humans and was “tapped into” when individuals were placed in appropriate conditions. Fostering favorable conditions for students by providing choices, minimizing pressures, and promoting

alternate solutions are means of achieving desired conditions for intrinsic motivation (Strong, Silver, & Robinson, 1995).

Self-determination theory (SDT) examines the social-contextual conditions that facilitate or hinder the natural process of intrinsic motivation (Deci & Ryan, 1985b). Self-determination theory assumes that people are active organisms, with innate tendencies toward psychological growth and development, and strive to master ongoing challenges to integrate their experiences into a coherent sense of self (Deci & Ryan, 2000).

Deci and Ryan (1985b) concluded that humans have a need to be autonomous and engage in desired activities. Deci (1980) maintained there is a distinction made between self-determination and will. Will is the capacity of an individual to choose how to satisfy needs; whereas, self-determination is the process of utilizing one's will. Deci and Ryan (1985a) stated that individuals must accept their strengths and weaknesses, understand the forces of their environment, and make decisions regarding the satisfaction of their needs in order to possess self-determining qualities.

Self-determination theory states that competence, autonomy, and relatedness facilitate intrinsic motivation in students (Ryan & Deci, 2000a); in addition, SDT cultivated internalization in which the student identifies with the value of an activity and is intrinsically motivated accordingly (Deci et al., 1994). Deci and Ryan (2000) concluded that students who perceive themselves as not possessing the competence for an activity fail to perform at the level expected. Furthermore, the absence of autonomy and the failure to perceive relatedness in the class produces an absence of internalization of value for the student for that activity which, in turns, produces low levels of intrinsic motivation (Grolnick & Ryan, 1987).

Self-determination theory states that motivated behaviors vary based on the degree of autonomy (Black & Deci, 2000). Autonomous behaviors have an internal perceived locus of causality (DeCharms, 1968); whereas, controlled behaviors create a perceived external locus of causality which diminishes the level of intrinsic motivation. Deci and Ryan (2000) stated that an individual's sense of self is a primary source of their autonomous behaviors in an environment and directly affects the level of intrinsic motivation.

The need for competence is based on White's (1959) belief that mastery and interaction with the environment are essential needs for individuals. Individuals possess a desire to be properly or sufficiently qualified to perform an activity. Ryan and Deci (2000a) concluded that students who have relevant knowledge and skills necessary for success demonstrate high levels of intrinsic motivation.

The degree to which students have a sense of connection to a teacher, class, or group directly affects the student's level of intrinsic motivation (Ryan & Deci, 2000a). Ryan, Stiller, and Lynch (1994) concluded that there was a direct correlation between students' perceived relationship and level of intrinsic motivation.

Deci (1980) stated that intrinsically motivated behaviors are a product of interest and value in the activity and the thoughts and feelings of engaging in the behavior. There are behaviors that are required by one's social environment that are not always intrinsic in nature and require an external stimulus. These behaviors vary with regard to autonomy and controlled behaviors (Ryan & Connell, 1989). Controlled behaviors can be transformed into autonomous behaviors through the process of internalization. Deci and Ryan (2000) stated that a behavior will become autonomous when an individual identifies the behavior with his/her sense of self and perceives the locus of causality to be internal.

Ryan and Deci (2000a) maintained that curiosity and self-motivation are common to all humans; however, the degree to which they are exemplified varies as a result of autonomy, competence, and relatedness. Deci and Ryan (1985a) stated that intrinsic motivation requires ongoing cultivation and support from the social environment in order to function effectively. That is, the social context can either support or thwart the natural tendencies toward active engagement and psychological growth.

Deci and Ryan's (2000) self-determination theory was constructed upon the foundation of explaining all human behavior in terms of intrinsic motivation. There are actually specific segments of human behavior that are influenced by intrinsic motivation, and others that are influenced by external structures, controls, and the process of internalization. Deci and Ryan developed sub-theories to support self-determination theory. The theories are cognitive evaluation theory, organismic theory, causality orientations theory, and basic needs theory.

Cognitive Evaluation Theory

Cognitive evaluation theory (CET) was developed to explain the intrinsic motivation side of human behavior. Ryan and Deci (2000a) stated that intrinsic motivation drives people to seek out and master challenges in order to feel competent and self-determining. CET specifies that there are factors in social contexts such as competence and autonomy that produce various levels of intrinsic motivation (Deci & Ryan, 1985a). Ryan (1982) stated that CET emphasizes that feelings of competence must be accompanied by a sense of autonomy in order to have a positive effect on intrinsic motivation. These factors must work in tandem and not be mutually exclusive in order to have the desired effect on intrinsic motivation. Individuals must experience satisfaction of the needs for both competence and autonomy in a given task to demonstrate high

levels of intrinsic motivation (Ryan & Deci, 2000a); if not, the individual's innate desire to master challenges will be decreased or eliminated.

Organismic Integration Theory

Organismic integration theory (OIT) focuses on extrinsically motivated behaviors relationship to intrinsic motivation. OIT states that a combination of extrinsic stimuli and contextual factors affect an individual's perception of the value of a task and their level of internalization (Ryan & Deci, 2000a). Deci and Ryan (2000) categorized the extent of the effect of external stimuli into the following levels. The first level is external regulation, which is the process that motivates individuals with regard to external rewards and the avoidance of punishment. The second level is introjected regulation, which refers to the process that motivates individuals by internal thoughts and feelings. The third level is identified regulation which refers to the motivation of individuals by the perception of the importance of the task to them individually. The final level is integrated motivation which refers to the motivation of individuals by the integration of external and internal factors.

Ryan and Deci (2000a) maintained that OIT suggests that external stimuli can be positive or negative based on the context in which they are applied; moreover, the context in which external factors are applied directly affect the level of motivation. Individuals will respond with higher levels of intrinsic motivation in situations in which choice exists; contrarily, situations in which students are limited in choice will result in limited levels of intrinsic motivation.

Causality Orientations Theory

Causality orientations theory (COT) describes differences in individuals' tendencies toward self-determined behavior for given tasks (Deci & Ryan, 1985b). The ability of autonomous choice produces more intrinsic motivation, in that choices are made on the basis of

interests and values. Deci and Ryan (2000) maintained that COT states that the interest and values of individuals will vary and differ based upon each task; thus, discrepancies will exist in an individual's level of intrinsic motivation for a given task. In addition, COT states that individuals who are relegated to strict guidelines and few choices tend to feel pressured and stymied in their effort because of the inability to make choices on the basis of interests and values (Neighbors & Knee, 2003). Controlled environments produced lower levels of intrinsic motivation compared to environments that are autonomy-supportive.

Basic Needs Theory

Deci and Ryan (2000) stated in their basic needs theory (BNT) that tasks presented in a manner that led to the satisfaction of basic psychological needs produce high levels of intrinsic motivation. Deci and Porac (1978) stated that intrinsic motivation is an innate human need that is conditioned by interaction with the environment. The essential staples for healthy development and functioning are specified using the concept of basic psychological needs, which are innate, universal, and essential for health and well-being.

A basic need is an energizing state that must be satisfied for an individual to exist in a state of health and well being (Hull, 1943). Ryan and Deci (2000b) maintained that basic needs are a natural aspect of human beings that apply to all people, regardless of gender, group, or culture. The extent that these needs are satisfied has a tremendous influence on the effective function and healthy development of individuals (Deci & Ryan, 1985a).

Application of Self-Determination Theory

Self-determination theory focuses on the importance of students making decisions about their actions, possessing a sense of competence for an activity, and perceiving relatedness in their environment (Deci & Ryan, 1985a). The inability to demonstrate self-determination adversely

affects students' intrinsic motivation (Ryan & Deci, 2000). The use of rewards for tasks that have intrinsic value leads to the diminishing of the intrinsic value of the task. However, the process of internalization establishes an intrinsic value for a task that was first accomplished as a result of external stimuli. Deci and Ryan (2000) stated that Self-Determination Theory provided a guide to “tap into” the vast potential of intrinsic motivation and improve the academic performance of students.

The review of the studies employing Self-determination theory (SDT) demonstrates the appropriateness of applying the theory to educational inquiries. SDT uses traditional empirical methods while employing the organismic metatheory focusing on the inner resources for personal development and behavioral self-regulation (Ryan, Kuhl, & Deci, 1997). SDT provides researchers a means of asking questions about student motivation and the factors affecting motivation; moreover, educators can view statistical data demonstrating the effects of instructional methods and practices on student motivation. The application of self-determination theory to educational studies is extremely important in increasing our understanding of how to “tap into” the vast potential of intrinsic motivation.

Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) conducted three field experiments with high school and college students testing the self-determination theory hypotheses that intrinsic goals and autonomy-supportive climates would improve students' learning, performance, and persistence. The learning of text material or physical exercises was framed in terms of intrinsic goals such as community, personal growth, and health. These intrinsic goals were contrasted with extrinsic goals such as money and image in a controlled learning environment.

Self-determination theory was used to analyze the variables that lead to the considerable variance in students' engagement and enthusiasm for school work and the degree to which they demonstrate lifelong interest in education (Sheldon & Biddle, 1998). Self-determination theory in these three studies focused on both the content of the goals people have for learning and the learning context in which the goals are pursued (Ryan & Deci, 2000b). Learning is viewed as an active process that is at its optimal level when students' motivation is autonomous. Black and Deci (2000) stated that learning environments that support autonomy enhance student motivation and facilitate learning, test performance, and adjustment.

The three studies examined the effects of manipulating intrinsic variables versus extrinsic variables; that is observing the interaction between the effects of autonomy-supportive environment, controlling environment, intrinsic goal contents, and extrinsic goal contents. The researchers inquired about the degree to which the autonomy-supportive environment affected intrinsic goal orientation as opposed to extrinsic goal orientation, and the degree to which a controlling environment affected extrinsic goal orientation as oppose to intrinsic goal orientation.

Research had previously stated the effects of autonomous-supportive versus controlling environments on the learning of students to be a factor of the participants' autonomous motivation while engaging in the learning process (Williams, Grow, Freedman, Ryan, & Deci, 1996). Likewise, research had previously shown a high correlation between intrinsic goal content and autonomous motivation (Sheldon, Ryan, Deci, & Kasser, 2004).

All three studies confirmed that the experimentally manipulated variables yielded main effects on depth of processing, test performance, and persistence; and an interaction resulted in synergistically high deep processing and test performance when both intrinsic goals and

autonomy support were present (Vansteenkiste et al., 2004). Effects were significantly mediated by autonomous motivation.

Study One: College of Education Students Studying Recycling

The study randomly assigned female college students, majoring in education, studying recycling and pro-ecological practices to one of four groups (Vansteenkiste et al., 2004). The first group's learning was framed in terms of intrinsic goals and the second group's learning was framed in terms of extrinsic goals. Each of the first two groups learned in an autonomy-supportive environment. The third group's learning was framed in terms of intrinsic goals and the fourth group's learning was framed in terms of extrinsic goals. The third and fourth group learned in a controlling interpersonal environment. The factorial manipulation resulted in four learning conditions.

The researchers employed a two-way between subjects' multivariate analysis of variance that produced results indicating a positive main effect for intrinsic goal content and autonomy-supportive context (Vansteenkiste et al., 2004). Five analyses of variance indicated that providing both intrinsic goal content and an autonomy-supportive environment produced more autonomous motivation for learning, less superficial processing, more deep processing, better graded performance, and more free-choice persistence.

Study Two: College Students Majoring in Marketing

The study divided 400 coed college students majoring in marketing in a business communication class into four groups based on intrinsic content, extrinsic content, autonomous-supportive environment, and controlling interpersonal environment (Vansteenkiste et al., 2004). The researchers speculated that the business emphasis of these students might lead to a greater

emphasis on extrinsic content such as money and promotion. The results of the study did not provide evidence to support this hypothesis.

The students were assigned the same business communications text to read (Vansteenkiste et al., 2004). The students in the intrinsic content group were instructed that comprehending the text was important for personal growth – an intrinsic variable; while the students in the extrinsic content group were instructed that comprehending the text was important for getting a well-paying job – an extrinsic variable. The manipulation of the autonomy-supportive variable versus the controlling interpersonal variable was done by changing the wording in the instruction in order to emphasize choice or pressure.

The students were assessed upon the completion of the reading. The assessments measured the students' autonomous motivation, their self-reports for superficial learning, and deep processing ability (Vansteenkiste et al., 2004). Students were also tested on their conceptual understanding of the assigned readings and small group presentations over the material.

The researchers employed a two-way multivariate analysis of variance and determined there was a positive main effect for intrinsic goal content and autonomy-supportive environments. An analysis of variance showed that intrinsic goal-framing and autonomous-supportive environments result in more autonomous motivation, less superficial learning, and increased deep processing ability.

The second study supported the first study findings that conceptual learning is enhanced when the learning is centered on intrinsic goals and conducted in an autonomy-supportive environment (Vansteenkiste et al., 2004). The second study encompassed both genders in its findings and incorporated participants with a different major learning different material. Neither of these variables affected the results of the study.

Study Three: High Students in Physical Education Class

The study used the learning of a physical activity as the context for the study (Vansteenkiste et al., 2004). Coed high school students in a physical education class were divided into two groups. The first group of students focused on the intrinsic goal of learning the physical activity to remain physically fit. The second group placed emphasis on learning the physical activity as a means to remain physically attractive, an extrinsic goal (Kasser & Ryan, 1996). Instructions for the activity were presented in either an autonomy-supportive manner or controlling interpersonal manner.

The study measured the autonomous motivation, the graded performance, and the free-choice of persistence behavior (Vansteenkiste et al., 2004). The statistical analysis again indicated a positive main effect for intrinsic goal content and autonomy-supportive environment. Autonomous motivation, graded performance, and free-choice of behavior were enhanced by autonomous-supportive behavior coupled with intrinsic goal content.

The following paragraphs provide an overview of four additional studies utilizing self-determination theory. The studies applied self-determination theory to educational situations with regard to autonomy support, relationships, self-esteem, tangible rewards, and internalization.

Study Four: Students in College Chemistry Course

Black and Deci (2000) conducted a study that applied self-determination theory to investigate the effects of students' course-specific self-regulation and the students' perceptions of their instructors' autonomy support on adjustment and academic performance in a college-level organic chemistry course. Traditionally, college-level organic chemistry classes are organized in a lecture model. The instructor provides one-way instruction and assigns homework

problems as a means of engaging the students in active learning. The National Science Foundation created The Workshop Chemistry Project as a means to improve college-level science education (Gosser et al., 1996). The workshop produced initiatives for active student learning that incorporated small-group mentoring relationships for students. Students attend intensive study sessions led by advanced students in addition to formal lectures by student-centered instructors.

Self-determination theory proposes that the interpersonal context influences the extent to which individuals are autonomous versus controlled (Deci & Ryan, 1985a). Black and Deci (2000) stated that autonomy support referred to an individual in a position of authority such as an instructor taking the perspective of a student and acknowledging their feelings and perception. An autonomy-supportive instructor will provide students with the information to solve a problem, but encourage the students to solve the problem in their own way (Black & Deci, 2000). On the other hand, a controlling instructor uses pressure to direct the behavior of students. Black and Deci stated that this type of instructor will provide information to solving a problem and mandate that the problem be solved in a particular manner. Grolnick and Ryan (1989) showed that autonomy-supported classrooms produced a higher level of intrinsic motivation and internalization than classrooms that were conducted in a controlling manner.

Black and Deci (2000) hypothesized that students having leaders who were perceived to be more autonomy supportive would exhibit a greater sense of competence and interest in the course, and the students would have less chemistry-related anxiety. The participants in the study were freshmen at a small, eastern university taking an introductory organic chemistry course. The students attended a traditional lecture and were randomly assigned to study groups. The

leaders of the study groups created either an autonomy-supportive environment or a controlling environment.

Black and Deci (2000) had the students complete two questionnaires with regard to their experiences in the course. The first was given at the beginning of the course, and the second was given two weeks before the course ended. The researchers used an analysis of variance on the variables of perceived leader autonomy support, relative autonomy index, perceived competence, interest/enjoyment, anxiety, and grade orientation.

The study revealed that students' selecting the course for relatively autonomous reasons predicted higher perceived competence and interest/enjoyment and lower anxiety and grade-focused performance goals during the course (Black & Deci, 2000). In addition, Black and Deci discovered that students selecting the course for autonomous reason were less likely to drop the course. The study also indicated that when the students perceived autonomy support from their instructors there was an increase in their level of autonomous self-regulation, perceived competence, and interest/enjoyment, and decreases in anxiety over the semester.

Black and Deci (2000) found that the variance in autonomous self-regulation predicted students' performance in the organic-chemistry class, and the instructor autonomy support predicted course performance of the student. The initial level of students' autonomous self-regulation moderated the effect of the instructor's autonomy-support, with autonomy support relating strongly to academic performance for students initially low in autonomous self-regulation, but not for students initially high in autonomous self-regulation.

Study Five: Effect of Relationships on Motivation

Ryan, Stiller, and Lynch (1994) conducted a study examining the effect relationships have on academic motivation and self-esteem. Self-determination theory states that autonomy,

self-esteem, and motivation are products of the experiences involving relatedness to others (Deci & Ryan, 1985a). There is a common assumption in education that the quality of a student's functioning in terms of autonomy, self-reliance, and confidence is partly a product of the relationships to teachers, parents, and friends; however, there was little empirical evidence in regard to education. Ryan, Stiller, and Lynch attempted to establish a connection between a student's sense of relatedness and their level of intrinsic motivation.

Ryan, Stiller, and Lynch (1994) surveyed 600 middle school students on the subject of student life. The surveys measured felt security, emotional utilization, school utilization, emulation. In addition, the survey provided information for each student's motivational orientations and their level of self esteem. The results indicated that positive relationships to parents and teachers predicted a high level of academic motivation, and that the relationship to friends had little influence on motivational orientations.

Ryan, Stiller, and Lynch (1994) found that self-esteem was directly related to the relationship of parents, teachers, and friends. These findings provided assistance in clarifying the differential functional significance of a student's sense of relatedness in terms of motivation and self-esteem.

Study Six: Effect of Tangible Rewards on Intrinsic Motivation

Deci, Koestner, and Ryan (2001) used the self-determination theory to conduct a study demonstrating that tangible rewards have an undermining effect on intrinsic motivation. Deci, Koestner, and Ryan used a meta-analytical approach to examine the results of 128 experiments using the free-choice behavioral measure of intrinsic motivation and self-reported measures of intrinsic motivation. Deci, Koestner, and Ryan (2001) discovered that the use of expected tangible rewards adversely affected the level of intrinsic motivation of students. In addition,

verbal rewards and unexpected tangible rewards did not affect intrinsic motivation. This study supported the self-determination sub-theory, cognitive evaluation theory. Cognitive evaluation theory purposes that underlying intrinsic motivation are the innate needs for competence and self-determination, and not external stimuli.

Study Seven: Motivation of Students in Uninteresting Activities

Deci et al. (1994) employed the self-determination theory to study the degree to which people were inherently motivated in uninteresting activities and the degree to which the social context of the activity affected the process of internalization. Deci et al. assigned 48 subjects to track lights on a computer screen. The subjects were asked to provide written acknowledgement that the activity provided little interest. The instructions for the activity were presented in either a supportive or controlling manner. The subjects were then timed in tracking the light to determine their interest level for the activity. Analysis of variance provided results that indicated that students who were provided a logical rationale for the activity and perceived a sense of choice tracking the lights on the computer screen internalized the activity and demonstrated a higher sense of intrinsic motivation.

Class Selection by Secondary Students

There are various factors that motivate secondary students to select a particular class or a specific instructional level for a class. Curriculum tracts provide external influences to students in the selection of classes. Kohn (1999) stated that secondary curriculum have evolved into a varied assortment of traditional courses that students are required to take in order to receive a diploma complimented by elective courses in areas of study such as fine arts, physical education, and career and technical education. Policy-makers and educators have answered the demand for higher academic achievement with the creation of strict graduation tracts for secondary students

that provide minimal options and relegate students to fulfilling numerous requirements in traditional academic classes (Kohn, 1999). The perpetual cycle of external stimuli and mandated requirements resulting with minimal success underscore the necessity for policy-makers and educators to cultivate the internal mechanisms in students to acquire viable academic improvement (Ryan, Connell, & Deci, 1985).

Braddock and Dawkins (1993) stated that secondary students often do not have any choice in how they chose a class. The choice is made for them based on the philosophies of their school and teachers. Therefore, by the time students reach the secondary level of their education the choice of which classes they can take is limited, if it exists at all. If the student has not had the opportunity in the early grades to have access to the grade-level curriculum, quite often they are too far behind by the time they get to high school to qualify for certain tracts such as college prep or advanced placement (Kohn, 1999).

Tracking and ability grouping are factors that have tremendous influence on the selection of classes by secondary students. Braddock and Dawkins (1993) stated that tracking is the grouping of students by presumed ability or achievement into a series of classes with a differentiated curriculum, and tracking is often referred to as ability grouping. Lucas (1999) maintained that ability grouping is the course-by-course placement of students based on perceived ability; ability grouping has created an inordinate number of low-income, minority students in the remedial and regular-level classes. Kliebard (1995) stated that tracking gained prominence in the early twentieth century in an attempt to enhance the education of students. Hall (1911) believed in hereditary determinism, advocating a differentiated instruction based on native endowment and even separate schools for “dullards” in the elementary grades.

Gamoran (1992) stated that disproportional numbers of African-American and Latino students are in remedial and regular level classes as opposed to the higher percentage of White and Asian students in upper level and Advanced Placement classes. In addition, documentation exists of different resources being allocated to different groups (Kozol, 1991). Braddock and Dawkins (1993) maintained that in schools today students are grouped in various ways: by ability group or track, by special education needs, and by interest in the form of electives. In addition, grouping by race, social class, gender, and handicap is often a result of external forces including institutional barriers and predetermined paths.

Gamoran (1992) suggested that focusing on the deficits of students instead of their talents has led to ability grouping practices that produce external factors influencing the selection process of students. African-American, and now Hispanic, students are no longer mandated to attend separate facilities; but in many instances these groups are segregated from other students in the same building by class assignment. Today the majority of Hispanic students attend schools that serve predominantly minority populations and are hindered in their acquisition of English-language competence (Sleeter & Grant, 1999).

Oakes (1985) reported that although many people assume that ability grouping and tracking are best for most students, the evidence points clearly to the conclusion that “no group of students has been found to benefit consistently from being in a homogeneous group,” and those in the middle and lower groups are often affected negatively (p. 7). According to Anyon (1981), students grouped partly on the basis of race and social class are taught differently. Upper-track and upper-class students are offered more instructional time, more challenge, interesting and effective instruction, opportunities to prepare for college, and more leeway in the selection of the appropriate classes. Lower-track and lower-class students tend to receive routine

and dull instruction, less challenge, memory work, little or no preparation for college, and limited choices in class selection. Schools have been described as sorting machines, slotting the young for a stratified labor market (Spring, 1976).

Special education is another factor affecting the selection of classes in secondary schools. Individual Educational Plans (IEP) provide clear curriculum and instructional guidelines for students classified as a student with special needs and influence the selection process extensively (Winebrenner, 1996). There are factors beyond IEPs that influence the student's selection process. Classes for gifted students are disproportionately White, whereas classes for children with special needs are disproportionately African-American (Sleeter & Grant, 1999). African-American pupils represent 16% of all public school students; however, they comprise almost 40% of those who are classified as students with special needs (Hacker, 1995).

Slower tracks become repositories for students whose conduct teachers find bothersome or inappropriate (Hacker, 1995). "The most common method of segregation is tracking, which is always defended on a scholastic grounds, with race never mentioned" (p. 169). However, more African-American students are consigned to "special education" classes, which all but guarantee that they will fall behind their grade levels and be limited in their ability to select classes. Even when students' diagnoses are couched in clinical terms, too often the message is that their behavior fails to mirror middle-class demeanor.

No Child Left Behind legislation requires schools to be held accountable for all children (Popham, 2005). No Child Left Behind requires data to be disaggregated to ensure improved achievement for specified sub groups. Some of the sub groups defined by No Child Left Behind include African-American, Hispanic, and Special Education students. Popham (2005) stated that No Child Left Behind has forced schools to improve the academic opportunities for all children.

Schools fail to make Annual Yearly Progress if sub groups are not improving in measured achievement each year. As a result, secondary schools have increased attention to differentiated instruction within a classroom and promoting mixed ability grouping in the curriculum.

There are factors outside the realm of tracking, ability grouping, special education, and legislative requirements that influence the selection process of secondary students. The place students and their parents occupy in the larger social structure has an integral effect on the students' desire to select a particular class or curriculum tract in high school (Huckfeldt, 1983). Huckfeldt stated the merging of the student's home and school produces a sense of expectation about the value of education and the role it plays in determining the student's future. Students will rely on the values and expectations instilled in them by their parent and home environment in the selection of classes when given the opportunity.

The student's self-esteem plays an important role in determining the selection of classes in relation to doubt by some and a sense of entitlement by other students (Rury & Mirel, 1997). The student's self-esteem provides a mechanism for students to employ in the selection process. Students possessing a high level of self-esteem in an autonomous-supportive environment will select classes that offer challenge and opportunities for personal growth (Deci & Ryan, 2000).

The student's level of literacy is a primary factor in determining the student's sense of competence and achievement potential. Oldfather and Dahl (1995) concluded that there was a direct relationship between literacy and a student's motivation to achieve academically. Students competent in their level of literacy will select classes and levels of classes that provide opportunities for personal expansion and growth.

Relationships play a vital role in the selection of classes at the secondary level. Moll (1990) stated the student's perception of relationships, either student-teacher or student-student,

play an integral role in influencing the student's selection process and desire to achieve. Students will select or not select a class based on actual or perceived relationships. The social environment of a secondary school in terms of relationships has a direct impact on the learning opportunities for each individual student and the institution as a whole.

Beckett (2003) suggested that establishing a true sense of community in which all students feel full membership enhances the process of students escaping traditional boundaries such as tracking and ability grouping. The key to achieving this goal is the cultivation and appreciation of cultural differences. Students perform better in an atmosphere in which they perceive mutual respect and understanding (Mendler, 2000).

Trumpsky (2001) indicated that involving students in personal reflective sessions that allow teachers to understand the student's cultural perspective facilitate an environment conducive to learning. Trumpsky maintained that these sessions allow students to remove many of the theory-based restrictions of their instructor and create an environment of achievement. This produces an environment in which students increase their self-esteem and discount many of the traditional external factors influencing student selection or placement in classes. A caring, cooperative environment increases the students' incentive to achieve (Strong, Silver, & Robinson, 1995).

Stipek (1988) stated that students perceive effort as an essential factor in determining academic success. Establishing a clear connection between achievement and effort is important in making a class appealing to students. The emphasis on effort instead of cognitive ability provides hope to students and gives students a sincere belief that they can master the curriculum. Deci and Ryan (1985a) stated this sense of competence increases the students' internal desire to achieve. Stipek added that the emphasis of effort provides students incentive to achieve.

Oldfather and Thomas (1999) found that students were insightful in regard to their personal learning style and abilities, and felt a sense of empowerment when allowed to demonstrate autonomy in scholarly knowledge and educational agendas. Students demonstrated an increased level of comfort in classes that emphasize the personal and social importance of the student. Students were more apt to select classes in which curriculum incorporate the perceptions, purposes, and experiences of the student in its objectives (Oldfather & Dahl, 1995). The separation of the processes and experiences of students from the process of learning is a grave mistake and diminishes the student's motivation to select the class.

This overview of factors influencing the motivation of secondary students in selecting a class or class level demonstrated the dominance of traditional perspectives in the process. Tracking and ability grouping have established various accepted and inadvertent practices determining the curriculum paths of students. Factors such as home environment, relationships, and literacy level also influence the selection process of students. Intrinsic factors such as self-esteem, autonomy, and competence have some degree of influence in the selection process, but pale in comparison to the external forces that exist in secondary schools today.

Selecting Classes in Secondary Career and Technical Education

Career and technical education in secondary schools provide courses in a specific program area such as agriculture, business, family and consumer science, marketing, trade and industry, and technical-communications (Bottoms, Presson, & Johnson, 1992). The historical purpose of career and technical education was to prepare students for entry-level jobs that required only a high school diploma. The Carl D. Perkins Vocational and Technical Education Act of 1998 defined career and technical education as the process in which sequence courses are offered to provide individuals with the academic and technical knowledge and skills necessary

for further education and careers (American Vocational Association, 1998). Career and technical education focuses on competency-based, applied learning that increases the academic knowledge, higher-order reasoning, work attitudes, employability skills, and technical skills of the students. Boesel (1994) identified that the changing workplace requires integration between academic and vocational education. According to him, semiskilled manufacturing jobs in America declined, and technical and service jobs have increased.

Career and technical education has placed an emphasis on academic achievement and improved workforce education in recent years. This emphasis has broadened career and technical education's purpose to include the development of academic as well as vocational skills. The reform movement in secondary education has produced an integration of academic and career and technical education to enhance both workforce education and academic performance (Levesque et al., 2000). Bottoms and Sharpe (1996) suggested that the emphasis on academic performance has increased collaboration and integration between academic and career and technical classes. Plank (2001) illustrated that integration can not only occur on a very low level, such as within-course integration efforts, but it also can occur on a very high level, such as interdisciplinary, team-teaching courses, or project-based learning.

Traditional tracts at the secondary level require students to enroll in academic classes based on sequence and then select a class or program in an elective area (Clarke County School District, 2005). According to the Georgia Department of Education (2004), students must decide whether to pursue a college-preparatory, career and technical or dual diploma seal. The college-preparatory tract establishes clear requirements for academic courses and provides some selection flexibility for electives. The career and technical and dual tracts establish academic requirements and specific tracts for selecting career and technical elective classes. A student

must earn four units in career and technical classes, with three units being in a specific program area.

The increased enrollment in career and technical classes is a reversal of trends in recent decades. Statistical Snapshot (2000) reported that the number of secondary students graduating with a concentrated area in one of the career and technical program areas decreased during the 1980s and the 1990s. Lynch (2000) reported the number of students selecting classes in career and technical education area has increased in recent years. The increase in the number of students selecting career and technical classes is a product of improvement in the student's perception of career and technical education at the secondary level. The creation of business and industry partnerships, the explosion of technology, and the realization of parents in the necessity of job/employment skills has provided the foundation for the renewal of career and technical programs at the secondary level. Each of these factors has been instrumental in influencing students to select career and technical education classes.

The traditional perception was that secondary students selected a career and technical class or program area based on subject interest and perceived career opportunities (Wright, 2001). The enticement to select career and technical classes has been enhanced by initiatives involving the partnership of career and technical education with business and industry (Scott & Sarkess-Wircenski, 2004). Secondary career and technical programs are adding opportunities for job shadowing, internships, and practicums to their curriculum. These apprentice-like programs are popular because they allow students to apply subject knowledge, develop workplace readiness, and experience actual employer-employee relationships (Cassidy, 1994). These additions complement the cooperative learning experiences provided in the established work-

based cooperative learning classes. The opportunities to gain real world experience and earn a salary are enticements for students to select career and technical classes.

The popularity of business and technical courses in secondary curriculum has coincided with the advancement of technology in our society. Business and technology classes comprise more than half of the enrollment for career and technical classes in secondary schools (Scott & Sarkees-Wircenski, 2004). The curriculum for Business Education classes has evolved from typing, shorthand, and accounting into one that incorporates mastery of application software, programming/networking, web-page design, and desktop publishing along with the traditional staples of accounting, business law, and banking/finance (Clarke County School District, 2005). Business and technology programs in secondary schools have benefited from the students' desire to increase their skill and knowledge in areas of technology (International Technology Education Association, 2000). The technology opportunities in career and technical education are prominent components influencing students to select career and technical classes.

Parents are realizing that creating and improving their children's knowledge and skills have become critical as our society makes a shift toward a knowledge-based economy. The development of new jobs and even existing jobs will increasingly require a more educated workforce and new sets of skills such as broader, deeper, and more flexible portfolios of skills, teamwork, and communication skills among workers (U.S. Department of Commerce, U.S. Department of Education, U.S. Department of Labor, & National Institute of Literacy and the Small Business, 1999). Silverberg and Fong (2004) reported that approximately 42% of all jobs in 2010 will be occupations requiring postsecondary vocational credentials. The changing workforce and increased skill requirements have motivated parents and their children to utilize all resources in preparing for the current and future workplace. Students and their parents

understand the importance of acquiring the academic, technical, and employability skills required by business and industry, and view the selection of career and technical education classes as a means of achieving these objective.

Student organizations in career and technical programs are an integral aspect of the popularity of career and technical programs at the secondary level. Organizations such as the Future Farmers of America, Future Business Leaders of America, and Health Occupations Students of America provide students opportunities to develop their leadership, cooperation, and citizenship skills. The appeal of co-curricular organizations provides motivation for students to select classes in the associated program area.

Tech Prep programs are another appealing aspect of career and technical classes. Tech Prep is a result of the initiative to provide a bridge between secondary and postsecondary education for students. Tech Prep is defined as a program that provides technical training in a career field by combining two years of secondary education with at least two years of postsecondary education in a sequenced manner (American Vocational Association, 1998). Secondary students are given credit for approved credits earned at the secondary level toward a postsecondary associate's degree.

The evolution of career and technical education as a viable component for preparing secondary students for career opportunities and postsecondary education has led to its appeal among secondary students. The opportunity to gain real-life work experience with compensation, to gain and improve knowledge and skills in technology, and the acquisition of the skills being required by business and industry are some of the primary factors motivating secondary students to select career and technical classes.

CHAPTER 3

METHOD

This chapter describes the method and procedure used to conduct this study. This chapter includes (1) purpose of the study, (2) design of the study, (3) study of population, (4) selection of study instrument, (5) collection of study data, and (6) data analysis.

Purpose of Study

The purpose of this study was to compare high school students' intrinsic motivation to succeed academically in required and elective classes. The primary independent variable was course enrollment, either required or elective. Additional independent variables were gender, grade, and whether or not the students were in classes by choice or not by choice. The dependent variable was the level of the student's intrinsic motivation as measured by the *Intrinsic Motivation Inventory*. The results of this study will provide educators with information concerning student motivation, specifically as to whether self-determination in selecting classes influences the student's level of intrinsic motivation to achieve academically.

Research Questions

1. How does the intrinsic motivation of high school students enrolled in a required class compare with the intrinsic motivation of high school students enrolled in an elective class?
2. Does the intrinsic motivation of high school students differ with regard to grade levels when comparing students enrolled in required classes and students enrolled in elective classes?
3. Does the intrinsic motivation of high school students differ with regard to gender when comparing students enrolled in required classes and students enrolled in elective classes?

4. Does the intrinsic motivation of high school students differ with regard to choice and the interaction of choice and class selection when comparing students enrolled in required classes and students enrolled in elective classes?

Design of Study

One of the paramount challenges to improving the United States' educational system is creating learning environments where students are intrinsically motivated to achieve (Stipek, 1988). A major component of meeting this challenge is allowing students to have more flexibility in determining their educational path (Kohn, 1999). This study compared the intrinsic motivation of students enrolled in a class required for graduation with the intrinsic motivation of students enrolled in an elective class, and the influence that autonomy and choice had on the intrinsic motivation of students.

This study utilized a causal-comparative design using survey methodology for the collection of data. Causal-comparative research explores the cause for, or consequences of, existing differences in groups of individuals (Fraenkel & Wallen, 2006). Moore (2003) stated that the causal-comparative design allows researchers to conduct inquiries on the causes of differences between groups without violating ethical and legal standards. Huck (2003) stated that researchers employing a causal-comparative design must determine the occurrence of interest and the independent variable(s) that cause the occurrence.

Causal-comparative studies test one or more independent variables to detect the effect on the dependent variable; however, the design does not employ the random assignment of participants. Lack of random assignment does produce possible disadvantages such as possible initial differences in groups (Herzog, 1996). Gall, Borg, and Gall (1996) acknowledged that the

absence of random assignment lowers internal validity, but suggested that random assignment is not always practical in educational research.

A survey was used as the instrument of measurement in this causal-comparative study. Alreck and Settle (1985) found that survey research was appropriate when respondents will provide the information through the survey method and the desired information can be sufficiently structured so it can be placed in printed form. Gay (1996) stated that survey research can be conducted using sample surveys. A sample survey infers information about a population of interest based on the responses of a sample drawn from that population. Dillman (2000) stated that surveys are most effective when the survey is limited in length and require a small amount of time to complete; in addition, Gall et al. (1996) stated that a survey provides for a wide variety of educational issues to be investigated.

Study Population

The population is the overall group to which the researcher hopes to generalize the results, and a sample is the smaller group selected from the population of interest (Olejnik, 1984). Defining the population and method of sampling is extremely important. Moore (2003) stated that statistics are used to make inferences about a population based on a sample, and a sample that is selected in a manner in which every member of the population has a chance of being selected increases the validity of the method. The method of sample selection for this study was purposive sampling. A purposive sample is one which is selected by the researcher subjectively in an attempt to be representative of the population (Fraenkel & Wallen, 2006). There was consideration of the subjective nature of purposive sampling with regard of the researcher familiarity with the school and participants, and measures were taken to maintain objectivity in the sampling process.

Participants were selected from students enrolled at Clarke Central High School during the 2005-2006 school year. Clarke Central High School is located in Athens, Georgia, with a diverse population of 1498 students. Clarke Central High School has a student population that is 51% male and 49% female; 52% African-American, 32% Caucasian, 13% Hispanic, 3% Asian, and 1% multiracial. Approximately 40% of the student population qualifies for free or reduced lunch. A sample size of 306 was required for this study based on the size of the population (Krejcie & Morgan, 1970). Nonresponse was not an issue because the population existed in a controlled, accessible environment in which the researcher could follow-up with any non-responder.

Selection of Instrument

The instrument used to measure the students' level of intrinsic motivation was the *Intrinsic Motivation Inventory (IMI)* developed by the Department of Clinical and Social Sciences in Psychology at the University of Rochester. Dr. Edward Deci and Dr. Richard Ryan provided written permission to use and modify the *IMI* as the instrument for this study.

Modifications were made to the *IMI* with regard to measuring the level of intrinsic motivation of students completing a class activity. The modifications to the instrument consisted of providing the prompt "As a student in an elective/required class . . ." and changing the word "activity" to "assignment." Creswell (1994) stated that in survey research the researcher may use a proven instrument with modifications, and Ryan (1982) stated that the *IMI* is a measurement tool for intrinsic motivation that can be modified to adapt to a variety of settings.

The *IMI* has been successfully employed in numerous studies on intrinsic motivation and is one of the most common measurements used for intrinsic motivation (Cuddihy, Corbin, & Dale, 2002). Ryan (1982) stated the *IMI* measures a student's level of intrinsic motivation within

a specific setting, and the *IMI* indicates a student's sense of intrinsic motivation for given activity.

Ryan, Mims, and Koestner (1983) utilized the *IMI* to measure the level of intrinsic motivation for introductory psychology students assigned to complete a course requirement with regard to perceived level of competency and autonomy. Ryan, Koestner, and Deci (1991) measured the level of intrinsic motivation for students with regard to the manner in which instructions were given by employing the *IMI* as the instrument in their research. Rezabek (1995) used the *IMI* to measure the effect varied forms of instruction and sense of relatedness had on the level of intrinsic motivation for students.

Instrument reliability means that the instrument will provide similar results over time and in various situations (Moore, 2003). Rojewski (1999) stated that validity is a unitary concept in providing a general claim as to how precise an instrument score reflects whatever is to be measured, and maintained that internal validity is perhaps the most important type of validity. Eliminating threats to external and internal validity is difficult in a causal-comparative study. Campbell and Stanley (1963) stated that history, maturation, testing, instrumentation, regression, selection, mortality, and selection interactions are all threats to internal validity.

The *IMI* has been tested on several occasions for reliability, internal consistency, and validity. McAuley, Duncan, and Tammen (1987) found strong support for the validity of the instrument and measured the instrument's internal consistency with an alpha coefficient of .85. Likewise, Tsigilis and Theodosiou (2003) reported the *IMI* to be valid and recorded an alpha coefficient of .82.

The *IMI* utilized for this study incorporated six subscales from the full model. The subscales included were interest and enjoyment, perceived choice, perceived competence,

pressure and tension, effort, and value and usefulness. The subscale of interest and enjoyment is a primary predictor of intrinsic motivation (Deci, 1980). Deci stated that perceived choice and perceived competence are positive predictors of intrinsic motivation, and that pressure and tension serves as a negative predictor of intrinsic motivation. Effort and the sense of value and usefulness are indicators of a student's intrinsic motivation for an activity (Ryan & Deci, 2000a). The subscale of relatedness was omitted from the *IMI* used for this study because the validity of this subscale has yet to be established. The responses provided for the six subscales produced one score indicating the student's level of intrinsic motivation for the assigned class.

The *IMI* consisted of 32 statements measuring intrinsic motivation. The statements prompted the participant to consider factors such as interest, enjoyment, competence, choice, pressure, effort, and usefulness with regard to the completion of assignments in the selected class. The stem for the instrument was "As a student in this elective class" or "As a student in this required class". Participants selected the most appropriate response from a Likert scale - 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. Twenty-five of the 32 items were stated in a positive manner while 7 were presented in a negative fashion to encourage more careful consideration of the instrument. The negative responses were scored in reverse and the sum of all 32 responses was calculated to provide the instrument score.

The possible score on the instrument used for this study ranged from 32 to 128. Cuddihy, Corbin, and Dale (2002) explained students who score high on the *IMI* are considered to be intrinsically motivated and acknowledged that the score gives researchers an accurate indication of the level of an individual's intrinsic motivation.

Collection of Data

The procedure by which the data for the study is collected is essential to the success of the research being conducted (Gall et al., 1996). The researcher must proceed with attention to detail and organization. These steps were followed in the collection of data for this study:

1. Permission for conducting the study was obtained from the Clarke County School District and the University of Georgia Institutional Review Board (IRB) for Research Involving Human Subjects.
2. Permission for the collection of data from human subjects was obtained from the University of Georgia Institutional Review Board (IRB) for Research Involving Human Subjects.
3. The approval of the instrument was obtained from the University of Georgia Institutional Review Board (IRB) for Research Involving Human Subjects.
4. Parental permission forms were collected from students selected to participate in the study. Students selected for the study who did not return a signed parental permission form were not allowed to participate.
5. Participant assent forms were collected from students selected to participate in the study. Students selected for the study who did not return a signed student assent form were not allowed to participate.
6. The *Intrinsic Motivation Inventory* was administered on March 1, 2006, to Clarke Central High School students eligible to participate in the study during first block. Fifteen students who were absent on the initial day of the administration completed the *IMI* on March 2, 2006.

The researcher selected 11 required classes and 11 elective classes. The required classes selected to participate in the study were Literature/Composition (all four grade levels), Algebra I, Trigonometry, Government/Economics, US History, Biology, Human Anatomy, and Spanish I. The elective classes selected to participate in the study were Computer Applications (four sections), Marketing, Web Page Design, Nutrition, Early Childcare, Visual Art II, Drama I, Outdoor Education, and Weight Training. The instructors of these classes were provided an overview of the study by the researcher and an invitation for their class to participate. Each instructor accepted the invitation and assisted the researcher in a cooperative, professional manner.

An adequate response rate is important for acquiring meaningful data (Gall et al., 1996). Two weeks prior to the instrument administration every student in each class was given a parent permission form and participant assent form. The students were instructed that both forms must be completed, signed, and returned in order to participate in the study. The total number of students receiving parent permission forms and student assent forms was 635. The number of students in the required classes returning both forms was 175, and the total number of students in the elective classes returning both forms was 170. A total of 345 students returned both forms (54% return rate) and became eligible to participate in the study. This number exceeded the sample size of 306 required by the Krejcie and Morgan (1970) scale for sample sizes.

Three classes had a return rate of 100%. The lowest return rate for a class was 28%. The researcher provided each instructor with a verification list of the students who had submitted both forms and were eligible to participate in the study. Students in the selected classes who did not submit both signed forms were not allowed to participate in the study.

On the day of administration, each classroom instructor passed out the *IMI* to the eligible participants. The *IMI* contained 32 statements measuring the students' level of intrinsic motivation. The survey instruments used for the required classes and elective classes were identical, except for the words *elective* or *required* in the stem, and the *IMI* used for required classes was copied on blue paper while the *IMI* used for elective classes was copied on gold paper. The classroom instructors provided the following instructions for the participants.

1. Use a pen or pencil and mark your responses on the survey sheet. Do not put your name on the survey.
2. Complete the three sections at the top of your survey form indicating gender, grade level, and whether or not the class would be freely chosen by the student.
3. Read the directions and mark the appropriate response for each of the 32 statements.
4. Do not mark in the shaded areas. Turn the survey into the teacher when finished.

The following information was provided to each classroom instructor.

1. For the purpose of this survey a required class is any Math, Social Studies, English, Science, or Foreign Language that will serve to fulfill graduation requirements for that subject area.
2. For the purpose of this survey an elective class is any non-core class that will fulfill the Elective requirement and/or fulfill the requirement for a Technology/Career Prep Seal or a Dual Seal.
3. If additional students have turned in their forms and you need extra surveys let me know ASAP via email. I will send the surveys to your room.
4. If a student is out, mark their name on the list and give them the survey on the following day.
5. Take up all surveys. The surveys will be collected during second block.

The participants completed the instrument in the instructed manner. The instruments were collected by the classroom instructors and placed in an envelope to ensure anonymity. All completed instruments were collected during second block on March 1, 2006.

A make-up day was provided for those students absent on the initial day of instrument administration. Fifteen participants had been absent on March 1. All fifteen completed the instrument on March 2, 2006. Non-response was not a factor due to the fact that the participants were easily accessible to the researcher. All 345 students eligible to participate in the study completed the survey instrument.

Data Analysis

The participants' data were analyzed using *R* software (Dalgaard, 2002) to determine the statistical significance of the study. *R* is a free software environment that is identical to *S+* which is used for statistical computing and graphics. The descriptive statistics used in this study included initial plots, frequency distributions, means, standard deviations, median, maximum, minimum, and percentages.

Analysis of variance (ANOVA) was used to test whether the means were significantly different with respect to an independent variable or the interaction of two or more independent variables. ANOVA is appropriate for causal-comparative designs when more than one independent variable is being investigated (Tuckman, 1994). All statistical tests were tested at the .05 level of significance. The appropriate level of significance must be determined before engaging a technique for statistical inference (Glass & Hopkins, 1996), and the level of significance is the probability that a discrepancy between a sample statistic and a specified population parameter is due to sampling error or chance (Shaver, 1993).

Witte (1993) stated that as long as the sample sizes are equal and fairly large in number (>10) the F statistic produced by ANOVA is reliable. ANOVA assumes a normal distribution of the response variable, an equal variance among all populations, and independence of the experimental units (Sullivan, 2005). A review of the descriptive statistics and histograms provided support for normal distribution.

Tukey's Honest Significant Difference (HSD) procedure was performed to compare mean values of the levels of each factor found statistically significant by the omnibus ANOVA F -tests. Tukey's HSD controls for compounding error rates during multiple comparisons and controls the chance for committing a Type I error (Ott, 1993). The Tukey procedure was used to perform comparison tests by constructing 95% confidence intervals (CI). If the CI included zero or the p -value was greater than .05, then statistically speaking there was no difference between the two means being compared. Omega squared was used to determine the effect size and the practical significance of the final ANOVA model (Olejnik, 2004). Cohen's d was used to determine the effect size and the practical significance of the pair-wise comparisons made with Tukey's HSD test.

CHAPTER 4

ANALYSIS OF DATA

This chapter presents the results of the data analyzed from the 345 *Intrinsic Motivation Inventory (IMI)* survey instruments completed by students at Clarke Central High School. The total student population available was 1498 and a sample size of 306 was required (Krejcie & Morgan, 1970). A total of 635 students in 22 classes were given an opportunity to participate in the study. Students were required to return the parent permission form and the student assent form completed and signed in order to participate. Of the 635 students receiving forms, 345 returned both forms completed and signed. This provided a 54% return rate for the parent permission and student assent forms.

Purpose of Study

The purpose of this study was to compare high school students' intrinsic motivation to succeed academically in required and elective classes. The primary independent variable was course enrollment, either required or elective. Additional independent variables were gender, grade, and whether or not the students were in classes by choice or not by choice. The dependent variable was the level of the student's intrinsic motivation as measured by the *Intrinsic Motivation Inventory*. The results of this study will provide educators with information concerning student motivation, specifically as to whether self-determination in selecting classes influences the student's level of intrinsic motivation to achieve academically.

Research Questions

1. How does the intrinsic motivation of high school students enrolled in a required class compare with the intrinsic motivation of high school students enrolled in an elective class?
2. Does the intrinsic motivation of high school students differ with regard to grade levels when comparing students enrolled in required classes and students enrolled in elective classes?
3. Does the intrinsic motivation of high school students differ with regard to gender when comparing students enrolled in required classes and students enrolled in elective classes?
4. Does the intrinsic motivation of high school students differ with regard to choice and the interaction of choice and class selection when comparing students enrolled in required classes and students enrolled in elective classes?

Findings Related to Research Questions

The main effect and all possible interactions between variables were tested using analysis of variance (ANOVA). This approach is an acceptable application of analysis of variance which involves multiple variables (Keppel, 1991). The priori alpha was set at .05 for all tests. The critical value of F was calculated using the R software.

In order to simplify the full model and obtain accurate statistical results to the research questions of interest the full model was reduced. Specifically, since some of the research question were directly answered by some of the 2-way interactions in the full model, it was of interest to investigate whether or not higher order interactions could be dropped from the model without loss of explanatory power of intrinsic motivation. Therefore, the 4-way and 3-way interactions that were not statistically significant were sequentially removed beginning with the least statistically insignificant interaction and the ANOVA was recalculated (Keppel, 1991). The higher order 4-way interaction term that was non-significant was eliminated first. Then the 3-

way interaction terms that were non-significant were eliminated. This was done to ensure that the statistical significance was not improperly influenced by non-significant factors. The process was repeated until it was found that the 4-way and all 3-way interaction terms could be dropped from the model. The 2-way interaction terms were retained since some of these directly answered the research questions of interest. The effect size for these results was calculated using omega squared (Olejnik & Algina, 2003). See Table 1 for the final model of the ANOVA.

Table 1

Analysis of Variance Results

Source	df	SS	MS	<i>F</i>	p	omega squared*
Class	1	362.5	362.5	4.109	.0435	.009
Gender	1	2145.4	2145.4	24.318	<.0000	.063
Grade	3	2313.9	771.3	8.743	<.0000	.063
Choice	1	29221.5	29221.5	331.232	<.0000	.490
Class:Gender	1	106.2	106.2	1.203	.2735	.001
Class:Grade	3	163.8	54.6	.619	.6032	<.000
Class:Choice	1	702.3	702.3	7.961	.0051	.026
Residuals	337	29663.1	88.2			
Total	344	64590.0				

*Criteria for omega squared: .01 = Small Effect; .06 = Medium Effect; .15 = Large Effect

Tukey's Honest Significant Difference (HSD) procedure was performed to compare mean values of the levels of each factor found statistically significant by the omnibus ANOVA *F*-tests. Tukey's HSD controls for compounding error rates during multiple comparisons and controls the chance for committing a Type I error (Ott, 1993). The Tukey procedure was used to perform comparison tests by constructing 95% confidence intervals (CI). Cohen's *d* was used to calculate the effect size for the pairwise comparisons and determine the practical significance of

the interactions (Moore, 2003). See Table 2 for the results of the analysis of the pairwise comparisons.

Findings for Research Question 1

1. How does the intrinsic motivation of high school students enrolled in a required class compare with the intrinsic motivation of high school students enrolled in an elective class?

Table 2

Tukey's Test at 95% Confidence Intervals for All Pairwise Comparisons

Factor	Comparison	Difference	Lower Bound	Upper Bound	Tukey HSD p-value	Cohen's d^*
Grade	10-9	-1.819	-5.622	1.985	0.6052	.194
	11-9	2.293	-1.444	6.030	0.3890	.244
	12-9	5.076	1.283	8.869	0.0035	.541
	11-10	4.112	0.508	7.715	0.0180	.438
	12-10	6.895	3.232	10.557	<0.0000	.735
	12-11	2.783	-0.810	6.376	0.1901	.297
Class by Choice	R:N-E:N	2.421	-2.916	7.758	0.6455	.258
	E:Y-E:N	24.324	20.113	28.535	<0.0000	2.593
	R:Y-E:N	19.556	15.394	23.718	<0.0000	2.085
	R:Y-E:N	21.903	17.416	26.391	<0.0000	2.335
	R:Y-R:N	17.135	12.694	21.576	<0.0000	1.827
	R:Y-R:Y	-4.768	-7.765	-1.772	0.0003	.508

KEY: R – Required; E – Elective;
M – Male; F – Female;
9 – Freshman; 10 – Sophomore; 11 – Junior; 12 – Senior;
Y – Yes for Choice; N – No for Choice

*Criteria for Cohen's d - .2 = Small Effect; .5 = Medium Effect; .8 = Large Effect

Participants were selected to complete the *IMI* as a student in either a required class or an elective class. The required classes selected for the study were Literature/Composition (all four grade levels), Algebra I, Trigonometry, Government/Economics, US History, Biology, Human

Anatomy, and Spanish I. The elective classes selected for the study were Computer Applications (four sections), Marketing, Web Page Design, Nutrition, Early Childcare, Visual Art II, Drama I, Outdoor Education, and Weight Training. The number of participants completing the *IMI* as a student in a required class was 175 (50.7%). The number of participants completing the *IMI* as a student in an elective class was 170 (49.3%).

The score on the *IMI* represents the student's level of intrinsic motivation. The mean score for the 175 students who completed the *IMI* as a student in a required class was 87.91 with a standard deviation of 12.094. The mean score of the 170 students who completed the *IMI* as a student in an elective class was 89.96 with a standard deviation of 15.147. Students in the selected elective classes were measured as having a higher level of intrinsic motivation when compared to the students in selected required classes. See Table 3 for the descriptive statistics for Question 1.

The results of the ANOVA test comparing the level of intrinsic motivation of students in required classes with students in elected classes produced an F value of 4.109 for the main effect of class selection and a p value of .0435. The critical F value was 3.871. This result indicated that the difference in the level of intrinsic motivation of students in a required class and students in an elective class was statistically significant at the .05 level. The omega squared test for effect size indicated that the practical significance in the difference was small. See Table 1 for the ANOVA test and effective size for the main effect of class selection.

The statistical significance of the class selection variable may be contributed to the fact that students select elective classes based on an interest or aptitude in that class. Deci and Ryan (1985a) concluded that students who perceive themselves as possessing competence for a given

subject and experiencing a sense of relatedness in the classroom environment demonstrate higher levels of intrinsic motivation.

Table 3

Descriptive Statistics for Required and Elective Classes

Statistic	Value
Required Classes	
Number	175
Mean	87.91
Median	89
Standard Deviation	12.094
Minimum	46
Maximum	118
Elective Class	
Number	170
Mean	89.96
Median	93
Standard Deviation	15.147
Minimum	50
Maximum	116

Findings for Research Question 2

- Does the intrinsic motivation of high school students differ with regard to grade levels when comparing students enrolled in required classes and students enrolled in elective classes?

Participants were asked to indicate their grade level prior to completing the *IMI* as either a student in a required class or an elective class. The breakdown with regard to grade level indicated that 76 (22.1%) were freshmen, 87 (25.2%) were sophomores, 94 (27.3%) were juniors, and 88 (25.4%) were seniors.

The mean score for the level of intrinsic motivation for freshmen was 87.00 with a standard deviation of 13.297. The mean score for the level of intrinsic motivation for sophomores was 85.91 with a standard deviation of 15.622. The mean score for the level of intrinsic motivation for juniors was 89.82 with a standard deviation of 13.703. The mean score for the level of intrinsic motivation for seniors was 92.61 with a standard deviation of 11.002. See Table 4 for the descriptive statistics for Question 2.

The results of the ANOVA test for the interaction of class selection and grade level produced an F value of .619 and a p value of .6032. The critical F value was 2.633. These results indicated there was no statistical difference in the level of intrinsic motivation with regard to grade level when comparing students in a required class and students in an elective class as measured at the .05 level of significance. See Table 1 for the ANOVA test measuring the interaction of class and grade level.

The results of the ANOVA test for the main effect of grade level indicated an F value of 8.743 and a p value of <.0000. The critical F value was 2.633. These results indicated there was a statistical significance in the intrinsic motivation of students in different grade levels as measured at the .05 level of significance. The omega squared test indicated a medium effect for the practical significance of the main effect of grade level. See Table 1 for the results of the ANOVA test and effect size for the main effect of grade level.

Tukey's HSD tested the six possible combinations of factors that caused the statistically significant in the main effect of grade level. The test indicated that the combinations of seniors-freshmen, juniors-sophomores, and senior-sophomores contributed to the difference in means of the different grade levels. Cohen's d indicated that each of these combinations had a medium

effect on the practical significance of the measured difference. See Table 2 for the pair-wise comparisons and effect size results.

Table 4

Descriptive Statistics for Grade Level

Statistic	Value
Freshmen (Grade Level 9)	
Number	76
Mean	87.00
Median	89
Standard Deviation	13.297
Minimum	46
Maximum	110
Sophomores (Grade Level 10)	
Number	87
Mean	85.91
Median	87
Standard Deviation	15.622
Minimum	51
Maximum	118
Juniors (Grade Level 11)	
Number	94
Mean	89.82
Median	92
Standard Deviation	13.703
Minimum	58
Maximum	116
Seniors (Grade Level 12)	
Number	88
Mean	92.61
Median	92
Standard Deviation	11.002
Minimum	60
Maximum	116

Findings for Research Question 3

3. Does the intrinsic motivation of high school students differ with regard to gender when comparing students enrolled in required classes and students enrolled in elective classes?

Participants were asked to indicate their gender prior to completing the *IMI* as either a student in a required class or an elective class. The breakdown with regard to the gender of the participants shows that 175 (50.7%) were female and 170 (49.3%) were male.

The mean score for the level of intrinsic motivation for females was 91.34 with a standard deviation of 13.188. The mean score for the level of intrinsic motivation for males was 86.43 with a standard deviation of 13.814. See Table 5 for the descriptive statistics for Question 3.

Table 5

Descriptive Statistics for Gender

Statistic	Value
Female	
Number	175
Mean	91.34
Median	93
Standard Deviation	13.188
Minimum	46
Maximum	118
Male	
Number	170
Mean	86.43
Median	89
Standard Deviation	13.814
Minimum	50
Maximum	116

The ANOVA measuring the interaction of class selection and gender produced an F value of 1.203 and a p value of .2735. The critical F value was 3.871. These results indicated that there was no statistically significant difference in intrinsic motivation with regard of gender when comparing students enrolled in a required class and students enrolled in an elective class as measured at the .05 level of significance. See Table 1 for the results of the ANOVA test measuring the interaction of class selection and gender.

The results of the ANOVA test measuring the main effect of gender produced an F value of 24.318 and p value of <.0000 for the main effect. The critical F value was 3.871. These results indicated that there was a statistically significant difference in the level of intrinsic motivation with regard to gender as measured at the .05 level of significance. The omega squared test indicated a medium effect with regard to the practical significance of the main effect of gender. See Table 1 for the ANOVA test and effect size for the main effect of gender.

Findings for Research Question 4

4. Does the intrinsic motivation of high school students differ with regard to choice and the interaction of choice and class selection when comparing students enrolled in required classes and students enrolled in elective classes?

Each participant was asked to indicate “if given the opportunity to freely choose, I would be in this class . . .” by choice or not by choice. The number of participants who stated they would freely choose the selected class was 262 (75.9%). The number of participants who stated they would not freely choose the selected class was 83 (24.1%).

The mean score for the students’ level of intrinsic motivation in a class by choice was 94.39 with a standard deviation of 9.352. The mean score for the students’ level of intrinsic

motivation in a class not by choice was 71.66 with a standard deviation of 10.590. See Table 6 for the descriptive statistics for Question 4.

Table 6

Descriptive Statistics for Choice

Statistic	Value
If I could freely choose, I would take this class	
Choice	
Number	262
Mean	94.39
Median	94
Standard Deviation	9.352
Minimum	71
Maximum	118
Not By Choice	
Number	83
Mean	71.66
Median	71
Standard Deviation	10.590
Minimum	46
Maximum	98

The results of the ANOVA test produced an F value of 331.232 and a p value of $<.0000$ for the main effect of choice. The critical F value was 3.871. These results indicated that there was a statistically significant difference in the levels of intrinsic motivation with regard to the variable of choice as measured at the .05 level of significance. The omega squared test indicated a large effect with regard to the practical significance of choice. Studies consistently indicate that choice and the opportunity for self-direction are essential for students to maximize their level of

intrinsic motivation (Zuckerman et al., 1978). Table 1 for the ANOVA test and effect size for the main effect of choice.

The computation of the scores for students in an elective class by choice produced a mean of 96.99 with a standard deviation of 9.160. The computation of the scores for students in a required class by choice produced a mean of 92.02 with a standard deviation of 8.914. The computation of the scores for students in an elective class not by choice produced a mean of 73.10 with a standard deviation of 10.397. The computation of the scores for students in an elective class not by choice produced a mean of 70.44 with a standard deviation of 10.714. The descriptive statistics for the interaction of class selection and choice are shown in Table 7.

The ANOVA for the interaction between class selection and choice produced an F value of 7.961 and p value of .0051. The critical F value was 3.871. These results indicated that there was a statistically significant difference in the level of intrinsic motivation with regard to the interaction of the variable of class selection and student choice. Tukey's HSD tested the six possible combinations of factors for class selection and student choice. All but one combination contributed to the significant statistical difference in the means. Cohen's d indicated that four of the five combinations had a large effect with regard to the practical significance of the interaction. See Table 2 for the results of Tukey's HSD and Cohen's d for effect size.

Figure 1 illustrates an interesting dynamic concerning the interaction between class selection and choice. The highest levels of intrinsic motivation were recorded from students who were in elective classes by choice; however, the lowest levels of intrinsic motivation were recorded from students who were in elective classes not by choice.

Table 7

Descriptive Statistics for Interaction of Class Selection and Choice

Statistic	Value
Elective Class by Choice	
Number	125
Mean	96.99
Median	97
Standard Deviation	9.160
Minimum	75
Maximum	116
Required Class by Choice	
Number	137
Mean	92.02
Median	91
Standard Deviation	8.914
Minimum	71
Maximum	118
Required Class Not by Choice	
Number	38
Mean	73.10
Median	74
Standard Deviation	10.397
Minimum	46
Maximum	98
Elective Class Not by Choice	
Number	45
Mean	70.44
Median	68
Standard Deviation	10.714
Minimum	50
Maximum	97

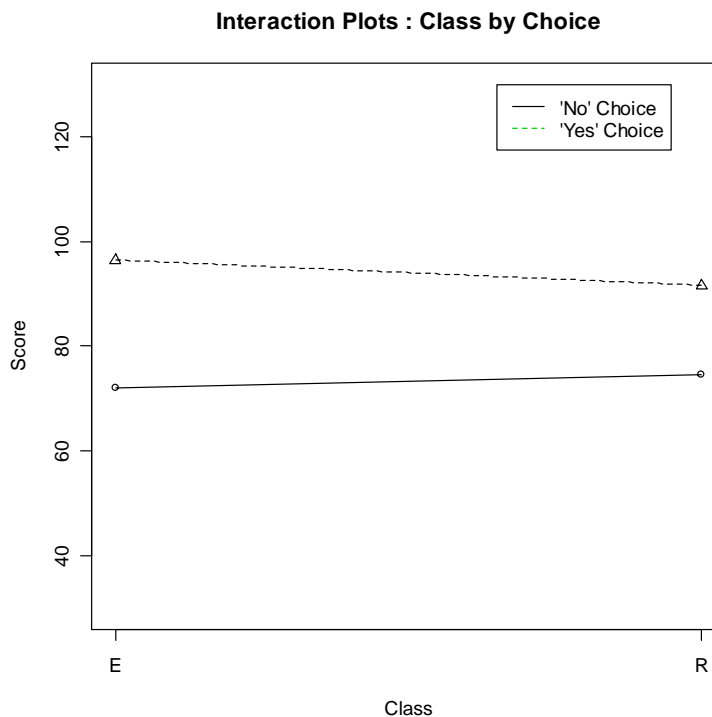


Figure 1. Interaction between Class Selection and Choice

Research supports that conditions promoting student choice increase the level of intrinsic motivation (Strong, Silver, & Robinson, 1995). In addition, students demonstrate a higher level of intrinsic motivation for classes in which they perceive a high level of competence and autonomy (Grolnick & Ryan, 1989). A student choosing to be in an elective class provides the student an opportunity to be in a desired class by choice. The level of intrinsic motivation in a required class is affected by choice. If the student would choose to be in the class, the level of intrinsic motivation will be higher.

Ryan and Deci (2000a) stated that situations in which students are limited in choice will result in limited levels of intrinsic motivation. The level of intrinsic motivation is higher for students who would not choose to be in a required class than for students who would not choose to be in an elective class. Even though a student would not choose to be in a required class, the student will realize the sense of value the required class has with regard to graduation. The lack

of choice and the inability to recognize a sense of value hinder the intrinsic motivation of students (Kohn, 1999).

Students demonstrate a higher level of intrinsic motivation in classes that they are in by choice. This is especially true for elective classes that are selected by the student. The selection of an elective class by the students highlights the students' autonomy, competence, and relatedness. These three factors enhance intrinsic motivation. However, the situation that produces the lowest level of intrinsic motivation is a student in an elective class not by choice. Students find themselves not only in a class not by choice, but also a class in which they can find no value.

The data analysis provided results that indicate that students demonstrated a higher level of intrinsic motivation in elective classes than in required classes. Variables such as grade level and gender do have a main effect on intrinsic motivation, but fail to produce any statistical significance with regard to whether the student is in a required or elective class. The most statistically significant variable was choice. The variable of choice was influential in affecting the level of intrinsic motivation. Allowing students to have choice in the class selection process will provide a greater opportunity for the student to demonstrate a high level of intrinsic motivation to be successful in the class.

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to compare high school students' intrinsic motivation to succeed academically in required and elective classes. The primary independent variable was course enrollment, either required or elective. Additional independent variables were gender, grade, and whether or not the students were in classes by choice or not by choice. The dependent variable was the level of the student's intrinsic motivation as measured by the *Intrinsic Motivation Inventory*.

The first phase of the study was a review of the literature on motivation, self-determination theory, application of self-determination theory, and class selection by secondary students. The review of literature on motivation offered a historical overview of motivational theories by reviewing early motivational theories, behavioral motivational theories, cognitive motivational theories, need motivational theories, social motivational theories, and management-based motivational theories. In addition, literature describing the constructs of extrinsic and intrinsic motivation provided an analysis of the similarities and differences.

The literature review on self-determination theory suggested that self determination theory focuses on the importance of students making decisions about their actions, possessing a sense of competence for an activity, and perceiving relatedness in their environment (Deci & Ryan, 1985a). The literature stated that the inability to demonstrate self-determination adversely affects a student's intrinsic motivation, and the use of rewards for tasks that have intrinsic value leads to the diminishing of the intrinsic value of the task (Ryan & Deci, 2000a). Deci and Ryan

stated that self-determination theory provides a guide to tap into the vast potential of intrinsic motivation and improve the academic performance by allowing the students to experience autonomy and choice in the educational process.

The review of literature on the application of Deci and Ryan's self-determination theory demonstrated the appropriateness of applying the theory to educational inquiries. Self-determination theory uses traditional empirical methods while employing the organismic metatheory focusing on the inner resources for personal development and behavioral self-regulation (Ryan, Kuhl, & Deci, 1997). Self-determination theory provides researchers a means of asking questions about student motivation and the factors affecting motivation; moreover, educators can view statistical data demonstrating the effects of instructional methods and practices on student motivation.

The review of literature provided a composite of the factors that influence the course selection process of secondary students. These include academic, vocational, and social factors that impact the selection process of secondary students either directly or indirectly. The increased demands with regard to assessment and accountability have led to the evolution of rigid curricula that provide little flexibility in the course selection process.

The second phase of the study was developing a research design that would allow the level of intrinsic motivation for a secondary student in a required or elective class to be measured. The instrument used to measure the students' level of intrinsic motivation was the *Intrinsic Motivation Inventory (IMI)* developed by the Department of Clinical and Social Sciences in Psychology at the University of Rochester. The *IMI* has been employed in numerous studies as the measurement tool for intrinsic motivation and is accepted as a valid and reliable instrument.

The *Intrinsic Motivation Inventory* was distributed to a sample of 345 students at Clarke Central High School during the second semester of the 2005-2006 school year. The total student population of Clarke Central High School was 1498. Each student provided information with regard to grade level, gender, and whether they were enrolled in the designated class “by choice” or “not by choice” prior to responding to the *IMI* statements. The *IMI* consisted of 32 statements used to measure the students’ intrinsic motivation. The students selected the most appropriate response on the Likert scale for each of the 32 statements.

The final phase of the study involved statistical analysis of data gathered from the instrument. Four research questions were examined. The first question examined the level of intrinsic motivation of high school students enrolled in required classes compared with the level of intrinsic motivation of high school students enrolled in elective classes. The second question examined if the level of intrinsic motivation of high school students differs with regard to grade levels when comparing students enrolled in required classes and students enrolled in elective classes. The third question examined if the level of intrinsic motivation of high school students differs with regard to gender when comparing students enrolled in required classes and students enrolled in elective classes. The fourth question examined if the level of intrinsic motivation of high school students differs with regard to choice and the interaction of class selection and choice when comparing students enrolled in required classes and students enrolled in elective classes.

Discussion

The *Intrinsic Motivation Inventory* measured the level of intrinsic motivation of students in selected required and elective classes. The required classes selected for the study were Literature/Composition (all four grade levels), Algebra I, Trigonometry,

Government/Economics, US History, Biology, Human Anatomy, and Spanish I. The elective classes selected for the study were Computer Applications (four sections), Marketing, Web Page Design, Nutrition, Early Childcare, Visual Art II, Drama I, Outdoor Education, and Weight Training. The primary independent variable was class selection and additional independent variables included grade level, gender, and choice. The mean score for the 175 students who completed the *IMI* as a student in a required class was 87.91, and the mean score of the 170 students who completed the *IMI* as a student in an elective class was 89.96. Students in the selected elective classes had a statistically significant higher level of intrinsic motivation than students in the selected required classes. The effect size indicated that the small practical difference in the level of intrinsic motivation of students in required and elective classes.

The statistically significant difference may be contributed to the fact that students often select elective classes based on an interest or aptitude in that class (Kohn, 1993). Elective classes provide students an opportunity to explore knowledge and skill areas that are of interest to them, and by enrolling in the elective class the student demonstrates a degree of autonomy. Many students possess an interest and aptitude for required classes. Deci and Ryan (1985a) concluded that students who perceive themselves as possessing competence for a given subject and experiencing a sense of relatedness in the classroom environment demonstrate higher levels of intrinsic motivation.

The mean score for the level of intrinsic motivation with regard to grade level was as follows: freshmen - 87.00, sophomores - 85.91, juniors - 89.82, and seniors - 92.61. There was no statistically significant difference in the level of intrinsic motivation of students in different grade levels when comparing students in required and elective classes. However, there was a statistically significant difference in the level of intrinsic motivation with regard to the main

effect of grade level. The higher level of intrinsic motivation measured in juniors and seniors. The increase in intrinsic motivation for juniors and seniors contradicts the general consensus in research that states that the level of intrinsic motivation in students decreases with each grade level (Harter, Whitesell, & Kowalski, 1992).

The mean score for the level of intrinsic motivation for females was 91.34 and for males was 86.43. There was no statistically significant difference in the level of intrinsic motivation of male and female students when comparing students in required and elective classes. However, there was a statistically significant difference in the level of intrinsic motivation with regard to the main effect of gender. The data indicated that females demonstrated a higher level of intrinsic motivation than males. Research indicates that the level of intrinsic motivation in males and females vary in relation to the activity that is being measured (Sansone & Harackiewicz, 2000).

The fourth research question inquired about the effect of choice and the interaction of class selection and choice. Each student was asked to indicate “if given the opportunity to freely choose, I would be in this class . . .” by choice or not by choice. The students who indicated they would choose to be in the class had a mean score 94.39. The students who indicated they would not choose to be in the class had a mean score of 71.66. The analysis of this data confirmed that there was a statistically significant difference in the level of intrinsic motivation of students choosing to be in a class and students not choosing to be in a class. The effect size indicated a large level of practical significance with regard to the main effect of choice. Research indicates that choice and the opportunity for self-direction are essential for students to maximize their level of intrinsic motivation (Zuckerman et al., 1978). Students who possess ownership in the decision making process demonstrate high levels of intrinsic motivation.

The interaction of class selection and student choice also produced a statistically significant difference. The mean score for each interaction was as follows: students in an elective class by choice - 96.99, students in a required class by choice - 92.02, students in an elective class not by choice - 73.10, and students in an elective class not by choice - 70.44. The effect size indicated there was a large level of practical significance with regard to the interaction of class selection and choice.

The highest level of intrinsic motivation was recorded from students who were in elective classes by choice. Providing opportunities for students to make choices is a key factor in increasing their level of intrinsic motivation (Strong, Silver, & Robinson, 1995). Students will generally choose classes in which they perceive themselves as possessing a level of competence and autonomy (Grolnick & Ryan, 1989). A student choosing to be in an elective class provides the student an opportunity to be in a desired class by choice and produces a high level of intrinsic motivation.

The level of intrinsic motivation in a required class is affected by choice. If the student would choose to be in the required class, then the level of the student's intrinsic motivation will be significantly higher than if the student would not choose to be in the class. Students often possess a sense of competence, autonomy, and relatedness in required classes. Moreover, the process by which a student develops a sense of the importance of a task is called internalization, and internalization heightens the level of intrinsic motivation in students (Deci, 1980).

The level of intrinsic motivation was higher for students who would not choose to be in a required class than for students who would not choose to be in an elective class. Students who would not choose to be in a required class will still internalize the importance of the required class with regard to meeting graduation requirements. However, students not choosing to be in

an elective class will find little value in the class and demonstrate a possess a low level of intrinsic motivation. Ryan and Deci (2000a) stated that situations in which students are limited in choice will result in limited levels of intrinsic motivation. The findings with regard to Question 4 indicate that intrinsic motivation is influenced more by choice than class selection.

Conclusions

The following conclusions were drawn upon the review of related literature presented in Chapter 2 and the findings in Chapter 4.

1. Students in elective classes demonstrated a higher level of intrinsic motivation than students in required classes.
2. Intrinsic motivation differed based on grade level and gender. However, these variables do not affect the level of intrinsic motivation when comparing students in required and elective classes
3. Students possessed a high level of intrinsic motivation in classes that they are in by choice. This is especially true for elective classes that are selected by the student.
4. Students possessed a low level of intrinsic motivation in classes that they are not in by choice. This is especially true for students in an elective class not by choice.

Implications and Recommendations for Practice

In this study, the level of intrinsic motivation for students in required and elective classes was investigated. While the research was limited to students in selected classes at Clarke Central High School during the 2005-2006 school year, the findings and related literature supported the following implications and recommendations for practice.

Intrinsic motivation can be a valuable tool in increasing the academic achievement of students. Curiosity is a basic facet of human beings (Deci & Ryan, 1985b). Unfortunately, there

are many barriers and obstacles in our educational system today that prohibit students from fully using this innate form of motivation. Albert Einstein said, “It is nothing short of a miracle that modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry” (Eves, 1988).

There are current trends in education to improve the academic performance of secondary students by increasing the opportunity for students to choose in the educational process. Career academies, smaller learning environments, and other similar initiatives are being championed as a means to increase academic achievement by cultivating student involvement in the process. The foundations of these initiatives are concepts such as choice, autonomy, relationships, and competence. All of these concepts are central to the self-determination theory. The application of the self-determination theory to the class selection process provides evidence to support initiatives that increase student choice in the educational process as a means to increase academic achievement.

Intrinsic motivation can be the catalyst to overcoming many of the challenges that face our educational system such as low achievement and apathy. Educators must seize the opportunity to stimulate the natural inquiry that exists in all students by focusing on the manageable contextual factors that enhance intrinsic motivation such as choice, autonomy, relationships, and competence.

Educational programs and systems that cultivate these factors produce an environment that enhances intrinsic motivation and increases student achievement. The ability to choose and recognize a sense of value in an activity increases the intrinsic motivation of students (Kohn, 1999). Intrinsic motivation can be enhanced by allowing students to exercise a greater degree of choice in the class selection process and providing students the opportunity of internalizing the

importance of each activity. Secondary educational institutions will provide a greater opportunity for students to realize their academic and career potential by implementing class selection processes that embrace student choice and autonomy.

Recommendations for Practice

Based upon the statistical analysis of the *Intrinsic Motivation Instrument* and additional discussion, the following recommendations for practice are suggested:

1. Secondary school students should be provided opportunities to enroll in classes based on contextual factors such as autonomy, competence, and relatedness. Secondary school initiatives such as Career Academies, Career Pathways, and Magnet Schools provide this opportunity to some degree.
2. Secondary school students should be given opportunities to enroll in elective classes of choice. The data analysis indicated that students placed in elective classes against their choice possess the lowest level of intrinsic motivation. Students should not be placed in classes just to complete their schedule, but be allowed to select classes that are of interest to them.
3. Secondary school students should be provided opportunities to enroll in non-traditional programs such as alternative schools and web-based virtual schools in order to tailor curricula to meet their interest and values.
4. Secondary school curricula should be reevaluated. Ohanian (1999) stated that our standard secondary curricula give nonstandard students limited choice. Students should be able to exercise more choice and autonomy when selecting classes and not be confined by strict perimeters established by rigid curricula.

Recommendation for Further Study

The results of this study have created awareness with regard to the importance of utilizing intrinsic motivation in increasing the academic performance of students. Further research is needed to determine how educators can better tap into the vast potential of intrinsic motivation. Based upon the findings and conclusions of the study, the following recommendations for further study are made.

1. Increase the scope of the study to include secondary students from high schools throughout Georgia. The increase in data would provide a better analysis of the effect class selection has on intrinsic motivation. Additional independent variables such as race, urban or rural location, and career choices could be added. Also, the level of students' intrinsic motivation in extra-curricular and non-school related activities should be measured to develop a better understanding of the effect that class selection actually has on each student's level of intrinsic motivation.

2. Conduct a study of successful instructional practices and school policies that enhance intrinsic motivation in students. Additional research should be conducted to determine what instructional practices "tap into" intrinsic motivation and what types of school policies improve the intrinsic motivation of their students. This type of information would be beneficial to educators as a means to reach a desired end.

3. Conduct a study on the implications of local, state, and federal policy with regard to stricter curriculums and higher assessment requirements. What are the effects of policy such as No Child Left Behind? Does stringent policy enhance or deter the intrinsic motivation of students?

4. Conduct a study of the relationship between intrinsic motivation and differentiated instruction. Differentiated instruction is a current trend in education that focuses on meeting the needs of all students. It involves a careful analysis of instruction followed by changes in instruction, materials, and products and assessments in order to ensure that all students experience academic success.

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APPENDIX A
HUMAN SUBJECT APPROVAL

From: Kirsten Walters [kwalters@uga.edu]
Sent: Tuesday, January 03, 2006 9:21 AM
To: Ward, Jonathan N.
Subject: RE: irb approval - ward

PROJECT NUMBER: 2006-10126-0

TITLE OF STUDY: Self-Determination: The Influence of Course Selection on Student Intrinsic Motivation
PRINCIPAL INVESTIGATOR: Mr. Jonathan N. Ward

Jon,

Please be informed that the University of Georgia Institutional Review Board (IRB) has reviewed and approved your above-titled proposal through the Expedited review procedure authorized by 45 CFR 46.110(a).

You may now begin your study. Your approval packet with the date-stamped consent forms will be sent via campus mail. If you prefer, you may pick up the stamped forms at our office since it will be Wednesday before the IRB Chair could sign off on the notice of approval. Just let me know.

Please remember that no change in this research proposal can be initiated without prior review by the IRB. Any unanticipated problems must be reported to the IRB immediately. The principal investigator is also responsible for maintaining all applicable protocol records (regardless of media type) for at least three (3) years after completion of the study (i.e., copy of approved protocol, raw data, amendments, correspondence, and other pertinent documents). You are requested to notify the Human Subjects Office if your study is completed or terminated.

Good luck with your study, and please feel free to contact us if you have any questions. Please use the IRB number and title in all communications regarding this study.

Take Care,

--

Kirsten Walters
University of Georgia
Institutional Review Board
Human Subjects Office
612 Boyd GSRC
Athens, GA 30602-7411
P: 706-542-3199
F: 706-542-3360 <http://www.ovpr.uga.edu/hso/>

APPENDIX B

INTRINSIC MOTIVATION INVENTORY

Intrinsic Motivation Inventory

Gender <input type="checkbox"/> Female <input type="checkbox"/> Male	<input type="checkbox"/> Grade Level <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12	If I could freely choose, I would be in this class . .. <input type="checkbox"/> by choice <input type="checkbox"/> not by choice
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Directions: Read the prompt and for each statement circle your most appropriate response using the provided scale.

	Prompt: As a student in an elective class . . .	Strongly Disagree	Disagree	Agree	Strongly Agree	Score (do not mark)
1.	I enjoy doing the assignments very much.	1	2	3	4	
2.	The assignments are fun to do.	1	2	3	4	
3.	I become bored with the assignments.	1	2	3	4	
4.	The assignments do not hold my attention at all.	1	2	3	4	
5.	I would describe the assignments as very interesting.	1	2	3	4	
6.	I think the assignments are quite enjoyable.	1	2	3	4	
7.	While I am doing the assignments, I think about how much I enjoy it.	1	2	3	4	
8.	I think I am pretty good at the assignments.	1	2	3	4	
9.	I think I do pretty well at the assignments, compared to other students.	1	2	3	4	
10.	After working at the assignments for awhile, I feel pretty competent.	1	2	3	4	
11.	I am satisfied with my performance at the task.	1	2	3	4	
12.	I am pretty skilled at the assignments.	1	2	3	4	
13.	The assignments are ones that I cannot do very well.	1	2	3	4	
14.	I put a lot of effort into the assignments.	1	2	3	4	
15.	I do not try very hard to do well at the assignments.	1	2	3	4	
16.	I try very hard on the assignments.	1	2	3	4	
17.	It is important to me to do well on each assignment.	1	2	3	4	
18.	I do not put much energy into the assignments.	1	2	3	4	
19.	I do not feel nervous at all while doing the assignments	1	2	3	4	
20.	I feel very tense while doing the assignments.	1	2	3	4	
21.	I am very relaxed in doing the assignments.	1	2	3	4	
22.	I am anxious while working on the assignments.	1	2	3	4	
23.	I feel pressure while doing the assignments.	1	2	3	4	
24.	I believe I have some choice about doing the assignments.	1	2	3	4	
25.	I do the assignments because I want to.	1	2	3	4	
26.	I do the assignments because I have to.	1	2	3	4	
27.	I believe the assignments could be of some value to me.	1	2	3	4	
28.	I think that doing the assignments is useful.	1	2	3	4	
29.	I think the assignments are important to do.	1	2	3	4	
30.	I will be willing to do the assignments again because they have some value to me.	1	2	3	4	
31.	I think doing the assignments can help me.	1	2	3	4	
32.	I believe doing the assignments can be beneficial to me.	1	2	3	4	

TOTAL SCORE: _____

This instrument is a modification of the Intrinsic Motivation Inventory (IMI) developed by the Department of Clinical and Social Sciences in Psychology at the University of Rochester. Permission has been granted for all modifications.

Intrinsic Motivation Inventory

Gender

☐ Female

☐ Male

☐ Grade Level

☐ 9

☐ 10

☐ 11

☐ 12

If I could freely choose,
I would be in this class .

..

☐ by choice

☐ not by choice

Directions: Read the prompt and for each statement circle your most appropriate response using the provided scale.

	Prompt: As a student in a required class . . .	Strongly Disagree	Disagree	Agree	Strongly Agree	Score (do not mark)
1.	I enjoy doing the assignments very much.	1	2	3	4	
2.	The assignments are fun to do.	1	2	3	4	
3.	I become bored with the assignments.	1	2	3	4	
4.	The assignments do not hold my attention at all.	1	2	3	4	
5.	I would describe the assignments as very interesting.	1	2	3	4	
6.	I think the assignments are quite enjoyable.	1	2	3	4	
7.	While I am doing the assignments, I think about how much I enjoy it.	1	2	3	4	
8.	I think I am pretty good at the assignments.	1	2	3	4	
9.	I think I do pretty well at the assignments, compared to other students.	1	2	3	4	
10.	After working at the assignments for awhile, I feel pretty competent.	1	2	3	4	
11.	I am satisfied with my performance at the task.	1	2	3	4	
12.	I am pretty skilled at the assignments.	1	2	3	4	
13.	The assignments are ones that I cannot do very well.	1	2	3	4	
14.	I put a lot of effort into the assignments.	1	2	3	4	
15.	I do not try very hard to do well at the assignments.	1	2	3	4	
16.	I try very hard on the assignments.	1	2	3	4	
17.	It is important to me to do well on each assignment.	1	2	3	4	
18.	I do not put much energy into the assignments.	1	2	3	4	
19.	I do not feel nervous at all while doing the assignments	1	2	3	4	
20.	I feel very tense while doing the assignments.	1	2	3	4	
21.	I am very relaxed in doing the assignments.	1	2	3	4	
22.	I am anxious while working on the assignments.	1	2	3	4	
23.	I feel pressure while doing the assignments.	1	2	3	4	
24.	I believe I have some choice about doing the assignments.	1	2	3	4	
25.	I do the assignments because I want to.	1	2	3	4	
26.	I do the assignments because I have to.	1	2	3	4	
27.	I believe the assignments could be of some value to me.	1	2	3	4	
28.	I think that doing the assignments is useful.	1	2	3	4	
29.	I think the assignments are important to do.	1	2	3	4	
30.	I will be willing to do the assignments again because they have some value to me.	1	2	3	4	
31.	I think doing the assignments can help me.	1	2	3	4	
32.	I believe doing the assignments can be beneficial to me.	1	2	3	4	

TOTAL SCORE: _____

This instrument is a modification of the Intrinsic Motivation Inventory (IMI) developed by the Department of Clinical and Social Sciences in Psychology at the University of Rochester. Permission has been granted for all modifications.

APPENDIX C

REQUEST AND APPROVAL TO USE INTRINSIC MOTIVATION INVENTORY

Yes, you are welcome to use the questionnaire mentioned below. Good luck with your project.

Edward L. Deci
 Professor of Psychology
 University of Rochester
 Box 270266
 Rochester, NY 14627
 Phone (585) 275-2461
 Fax (585) 273-1100
 e-mail: deci@psych.rochester.edu
 web site: <http://psych.rochester.edu/SDT/>

On Wed, 26 Jan 2005, Ward, Jonathan N. wrote:

> Dr. Deci and Dr. Ryan:

>

> My name is Jon Ward. I am in my 18th year as a high school educator and I am finishing my course work at the University of Georgia toward a doctorate in education. My dissertation will compare the intrinsic motivation of students in a required classes and elective classes.

>

> First of all let me say thank you for your work in regards to intrinsic motivation. I have cited your articles and publications extensively in my study.

>

> I am asking for your permission to use the Intrinsic Motivation Inventory (www.psych.rochester.edu/SDT/measures/intrins.html) as the instrument for my study. Please let me know if this is possible.

>

> Again thank you for your work and I hope to meet you someday.

>

> Jon Ward

> Clarke Central High School

> 350 South Milledge Avenue

> Athens, GA 30605

>

Jon:

Ed may have already responded, but you are welcome to use that measure, or any others on our website.

rich ryan

p.s. i will look forward to that someday meeting.

Dr. Deci and Dr. Ryan:

My name is Jon Ward. I am in my 18th year as a high school educator and I am finishing my course work at the University of Georgia toward a doctorate in education. My dissertation will compare the intrinsic motivation of students in a required classes and elective classes.

First of all let me say thank you for your work in regards to intrinsic motivation. I have cited your articles and publications extensively in my study.

I am asking for your permission to use the Intrinsic Motivation Inventory (www.psych.rochester.edu/SDT/measures/intrins.html) as the instrument for my study. Please let me know if this is possible.

Again thank you for your work and I hope to meet you someday.

Jon Ward
Clarke Central High School
350 South Milledge Avenue
Athens, GA 30605

--

Richard M. Ryan
Professor of Psychology, Psychiatry and Education
Meliora Hall-CSP
University of Rochester
Rochester, NY, 14627
<http://www.selfdeterminationtheory.org>
585-275-8708

APPENDIX D
PARTICIPANT ASSENT FORM

PARTICIPANT ASSENT FORM

I, _____, agree to take part in a research study titled, "Self-Determination: The Influence of Course Selection on Student Intrinsic Motivation" which is being conducted by Mr. Jon Ward, from the Department of Occupational Studies at the University of Georgia (542-1682) under the direction of Dr. Wanda Stitt-Gohdes, 542-1682. I understand that my participation is voluntary. I can stop taking part or choose not to take part without giving any reason, and without penalty. I can ask to have all of the information about me returned to me, removed from the research records, or destroyed.

The purpose of this study will be to compare high school students' motivation to succeed academically in required and elective classes.

If I volunteer to take part in this study, I will be asked to do the following things:

- 1) Complete a survey instrument consisting of 32 questions to be answered with a response of strongly agree, agree, disagree, or strongly disagree.
- 2) Provide grade level, gender, and whether I'm enrolled in the designated class "by choice" or "not by choice."

- The research is not expected to cause any harm or discomfort.
- Participants may choose not to answer questions that are uncomfortable to answer.
- The questionnaire will be completed during free study time.
- Time needed to complete the questionnaire will be 20 minutes.
- Participants will not be required to put their names on questionnaires, so no data will be linked to any specific participant.
- Any information that is obtained in connection with this study and that can be identified with me will remain confidential unless required by law.
- Participation in this research study will have no affect on course outcome or grade.
- My participation in this research study may lead to information that will provide educators with information concerning student motivation, specifically as to whether self-determination in selecting classes influences the student's level of intrinsic motivation to achieve academically.
- I understand that I am agreeing by my signature on this form to take part in this research project and understand that I will receive a signed copy of this consent form for my records.

If you have any questions or concerns you can always call me at (706) 357-5200 or call my teacher, Dr. Wanda Stitt-Gohdes at the following number (706) 542-4078.

Jon Ward, Researcher

Signature

Date

Telephone: 706 357-5200

Email: wardjo@clarke.k12.ga.us

Name of Participant

Signature

Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

APPENDIX E
PARENTAL CONSENT FORM

PARENTAL PERMISSION FORM

I agree to allow my child, _____, to take part in a research study titled, "Self-Determination: The Influence of Course Selection on Student Intrinsic Motivation", which is being conducted by Mr. Jon Ward, from the Department of Occupational Studies at the University of Georgia (542-1682) under the direction of Dr. Wanda Stitt-Gohdes, 542-1682. I do not have to allow my child to be in this study if I do not want to. My child can stop taking part at any time or choose not to participate without giving any reason, and without penalty. I can ask to have the information related to my child returned to me, removed from the research records, or destroyed.

- The purpose of this study will be to compare high school students' motivation to succeed academically in required and elective classes.
- Students will not benefit directly from participation in this research study.
- The results of this study will indicate whether focusing on manageable contextual factors such as choice and freedom, educators can create an environment in which students are more highly motivated and succeed academically.
- Students selected to participate in the study will be administered the instrument on a predetermine date during the same period. Students will either be in a required class or an elective class. Each student will provide their grade level, gender, and whether he or she is enrolled in the designated class "by choice" or "not by choice." The survey instrument will consist of 32 questions to be answered with a response of strongly agree, agree, disagree, or strongly disagree. The students will be able to complete the questionnaire in 20 minutes.
- This activity will take place during free study time and will not interfere with instructional time. If I do not want my child to take part he/she will be allowed to study as usual.
- The research is not expected to cause any harm or discomfort. My child can quit at any time. My child's grade will not be affected if my child decides to stop taking part.
- Any information collected about my child will be held confidential unless otherwise required by law. Participants will not put their names on the questionnaires; therefore, no data will be linked to any specific participant.
- The researcher will answer any questions about the research, now or during the course of the project, and can be reached by telephone at 706 357 5200 or email at wardjo@clarke.k12.ga.us. I may also contact the professor supervising the research, Dr. Wanda Stitt-Gohdes, University of Georgia Department of Occupational Studies, at 542-1682.

I understand the study procedures described above. My questions have been answered to my satisfaction, and I agree to allow my child to take part in this study. I have been given a copy of this form to keep.

Jon Ward, Researcher

Telephone: 706 357-5200

Email: wardjo@clarke.k12.ga.us

Signature

Date

Name of Parent or Guardian

Signature

Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your child's rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

APPENDIX F

INSTRUCTIONAL MEMO TO TEACHERS

INTEROFFICE MEMORANDUM

TO: TEACHERS ADMINISTERING SURVEY FOR JON WARD
FROM: JON WARD
SUBJECT: SURVEY INSTRUCTIONS
DATE: 2/23/06

Attached you will find a list of students that have submitted a signed Parent Permission form and a signed Participant Assent form AND a copy of the survey for each student listed. Only allow these students to participate in the survey.

Please administer the survey to your first period class on Wednesday, March 8.

Read the following instructions to the students:

- Use a pen or pencil and mark your responses on the survey sheet. Do not put your name on the survey.
- Complete the three sections at the top of your survey form indicating gender, grade level, and if you could freely choose.
- Read the directions and mark the appropriate response for each of the 32 statements.
- Do not mark in the shaded areas. Turn the survey into the teacher when finished.

Special Notes for Teachers:

1. For the purpose of this survey a required class is any Math, Social Studies, English, Science, or Foreign Language that will serve to fulfill graduation requirements for that subject area.
2. For the purpose of this survey an elective class is any non-core class that will fulfill the Elective requirement and/or fulfill the requirement for a Technology/Career Prep Seal or a Dual Seal.
3. If additional students have turned in their forms and you need extra surveys let me know ASAP via email. I will send the surveys to your room.
4. If a student is out, mark their name on the list and give them the survey on the following day.
5. Take up all surveys. I will send a student to pick the survey up during second block.