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Promoting freshman college student development using cognitive developmental theory presented in a Deliberate Psychological Education-based freshman orientation program

Cynthia Mansfield Loiacono
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**PROMOTING FRESHMAN COLLEGE STUDENT DEVELOPMENT USING
COGNITIVE DEVELOPMENTAL THEORY PRESENTED IN A DELIBERATE
PSYCHOLOGICAL EDUCATION-BASED FRESHMAN ORIENTATION PROGRAM**

A Dissertation

Presented to

The Faculty of the School of Education

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Cynthia M. Loiacono

May 5, 2000

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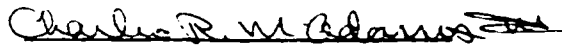
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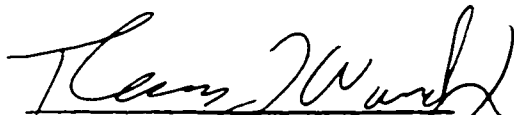
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Cynthia M. Loiacono

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**PROMOTING FRESHMAN COLLEGE STUDENT DEVELOPMENT USING
COGNITIVE DEVELOPMENTAL THEORY PRESENTED IN A DELIBERATE
PSYCHOLOGICAL EDUCATION-BASED FRESHMAN ORIENTATION PROGRAM**

ABSTRACT

Research indicates that the college experience has an impact on human development. Cognitive developmental theory provides a framework to describe stages of this psychological development. High-risk students face a struggle in colleges when they are expected to apply independent, conceptual, and abstract learning styles that are in conflict with their need for more structured, concrete and distinctly linear learning. This study explores cognitive development methods designed to promote the growth of high-risk college students in a freshman seminar. A quasi-experimental design was employed in which there were two experimental and two comparison groups. Students were pretested and posttested using the Paragraph Completion Method (PCM), the Learning Environment Preferences (LEP), and the Watson-Glaser Critical Thinking Appraisal (WGCTA). The method of instruction for the experimental group was a Deliberate Psychological Education Model (DPE) providing carefully guided reflection of the new role, a balance between support and challenge, with continuity for the students. Though results for the instruments were not significant, note they did indicate growth in the right direction. The study provided intriguing information and data for further research with this population.

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CHAPTER ONE

Introduction

Amazing discoveries, events and technologies have influenced the lives of today's college students. The influence of these changes on education was unforeseen in the development of many of the professors who teach these students. Those enrolled in college come from widely divergent backgrounds, and due to different life histories, they enter higher education with many different influences from their short pasts (Williams, 1998). Many students fit the category of the so-called "traditional" student who is eighteen to twenty-five, white, upper or middle class, and who lives on campus and takes full-time classes (Pace, 1998; Williams, 1998). Other students commute to part time classes while working and raising families. U.S. Department of Education statistics indicates a change in population away from the traditional 'mold'. In 1994, according to those statistics, 44 percent of all college students were over twenty-five years of age, 54 percent were working, 55 percent were female, and 43 percent were attending part-time (Levine & Cureton, 1998). It appears that many of these students may be unprepared for the complex demands placed upon them in the college setting.

Description of the Problem

College deans report increasing numbers of students, both traditional and non-traditional, who are in need of remediation before they can begin college-level work. Remediation in the basic educational building blocks of English, writing, and mathematics, is required by a third of incoming college students (Levine & Cureton, 1998). There is evidence to suggest that students in college are expected

to advance in thinking skills to include more critical and abstract capabilities (Pascarella & Terenzini, 1991). Students face a struggle in colleges when they are expected to apply independent, conceptual and abstract learning styles that conflict with their need for more structured, concrete and distinctly linear learning. The predicament creates great stress for the students who, as a result, are likely to experience college as imperceptible and obscure. It likewise creates a problem for the educational institution when it results in student academic failure. In a financially competitive environment, retention of students through graduation has become a priority in higher education. College administrators are unable to strategically plan for the growth and development of the academic community and needs of students when high attrition rates impact the college financial overhead (Jones & Watson, 1990). To remain competitive in the current environment, educational institutions must work to maximize retention of students, particularly those who are at high-risk of failure from the outset.

High-risk students are those who have the potential to obtain advanced learning but who have not demonstrated achievement of their educational goals (Fife, 1990). They commonly are without strong family or financial support; lack educational building blocks from elementary or secondary education; are minorities, women, or come from non-English speaking families; are first generation college students; are from uneducated parents; are international students; have physical or mental disabilities; or are affected by cultural ties which deny the value of education (Cunningham & Tidwell, 1990; Jones & Watson, 1990; Terenzini, Sringer, Yaeger, Pascarella & Nora, 1996). These

students are less likely to spend time on campus other than for their classes, and, consequently, may be denied opportunities for acculturation to the college learning environment that are afforded to more traditional, full time students in the gym, library, laboratories and student dorm rooms. Consequently, the time spent with educators and other students in the classroom often takes on a greater role in the acculturation process for high-risk students.

Theoretical Rationale for the Study

College Student Development

Students interact with the new environment of college and must develop new ways to understand and function in the new environment. Chickering (1969) identified student development as a criterion to be considered in assessing the effectiveness of educational institutions. The development of personal identity was the salient issue in the theory, with the college student cycling and recycling through the specific vectors of development with improvement in ability of comparison and contrast of thought respective to each successive vector. This cyclical movement creates a spiraling development as the student experiences more intricacy of thought and perception. Chickering identified seven developmental tasks that he felt that students needed to resolve chronologically during their college experience in order to reach the maturity of personal identity (Chickering, 1969). The vectors include: “developing competence, managing emotions, moving through autonomy toward independence, developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity” (Chickering, 1969, p. 505-510). The competence vector

includes competence along the physical, intellectual and interpersonal domains, and growth in any of the three domains can be a strong antecedent to development. Emotional management includes the ability to understand and handle negative as well as positive feelings and responses, to be flexible in responses, and to develop intelligent optimism and caring in decision-making regarding oneself and others. Moving through autonomy toward independence involves becoming emotionally self-sufficient; that is, separating from one's family yet maintaining a non-dependent emotional connection. The development of mature interpersonal relationships involves forming relationships with peers that are interdependent and supportive of personal self-sufficiency. One separates from family, creates relationships with peer groups, and then proceeds to personal self-sufficiency with high quality interdependent relationships (Reisser, 1995; Chickering, 1969). Establishing identity is seen as the pivotal vector and involves each of the previous vectors. To accomplish identity, one must define his or her sense of self in a way that is relatively stable and consistent. Purpose evolves through the development of persistent goals and is endorsed through the pursuit and accomplishment of those goals in lifestyle and vocation. A relativistic outlook, clarification of personal values, responsibility, accountability, and respect for other's values are central to the development of integrity. The developmental evolution incorporated in moving through the vectors that Chickering identified requires stimulation to occur (Widick, Parker, & Knefelkamp, 1978). According to Chickering (1969) college is the institution having the greatest potential to stimulate growth along each of these vectors. He

explained that a college could either support and enhance or hinder student development depending on the clarity of educational objectives, the culture of the institution, the residence arrangements and supports, and the curriculum.

A goal of colleges must be the intentional development of students through proactive planning to meet assessed developmental needs (Miller and Prince, 1976). Creamer (1990) agreed that student development must be an intentional focus of colleges. He described a variety of necessary college resources that create a holistic framework to support the development of the individual, the environment, and the person-environment interaction. He acknowledged that it was a daunting task to promote development with so many variables to consider. Kniefelkamp, Widick and Parker (1978) also emphasized the need for the theoretical, philosophical, and programmatic aspects of college to support overall student development. They identified the goals of higher education as being knowledge acquisition and intellectual command along with personal and psychosocial growth, which then lead to mature socialization and career preparation (Widick and Simpson, 1978).

As noted previously, Chickering (1969) identified human development as the purpose that integrates the elements of higher education. Intentionality, with regard to promoting development in college students, suggests that colleges must have the “tools” to promote developmental growth as well as to assess developmental change. Theories of college student development such as that of Chickering aid in understanding the developmental objectives of the college experience but shed less light on the nature and promotion of developmental

growth. One source for acquiring a broader understanding of human psychological development lies in the literature pertaining to various domains of cognitive developmental theory.

Cognitive Developmental Theory

Cognitive developmental theory provides a conceptual framework for delineating among distinctly different stages of human development (Dewey, 1960). Development occurs as a reorganization of thought about one's experiences that occur in progressive and qualitatively distinct ways, in a hierarchical sequence through permanent, unchangeable steps. Movement toward higher stages of psychological development represents a consecutively advanced developmental outlook that an individual will use for conceptualizing new experiences (Dewey, 1960). Special experiences are needed at precise turning points to evolve to a higher developmental stage (Piaget, 1970). From a cognitive developmental perspective, growth is not automatic; a person could suspend development and stabilize at levels below his or her potential (Sprinthall, 1978). This stabilization could occur through a lack of stimulus to development, or through illness or trauma, either mental or physical. Education comes about through experience, stimulating interaction between the person and the situation which results in significant deliberation, incentive, and self-motivation to gain understanding of the circumstances (Scheffler, 1966).

There are a variety of distinct developmental schemes that focus on different aspects or domains of human meaning-making. All of these schemes are united, however, by a shared group of central assumptions regarding psychological

growth and behavior (Knefelkamp, Widick, Stroad, 1976). The central assumptions of cognitive developmental theories are as follows:

1. Humans possess an inherent drive toward competency and proficiency.
2. Humans develop cognitively in stages through using their current understanding of the environment to process information.
3. Stages of growth differ qualitatively rather than quantitatively.
4. Growth in stages occurs hierarchically and sequentially.
5. Growth in stages occurs unidirectionally and irreversibly.
6. Growth occurs between the person and the experience in the environment but does not occur automatically.
7. There is a consistent relationship between the stage of development and the person's behavior and choices made in a particular circumstance.
8. Physiological and psychological changes determine cognitive development.
9. Development in stages occurs in distinct domains and does not generalize from one aspect of human processing to another.
10. Behavior occurs above or below the currently preferred stage and is not in a fixed position.
11. Cognitive development occurs universally across genders and cultures.

Research suggests that higher complexity in cognitive development supports more flexible and adaptive behaviors and provides an ability to process and respond to experiences more effectively than when functioning at lower stages of development. This is specifically supported by McAdams and Foster (1998) who found that college students at higher levels of development

understand and process in more abstract and cognitively complex ways. The authors proposed that those students who advanced in cognitive complexity would be better able to meet the multiple demands of college. Students with high conceptual level could more accurately comprehend situations and alter their responses to demands of the circumstances or surroundings than those at lower stages (Hunt, 1971). Those with low conceptual levels were not able to change behavior but rather followed old patterns even when the situations were new. Given the multitude of changes that are demanded of college freshmen, those with at higher levels of conceptual development would seem to have a clear advantage. Hunt's (1971) conceptual developmental scheme along with a multi-stage model of Intellectual Development proposed by Perry (1970) has particular relevance to the understanding of college student development.

Intellectual Developmental Theory

According to Perry, there is a strong propensity for cognitive development to occur during the college years if the necessary conditions are in place (White, 1970). The formidable task for college instructors is to practice "responsive versatility" (p. v) that is, to know where the student is developmentally and what the student needs in terms of intellectual stimulus (White, 1970). Responsive versatility requires the creation of learning situations in which students are encouraged to think and express their thoughts, so that the actual process of thinking can be explored (Perry, 1970). Perry accomplished this through interviews in which students were asked to describe their personal college experience during the school year. He studied male undergraduate college

students at Harvard over a nine year span from 1954 through 1963, and from his observations, formulated a scheme of intellectual development that centered on progressively complex student perceptions of knowledge and learning.

Nine non-rigid stages in the Perry scheme describe developmentally different thought structures that students use to view the world. Development is hierarchical and sequential across the scheme occurring in a wave like motion of surging and cresting in understanding and organizing before fully moving forward (Perry, 1970). The nine stages are grouped into four broad categories of dualism, multiplicity, and relativism and commitment in relativism. Dualism refers to thinking in absolute terms with only two sided views, right and wrong. Alternate truths are disruptive, and all knowledge rests with authorities. Multiplicity involves accepting more than one possibility while continuing to hold belief in one's opinions. Relativism permits all comparative knowledge to be incorporated and seen in contextual terms. Small pockets of absolute two-sided views continue to be held. Authority is seen as a source of additional knowledge, and views can be multiple and part of greater systems of knowledge. Commitment in relativism is reached when there is ownership of personal beliefs, even though there is awareness that other choices are always available.

The college experience can be a time of discovery and awakening where, according to Perry (1970), it is essential to move from dualistic early positions into the higher, more relativistic positions. The setting of most colleges involves such a diversity of culture and diversity of subject matter, that coming in contact with the values of other students is inescapable and stimulates both a need for a

relativistic outlook on life and an opportunity to develop such an outlook.

Understanding of the process of development was advanced by Perry (1970)

when he looked away from the singular self-development of the Freudian ego.

Perry (1970) researched individual development according to how the individual understands himself or herself, in relation to others and to the diverse environment.

Conceptual Developmental Theory

Conceptual level refers to one's ability to use abstract thought in solving problems (Hunt, 1975). Conceptual Systems Theory (CST) is based on the varying ways a person behaves, depending on how he/she makes sense of the environment (Harvey, Hunt and Schroder, 1961). Conceptual level and its corresponding behavior are the products of the person in interaction with the environment (Holloway and Wampold, 1986). Research into student effectiveness in learning requires knowing the manner in which students learn, the way in which they are taught, and their manner of interaction in the educational environment (Hunt, 1975). Behavior is a function of the person and the environment ($B = f[P, E]$) (Lewin, 1951). When applied to college student learning, this formula suggests that learning (B) is a function of the interaction between the unique makeup of the student (including developmental level) (P) and the methods of instruction used in the classroom (E) (Hunt, 1975).

On the basis of the BPE paradigm, Hunt developed a Conceptual Level Theory for describing and facilitating growth in an individual's level of conceptual complexity (CL) (Hunt, 1975). He proposed that appropriate

matching of the structure of the environment to the CL level of the student would optimize learning. Hunt's conceptual levels are presented as a stage scheme in which the complexity of a person's interaction with the environment is represented on a continuum ranging from concrete to a cognitively complex, abstract way of knowing (Khalili & Hood, 1983). Hunt's model of conceptual complexity contains four stages.

Those at the lowest level of complexity have little flexibility or adaptation in problem solving and require precise structure in a learning environment. Ambiguity creates dissonance, and absolutism creates comfort. The highest level of conceptual complexity includes those who can differentiate among many environmental stimuli easily, notice and hold multiple perspectives for decision making, and function in responsible and independent ways. Such individuals are autonomous and require little structure. Knowing the conceptual level of a high-risk college student could aid an educator in providing an appropriate accommodation between the conceptual level of the student and the requirements of the classroom environment (McAdams, 1988). Remedial programs in colleges could be designed to facilitate appropriate student-to-educational environment matches to maximize learning potential and promote developmental growth. A potential benefit of the achievement of appropriate student-to-classroom matching may also be the enhancement of critical thinking, a skill that appears to be central to success in the modern-day college environment.

Critical Thinking

The notion of critical thinking dates back to ancient Greece with Socrates and has been an educational goal throughout history (Cassel & Cogleton, 1993). Research regarding critical thinking and students has been conducted for many years in colleges (Pascarella & Terrenzini, 1991). The 1985 report of the Association of American Colleges entitled “Integrity in the College Curriculum: A Report to the Academic Community”, identified critical thinking skills as a minimum expectation of all students. By 1987, California had established critical thinking as a graduation requirement in nineteen sites of the state university network. The National Education Goals Panel (1991) determined that one of the nationwide educational outcomes desired was enhancing critical thinking.

Critical thinking is defined as “reasonable reflective thinking that is focused on deciding what to believe or do” (Ennis, 1962, p. 14). According to Ennis (1985) twelve conditions are necessary to the process of critical thinking that include: (a) clarity of the problem or question at hand, (b) awareness of the reasons for the issue, (c) in-depth knowledge of the issue, (d) reliance only on valued sources of information about the issue, (e) mindfulness of the entire circumstances surrounding the issue, (f) openness to alternatives while not losing sight of the original problem, (g) belief in the merits of the information from only reliable sources, (h) ability and willingness to hear others’ beliefs and therefore, view issues through others’ beliefs (i) openness to a change of opinion when understanding changes (j) willingness to invest necessary time and energy to make good decisions, (k) development of an organized approach to decision

making to assure sound decisions and (l) awareness of the impact of the issue on others (Ennis, 1962). Meeting the conditions necessary to critical thinking demands higher order cognitive abilities (Ennis, 1985).

Critical thinking, in broad terms, includes examination with intent to determine whatever the problem is, and creating either hypothesis or a solution about the circumstances that encompasses all the known information regarding the problem, and having the ability to support this hypothesis or solution with persuasion (Kurfiss, 1988). Kurfiss (1988) sees the critical thinker as one who would aggressively seek and welcome all information and argument available.

Classroom instruction is a fundamental method available to enhance students' methods in critical thinking skills (Dressel and Mayhew, 1954). Higher order thinking is achieved in classes centered on student needs and discussion rather than the instructors' needs and lecture format (McKeachie, 1970). In 1975, reviewing McKeachie's previous research, Kulick and McKeachie concluded that college education must reach beyond simple knowledge, and seek to enhance students' ability to think critically.

There is a need for more research in the area of critical thinking skills (McMillan, 1987). While McMillan (1987) could not determine any particular causative factor for gains in students' critical thinking while in college, he recommended that studies should be conducted to determine the most effective measures of critical thinking and to determine the instructional methods that are most conducive the promotion of critical thinking. The current study will address these recommendations through the use of a standardized measure to assess

critical thinking development following the implementation of a Deliberate Psychological Education-based instruction format.

Deliberate Psychological Education

Deliberate psychological education (DPE) refers to a fundamental teaching learning framework for curriculum development and instruction that is designed to promote psychological growth and development (Peace, 1995; Reiman, 1995). This model combines a plan for academic and developmental growth that translates to improved life management skill beyond the classroom.

The keystone of the DPE is the new role taking with a guided reflection to promote meaning and learning (Reiman, 1995). The taking of a new role with practice in guided problem solving related to the role affords a means of encouraging growth through a gradual process of constructing more complex understanding. The most vital aspect of DPE may be the guided reflective component since it is often difficult to extract complex meaning from experience (Reiman, 1995). One's level of cognitive complexity determines how well he or she can perceive and analyze to reach meaning from experience (Reiman, 1995). The conditions necessary for DPE implementation include:

1. the provision of learners with a significant new role-taking experience that includes new active learning;
2. careful guided reflection on the experience of role;
3. a balance between the experience and the reflection;
4. support for the disequilibrium or dissonance that can accompany new role-taking with the challenge to proceed; and

5. continuity for sustained development.

DPE has been effectively implemented in both classroom and non-classroom settings. Chickering (1969) studied college student development because he believed that future leaders were being educated in our colleges and that higher level cognitive development would produce more effective future leaders. He concluded that development could occur in college, and it was the responsibility of the college to improve the academic environment to support effective developmental change. DPE offers one means of classroom interaction and educational method to achieve this developmental change. High-risk college students often require more resources than non-high-risk students in order to achieve in college. A greater understanding of expected developmental change combined with an understanding of high-risk student needs could bridge the gap between their attrition and a successful college career. Developmental research can shed invaluable light on the specific impact of the college experience on the thought processes and behavior of high-risk college students (Pace, 1998).

Overview of the Research

Nature and Purpose of the Study

This study examined the impact of a deliberate psychological education curriculum on the academic and cognitive development of high-risk college freshmen. The impact of the curriculum on students' intellectual development, conceptual complexity, and critical thinking was the object of the exploration. A selected review of current literature regarding college student development is provided. Also included is a description of the instruments to be used to measure

cognitive developmental growth and critical thinking. The design and methodology, the results of the study, a critique of threats to the reliability and validity of the study, and a discussion of the utility of the findings are presented in detail.

Definition of Terms

Intellectual Development: Intellectual development is defined as positive movement along the Perry Scheme as indicated by student scores on the Learning Environment Preferences (LEP) (Moore, 1989). The LEP is a measure of the positions two through five of Perry's Scheme (1970) of intellectual development.

Conceptual Development: Conceptual Development is defined as positive movement along the Hunt Conceptual Level Scheme as indicated by student scores on the Paragraph Completion Method (PCM) (Hunt, Butler, Noy, & Rosser, 1978). The PCM is a measure of a person's conceptual level based on Hunt's (1975) conceptual development theory.

Critical thinking: Critical thinking is defined as positive movement along the continuum of critical thinking as indicated by the scores students achieve on the Watson-Glaser Critical Thinking Appraisal, Form S (WGCTA) (Watson and Glaser, 1994). The WGCTA is a measure of a person's critical thinking ability in the areas of inference, recognition of assumptions, deduction, interpretation and evaluation of arguments.

Deliberate Psychological Education: Deliberate psychological education (DPE) is defined as an educational curriculum designed to promote personal stage

growth in thinking, problem solving and flexibility. DPE is grounded in the work of Mosher and Sprinthall (1971).

Research Hypothesis

The primary objective of this research was to produce empirical data to substantiate a central hypothesis that cognitive developmental theory presented through a deliberate psychological education model of instruction is an appropriate basis on which to promote development of high-risk college freshmen. Several specific hypotheses support this objective.

Sample and Data Gathering

Students in two sections of the College Experience 101 course at a southeastern university during the Fall 1999, comprised the intervention groups. The comparison groups were students in two other sections of the same course taught at the same university. Both the intervention and the comparison groups were pretested at the beginning of the semester and posttested at the end of the semester. Demographic data was collected from each group during pretesting.

Limitations

Due to the policy of the University that allows students to develop their individual schedules rather than be assigned, the students were not randomly assigned, but were self-selected in each of the available sections according to course fit and personal choice. This and other threats to internal and external validity are discussed.

Summary

The first chapter presented issues facing high-risk college students and a description of college student development. Theories included college student development, cognitive developmental theories (encompassing intellectual and conceptual development), and critical thinking. The concept of deliberate psychological education was introduced. A research overview was presented including definitions of terms, research hypotheses, and limitations of the study. The second chapter will present a selected review of the literature.

CHAPTER TWO

A Selected Review of the Literature

This chapter will examine the theory and research regarding the remediation and support of high-risk college students. It will also examine cognitive-developmental models that have been used in college development intervention programs created to support retention of high-risk students in college education. Research findings providing empirical support for cognitive developmental paradigms used effectively in college education will be discussed, including the Perry Scheme, Conceptual Level, critical thinking and Deliberate Psychological Education.

The Nature and Effectiveness of Current Remedial Models and Programs for High-Risk Student Development

Murphy (1989) identified 1911 at Reed College as the year in which the first college seminar credit to support freshman development, was established. Courses devised to support the transition to college life were prevalent in the 1970's, and research regarding success of courses, as indicated through college retention, has been prevalent since the 1980's (Burley, 1994). Studies have explored the effectiveness of college development intervention courses and have compared those students who received such intervention courses with those who did not receive the courses. Additional studies have investigated the courses taught the instructional strategy used, or the focus of the university department that implemented the program. Criticisms of these studies include poor design due to lack of suitable control groups or to lack of longitudinal designs which

have been determined to be the most appropriate design for retention research (Boudreau & Kromrey, 1994).

The initial two to six week period of the freshman college year is considered the most crucial adjustment period for students (Levitz & Noel, 1989). For a variety of reasons, a third of freshmen leave college before the end of the second year. Lack of academic preparedness, unrealistic expectations, lack of or unclear goals, and difficulty adjusting to college life, are listed as reasons for student attrition. Students are more likely to continue in college when they are supported in developing knowledge of themselves and their surroundings, and in developing study skills with awareness of college resources available (Levitz & Noel, 1989). Seminar courses have been offered to aid in this development and reduce the rate of student withdrawal prior to graduation.

In an overview study, Fidler and Hunter (1989) classified seminar courses according to a variety of focus or emphasis variables. Courses emphasized student retention; improving student academic success; introducing and encouraging involvement in student activities and campus services; exploring individual personality development; and support for subgroups such as those defined by race or ethnicity. Burley (1994) conducted a meta-analysis to study the effectiveness of college development courses on student success. He analyzed studies that compared students enrolled in college development courses against comparison groups of regularly enrolled students. The results indicated that programs that were theory based, competency founded, and well planned for college student development, provide better results and reduce dropout rates. The

characteristic types of courses offered included student retention models, social adjustment models, and whole person development models. The following sections will look at these models developed as resources for students to be successful in college.

Student retention models. Students may have been in school for many years, but this is no guarantee that they know how to study or have developed methods or strategies for learning (Ellis, 1998). Student retention programs are developed to support a broad application of study skills and behaviors necessary for retention and success in college leading to graduation. Courses may include instruction in time management, methods of study, techniques and methods of writing, note taking, memory, test taking, reading, and thinking. Additional topics may include relationships, health, diversity, and campus resources and services. The purpose of the student retention course is to create a level playing field, where all students are exposed to and have an opportunity to learn and experiment with techniques, methods and services available to promote their college success.

A specific program designed to promote retention at West Virginia University (Clarke, 1992) was developed to aid incoming students with specific study skills for college in the areas of reading, math, or study deficits, coupled with individual life management skills such as time management, networking, and problem solving skills. Findings indicated that this course successfully assisted many students to become academically independent. Case studies were presented of student's personal stories of success. The students described the use of "self-

management and academic problem solving skills” learned in the course; applying study skills successfully and obtaining grade point averages greater than 2.0; using support services on the campus as needed and retaining in the college. Cases of two students, who continued their college studies, were presented in the study. A limitation of this type of study is the small number of student respondents, which limits the applicability of the results. The value of this study is the close look at the development of students in their freshman year.

Wilkie and Kuckuck (1989) conducted a three-year study of grade point average and retention rates of students considered at high risk of failure at the Indiana University of Pennsylvania’s branch campuses. Those who were successful in completion of a very structured freshman orientation course had a higher grade point average and higher three-year retention rate than did a control group (Wilkie & Kuckuck, 1989). The study followed 183 students, 90 of whom were assigned to an intervention group and 93 to a non-intervention control group. In the intervention group, those who received a C or better were considered successful and comprised the actual experimental group of 74. The orientation course provided instruction in study skills, time management, learning styles, tests, note taking, decision making, developing goals and understanding values, communications, as well as university policy, resources, and career assessment. Grades were determined through participation in large and small groups, quizzes and test and assignments. Grade point averages were predicted at the beginning of the semester and compared to those obtained at the end of the semester and again at one year, two year, and three year increments. The

retention rates were measured at each of the aforementioned increments and after the course. End of the semester course evaluations by 90% of the students positively supported the course goal of informing students of methods and procedures necessary for college, and 69% of these students felt the course had been pertinent for them. One limitation of the study is that by eliminating those who received less than a C, information was lost regarding struggling students, which could have broadened the knowledge outcome of the study. It nonetheless demonstrates that involvement in the freshman seminar supported acculturation in academic and social or emotional levels to the college environment that resulted in success.

The University of South Carolina studied retention for 26 years and concluded that there was a higher sophomore retention rate in students who participated in the freshman seminar. That rate was statistically significant for ten of the twenty-six years. The South Carolina data is considered conservative due to the inclusion of all seminar students, regardless of student success in the course. When results were analyzed for the 1986 freshmen including all students, there were no significant results, however when only the successful freshman students were used in the analysis, the number rose 3.4 percentage points to become significant. This demonstrated that for those who passed the freshman seminar course, the retention rate was higher than for the rest of the freshman class. This is valuable to this study because these students often are less well qualified upon entry to college but there was no significant difference in year-end, freshman cumulative grade point average in those who attended the seminar and those who

did not. The graduation rate of the seminar students was significantly higher at 56.2 percent, than those who had not participated 50.7 percent with a z-score; $p < .01$.

Several additional studies are presented as support for the positive effects of the use of the freshman seminar for retention in college. In 1987, the University of North Carolina at Charlotte, conducted a comparison study of freshman seminar students to non-seminar participants. The students were matched on predicted grade point average and reported higher grades for seminar students ($p < .05$). The seminar students also developed more contact with faculty outside the classroom. Control groups were used to assess a freshman student seminar program at Sacramento City College and reduce selection bias (Fidler & Hunter, 1989). Matched groups were formed on recommended reading and writing placement, and age and sex. The programs were a one-hour orientation, a four-hour orientation, and a freshman seminar, and were compared on grade point average and retention. The freshman seminar students had a second semester return rate of 91.4 percent, contrasted with 81.7 for the four-hour program, and 78.8 for students in the one-hour program (p. 219). Those in the seminar program earned almost one full grade point higher and completed approximately three more semester units of college work.

Retention rates were also studied using an elective seminar at Georgia College for freshmen and transfer students. The 51 students in the 1981 and 1982 fall semesters were compared with nonparticipating control group students having SAT scores; above 800 and those below 800. Those in the seminar groups,

including both SAT classifications, showed significantly higher retention rates after three quarters and after six quarters (chi square; $p = .05$) (p. 219). Columbus College compared 1984 retention rates between students in its freshman seminar and those not enrolled. Those enrolled in the seminar had a significantly higher retention rate, 58% compared to 48% for non-participants. When further categorized into regular and developmental students, the regular students in the seminar continued to have higher rates, where the developmental students presented no difference in retention rates between those enrolled in the seminar and non-participants. These findings indicate that retention is enhanced by the freshman seminar. Fidler and Hunter (1989) do not identify the seminar as the cause of retention increases but instead indicate that a positive relationship exists between freshman seminar students and retention.

Fidler and Hunter (1989) studied the relationship between academic performance and the freshman seminar of Sacramento City College. Students were compared in matched groups and freshman seminar students were found to have an average of 0.71 grade points higher than non-seminar participants' scores. The seminar participants acquired an average of 2.76 more units of college semester credit than the non-participants did. The results of both comparisons were significant statistically with a z-score; $p < .05$ (p. 222).

Fidler and Hunter (1989) reported on a number of seminars considered supportive for students who enter as high-risk students or who enter with less academic preparation. These seminar students have the same retention rate as those who enter as stronger students and therefore, are not required to take the

seminar. At Clarion University of Pennsylvania, those high-risk students admitted in the fall of 1982 attained the same three-semester retention rate and grades, as did the regularly admitted students who did not participate in the seminar. The students who did not participate, and were considered non-high-risk students, began their college work with significantly higher SAT means (Fidler & Hunter, 1989). Francis Marion College reported no significant difference in retention rates of their high-risk seminar students and non high-risk students. The seminar they provide serves the highest-risk students and apparently compensates in areas of the students' needs. Marietta College reports no significant difference in their retention rates between those in the seminar and those not. The college has an above-average retention rate, overall, and the college suggested that this is a limitation in comparison to other institutions (Fidler and Hunter, 1989).

The previous studies demonstrate the value of the freshman seminar to support the student in achieving success in college. The seminar does not cause retention but is associated with improved college student retention (Fidler & Hunter, 1989). Assessing the needs of the high-risk college student can include many factors. The outlook of the freshman seminar for retention provides important information but is not sufficient in determining the requirements for student success. Therefore, many programs are created to promote overall acculturation to the college campus environment and to encourage social success as well as academic success and retention. The following studies will look at the models of social adjustment.

Social adjustment models. Students are social animals, and react to peer pressure from various previous relationships and those they will form on the college campus (Creamer, 1990). Students arrive on campus with values, beliefs and systems of behavior from their family, friends and former social relationships, whether they are coming straight from high school or have had other types of interim experience. An environment which is supportive of the social needs as well as the academic needs is critical to the success of the student (Creamer, 1990). Courses based on social adjustment emphasize personal as well as academic development to include connecting with others on campus and learning about personality development to understand the impact on college success. The purpose of the social adjustment models is to enlarge the student's self-awareness and self-understanding. Students aware of their personal responses are more able to make choices to enhance their social transition to the campus environment and life. The following studies were selected to demonstrate the application of freshman seminars with a focus on personal awareness and development to encourage and support college success.

In a study at Eastern New Mexico University, Walsh (1985) explored college student adjustment. The focus of the inquiry was on academic and personal growth, as well as transition to college life. The grade point average and retention rates demonstrated the students' academic achievement, whereas the attitudes about self and the university indicated the personal development. The Tennessee Self-Concept Scale was used as a pretest and posttest measure of self-concept. The Total P score, a measure of self-esteem, was the single statistic

reported. Satisfaction with university life was assessed using two questions from the Student Opinion Survey regarding “Concern for you as an individual” and “the college in general” (Walsh, 1985, p. 311). Students could chose from very satisfied to very dissatisfied. The program provided students with a manual composed of six modules that introduced student development, academic interests, career development, time management, decision making and campus resource information. It was delivered as a self-guided course with group classes at the beginning and end of the semester and three individual conferences during the semester. One hundred twenty full-time freshmen students were randomly assigned to two groups, treatment and control, but with attrition, 27 remained in the treatment group, and 35 remained in the control group.

Those students in the treatment group, who received the experimental/student development program, were more satisfied with their college career as shown by higher grades than the control group. The Total P score was greater for experimental students than control students, but not significantly greater. The researcher concluded that attending college provides a positive influence on the freshman student self-concept. Retention rates in the student development treatment group of this study equaled those of the control group. A limitation may be that the course did not begin until a few weeks into the semester and differences may have been more significant if the course had begun during the orientation of freshmen students. Usefulness of the study includes the fact that the academic professors, who deal with the scholastic student needs, and the university student services personnel, who serve the

student's personal and environmental college needs, became more involved with each other's activities and domains because of this study (Walsh, 1985). This was considered a positive approach that provided a broader and more comprehensive outlook for students and has continued at Eastern New Mexico University. This study of student development curriculum demonstrated students gaining more satisfaction with the college experience and better academic performance for the experimental group than the control group. Usefulness of this study also includes the note of the authors that early intervention with freshman is important because the intention to persist or withdraw from the college environment generally is made by students in the first two months of their semester (Walsh, 1985).

A study of a program designed to promote the transition to college and provide a supportive social atmosphere for freshman was conducted to determine its effect on academic and college adjustment (Schwitzer, McGovern, & Robbins, 1991). This study created a connection between the planned intervention and the outcome expectations and allowed ongoing student communication regarding the impact of the intervention. Researchers used a model with three levels of goals: immediate, intermediate and ultimate. The Course Satisfaction Rating assessed immediate satisfaction with the course design and content, and the Classroom Environment Scale measured the student assessment of the classroom psychosocial environment. Together these offered an outlook as to how the student perceived the seminar's supportiveness to their entry into college life. The Campus Information Survey, an assessment of the procedures of the university and the campus and resources, and the Student Adjustment to College

Questionnaire, an assessment of the student perception of college life adjustment measured intermediate goals. These scales assessed the students' level of information about the university and their satisfaction with adjustment to university life over the semester. The ultimate goal of the course was student success in the first semester measured by the GPA and retention. Of the 113 freshman volunteers, all participated in the treatment since there were no control groups. According to the findings, students increased their knowledge of the university and the social environment, and all maintained good academic status with GPAs comparable to those of upper-classmen. One hundred per cent of the students returned for the following semester. The study allowed students to immediately register their satisfaction or dissatisfaction with the course so that changes could be made in development of the program. Limitations of the study include that the study did not identify the location of the university and the three authors were from three different sections of the country. There were no comparison groups, and there was no long term tracking of the students which would have allowed for better assessment of outcomes. Despite these limitations, the study addressed concerns of student development and retention and provided an effective means of integrating the students into campus life.

Robyak and Downey (1979) conducted a study to explore the personality preferences of students who take the freshman seminar course at Kansas State University. They enrolled underachievers and non-underachievers in the program and looked at personality preferences in social adjustment. Students who have capability and therefore could be successful in college, but demonstrated low

grades were using seminar courses to enhance development toward college success (Robyak & Downey, 1979). Interestingly, these particular students also exhibited a high preference toward introversion as a personality trait. Since introversion involves focus on the student's inner world, the authors felt those students could accomplish work due to their focused attention, without learning new skills. Those who struggle academically who are introverts may have difficulty due to time spent in reflection and not in production of academic requirements. The authors felt that the students who focused on the outer world and did not have a strong knowledge of study skills would demonstrate deficits, and also, would have distractions from their outward focus and too much time directed toward people and things, rather than studies. The authors were surprised with the findings of the study that indicated the knowledge of study skills, and lack of application of study skills was similar for both the non-underachievers and the underachievers. Introverts reach understanding through reflection within, while extroverts seek more interactions from without to reach understanding (Robyak and Downey, 1979). The study suggested that the personality or Meyers-Briggs Type Indicator preference of students could be critical in understanding the effectiveness of student development courses. The authors determined that the personality preference of the student should be considered in the design of the instructional format. The social adjustment of the student would be fostered through increased knowledge of the personality type indicator and the implications this would have toward the student applying known behaviors to

achieving college success. Limitations include the less than perfect ratio of respondents to variables.

The programs mentioned above approach college success through understanding personal development and determine success by grades or retention rates. This broader, more comprehensive approach to promote a supportive personal development for transition to college life is demonstrated as important but is not sufficient to stem the losses from attrition. Additional programs are described with curriculum plans that include overall development of the whole student.

Whole person development models. Models advanced to address the development of the whole person are created to promote environmental, academic, and personal success for students. Deficits will vary for the students entering higher education from a variety of cultural, educational and lifestyle backgrounds. Therefore, the courses offered in such programs are broad in scope and encompass the overall development Chickering (1969) described in his vectors to include competence, emotions, autonomy to independence, interpersonal relationships, identity clarification, purpose and integrity. Success in these courses is often measured by retention or grade averages. The purpose of the courses is to offer overall development to support persistence and success for students in college.

The freshman seminar according to Murphy (1989) provides needed support for those who are less prepared for college in personal development and therefore, are structured to address those needs for the seminar students. Murphy described

five models of freshman seminar programs. They include the “Success/Survival/Orientation Model, the Academic Model, the Professional Model, the Curricular Model, and the Eclectic Model” (pp. 96-97). The success/survival/orientation model extends the orientation process with survival skills, campus resources and study skill and special topics relating to the whole person, such as drug use and sexuality, along with belonging on the campus. The academic model focuses on intellectual development. The professional model introduces the professional self-image, the professional jargon, and successful specialists in the profession. The curricular model involves those from student affairs and academic affairs working together to present seminar courses for the students in a broad range of student support topics. The eclectic model is a hybrid of the previous models and is often required for students. The rationale used here is that students who enter college are selected because they have test scores indicating they can graduate. If they do not graduate, there must be other variables hindering their success and therefore, the freshman seminar is developed to support student success. Success is measured by retention, which is the most universal indicator of success in colleges. Student return rates for the semester following intervention or graduation rates are classified as success. When reviewing studies relating to freshman seminar courses, the students enrolled in the course always had more positive retention rates than freshmen not enrolled in seminar courses (Murphy, 1989). However, in one study, Murphy (1989) reported that there was no difference in retention rates among the treatment at risk group and the control group. This study is important because it supports those

more at risk of failure, as being able, through the involvement in a seminar, to keep abreast of the students who did not enter college at risk. Retention rates are 1% to 10% higher for those who take the courses and the graduation rates are 6% higher for those who participate in freshman seminar programs (Murphy, 1989). Another importance of this study is that faculty supported student identified reform when it was demonstrated as needed in curriculum and learning programs. Students on campuses who become this involved in reform are demonstrating personal growth as well as scholastic growth (Astin, 1977).

Eison and Pollio (1985) observed the learning styles of introductory psychology students using a sample of 214 members of the student population enrolled in an introductory psychology course. The authors concluded that learning styles comprise many dimensions that affect the way students learn and that the whole person in combination with the environment determines the behavior exhibited by the student. The authors suggested that learning styles of students might affect success in the college setting. This study has value in this research because it includes many factors of the whole person as student; including personality, attitudes, study skills, habits and motivation, and relates them to promoting learning.

Six questionnaires were used including the LOGO II Scale, which was completed in the classroom, and five other tests were completed outside the classroom. The LOGO II Scale is divided into learning orientation and grade orientation categories and measures attitudes and behaviors regarding these categories. The additional tests included the 16 Personality Factor Questionnaire,

Form C, a personality characteristic scale; the Survey of Study Habits and Attitudes (SSHA), a survey used to determine study motivation, methods, effective procedures and attitude; the Achievement Anxiety Test, a self-report indicator of test anxiety significance; the Levenson IPC Scale a measure of locus of control; and the Meyers-Briggs Type Indicator Form G, (MBTI) a measure of personality preference types on the eight scales in four groupings. A factor analysis was conducted on the variables, and resulting values determined significant were interpreted. Summarizing the information gained: 1) work habits did not correlate with anxiety; 2) strong locus of control correlated with self-sufficiency; 3) creative learning. Locus of control, and intellectual interest and attention to detail correlated; 4) tension and suspiciousness correlated with restlessness; and 5) college GPA and age did not correlate with any of the scales. The authors concluded that a repeated study would gain the needed information from using only four of the tests including The MBTI, LOGO II, SSHA, and LEVENSON IPC. This information would be useful for college students and those who teach them, because having more whole person knowledge would aid the student in learning to adapt to the environment of the college campus as well as to the academic curriculum. Limitations of the study included the belief that too many tools were provided to the respondents.

While no college stated the seminar caused retention rates to increase, many declared the evidence lends support to conclude a positive relationship exists (Fidler & Hunter, 1989). Seminars cover many topics of the freshman experience. The positive relationship might exist in support between the students

and faculty, or adjustment of the students and college social life, or the relationship between students and reduction in stress associated with the freshman year, or in ease of locating student services on campus.

Research at the University of South Carolina determined that seminar participants achieved grade point averages similar to the non-participants in practically every year of a fourteen-year study. The seminar students had lower weighted scores using SAT scores and high school class ranking. Clarion University of Pennsylvania and Georgia College reported similar grade point average results in their seminar students (Fidler and Hunter, 1989).

Many of these studies demonstrate that the seminar courses are associated positively with academic performance for students. Studies report personal gains beyond the freshman experience in social adjustment and development of the whole person, such as self-sufficiency and internal locus of control, interest in intellectual matters and a personal responsibility to continue learning. The revolving door of entry into and departing from college still persists for many students. For high-risk students the goal is to stabilize their enrollment, through retention until graduation. Widick and Simpson (1978) described the goals of higher education to include intellectual competence with knowledge achievement, accompanied by development of personal identity through psychological growth, which results in adult role socialization and preparation for a career. High-risk students need the skills offered in seminar programs as well as the personal development, but they also need the ability to think critically (Ennis, 1985). Much growth is supported through critical decision making in working through

the problems of developing independence (Chickering, 1969). The freshman seminar would seem to support the development of critical thinking as well as encourage students to seek further education. The seminar is a learning situation where students can actively practice challenging themselves on issues with which they are familiar and seek new information through learning to critically analyze problems with classmates in stimulating debate (Ennis, 1985).

The Nature of and Need for Critical Thinking

Critical thought is employed when precise or decisive answers are unknown and all the necessary information to conclude such an answer is not available. Kurfiss (1988) defined critical thinking in broad terms to include: 1) examination with intent to determine the nature of the problem, and, 2) creation of either hypotheses or solutions about the circumstances that encompass all the known information, and, 3) supported persuasion in describing the conclusions or possibilities. She sees the critical thinker as one who would aggressively seek and welcome all information and argument available. There are two results of this inquiry. The first is the hypothesis or solution and the second is the supporting defense. When the individual defends his/her belief or hypothesis, the reasons for the conclusion must be declared. This is especially necessary if the problem is ill structured and does not have a single correct answer. Kurfiss (1988) stated that the creative aspect of critical thinking is in the searching phase where the individuals' knowledge and inquiry ability are combined to seek answers for the unknown. The justification aspect of critical thinking occurs when conclusions

are woven together to present an effective persuasion of the new belief or hypothesis.

Critical thinking improves in those who attend college (McMillan, 1987). In 1984, the Board of officers of the American Philosophical Association announced to their members that they should offer services for the development of curricula to educational authorities interested in developing critical thinking programs (Ennis, 1985). The National Institute of Education in 1984, recommended in its report, "Involvement in Learning: Realizing the Potential of American Higher Education", that curriculum development provide for improving students' ability to adapt in a changing world and solve problems through analysis, synthesis and verbal and written application. The 1985 report of the Association of American Colleges entitled "Integrity in the College Curriculum: A Report to the Academic Community", required critical thinking skills as a minimum expectation of all students. California, by 1987, considered critical thinking a graduation requirement of nineteen sites of the state university network. The National Education Goals Panel (1991) determined that a desired education outcome was critical thinking.

Dressel and Mayhew (1954) identified classroom instruction as a fundamental method available to enhance students' methods in critical thinking skills. McKeachie (1970) determined that higher order thinking is achieved in classes centered on student needs and discussion rather than the instructors' needs and lecture format. Kulick and McKeachie (1975) concluded that college education

must reach beyond simple knowledge acquisition, and seek the ability for students to think critically.

Ennis (1985) incorporated five significant concepts in his definition of the practical activity that he called critical thinking. The key concepts include “practical, reflective, reasonable, belief, and action” (Ennis, 1985, p.14). He based much of his definition on the ability to reason and included skills, creativity, logic, reflective decision making. Ennis (1985) explained activities necessary to critical thinking: 1) to clarify the problem or question; 2) to determine reasons for the issue; 3) to be knowledgeable; 4) to give credit to and only rely on valued sources; 5) to be mindful of the entire circumstance; 6) to be open to alternatives while not losing sight of the original problem; 7) to profess a belief that merits all of the information and support from all positions you can muster; and then, 8) to be aware of its impact on others. In addition, it is necessary to have the aptitude for clarifying issues and arguments; to have enough information to judge resources; and the ability to have an ability to reach conclusions through methods of inference to include deduction, induction, and evaluation. Ennis (1985) described the need to support the conclusion reached with evidence in a form of communication that is respectful of others. He described these factors of critical thinking as being overlapping and interdependent. Subject matter may be used in classrooms to teach the capacity for critical thought, and Ennis (1985) described the goal of classroom teaching as developing an understanding of critical thinking so as to transfer it to new circumstances.

The complex global society places greater demand on students developing the ability to reason and the ability to express this rational competence (Kurfiss, 1988). Studies in the literature have attempted to inquire into the nature of critical thought and the promotion of critical thinking in the classroom (Ennis, 1985).

College Attendance and Critical Thinking

McMillan (1987) reported the need for more research in the area of critical thinking skills. He agreed with Pascarella (1985) that critical thinking skills improve while students attend college. McMillan (1987) could not determine any particular causative factor for gains in critical thinking but provided some suggestions for further study. He recommended coordinating interventions with measurement instruments as well as possible, to ensure that one was testing what one was teaching students. The individual capacity and style of the instructor should be considered in the variable mix, as individual capabilities and style may affect the intervention. Students beginning certain colleges that look for critical thinking skills upon entry may change over time, in ways not assessed on some instruments of critical thinking. The demands for critical thinking in the student environment must be viewed along with the students' skill levels.

Pascarella (1989) investigated critical thinking and began in the junior high school year. He studied college students and comparable non-college-attending individuals from the same five high schools. The author collected scores from respondents that included: the Watson-Glaser Critical Thinking Appraisal, the Combined American College Testing Program (ACT) scores, an average of the respondents high school scores, a score of socioeconomic status that averages the

parents education, and a numerical score indicating the highest level of education the student intends to seek, which was included to control for selection maturation interaction. Astin (1977) and Feldman and Newcomb (1969) had found previously that the college experience and the outcome of college are influenced by these variables according to

This study was quasi-experimental, with a pretest after multivariate analysis of variance used to match groups, followed by posttest one year later. Initially, subgroups were matched on the variables using .25 SD as the matching criterion. There were only chance differences on the variables, and non-significant differences of the high school and Watson-Glaser CTA scales. One year later, the Watson-Glaser CTA was repeated. The research then included an analysis of covariance using the sub-scores of the CTA as the dependent variables and the ACT scores, high school grades, socioeconomic score, former CTA scores, and intended educational score as the covariates.

Results indicated an increase of critical thinking skills on the CTA of 17% for those who attended the freshman year of college over students who did not attend. The interesting fact in the results is that the effects of critical thinking within this first college year are alike for a wide array of additional variables. An additional questionnaire was given respondents in the post-testing that included questions concerning financial resources, library size, college selectivity, curricular science or logic courses, living on or off campus, interactions with faculty, study time, amount of non-assigned reading, and extra-curricular involvement. These areas all failed to have significant relationship with critical

thinking. When the study covariate was controlled, a score of student intellectual and social involvement proved to be positively correlated with critical thinking. This supports the belief that the amount and quality of involvement by college students are the salient factors of the impact on college student development (Astin, 1984). This resulting outlook supports the overall experience of college as affecting critical thinking (Pascarella, 1989).

The dominant focus of research in critical thinking has been toward individual programs, courses, or instruction methods. Tsui (1999) conducted research looking at how the ordinary classroom experience can affect critical thinking for students. The study looked at how effective instruction within effective courses can impact critical thinking. Students were given self-report questionnaires four years after their beginning freshman semester. The survey was conducted by the Higher Education Research Institute at the University of California in Los Angeles, and provided a sample of 24,837 students who were from 392 four-year colleges or universities over the United States used to deliver it. Data used in this study related to the type of course and the instruction methods. Findings of the research indicate that instructor's feedback on student writing assignments can positively affect critical thinking abilities of the students. Other findings include that critical thinking is enhanced when assignments, such as independent or group assignment, essay, or a presentation, require students to devise answers to questions or problems. There was little effect on critical thinking regarding courses or instruction independently. When the analysis included the course and the instruction methods together, results demonstrated

self-reported growth in critical thinking. Both the type of course and instruction methods emerge as important, with instruction having a slightly greater impact on critical thinking. Based on this research, experiences in the classroom were found to be important to the development of critical thinking. Limitations of this study include the use of a self-report instrument, and its possible lack of objectivity and potential response bias. However, the study is particularly applicable to the current research because it supported creating changes in curriculum and emphasizing instructional methods and classroom experiences to enhance critical thinking.

A study investigating institutional effects on the critical thinking of college students was conducted using students who participated in the National Study of Student Learning researching cognitive development and learning (Hagedorn, et. al., 1999). Longitudinal testing was done to include incoming freshmen, and repeated after the first, second and third years of college. The freshmen were located in 16 states and attended 18 four-year and 5 two-year colleges and universities. The authors carefully chose a wide range of institutions to include selective admission and open-door admission policy schools. The study correlated the critical thinking level of the incoming freshmen with the level of critical thinking at the first, second and third year testing. The authors investigated whether a difference exists in influencing students learning to think critically, when the average institutional context of critical thinking of the institution differs. The institutional context is the pre-college mean of critical thinking of the incoming freshman class, which is highly correlated with the

college admission selectivity. Results of the end of the first year testing were that the institutional context did have a significant positive effect on critical thinking ability. However, on the end of the third year results, the institutional context had a small and statistically non-significant effect on critical thinking (Hagedorn, et.al., 1999). The findings suggest that attending a college or university where peers have strong critical thinking abilities has a definite effect on developing critical thinking abilities among first year students. Surprisingly, the effect of attending a college or university where the institutional context of critical thinking is strong, diminishes by the end of the third year to trivial and non-significant effect on the critical thinking ability of individual students. The study also described the learning curve in critical thinking as being the strongest for those who begin college or university-work with a low level of critical thinking. The authors stated that the peer socialization has its strongest effect in the freshman year. Students in select schools were expected to express themselves well using verbal critical thinking skills. Therefore, peers in these select schools who may not have begun college with strong verbal critical thinking skills, were able through socialization to gain the ability to express themselves well. By the end of the third year verbal critical thinking skills are routine expectations in all colleges and universities and the impact diminishes. Students at the end of their third year have had three years of curricular and instructional interaction to encourage and challenge the learning process and develop critical thinking ability.

Limitations of this study include sample differences between the first and third years and self-selection bias. Analyses were done in 23 colleges and

universities, and results therefore, cannot be generalized to all institutions. This study supports teaching freshmen students the skills of critical thinking in the classroom. Teaching the critical thinking skills, encouraging students to use skills in the small group discussions, and assigned writing with instructor reflection are all supported through this study, and, thus, support their use in the current research.

Research supports college as having a positive influence on critical thinking, but not much is known about how one learns to think critically. Students arrive in college with patterns of behavior common to their peer culture and guidelines and rules from their home environment. These are norms they have previously used in decision making. These norms may not support critical thinking (Kurfiss, 1988). For comfort, students may seek peers who do not verbalize critical thinking skills. However, the capacity to seek, understand, evaluate and use new information; reason and process decision making; use critical thinking skills and express ideas and inquiry, are cognitive competencies which are valued and necessary for success in college and in our global society. Since there is not consensus on how critical thinking is best fostered, colleges seek information through research, on the manner in which students gain these critical thinking skills (Ennis, 1985).

Promoting critical thought

Currently, courses in educational settings place logic at the center of critical thinking courses (Weinstein, 1997). Others declare we must enhance the student ability to understand his or her own thinking, seek the sources of ideas, develop

character traits and communication skills that support them in developing an ability and willingness to speak out critically (Cohen, 1993). Those who seek an understanding of college students and critical thinking must define what they expect as the outcome and then proceed to provide the direction to learn the elements of the critical thought process needed to achieve the outcome.

Researchers must work with the same definitions in constructing research instruments and testing in order to achieve significant results (McMillan, 1987; Pascarella, 1989).

McMillan (1987) conducted a meta-analysis of twenty-seven studies investigating critical thinking in college students. The analysis covered thirty-five years from 1950 through 1985, and obtained the research from Dissertation Abstracts, Research in Education, and the Current Index of Journals in Education. Its purpose was to assess studies of programs that focused on altering the critical thinking skills of college students. McMillan (1987) divided his findings into three classifications, to include: variables of instruction, individual effect of the type of course on critical thinking, and overall program effect on critical thinking.

Instructional variables research. McMillan's analysis (1987) refuted the broad statement that classroom instruction makes a difference in critical thinking. Thirteen studies included in the analysis looked at teaching methods in the classroom, and six reported no noted differences, four reported some differences and three reported a mixed conclusion, but none of the teaching methods consistently supported a difference in critical thinking. The classroom characteristics related to critical thinking included instructional methods, focus on

traditional didactic teaching contrasted with guided design or value interpretation and mini-course or self-paced individual study compared with lecture.

The instructor role, rather than the course methods, was related to differences in two of the studies. One study found significant differences in biology students for whom critical thinking was accentuated; however, the control group also gained in a like manner. Limitations of that study include the possibility that the same instructor may have taught both classes causing experimental treatment diffusion. Some of the further studies included weak designs and selection problems or needed translation to another language without documentation of the reliability or validity. The assets and findings of the studies overcome the limitations for the purpose here. Field research usually has limitations and if all studies with limitations were eliminated, there would be little research.

With regard to McMillan's (1987) first variable, instruction, he determined there was no consistent support found for changing course methods as a means of increasing critical thinking. Limitations of the usefulness of this judgment included, one semester being too short a length of time to see a change and the use of broad generalized measures rather than a special curriculum instrument to measure change. The fact that classes were compared rather than individual students created difficulty in statistical analysis. Some students may have learned well while others struggled.

Course content variables research. The second classification McMillan (1987) used was the effect of the type of course on critical thinking. His findings refuted the premise that a particular type of course may affect critical thinking.

Inquiry into this variable involved seven studies and a review of courses in research, science, debate, critical thinking with argumentation, and psychology. Significant differences were not found in the ability of the students to think critically except when the comparison was between colleges rather than the courses taught. Research, psychology, and debate programs were studied and analysis determined no significant differences in the ability to think critically among students in these courses. Mixed results were found in a debate program involving debate courses offered in nine schools. In five schools, those in the course scored higher on critical thinking, and in the remaining four schools, those in the non-debate control groups scored higher. Significant differences in critical thinking, with argumentation, were not found among individual students, but differences were found when the colleges were compared. A study of science courses found those in science reporting the same ability to think critically as those not taking science. In other schools, the study found gains for those in a logic course, while those in a third section of the study resulted in science students showing higher scores in critical thinking than non-science students. Attendance in the college environment, rather than attendance in any particular college affected the results of this thinking skill analysis.

The literature reviewed indicates that the college itself may be a factor which may affect critical thinking, and the experience of the environment of a particular college as a variable may affect critical thinking. Limitations of these studies include that they were quasi-experimental studies and not randomized, and so the results could be questioned. Field research often requires that one use the groups

available without altering their makeup, and if the groups were eliminated there would be little research available. McMillan's research (1987) identifies that critical thinking improves for those who attend college but that the particular type of course taken does not determine the ability to think critically.

Courses specific to critical thinking research. The final section of McMillan's research (1987) involved studies of critical thinking programs and included seven investigations. Two studies looked at specific freshman year critical thinking courses. The remaining five studies demonstrated gain in critical thinking skills but limited the results by providing no comparison groups. Authors who completed two studies showing gains in science analysis and critical thinking used measurement instruments that were created at their college. The sample sizes were 990 and 1002. An interesting aspect of this study showed that students who entered with strong critical thinking skills showed little gain while those who had paucity of skill demonstrated an advance in critical thinking skill development. A study of upper class students demonstrated higher levels of critical thinking skills. This result was supported in a study of social science students who matured in their curriculum.

A longitudinal assessment was conducted for one college that chose to infuse critical thinking skills by intentionally teaching them throughout all departments in the entire curriculum, and including students in all years of study. The Watson-Glaser CTA was used as the testing instrument. There were no significant gains in critical thinking ability when comparing classes, however, longitudinal individualized student scores on the Watson-Glaser CTA were

analyzed and showed improved scores for critical thinking ability for individual students over time. Limitations of these studies included the locally created instruments for measurement and found no significant differences in critical thinking. McMillan (1989) questioned the use of nonequivalent groups and some of the statistical analysis that reported critical thinking gains.

The conclusion of this section of the literature review is that upperclassmen tend to demonstrate higher levels of critical thinking skills. Although, the data was not compelling in its strength, the positive direction of the difference in students in upper classes to have stronger critical thinking skills shows promise and supports continuing more research in determining the relationship of college curriculum to critical thinking skills.

Critical thinking is but one of many measures of cognitive development which is enhanced during college years but may be insufficient to explain development alone (Hagedorn, et. al., 1999). Cognitive developmental theory provides an understanding of the various domains of human psychological development and will be described next.

Cognitive Developmental Theory

When individuals are active in their attempt to make sense of their environment, they are creating an understanding, definition, or clarification of the experience of life (King, 1990). The underlying logic that a person uses to create his or her sense of the environment is their insight, awareness or cognition, or the way in which they make meaning and hold knowledge of their experience. The organization, construction, or configuration a person uses to create this knowing,

changes with each new discovery or understanding. The more complex the interpretation, the more mature is the knowing and experience of the environment (King, 1990). The capacity, pace, or relative amount of change for each person is unique to the individual. The intellectual ability, stimulus in the environment, challenge to change, and perception of support to make the shift in thinking are all variables affecting the way in which a person will interpret the environment. These changes in insight or cognition are called stages or structures and include assumptions from which the interpretations are made. These stages in developmental theory have a natural evolution and progression.

Central Assumptions

Special experiences are needed at precise turning points or states of readiness to facilitate or promote the individuals' knowing to evolve to a higher level (Piaget, 1970). The theories of cognitive development encompass many domains or aspects of knowing and include intellectual, moral, and conceptual frameworks. These theories are united in the following basic assumptions of cognitive development:

1. Humans possess an inherent drive toward competence and proficiency. Piaget (1970) concluded from his investigation into development that humans are intrinsically motivated to achieve mastery through seeking meaning of experiences. McAdams (1988) states that humans are not "passive recipients" but are "motivated in their own right"(p.43).
2. Cognitive development occurs in stages where each stage represents an individual's currently preferred style of comprehending the environment. Dewey

(1963) was the first to claim that children developed along a series of qualitatively distinct stages. Children organize their thoughts to comprehend their world in a series of distinct stages using their current understanding to interpret their experiences (Dewey, 1963).

3. Stages of growth differ qualitatively rather than quantitatively. Stage growth is dependent on the understanding built upon the prior stage of knowing. Each stage is a unique and different comprehension and produces a substantially different qualitative view of the world.

4. Growth in stages occurs hierarchically and sequentially. Stage growth develops from lesser complex comprehension to greater complexity of understanding. This growth is patterned in that one stage builds directly on the knowledge of the previous stage (Sprinthall & Collins, 1984).

5. Growth in stages occurs unidirectionally and irreversibly. Stage growth occurs in one direction and once the new complexity of understanding is achieved, an individual will not return to a less complex modal level. One cannot omit steps in the sequence (Rest, 1983). Experiences, which are repeated, will be interpreted in a qualitatively different way (Sprinthall & Collins, 1984).

6. Growth occurs between the person and the experience in the environment but does not occur automatically. People are connected to the environment through their experiences and the interpretations they develop for understanding. Piaget (1970) determined that specific experiences have to occur at precise turning points for growth to occur. These experiences support movement to the next higher developmental level (Sprinthall, 1978). An individual may cease

growth and stabilize below his or her potential without the stimulus of these environmental interactions.

7. There is a consistent relationship between the stage of development, and the person's behavior and choices made in a particular circumstance. This cognitive assumption is explained through Hunt's (1975) Behavior-Person-Environment paradigm. The person's behavior and choices made are a result of the complexity of development of the individual at the time he or she encounters the environmental experience. The stage does not create the behavior, but the level of complexity with which the person functions will influence the behavior and the choices made (McAdams, 1988).

8. Physiological and psychological changes determine cognitive development. Cognitive growth, according to Piaget (1970), occurs through assimilation and accommodation. These are simultaneous and complementary. Assimilation occurs when the existing thought process is used to interpret the environment, and accommodation involves changing the current understandings to allow for the new environmental experiences (Kolbert, 1998). With this repeated reorganization of knowing, cognitive evolution occurs and results in a qualitatively different environmental and experiential comprehension. Learning is augmented or restricted through the sum total and kind of experiences an individual encounters or is willing to meet. Physiological changes and social conditioning are necessary for the psychological changes to occur (Sprinthall & Collins, 1984).

9. Development in stages occurs in distinct domains and does not generalize

from one aspect of human processing to another. Stage development occurs in the different domains independently. Domains include, but are not limited to, intellectual, conceptual, moral, and spiritual, and development in one domain does not presume development in any other domain. Development cannot be assumed from one domain to another (McAdams, 1988).

10. Behavior or stage definition is modal rather than fixed and may indicate functioning across adjacent stages. The preferred stage or modal stage for function is the current usual stage of an individual. This is not a fixed avenue of behavior (Sprinthall & Collins, 1984). Individuals often function one stage higher or lower than their modal stage depending on their circumstance and their environment.

11. Cognitive development occurs universally regardless of gender or culture. Snarey (1985) determined that cultural differences do not alter the sequence of cognitive developmental assumptions. Nassi, (1981) explained that there are no gender differences apparent in the assumptions of cognitive development. Gilligan (1977) agreed that cognitive development occurs regardless of gender and further explained that women move as men do, from self focus to civil society focus to a sweeping overall universal focus. Gilligan (1977) describes all individuals as having a preference to use either a caring or a justice expression for their reasoning. Both genders are capable of using each expression. Women more often express their views in a voice dominated by caring and men more often express their views in a voice managed by justice. Kohlberg (1984) agreed that the difference in the two expressions is in the style of

reasoning.

Higher is Better

Research in related fields suggests that higher complexity in cognitive development supports more flexible and adaptive behaviors and provides an ability to process and respond to experiences more effectively than when functioning at lower stages of development (Khalili & Hood, 1983; Kolbert, 1998; McAdams, 1988; McAdams & Foster, 1998). This section will examine a sampling of studies regarding the notion that “higher is better”. A meta-analysis of sixty studies measuring cognitive complexity concluded that persons with higher cognitive complexity levels functioned differently than those at lower levels (Miller, 1981). Behaviors of higher complexity included autonomy, independence, internal locus of control, more flexibility and empathy, better decision making and less prejudice (Kolbert, 1998).

Holloway and Wolleat (1980) researched the relationship between the conceptual level of 37, first semester, counselor education students and their ability to formulate a clinical hypothesis. These students entered the graduate program with differing levels of professional experience. Students were given the Paragraph Completion Method (PCM) to examine their conceptual complexity. Students were then, provided with videotape of a counseling interview and were asked to complete a Clinical Assessment Questionnaire (CAQ) to investigate hypothesis formation. Additionally, investigators added a category that scored the respondents’ level combining hypothesis, and quality and clarity of thought and expression. Multiple regression statistical analysis was used to test for

relationship between the PCM results, the level of professional experience which were considered independent variables, and the CAQ sections which were the dependent variables. There was a significant positive relationship between the student's conceptual level and the quality and clarity of thought and expression in determining the hypothesis. Conceptual level was not related to other categories of the CAQ such as information sought, time frames involved to learn about the client, or information used to support findings. The previous professional experience of the students did not relate to the CAQ categories. Significant findings supported the students' level of conceptual ability being able to transfer to decision making and ability to express thought in hypothesis formation, but also demonstrated that the components of counselor education are a new category of learning for these students.

The relationship between conceptual level and leadership style was investigated by Silver (1975). Elementary school principals in New York, and their professional staff were the subjects. The Paragraph Completion Test was administered to 36 principals to determine their conceptual complexity. A standardized measurement instrument was provided to the 444 professional staff members working for these principals. These respondents were asked to report their perception of the leadership style of the principals. The level of conceptual complexity is described as having the capacity to use abstract thought in solving problems. This was determined to significantly relate to the principals' leadership behaviors perceived by their staff members. Principals with higher levels of conceptual complexity were considered to be more responsive, flexible,

personable, less autocratic, and overall, more professional. Documented limitations of this study included the use of volunteer subjects, and question of the validity and reliability of the measuring instruments. Nonetheless, the study points to the use of developing conceptual complexity through educating leaders in areas of abstract thinking to enhance their leadership style.

Holloway and Wampold (1986) investigated the relationship between counseling related tasks and the conceptual complexity level of the counselor in a meta-analysis of 24 studies. The authors used the psychological abstract computer search system to obtain articles from 1967 to 1983, which investigated counseling process and conceptual level. The findings demonstrated that the higher conceptual level counselors performed better than lower conceptual level counselors on counselor related tasks. When in complex and ambiguous situations, such as interviewing in counseling, the higher conceptual level counselor was able to perform subjective, psychological and intellectual tasks with more precise understanding, a greater flexible use of skills, and more well synthesized use of diagnostic appraisal (Reiman, 1995). The authors also concluded that lower conceptual level counselors needed to be in a more structured environment to benefit from education or training to increase their level of performance. Limitations of the study include those of a meta-analysis in relating information on different studies findings with different sample characteristics as though they were one study. However, this study clearly supported the concept that instructional methods and environments can be

developed to meet the needs of the college student and matched to development of different types of learners to enhance their success.

These studies did not explore the high-risk population, but they did provide information suggesting that higher is better or the concept that cognitive developmental stage progression to higher levels provides more effective human decision making, function and processing. Higher conceptual level counselor education students were better able to develop clinical hypotheses, higher level elementary school principals were more able to use abstract thinking to enhance their leadership skills, and higher conceptual level counselors were better able to process and perform tasks of counseling. Matching the environment of the counselor students to their level of complexity enhanced their learning. The successful outcomes in these areas provide motive to employ cognitive developmental theory in the present study of high-risk college students. Studies of cognitive complexity and intellectual growth have added depth to the understanding of development (Perry, 1970; Hunt, 1975). Hunt (1975) described the conceptual level as the process of having the capacity to use abstract thought in solving problems. Progression in the form of thought occurs during the college years as demonstrated by Perry (White, 1970). The following segments will discuss intellectual development and conceptual development.

The Perry Scheme and Validating Research

William Perry (1970) described patterns of cognitive development, which progress in complexity over time and experience. To develop his scheme, he studied male undergraduate college students at Harvard University. The research

spanned a nine year period from 1954 through 1963, was a longitudinal qualitative (interview) in design, and was found to have an inter-rater reliability between .815 to .978 (Perry, 1970, p. 12). Harvard University students were not generally considered high-risk students but were in similar age ranges and so provide a baseline for comparison in this study.

According to Perry (1970) the college student is engaged in the process of organizing the experiences and changes he or she encounters into meaning within context of his or her development. The manner in which the student sees the world, learns, perceives, and organizes knowledge is distinguished in nine stages or positions. The beginning and ending stages were hypothetical determinations created by Perry to enlarge the research to include a full spectrum of development (Perry, 1970). The students he studied did not meet these categories because they were either too advanced to meet the beginning stage or not yet advanced enough, while college undergraduate students, to meet the end stage. Within the scheme, stage growth is hierarchical and sequential movement with wave like motions of surging and cresting in understanding and organizing before fully moving forward. The 9 stages of the Perry Scheme are organized into broad categories of dualism, multiplicity, relativism and commitment in relativism as shown in Table 1.

Table 1
The Perry Scheme

Cognitive Structure	Positions	Corresponding Behavior
Dualism Knowledge and values right and wrong ambiguity unnatural learner finds right answer	Position- 1- Absolutism; polarity of terms, always a right and wrong – good and bad answer; Authority knows right & must teach truths, no alternatives. Position- 2- Confused if task or opinion have more than one possibility, Alternate views not considered justifiable, Decisions are stated as if obvious with authority, Diverse opinions consider an inadequacy in authorities.	
Multiplicity Increase tolerance of uncertainty and diversity of opinion,	Position- 3 – Accepts diversity and uncertainty as legitimate, considers authority as withholding truths or incapable to point to truth, considered inadequate authorities, puzzled by lack of knowledge, assumes graded on goodness but standards unknown. Position- 4 - Uncertainty and diversity are legitimate, everyone has right to own opinion, questions have multiple answers, different opinions not wrong, But authority still knows right from wrong.	
Relativism Dualism collapses and replaced by relativism meaning of relativism can collide with personal life.	Position- 5-All knowledge and values including Authorities as contextual and relativistic, all beliefs viewed in context, differ between beliefs considered and unconsidered. Position- 6- Authority esteemed for expertise, can question authority, different beliefs and values seen in context of a larger whole, Orient self in this relativistic world through carefully considered personal commitment.	
Commitment in Relativism Affirmation of self, and responsibilities in pluralistic world to establish identity.	Position - 7 – Initial Commitment in some area is seen as necessary. Position -8 –experiences implication of commitment, explores subjective and stylistic issues of responsibility. Position –9 -The student experiences the implications of identity among multiple responsibilities and realized commitment as an ongoing unfolding activity through which he expresses his life style. (Perry, 1970, p. 10)	

A limitation of Perry's research for use in this study is the concentration of male respondents rather than a coeducational population that would have noted any difference in gender development. High-risk students in the classroom comprise both genders.

Kitchener (1983) referred to an epistemology development in the students' way of making meaning of experiences. Knowing was determined to be clear, limited, or unknown, and assumptions are used in sorting experiences and taking them into meaning as knowledge to retain, or as areas of continued inquiry, or as puzzling alien information. Baxter-Magolda (1992) viewed student development broadly and applied Perry's scheme as a research tool. The underlying assumptions of a student's retained knowledge base are used to make meaning of the college experience. This meaning making experience by the student was reciprocally used to sort the new experience for knowing. Therefore, assumptions previously held affect new understanding or knowledge gained and the knowledge a student holds will affect assumptions used for future acquisition of knowledge. According to Baxter-Magolda (1992), if one can comprehend the epistemologies of the students, an understanding of the development of the student can be facilitated. To support student learning, it is important to know the knowledge base and assumptions a student has when he or she arrives to college. Equally important is the necessity to be aware of the knowledge acquired while in college.

Perry (1970) studied the students' perception of thought, not the content of thought, and this allows the scheme to be applicable to high-risk students who may enter college in a low stage of development. Widick (1977) described the

need for disequilibrium to occur in order for cognitive development to happen, but warned that an overwhelmed student would fixate and not progress. It is reasoned that college professors who use the scheme to challenge their students would have the understanding and knowledge to encourage growth without challenging to the extent that the student would feel overwhelmed.

Stephenson and Hunt (1977) conducted an examination of the use of a developmental focus in determining curriculum and instruction methods to provide student advance on the Perry scheme. The research by Stephenson and Hunt (1977) is a replication of a two-fold experiment by Knefelkamp and Widick (1974) and was a pilot study to view program development based on cognitive-developmental theory. The study consisted of two experimental and two control groups in four freshman orientation courses, with self-selected enrollment, based on course description, subject interest, and personal interest. One course, an experimental intervention group, was conducted in the fall and the three remaining courses, an experimental and two control non-intervention groups, were held in the spring. The experimental groups each consisted of 21 students who were taking a course entitled Themes in Human Identity. The first control group of 15 students were in a cross-disciplinary class selected on the basis of excellent fall semester grades, and the second control group contained 19 students who were in general education liberal arts English course (Stephenson & Hunt, 1977).

The research was designed to demonstrate whether classroom-teaching methods would create the conditions needed to cause an upward shift in

development. Course content was developed for appropriate use with lower and middle positions of Perry's scheme. The students were freshmen, and the researchers expected students to fall in these positions. The literature content used in the course presented contradictions for the students to resolve. The direction of development was toward increasing the cognitive complexity, such as raising alternative explanations of events to create contrasting judgments, and providing dissonance. The students in the dualistic position would be expected to respond qualitatively differently than those in the relativistic level. The dualistic student would respond with comfort to the educator providing expert answers, and the relativistic student would expect to seek alternatives to solution. The experimental groups were taught with a paradigm strong in challenge and in support for the expected dualistic position of freshman students. The challenge was supported in the diversity of content and procedure, as well as the complexity of being an interdisciplinary course presenting differing views. There was diversity of structure in the classes, and individual meetings with the professors and modeling provided supports to students. The themes of identity and growth of self in relation to others in terms of career and work were presented in literature. The control groups were taught in the usual manner by one professor who had no working knowledge of cognitive development and another who could speak to the subject, had more sensitivity to the process, but who was not familiar with the theory.

Pre and post testing was done using the Defining Issues Test (DIT) created by Rest (1973), and the KneWi developed by Knefelkamp and Widick (1974).

The DIT was developed to measure moral judgement, or thinking in arenas of caring, fair decisions and social justice (Rest & Narvaez) 1994). The objective multiple-choice, group administered, computer-scored testing process provides moral dilemmas and 12 item considerations for the respondent to priority rank in relative importance in deciding a manner of solution. The KneWi was developed to measure cognitive development using the Perry Scale (Knefelkamp & Widick, 1974). The test consists of ten sentence stems and two paragraph completions. This study used only the paragraph completions rated blindly by two trained raters with an inter-rater reliability of .82.

The experimental groups showed stage or position movement for each class, of .85, where the stage or position movements for the control groups were .42 and .12. The results of the DIT data assessment were not reported but appeared on preliminary view to be in support of the KneWi. Research findings in this study support the upward movement potential of college freshman when in appropriate intervention programs created to be in support of the student as they meet the paradox of development. Limits of the process are the lack of full data results, the self-selection and whether the changes persisted.

Widick (1997) believed that since development is an interactive process, the college experience can support or detract from the possibility of growth. Perry (1970) suggested that students could become stuck in development. Some experienced necessary periods of seemingly little upward movement, where growth that had occurred was integrated into knowing, and other periods where they were stuck in development due to extreme strain from their environment.

Each student is impacted differently according to the stage or position of development (Widick, 1997). Interventions are perceived differently and learning differs according to state. Knowing the developmental position and the tasks that provide for advancement in that stage would allow strategy design to stimulate growth. Programs that challenge students must consider problems that could occur due to adverse disequilibrium in the environment. Students may become fixated in positions and cease growth when challenged in levels they cannot cognitively achieve.

The Perry scheme and the research provided in this section, looked at college student development. The stages of Perry's scheme of college student perception of knowledge were described to include a qualitatively different understanding of the perception of knowledge at distinct stages. These stages are identified through interaction with the student and understanding his or her explanations, behaviors and cognitive processes used. Widick (1997) described the college process as contributing to or detracting from student growth. High-risk college students may need to move to higher stages of development in order to become successful students and accomplish what they desire in college. To adapt to college, students must be able to read and flex to their new environment. The Perry scheme describes the development in stages and provides a reliable framework for observing student development, but it does not describe the method of supporting a student in moving from one stage of cognitive development to the next. Hunt's Conceptual Systems Theory and its related

matching model for instruction may be viewed as a means of facilitating this process.

Hunt's Scheme and Validating Research with the Matching Model and Supporting Research

Competent knowing and organizing in increasingly complex, hypothetical and theoretical ways constitutes conceptual complexity (Pascarella & Terenzini, 1991). Harvey, Hunt and Schroder (1961) describe conceptual complexity as the ability to attend to and manage multiple cognitive stimuli and function proficiently in the environment in a variety of elaborate, abstract situations. According to Khalili and Hood (1983), conceptual complexity provides the ability to create distinction in organizing and judging the environment, with awareness of subtle differences in environmental relationships and the capacity to consolidate information into understanding and knowing.

Harvey, Hunt and Schroder (1961) described a personality organizing theory, Conceptual Systems Theory (CST), which is based on the varying ways a person behaves depending on how he or she makes sense of his environment. The conceptual level (CL) and the corresponding continuum of behavior from concrete to abstract levels of function are the result of the person in interaction with the environment (Holloway & Wampold, 1986). Hunt (1975) has studied student learning, teaching style, and their connection with assessed CL. Hunt determined that having a system with which to coordinate research required knowing the components of that system and the interactions of the components in the system in specific circumstances (1975). Therefore, Hunt incorporated

Lewin's theory (1951) which proposed that " $B = f(P, E)$, Behavior is a function of the Person and the Environment" and that it is possible to determine the effect of their interaction when "in the classroom the (B) Behavior (learning) would be seen as jointly determined by P (kind of student) and E (way of teaching) (Hunt, 1975, p. 217). Hunt (1975) provided four attributes of the paradigm to be applied to fully understand this "person-environment interaction" (p. 218). The system: (1) should be "interactive" in balancing the interaction of the person and environment and in serving the effects of behavior; (2) should oversee from a "developmental" outlook both present and future; (3) should view in "reciprocal" understanding the outcome of the person on the environment and likewise the environment on the person; and (4) should consider the "practical" use of the information (p. 218).

Hunt (1975) felt this system of interaction would focus learning environments toward meeting student needs. This BPE paradigm is operationalized in the Conceptual Level Theory (CL) which indicates complexity of thought and maturity of the student. Hunt (1975) believed that matching the structure of the environment to the CL or interpersonal style of the student would enhance learning. The matching model is based on the belief that low CL learners function best in highly structured classrooms, and high CL learners function best in low classroom structure. High CL learners are less affected by alterations in the structure of the classroom (Hunt, 1975). Students benefit from programs designed to educate according to the principle of matching to low CL or high CL levels. Hunt found that educators who could assess or "read" the CL level of

their students and be flexible in matching the needs of the students were more effective. This reading and flexing maximized the potential of the student. It is necessary to challenge the student enough to arouse interest but not enough to discourage the student. This interaction between the educator and the student is called a “constructive mismatch” (Hunt, 1971). The ability to read and flex is equally important for teachers and for the student who is learning to tolerate the demands of a changing environment. This is significant in high-risk students’ quest for an education. Since high-risk students usually enter college with low CL levels, it seems reasonable that they will have difficulty reading and flexing in their college life. It would be a valuable experience for high-risk students to learn under this matching model of instruction.

In the normal developmental interaction of a person with the environment, learning takes place on a continuum from the basic concrete way of thinking to a cognitively complex abstract way of knowing (Khalili & Hood, 1983). This learning includes personal and societal responsibility, the ability to discriminate and make distinctions, and integration of knowledge. Four stages comprise the model of conceptual complexity described by Hunt, and they include:

Stage – 0.0: includes individuals who think concretely in simple terms, with fixed rules and rigid problem solving. Ambiguity is not endured.

Stage – 1.0: includes individuals who are concerned with social acceptance, and who are dualistic thinkers and defer to authority.

Stage – 2.0: includes individuals who are seeking independence, who can tolerate ambiguity, who question and are open to others ideas but do not

integrate them into solutions, and who take interest in their own ideas.

Stage – 3.0: includes individuals who have self-acceptance, are independent, allow external imposition and comprehend the person environment interrelationship, seek solutions, compromise, and interdependence.

(Kahalili & Hood, 1983, p. 389).

Studies using the Paragraph Completion Method (PCM) provide evidence that during college, students increase in conceptual complexity (Hunt, Butler, Noy & Rosser, 1978; Pascarella & Terenzini, 1991). The PCM is a semi-projective measure in which answers to sentence stems are scored according to how the respondent expresses reason and are scored using the rater's experienced clinical judgement and a protocol scheme (Hunt, Butler, Noy & Rosser, 1978). The rater must understand clearly the different attributes of reasoning at each level of conceptual development, because the most demanding aspect of scoring is to read the content while attending to the thought structure. The PCM yields a Conceptual Level (CL) score from six categories of thought samples obtained from questions stem where students describe how they process conflict, authority, rules, and uncertainty. To each of the six questions, the students are requested to respond with at least three sentences, through which the rater studies the manner in which the student reasons.

Meyer (1977) tested the conceptual level of freshman and seniors in two colleges. In these colleges, the freshmen scored significantly lower CL's than did the seniors. This supports the notion that there is significant conceptual complexity growth in the college years. The recruitment standards could be

different in the schools, loss of academically challenged students could occur after the freshmen year, and the natural maturation effect of students from freshmen to senior years could all confound the study effects of the cross-sectional design.

The PCM was administered as a pre and post-test to separate groups of freshmen and then again at the end of the senior year (Khalili and Hood, 1983). Khalili and Hood (1983) chose to look at the four-year growth period. The authors determined that freshmen are often interacting with their environment at a low conceptual level and need rules and structure to support their absolute outlook. Seniors may often function in an abstract manner and can create think independently and are able to evaluate experiences and subtle circumstances. The PCM was administered to 169 incoming freshmen during summer orientation at the University of Iowa. The two raters who scored these tests provided inter-rater reliabilities of 0.63 to 0.78 (p. 390). The second testing at the end of the freshman year was to include half of the students but only 38 participated including 20 males and 18 females. 77 respondents participated in testing in the senior year. A demographic questionnaire regarding the students' college lives was collected.

Findings from this longitudinal study were comparable to the previously described Meyer study, with statistical significance in the CL gain from freshmen to senior years. The change represented an average of $\frac{1}{2}$ a conceptual stage in growth (p. 390). The move was from half way in the first stage to mid way in the second stage of the Hunt Scheme. This illustrates student conceptual stage growth during college. Females tested $\frac{1}{8}$ of a conceptual stage higher than males

at pretest initially which was significant, but the $1/8$ difference was not significant at posttesting. The question stems on the PCM differ in content. Scores on each of the question stems increased in like amount for each gender between pretest and posttest. The report concluded, however, that of the 1.33 of a standard deviation gained over the research longitudinally, .72 of a standard deviation occurred during the freshman year.

The change during the freshman year of $1/4$ a stage growth compares with $1/4$ change at the end of the senior year, supporting the belief that more change occurs in the freshman year. Seventeen students dropped in CL level; four stayed the same, while most showed substantial increase. The study found that CL scores had little relationship to college retention in this study. The scores for those who stayed compared to those who left college did not differ. Conclusions of this study suggest that the structure of the learning and living environments should be high for most freshmen due to lower CL levels, and should be decreased in structure according to the amount of conceptual complexity demonstrated by individual students (Khalili & Hood, 1983). In longitudinal studies in college, due to maturation effects, growth in many cognitive dimensions occurs and may be simply developmental rather than from treatment effect (Pascarella & Terenzini, (1991). Therefore, it is important to use control groups. A limitation of this study is that they did not identify whether they used control groups.

Research by Pascarella and Terenzini (1991) involve an experimental curriculum designed to move college students into formal or abstract reasoning

during their freshman year. The program “Accent on Developing Abstract Processed of Thought (ADAPT)” included six areas of study: “anthropology, economics, English, history, mathematics, and physics” all of which were taught “in an inductive manner consistent with the learning cycle-inquiry approach” (p. 142). The ADAPT process includes three steps, where (1) hands on concrete exploration takes place and then (2) conclusions are drawn from the concrete operations, which then, (3) must be applied. Students in the ADAPT program were scheduled together in classes and spent much social support time together and with instructors.

A version of the PCM was given to freshmen in the program and to freshmen in the regular curriculum, and differences in the scores were contrasted. Pretest scores demonstrated no differences. The post test PCM scores showed a decline for the control group while the ADAPT experimental group showed significant increase, approximately .50 of a standard deviation. Limitations of this study include selection of the ADAPT curriculum and their reasoning for selection which could confound the study.

These studies indicate that students develop while in college in areas of conceptual complexity. However, due to the confounding effects of differing admission standards, attrition rates, transfer of students, and simple maturation expectancies, it is unknown whether the growth can be ascribed to college attendance (Pascarella & Terenzini, 1991). Studies comparing freshmen and seniors identify seniors as having advanced oral skills, with a standard deviation of .60 which is a 22 percentile point improvement, and more advanced written

skills with a standard deviation of .50. This shows a 19 - percentile point improvement, and more advanced written skills with a standard deviation of .50, which shows a 19 percentile point improvement. Complexity skills such as abstract reasoning, critical thinking, and conceptual complexity were improved. Improvement included abstract reasoning at .33, an improvement of 13 percentile points; and critical thinking and conceptual complexity each improved by 34 and 38 percentile points respectfully. The first and second year account for about 50 percent of the gains in reasoning, critical thinking and conceptual complexity development (Pascarella and Terenzini, 1991). Community college graduates, when held constant for age and verbal and math capabilities, achieved higher scores on analytical and intellectual ability than incoming freshmen. College supports the ability to look at possible choices and to analyze them and determine which is the valid choice. The ability to use reason in controversy and be flexible in understanding more than one side of issues is advanced in college graduates. The appropriate matching of the learning environment in college to the learner may be a key factor in success. The college environment provides possible experiences where courses, the use of labs and libraries, and interactions with faculty and peers support the development of cognitive complexity. As shown above, the PCM is useful as a measure of growth in conceptual level. A matching model for promotion of conceptual complexity is described next.

**Deliberate Psychological Education and Conditions for Growth with
Supporting Research**

Cognitive developmental theory describes growth as a process of meeting and reacting to new information. One attempts to make sense of the new experience through integrating it with existing information or cognitive construction in assimilation. Accommodation occurs simultaneously where previously held knowledge is restructured or reorganized to intake the new information. Piaget (1970) called this equilibration, in which a constant balancing act occurs to support knowledge acquisition. If accommodation does not occur, disequilibrium results. The individual will not reconcile information that is more complex than previously encountered and which cannot be integrated into understanding. The individual must develop cognitive structures that are more complex to reconcile the imbalance and lack of understanding and process the new information. Cognitive developmental growth is the result of this disequilibrium and equilibration or balancing act. As the physiology, psychology, and opportunity of experience permit, the cognitive development will continue slowly in stage growth. High-risk students, who have struggled in the past with learning, may be resistant to change and may need more encouragement and support to allow or experience this equilibration and advance in development.

The deliberate psychological education model (DPE) has as its keystone an action phase or new role taking and a critical reflection requiring education (Reiman, 1995). The action phase or role taking is not role playing, but actual taking of the role with practice in problem solving related to the experience and

with support especially from leaders but to, also, include peers in the process. Furth (1981) supports this means of developing through a gradual process of acting and reflecting on their experience. The most salient aspect of the deliberate psychological education may prove to be the critical reflective component. It is difficult to extract complex meaning from experience and cognitive complexity determines how well the person can perceive and analyze (Reiman, 1995). The leader must start where the student is in terms of perceiving his or her environment and gradually mismatch the journal and classroom responses to stimulate the natural development of decision making, problem solving, judgment and reasoning. In a constructive mismatch, the student is challenged to exceed his or her present level of functioning by composing new strategies for problem solving and decision making and by developing a more complex cognitive perspective. Furth (1981) supports the reflective approach in problem solving, especially during periods of challenging experience resulting in dissonance. Relaxed reflection as in the journalizing processes, and is imperative when facing such decision making.

Foster and McAdams (1996) used a deliberate psychological education model to promote moral development and skills of supervision among 35 counselor/supervisors in residential treatment settings for children and adolescents. The curriculum used for this DPE project included guided reflection to support the counselor/supervisors in their investigation of ethical dilemmas. The authors identified the residential environments as unpredictable and sometimes highly charged. The respondents in the study had to react to the

external environment as well as manage their own behavior in response to the sometimes-provocative tasks at hand. Growth was measured by the Defining Issues Test, which is an objective measure of moral reasoning based on Kohlberg's stages of moral reasoning, and on assessment of developmental stages through review of journal entries using the Moral Judgment Interview scheme, also based on Kohlberg's stages. Results of the study showed significant increases in moral reasoning by the subjects. Documented limitations of the study included the lack of a control group, the use of one journal entry rater, and a shorter than desired time frame for development of moral growth. However, given the positive results, this study lends support to the continued exploration of a DPE based program as a means of effectively promoting development.

Sprinthall and Scott (1989) used the DPE based program with a two-prong approach in research. They sought to promote the math achievement of female elementary school students and to promote the cognitive developmental growth in autonomy and independence of female high school students who were in a role-taking tutoring program. Two groups of 15 high school girls each comprised the experimental and comparison groups. The experimental group was volunteer tutors and the comparison group was volunteer teacher aides. The experimental group was mentored and received DPE instruction. The comparison group did not receive training nor did they discuss their work or reflect on their helping role. The results for the high school females were two-fold. They gained in conceptual complexity and value judgement and also became more independent and autonomous. Guided reflection of the DPE process was noted as a valuable

asset in the developed cognitive complexity. The elementary female students with more time on the math tasks were successful in math. As the tutors matured, their relationships with their mentors became collaborative and this provided added benefit to the high school students. However, more support may have been needed for the teacher assistants. This study is especially interesting because females are often considered at risk in math and science, and this demonstrated that the DPE intervention can benefit this at risk population (Sprinthall & Scott, 1989).

McAdams and Foster (1998) conducted a study using the DPE model in an orientation course for college freshmen. The 72 students were high risk because they had college entry scores that fell below the standard admissions criteria. Seventy-one students were African American and one was Caucasian. The students were divided into four sections, two of which were experimental groups and two were comparison groups. The experimental groups were taught using DPE –based instruction and the two comparison groups were taught with the usual didactic teaching method. The instruments used were the Survey of Study Habits (SSHA), the Learning Context Questionnaire (LCQ), and the Paragraph Completion Method (PCM). The pretest to posttest increase in PCM scores was significant for the experimental groups while the comparison groups had only a slight non-significant increase. Pretest to posttest increase in LCQ scores was positive but not to a level of significance. The comparison group had a negative change in the pretest to posttest on the LCQ. The SSHA increase for the pretest to posttest experimental group was statistically significant and there were slight

positive increases for the comparison groups. Nearly all (97%) of the students entered the program with low conceptual levels and dualistic thought processes that can create disequilibrium in students when change is required. The authors suggested that the DPE model with its reflection and support may more positively affect the students at lower conceptual levels. This research is applicable to the present study because it too had a time frame of one semester. The ideal time frame for change to occur developmentally is one year (Terenzini & Pascarella, 1991). This caused the significant gains in this research to be even more remarkable.

The above studies have supported the DPE- based education model as an effective intervention tool for development in college freshmen. The aspects of planned disequilibrium coupled with support and reflection have proven successful for high-risk students who may enter college at low conceptual levels. Promoting the development of high-risk students to the level of success needed for retention may slow the revolving door of entry to college and subsequent failure. The hope is that the students who succeed in college and graduate will have moved into a level of cognitive complexity, education, and confidence to succeed in life.

Summary

This review of the literature has attempted to demonstrate the need for interventions in college programs to support high-risk college students in achieving college success. Sprinthall (1981), in viewing the research of students and growth, stated that since psychological development is complex, it is

important to have outcomes or targets for the programs developed in education in order to recognize achievement. Individuals who are in more complex stages of development are able to more appropriately and effectively perform adult tasks. Chickering (1972) identified the tasks as predictors or vectors of adult behavior. These vectors are enhanced through complexity of thought and higher stage intellectual development. The domains presented include Critical Thought, Perry's Intellectual Development, Hunt's Conceptual Development. The Deliberate Psychological Education model is presented as the instructional tool for developing classroom curriculum. High-risk students require supportive interventions to assure the possibility of college success. Chapter three will present the design and methodology of the proposed study.

CHAPTER THREE

Design and Methodology

The design and methodology will be presented in the following order:

- 1. Population and Sample**
- 2. Data Gathering**
- 3. Instrumentation**
- 4. Research Design**
- 5. Hypotheses**
- 6. Data Analysis**
- 7. Critique**
- 8. Ethical Considerations**

Population and Sample

High-risk college students in Virginia were the target population for this study. The sample for the study was drawn from the high-risk students enrolled in the College Experience 101 course at a southeastern University. These students were designated by the Undergraduate Admissions Office as being in a “high risk” category for academic failure and assigned to the College Experience 101 course. The sample included traditional age (17 –19 years) and non-traditional age (over 19 years) freshmen students.

The students in the experimental group were those enrolled in the College Experience 101, Sections 03 and 04. The students in the comparison group were

those enrolled in College Experience 101 Sections 01 and 02. Students selected the course section they desired based on their schedule and times available, and thus, were not randomly assigned to any section. The size of the sample was determined by the number of students selected by Admissions and by the enrollment in College Experience 101. The assignment of the students to experimental or control groups was unknown to the students, since they were not aware of the research prior to the beginning of academic year. Therefore, the research project was not a decision in their selection of section. The students assigned to the experimental or control groups were unknown to the researcher until the academic year began, thus the decision to assign experimental or comparison designation to groups was not based on which students were registered in the groups. In summary, decisions regarding the design of the research project were not based on particular group membership.

Data Gathering

Students in the experimental and comparison groups were pretested and posttested using the Paragraph Completion Method (PCM) (Hunt, Butler, Noy, & Rosser, 1977), the Learning Environment Preference (LEP) (Moore, 1989); and the Watson-Glaser Critical Thinking Appraisal Form S (WGCTA) (Watson and Glaser, 1994). Informed consents were signed at the time of pretesting (Appendix A).

Students were pretested in the beginning of the fall 1999 semester and posttested at the end of the same semester. Demographic data (Appendix B) was collected during the pretesting session, and data regarding participants' intention

to register and subsequently continue at the university, was collected in the posttest period. Demographic data was used in final analysis to better understand the student group as a whole and to compare and describe differences, if they existed, within and between the individual groups. Prior to their participation, students were informed of the purpose and nature of the research project and given opportunity to refuse participation or to withdraw at any time during the process. To ensure confidentiality, participants were identified by a self-selected personal code. Students were informed that their grade in the course would not be affected by their decision to participate or not to participate in the research process. Students in the experimental and the comparison groups received instruction in the same general topic content areas and differed only in the process of their instruction. Instruction of the experimental group incorporated a Deliberate Psychological Education (DPE) format, while instruction of the comparison group followed the more traditional lecture format, the format typically administered in the course. Assessment data were maintained in strict confidentiality, and all reports are presented in summative form.

Instrumentation

Cognitive developmental growth within the conceptual, intellectual domains was measured respectively by the Paragraph Completion Method (PCM) (Hunt, Butler, Noy, & Rosser, 1977), and the Learning Environment Preference (LEP) (Moore, 1989). Critical thinking was measured by the Watson-Glaser Critical Thinking Appraisal Form S (WGCTA) (Watson and Glaser, 1994). These

instruments are reported to provide valid and reliable empirical measures of developmental change and critical thinking skills.

The Paragraph Completion Method (PCM) is a semi-projective measure in which respondents are asked to complete six open-ended sentence stems about how they process conflict, authority, rules, and uncertainty (Appendix C). Their responses serve as thought samples that can be used to assess the conceptual complexity of respondents' thinking. To each of the six stems, the students are requested to respond with at least three sentences in two to three minutes. The stems include, "What I think about rules; When I am criticized; What I think about parents; When someone does not agree with me; When I am not sure; and When I am told what to do" (Hunt, Butler, Noy, and Rosser, 1978, p.2). The instrument is scored by comparing actual responses to sample responses that are provided on a scoring key. Raters must understand clearly the different attributes of thinking at each level of conceptual complexity and apply experienced clinical judgment to identify stage-specific thought structures underlying the content of each response. Numerical scores are determined for each student response, and scores for all responses are summed to gain a single Conceptual Level (CL) score. This score corresponds to one of Hunt's Conceptual Level stages. The CL score was used in all statistical analyses for this study. The PCM has been standardized for female and male samples and may be used with ages of middle school through adult who have age appropriate command of the English language. Inter-rater reliability co-efficients that range from .80 to .86, and evidence of substantial construct validity of the instrument is described in the PCM Manual.

The Learning Environment Preferences (LEP) is a measure of the Perry Scheme of cognitive development (Moore, 1989) (Appendix D). The LEP is an objective measure of intellectual development, addressing positions two through five of Perry's nine position scale. It consists of 60 items, each of which are rated on a 4-point Likert scale. The respondent is asked to rate each item according to what he or she considers to be the ideal learning environment. The respondent is then asked to priority rank what he or she considers the most salient statement in each of five domains that include: "(a) view of knowledge and course content, (b) role of the instructor, (c) role of the student and peers in the classroom, (d) the classroom atmosphere, and (e) the role of evaluation" (Moore, 1989, p. 506). To score the instrument, key responses in each domain are identified as being the most reflective of the Perry positions. The key responses are compared to the Cognitive Complexity Index (CCI) to establish the student's composite stage of intellectual reasoning. The CCI scores range between 200 and 500 and coincide respectively with Perry positions 2 through 5. There is one item in each domain that is written using complex sounding words but with little meaning, and this serves as a check to protect item reliability. The reliability coefficients range from .72 for domain three, to .84 (Moore, 1989).

The Watson-Glaser Critical Thinking Appraisal Form S (WGCTA) is a 40 item objective measure of critical thinking as it pertains to "attitudes, knowledge and skills" (Watson & Glaser, 1994, p.9) (Appendix E). It is developed on the premise that understanding that problems exist and that one must have or find evidence to support general truths is an attitude that is necessary to the process of

critical thinking. Equally necessary is the understanding that the abilities to deduct, theorize, and analyze are necessary when faced with different types of truths and the need to develop the logical supporting evidence. Finally, one must have or develop skills needed to acquire these attitudes and knowledge that are central to the process of thinking critically and developing conclusions. The WGCTA provides an estimate of student's abilities in these areas by combining data from five-sub-tests. The sub-test topics include: (a) inference, which is the ability to determine the degree to which deductions gained from data are true or false, (b) recognition of assumptions, which involves the ability to identify unstated or presumed information in declarations or claims, (c) deduction, which is the ability to decide whether the information from reports or suppositions leads to certain conclusions, (d) interpretation, which includes the ability to weigh evidence and determine whether the analysis or conclusions concerning certain data are justified, and, (e) evaluation of arguments, which is the ability, when considering a specific question, to determine between a powerful relevant argument and one that is weak and useless.

The WGCTA is a test of the ability to solve problems that are not dependent on the respondent having any knowledge in a specific content area. The instrument involves reading excerpts or stories containing problems encountered in every day situations. The excerpts may be either controversial or neutral. The controversial excerpts contain issues in social or political areas that evoke opinions or emotional responses from the person taking the test. The neutral excerpts evoke little emotion or opinion from most people. Emotions may

interfere with the ability to make critical thinking decisions and to make the test valid, the controversial items were needed (Geisinger, 1995).

The instrument contains five separately presented subtests. The respondent is instructed to take notice of specific directions which must be read carefully prior to taking each section of the test. Items in the inference sub-test have five possible responses, including 1) true, 2) probably true, 3) insufficient data, 4) probably false, and 5) false. The other tests have two possible responses each. Questions of deduction or interpretation ask for conclusions, whereby the respondent is asked to choose from either 1) “follows” (the statement) or 2) “does not follow”. Questions of recognition of assumption require the respondent to choose from either 1) “made” (recognition of assumption was made or not made) or 2) “not made”. The section regarding an argument is answered by responding with choices of 1) “strong” or 2) “weak”.

The score of each sub-test is determined by the number of correctly answered items. Incorrect answers do not count against the respondent. Individual sub-test scores are combined to create a single score that is considered as the measure of critical thinking and used as the test statistic. Watson and Glaser report internal consistency coefficients in mid .70's to low .80's (1994). The test manual indicates that one must have the equivalent of a ninth grade education to effectively use the instrument. The high-risk college students at the university meet this criterion.

Research Design

A quasi-experimental nonequivalent control group design was used for this study (Gall, Borg & Gall, 1996). Students in the experimental group were taught according to the DPE curriculum (independent variable) as specified in the course syllabus that is provided (Appendix F). A description of class sessions for the experimental groups is provided (Appendix G). Students in the comparison group were taught according to standard didactic teaching methods as specified in the existing College Experience 101 course syllabus that is provided (Appendix H). Testing of experimental and control group subjects took place the second week of classes in the fall 1999 classes (September) and again at the end of the semester. The instruments administered included the LEP, the PCM, and the WGCTA.

In the experimental section(s) the DPE model was integrated into the overall course design, thus, the research protocol did not disrupt the normal flow of the classroom work. The DPE protocol represented an addition to the existing College Experience 101 course. It did not deny the comparison groups the standard educational component of the course in any way. Confidentiality was maintained through the use of coded responses for all testing and through aggregate rather than individual reporting of results.

Precautions were taken to ensure that ethical standards were maintained throughout this research. Students were told that the study sought to examine the effect of the College Experience 101 course on their psychological growth during the first year of college, that the course is required for all students considered at

high risk of college failure, and that the university is concerned that their needs are being met with this course. Informed consent was obtained from all participants. They were informed that testing was voluntary, and that they might withdraw from participation at any time. Students chose their own identification codes to ensure confidentiality of the research process. They were informed that their grade in the course would not be affected by their choice regarding participation or non-participation in the research process.

Hypotheses

On the basis of current theory and research the following hypotheses were explored:

Hypothesis 1: Subjects in the College Experience 101 experimental group will show higher posttest levels of intellectual development than those in the comparison group as indicated by scores on the Learning Environment Preferences (LEP).

Hypothesis 2: Subjects in the College Experience 101 experimental group will show higher posttest levels of cognitive complexity than those in the comparison group as indicated by scores on the Paragraph Completion Method (PCM).

Hypothesis 3: Subjects in the College Experience 101 experimental group will show higher posttest levels of critical thinking than those in the comparison group as indicated by scores on the Watson-Glaser Critical Thinking Appraisal Form S (WGCTA).

Data Analysis

The following plan was employed for the statistical analysis of the data:

LEP, PCM, and the WGCTA.

Demographic data was obtained from all respondents during the initial test.

Scores were obtained for the pretest and for the posttest for each measure.

Due to the non-random group selection, the pretest scores of the experimental and the control groups were subjected to a one-way analysis of variance (ANOVA). This procedure was employed to determine whether there were significant differences among the experimental and control groups prior to the intervention. If pretest differences were found to be significant ($p < .05$), an analysis of covariance (ANCOVA) would be conducted to control for initial differences between pretest groups before comparing the group differences in posttest assessment.

If significant pretest differences were not found, an analysis of variance (ANOVA) would be conducted to compare the magnitude and significance ($p < .05$) of the difference between the experimental and comparison groups' pretest scores to posttest scores over time on each of the tests administered.

If significance was found, multiple comparison post hoc testing, such as a Scheffe, or Kruskal-Wallis test or a Tukey Honestly Significant Difference test would be conducted to statistically adjust for the possibility that a significant difference in scores could be found because multiple analysis were made on the data.

Critique

Internal validity. There are threats to internal validity whenever sample selection and assignment cannot be controlled. Foremost of these is the inability to achieve true randomization of the research sample. Despite the fact that, through university registration procedure, each student has as much chance being in one class as the other, the noted inability to achieve true randomization was an important consideration when conclusions were drawn from the resulting data.

Other considerations included:

History – Unique events might conceivably occur during the research period that could change the subject groups and, thus, confound the research findings. Fortunately, the possibility of such events occurring was equally possible for both the experimental and control groups and not likely to result in group differences that were unrelated to the intervention.

Maturation – It was possible that the students would mature physically or psychologically over the experimental time frame but this was equally possible for each group and, was not likely to result in group differences that were unrelated to the intervention.

Testing – It was imaginable that the students would show increased scores simply as a result of their pretesting with the same instruments, but, again, it was equally possible each group and, was not likely to result in group differences that were unrelated to the intervention. This also, has not been the case in previous research.

Instrumentation – Pretests and posttests were scored by professional testing services that were uninvolved with the students or the research. Although, there could have been group differences unrelated to the intervention based on instrumentation, the possibility was minimized by the fact that the raters were trained and experienced and were, therefore, the most reliable possible.

Statistical regression - Subjects whose scores fell in the extremes on the pretest could have a greater tendency to score nearer the mean on retest (Gall, Borg & Gall, 1996). However, because this was as likely in the experimental group as in the control group unexpected group differences as a result of regression were not expected to occur.

Differential selection – This was not a factor since the educators and the students had equal opportunity to be in each of the groups. The type of student selected for one section was not different than for another section of the course and, therefore, was not the cause of any observed statistical difference.

Experimental mortality – Attrition was as likely in the experimental as in the control group and was, therefore, expected to be distributed evenly. Students were able to self-select groups on registration, and so random selection was not possible. However, the curriculums were similar which minimizes the chances of a student wanting to move to another section of the course on the basis of curriculum, and, thus, protects against uneven attrition. Students who were experiencing difficulty in the course were given extra help in both the experimental and comparison groups, a protection against uneven attrition providing an additional safeguard.

Selection maturation – Group differences in the classes due to student age could have affected the study due to growth as a result of individual life experience. There was equal chance for students of all ages and backgrounds to enter each class. Hopefully this protects against test results being different simply due to growth as a result of individual life experience. It was assumed that such growth would occur for all students regardless of entry age, and, therefore, it was expected that selection maturation would not be the cause of any observed statistical difference.

Experimental treatment diffusion – The information of the experimental class was not shared with the instructors of the control group so as to prevent diffusion across the research which could interfere with the statistical results. The experimental class was taught with the DPE method and the control class was taught with regular didactic method.

Compensatory rivalry by the control group – The control group could possibly have performed above their usual level to rival the experimental group because they expected they were in competition. This was however, equally possible for the experimental group and so was not a problem to the research. Additionally, the groups were not aware which were the control and which were the experimental groups, and this would prevent rivalry by the control group.

Compensatory equalization of treatments – This could occur if the treatment group was seen as being given favorable treatment. This did not occur because the control group had the same book and general syllabus and lacked only the instructional framework of the DPE curriculum.

Resentful demoralization of the control group – The control group can resent the treatment given the experimental group and become discouraged and perform poorly. Because freshmen students generally find less work more favorable, this was not expected to present any statistical challenge.

External validity. This refers to the magnitude to which the results of a research study can be applied to situations or populations beyond those within the study (Gall, Borg & Gall, 1996). The testing procedures used were standardized and were chosen based on previous research and their relevance to the hypotheses. These standardized procedures were not altered during the research process, thus, maintaining a rigorous research approach. Further examination of the issue may occur but only in following research studies. The data did not support the hypotheses and is not generalizable.

Population validity. Generalizing beyond the experimental population to a larger defined population, to include either the accessible population of like students or the target population of all similar individuals is questionable. Population validity was threatened because the design did not provide for random selection and, therefore, cannot be generalizable to a population beyond the experimentally accessible population (Gall, Borg & Gall, 1996). Although personal characteristics of the individual students, including personality and behavioral attributes could have interacted with the study, there was equal chance for such interaction to occur in each class group, thus, this seems unlikely.

Ecological validity. Ecological validity is the ability to generalize a study from one set of environmental conditions to another (Gall, Borg & Gall, 1996) and includes:

Explicit description of the experimental treatment – The research study must be described well enough to be easily replicated. The researcher is confident that this requirement was met and that the study can be replicated.

Multiple-treatment interference – This is not an issue as the research study did not include many treatments that are difficult to replicate, but included one well-explained treatment. Therefore, it could be generalized to another study using the same format.

Hawthorne effect – The students became aware of the study during pretesting, and this could have affected their performance. However, the nature and purpose of the testing was stressed only at the beginning and at the end of the course. The significance of the testing process was not emphasized in the interim and, therefore, was not expected to cause significant impact on performance.

Novelty and disruption effects – The testing was built into the curriculum and did not disrupt the course plan. The entire freshman year is different from high school, and the testing and experimental process was not considered unusual. Disruption and novelty were therefore, not expected to cause any statistical difference in the research.

Experimenter effect – The researcher who had been teaching with this method for two years administered the treatment for the entire semester. Her enthusiasm

for this method of developmental education could have been transmitted to the students. However, since they were in a new situation and would have no experience with the course methods, the control would be for the instructor to follow the DPE model closely, which she did.

Pretest sensitization – The pretesting could prepare the students for direction for the class and affect the results, however, the measurements assessed broad generalizations of development rather than specific course content, so this was not expected to be the cause of any statistical difference.

Posttest sensitization – The possibility of the learning and direction of the course becoming clear during the posttest was feasible, however, this was equally possible in each of the classes and so was expected to be distributed equally across statistics.

Measurement of the dependent variable – The results were considered in light of only the named instruments used and were not contemplated regarding other measures. Any alteration of the dependent variable during the study would have invalidated this research process.

Strengths

This was a course in the freshman year of college where much of the developmental change in students has been found to occur. The intervention was designed to assist students in adjustment to the differences in college life and the challenges necessary for college success. The instructor of the course for the intervention group had considerable experience teaching this course in this

college system. This study will add to the knowledge of high-risk students in the freshman orientation course at Christopher Newport University and hopefully, will attribute to their academic success.

Ethical Considerations

Ethical standards were a consideration at all times. The students were informed clearly that the study was intended to examine the effects of the College Experience 101 course on their growth during their first year of college. Informed consent was obtained from all participants. They were informed that testing was voluntary and that they could withdraw at any time. Students chose their own identification codes that were registered on an information card for use at the second testing if they forgot them. These were rigorously protected for confidentiality. Their grade in the course was not affected by their choice regarding participation or non-participation in the research.

Summary

This chapter presented the design and methodology for the research. The study will add to the body of knowledge of high-risk college students and the methods used to support them in their pursuit of growth. Research in the classroom is generally difficult because of the myriad of possible variables with which to contend, but it is those same variables that add to the richness of opportunity of this approach. High-risk students may miss class and assignments or experience fear of a lack of knowledge of these deficits or reticence in self expression during discussions. Individual acknowledgement can stimulate a student to seek change. High-risk students come to college often, without a

feeling of impending success. When they begin to move educationally, it is rewarding for them and creates enthusiasm upon which an instructor can build. High-risk students often struggle with time management and assignments. As they learn skills and take control of their college lives, the self-awareness and self-efficacy developed are demonstrated in their ability to achieve success. Commuter students struggle with the demands of off campus needs and expectations of others. Supporting such students in developing identity, individuation, purpose and integrity while satisfying everyday expectations of a family demands that the instructor have an awareness of the student as a person. The relationship with the college professor may be one of the first independent and interdependent relationships available in the life of the student. In this mindfulness, teaching high-risk students becomes its own premium or reward.

CHAPTER FOUR

Description of the Intervention

Introduction

The intervention for the experimental group was designed using a Deliberate Psychological Education-based (DPE) format that will be described in this chapter. The comparison group was taught using the traditional didactic or lecture format that will also be described.

The College Experience 101

The College Experience 101 course at Christopher Newport University (CNU) was begun with the objective of supporting high-risk college students in achieving college success. The course aims at helping students (1) feel welcome in the academic environment and (2) evolve into university students seeking and capable of mastery. Students are required to take the course when their high school grade point average is satisfactory, but their SAT combined scores are below 1000, or if they had struggled with academic success in any courses in the past. For instance, they may have struggled with their last two years of English, achieving grades of C or D in the class. Others may request to enroll in the course on the advice of an adviser or an instructor, or the basis of previous achievement, their tendency to isolate, or their fear of failure. According to the undergraduate catalogue, the three credit, three hour per week course, is designed to:

“increase the student’s success in college by assisting them in obtaining the knowledge and skills necessary to reach their educational goals.

Topics include the nature of a liberal arts education, time-planning,

test-taking, communication skills, study techniques, memory skills, question asking skills, library use, and personal issues that face many college students. This course is recommended for freshmen, returning students, and transfer students who have completed less than 30 semester hours of credit. Students who have completed 60 hours or more may not enroll” (CNU Undergraduate Catalogue, 1999-2000, p.134).

The textbook required for the course, Becoming a Master Student, Eighth Edition, (Ellis, 1998), is a working text that is presented in a magazine format and is designed to generate interest, excitement and stimulus to read. The book includes twelve chapters with suggestions, methods, procedures, hints, shortcuts, and tools for achievement in a variety of topic areas. The topics include time-management, memory, tests, note taking, reading, thinking, and writing. The text also, includes information on relationships, attitudes, goals, diversity and health. It concludes with a futuristic overview of career planning, asking the student to look ahead and begin planning the next semester based on his or her desires for long term goals. The student is encouraged to continue the self-directed approach to studies and his or her future. Additionally, students can learn about well-known individuals who struggled in each topic area.

All students enrolled in the experimental and comparison groups of the College Experience 101 course used the same textbook and met in the CNU campus classrooms. The experimental groups met on Tuesdays and Thursdays for one hour and fifteen minutes each day. Experimental Group # 3 met at 8:00 am and experimental Group # 4 met at 9:30 am each of the days. The researcher,

who had taught the College Experience 101 course for four semesters previously, taught both experimental groups. The comparison groups met on Monday, Wednesday, and Fridays for fifty minutes. Comparison Group # 1 met at 8:00 am and comparison Group # 2 met at 12:00 noon. The comparison groups each had an instructor who had taught the course one prior semester. The instructors for the comparison group were familiar with the DPE instructional model and the concepts of cognitive development because they were graduate students in a cognitive developmentally focused counselor educator program in a nearby college. To differentiate between the instructional models to be used, a meeting was held with each instructor to discuss the needs of the study and to determine a plan to teach the comparison groups with traditional lecture format. Both instructors agreed to teach their respective classes using the traditional format.

The Deliberate Psychological Education (DPE) Curriculum

Developmental growth conditions applied through a DPE instructional model were employed in the experimental groups. The instructor deliberately mismatched the response or classroom experience to create constructive dissonance for the students, the outcome of which was to achieve enhanced understanding and multiplistic, critical thinking. With new understanding it was anticipated that there would be equilibration or resolution of the dissonance and ultimately psychological growth. The DPE conditions include:

1. Providing students with a significant new role-taking experience that includes new active learning to stimulate growth toward more complex cognitive development. The significance of college as a role-taking experience was

identified and discussed throughout the semester. It was considered important to expand and extend the students understanding of their role without the role becoming more complicated than the student could or would be willing to understand.

2. Careful guided reflection on the role-taking experience was built into the written and group sessions. The instructor identified issues pertaining to college student development or growth such as seeking new alternatives, seeking a middle gray zone for previously held dualistic opinions and beliefs, respecting others who hold opposite views, learning to argue in favor of opinions opposite beliefs, or taking charge of the manner in which the student manages his or her time. The experience in new thought concepts was directly reflected on in thoughtful contemplative responses from the instructor. For instance, if a student commented that he or she did not have to worry about more than one answer in high school, the instructor might describe how the student had moved to a higher level of education where more complex thinking was expected and the experience of contemplating more than one response would open possibilities for more success in all of his classes. The instructor would then ask the student to identify his other classes, and in discussion would identify areas where complex thinking would be an advantage. Including others in the class in the deliberation would broaden the perspective. The first student would be encouraged to continue his or her 'insight' throughout the semester. It was important that the student understood the significance of the role-taking experience on a personal level so that the experience would have effectiveness. Experience does not impact

psychological growth without significant comprehension of the impact of the personal encounter (Reiman, 1995).

3. A balance between the real experience and the reflection was maintained. Activities in the class, and outside class interests, along with instructor-selected topics were discussed in small group and full class sessions to maintain intensity in learning for the class time, throughout the semester. It was important to blend the experience with the reflection rather than have the student constantly experiencing. Discovery of the meaning of an experience would create an impression on the student. This impression or impact would be discussed for reflection to clarify the learning for the student. The course provided that opportunity.

4. Psychological growth occurs when there is support for the disequilibrium or dissonance that can accompany new role-taking, and this is balanced with the challenge to proceed with the new thinking and application of knowledge. Support and challenge were constants but were gradually altered through progressive introduction of dissonance to the class to encourage development of skills. Critical thinking skills are a good example. Students were taught critical thinking skills to include assessing, analyzing and critical problem solution. They were given response paper topics that were to be addressed using the skills. The expectation of multiple views or an alternative outlook on the response papers increased with time. Students were supported to continue in areas where they demonstrated success and encouraged through challenge to expand their work where they were not making progress. Examples were

provided in instances where students were unable to think of alternatives. Ideas were expanded for the student where they attempted to move to new ways of thinking. Encouragement to continue to try the new experience and give up their old ways was consistent.

5. Continuity is necessary for sustained development. The university allows only one semester for the course, and this is considered half the recommended time frame for the DPE instructional model and conditions to achieve the goal of psychological growth. Continuity is optimally achieved by supporting the growth over a year's time.

Matching and Constructive Mismatching

Continuity was also the aim of efforts to apply classroom topics to the real world. This was attempted through small group discussion, large group discussion, and separate-student selected small groups created for presentations at the end of the semester. These different groups provided an opportunity for the members of the group to discuss, try to understand, and share in each student's personal experience of the academic environment. For instance, students began the semester with a study assignment of learning styles and an assessment of their personal style. A small group task was to connect their personal learning style with methods of note taking and the subjects they were studying to determine the best approach to use in other classes. The students described how they would approach the subject, learn the subject matter, and pass the course requirements. They then each shared their findings regarding their personal learning approach in the small group. This provided alternative ideas and support for students who had

might not have considered these particular alternative methods. Then the most unique combinations were presented to the whole class. Due to the variety of learning styles, methods of note taking as well as courses available, students had many unique solutions to present to the whole class. Students were exposed to ideas they would not have previously considered.

During experiences such as these, the instructor would move about the room and join the groups to encourage the students to express themselves. The instructor would initially match the students learning style in order to make them comfortable in the learning process. For instance, if the student were a concrete learner, he or she would tend to learn best those things that they feel are important to them at the moment. To join a student in this would include asking how the item under discussion would apply to them today. To encourage students to move forward would involve constructively mismatching by asking them to imagine how the item under discussion would apply at another time or to someone else. If the item under discussion were a sociology class, discussion could begin with learning basics in the class in order to pass the course. A constructive mismatch might consist of developing multiple methods to succeed in the class or moving to applying the information to a career choice. A stronger mismatch could be used if the student was comfortable with the exercise, in which case, the student could be asked to apply the subject matter to circumstances that could occur to the student later in life, such as being elderly and needing health care. Students were encouraged to discuss differences of opinion with as much open student discussion as possible to permit movement to a more relativistic outlook.

Alternative views were strategically pointed out, encouraged, and used by the instructor to facilitate such movement.

Careful Guided Reflection

Students presented response papers to instructor-chosen issues on personal, college and current social topics, such as why they are attending college, if they would like their best friend from high school to be living in their dorm, and what their views are on abortion (Appendix I). Students were encouraged to provide responses where they would have to analyze the topic and employ critical thinking in their response (Appendix J). Students were challenged to demonstrate their understanding of the topic and to move from a concrete perspective to a well-rounded thoughtful comprehension. For instance, a student may have initially thought that it was positive to have a best friend to share a college dorm. After careful analysis, the student may have come to realize that an old friend would eliminate the need to meet new people, might expect more of the time needed to study, or might prevent the student from engaging in new experiences on the college campus. The instructor responded to each response paper with support, encouragement, and a careful challenge to encourage an alternative view or an expansion of a view. Students were encouraged to use response papers to express negative as well as positive ideas and thoughts and to communicate any topic that might be embarrassing or cause them to feel uncomfortable within the class structure. This created trust as instructor comments supported students' expression and allowed them to begin to bring up

topics in the classroom and to discuss experiences on the campus of both an academic and a personal nature.

Field trips and guest speakers were also used where pertinent to expand the students' contact with campus resources and to encourage the extension of this to outside resources to expand learning. The instructor went with the students to the library, computer center, career and counseling center. These experiences were discussed back in the classroom to explore alternative views and to clarify any misunderstanding students may have developed from the speakers. The high structure and supervision needs of high-risk students were provided through the instructor being with the students during the experience and debriefing after it so as to help them understand its significance.

Challenge with Support

As discussed previously, the college environment in itself can be a daunting challenge for a high-risk student. Consequently in the DPE curriculum, general course rigor, taking attendance, grading of all papers, and close supervision of all activities were aimed at providing the high-risk students with needed support in the form of class structure and direction. A course syllabus (Appendix F) was provided and reviewed in depth on the first class day. This syllabus provided the instructor's telephone numbers and e-mail address, a course description, information on the text, course objectives, description of teaching strategies, methods of student evaluation, and a full description of the grading system. An outline of the course schedule was provided that included class meeting dates, course readings, and assignments and exams with due dates. This course credit

was similar to all other courses. Course requirements were specific and geared toward the dualistic student so as to reduce dissonance upon entering a new class. The instructional method or process of the class would be novel and therefore, it was important to present the course requirements or content as clearly as possible.

When the semester began, close supervision of all class activities and extensive clarification of the instructional plan for each day were employed in the class. The instructor considered this important due to the expected dualistic nature of the students. Students were new to each other and new to experiential learning exercises, where learning takes place through activity and communication rather than lecture. For example, an exercise with students sitting on the floor and each having a lemon which they identify by color, smell, sight, blemishes, and size was used. The lemons are then collected and passed one by one around the circle of students to be identified by the original owner student. Students learn to interact with fellow students, and likewise learn that while the color, smell, sight, blemishes, and size do not change the lemons' designation as a lemon, they add a great deal to the originality of the lemon. This exercise is used to teach many issues, from cooperation (sitting on the floor is not common in classes and each must find a spot in the group and include the others in the class), to communication (students must work together so each finds his or her own lemon), diversity (the lemons have sameness and uniqueness and value), and memory (many senses used to remember and many memory techniques to identify their own lemon).

As the semester progressed, students became used to the experiential nature of the class work and comfortable with each other in group work. Students began to form bonds and feel a sense of belonging in the class. Questions regarding tests were asked from the perspective of we as opposed to I. Examples include the asking of “When will we know about the test?” rather than “when will I get my grade?” As the groups began to develop leaders, the supervision of what was occurring in each small group was reduced, and the instructor was able to move about the classroom without directing the activity. The dissonance of group interaction was diminished by the activity of the higher CL level students leading within the group. The instructor’s work then shifted to creating situations that facilitated the involvement of the more reticent students. They were often called on in their small group to explain whether the group was progressing. These students were asked to present information by putting it on the board and describing it for the class. These activities provided experience that was immediately identified by the instructor as one of the goals of the master student (Ellis, 1998). The title of the text in the class was used as reference to becoming independent, self-directed and successful in their tasks as students. Knowing information is valuable, however students are expected to be able to share with others the information they learn. The goal of being more open and interactive in the classroom through working with fellow students and speaking out, has a benefit of increasing interest and excitement that leads to involvement learning and mastery.

The instructor provided continuity and support through guiding the reflection on the daily activities. This took place in the beginning of the class and at the end of the class. Each day students were asked to discuss and reflect on the knowledge they felt they had learned in the previous class. At the end of the class, students were asked to discuss the current educational topic and to identify any relationship they might see it to have to the previous learning topic. For instance, when studying reading and memory, there are approaches to learning while reading that simultaneously provide for the process of memory. Patterns emerged where students began connecting learning in one category to that of another category and feeling that there was a connectedness about their semester. Students were encouraged to see the processes of the learning as being complementary and interconnected. In the beginning of the semester, the instructor did most of the work of connecting information and identifying techniques that had been noted in other sections. As methods for reflection on learning were established, students were asked questions to accomplish the task of interconnection among the sections of the book. The discussion regarding learning in the classroom was also tied to their experience in other classes as a current college student. For the role-taking experience to have lasting value there needed to be meaningful discussion of its significance. As can be seen, that discussion was facilitated in a number of ways in the DPE curriculum.

Critical Thinking

Critical thinking was introduced as a vehicle to provide for the development of alternative views. An alternative view implies having an ability to think of a

solution or answer which has multiple options, selections or choices as opposed to one answer. It was important to introduce a method of examining issues so as to learn to see a variety of diverse opinions, but to do it in such a way that the students did not become discouraged and consider the material mysterious or unfathomable. If the new task were comprehensible, the students would experience less dissonance. Individual weekly response papers were written as an exercise in critical thinking. This proved very difficult, and many struggled with the exercise. It was hypothesized that the students, who were able to write papers using critical thinking, considered the response paper as a research paper. To find the answer these students went to a resource book such as an encyclopedia and developed multiple views using a listing process. Those who were unable to write the response paper considered the exercise an opinion paper, and because they could not present alternative views, they struggled with the task. Response papers were graded, and those who had not been successful were given an opportunity to redo the paper with instructor feedback ideas to help him or her further develop the paper. Many students succeeded in demonstrating a higher level of critical thinking, and then proceeded to write well in future papers. Other students needed more direction, encouragement and specific instructions to complete assignments. Students were rewarded with positive comments on papers that contained alternative views so that they would be aware they had accomplished their task. Encouraging words were provided on every paper to maintain continuous support, and to recognize the effort as a new and possibly difficult approach to use in thinking. When for any reason, a topic created too much

dissonance, as indicated by the students' reluctance to write about the topic, the instructor gave students permission to eliminate a particular response paper topic. The student then would meet with the instructor, and together they would decide on a new topic. Five students changed topics over the course of the semester. For example, one student had had an abortion and was not yet reconciled with the issue, but was willing to write on an alternative topic. It was not necessary to use the original topics to learn critical thinking. The critical thinking process was difficult, and when combined with the alternative views required by the response papers, created considerable dissonance for the students who were at lower CL levels. However, because critical thinking skills are expected of the successful college student, the DPE curriculum focused on helping students to manage this dissonance, not eliminate it.

The use of the DPE curriculum for the experimental groups was intended to encourage college student developmental growth throughout the semester. The new role-taking experience as a college student was identified and valued through a careful and balanced guided reflection on the experience of role. Support for the dissonance that can accompany new role taking for the students was balanced with the challenge to proceed. Continuity for sustained development was provided by instructor contact throughout the semester.

The Comparison Curriculum

The comparison curriculum used for the groups was the basic College Experience 101 curriculum offered typically to students at the university. The content of the curriculum was same as that in the experiential groups, but the

method of instruction was didactic lecture format. The syllabus (Appendix H) was similar to the experiential group syllabus. The text was identical, and the topics for the weekly work, even though arranged differently, were also identical.

The daily format in the comparison groups involved lecture, and class discussion was conducted as a large group rather than small group. Exercises to reinforce the subject matter were employed without the added DPE emphasis of advancing the alternative view or critical thinking. Issues presented in weekly journal papers were designed to investigate the students' thinking regarding the current topic under study. Critical thinking skills were not emphasized. The instructors responded to the journal papers, but their responses tended to be specific to the mastery of the skill topic at hand. Their responses aimed more at promoting academic achievement than the psychological growth of the student. There was not an intention to raise the students' awareness beyond that which was necessary to meet course requirements. If the student mentioned an issue, the instructor would respond to the issue.

In the traditional lecture format, the instructor in the classroom, possessed the knowledge of a topic and presented it to the students. Students were allowed to discuss the topics as a large class, but without the small group work, there were less opportunities for the instructor to hear the development of ideas within the class by many different students. This format did not vary through the semester. The instructors did not require students to write weekly papers to be with critical analysis. Abstract thought was approached in large group discussion during the semester. Students were graded on three tests that were composed of class

created questions. This method of evaluation was developed to make the students experience involvement in their studies and their class. Students grading included a presentation and project that were standard expectations for the College 101 course. Students were aware of their grading system and appraised of their performance in the classroom. The model for the comparison group was content based and information laden, whereas the DPE course used content as a medium for promoting psychological growth the students.

Summary

This chapter described the Deliberate Psychological Education-based (DPE) format used for the intervention in this research study. The comparison group was taught through the traditional didactic or lecture method and this was described. Chapter five will describe the results obtained from the intervention.

CHAPTER FIVE

Results

Introduction

The purpose of this study was to evaluate the intellectual, conceptual and critical thinking development of high-risk college students in a freshman orientation course. The study employed a quasi-experimental design with the experimental group instructed according to a Deliberate Psychological Education (DPE) based-model and the comparison group instructed in the conventional didactic manner. The findings of this study will be presented in two sections: the descriptive statistics and the data analysis for the research hypotheses.

Descriptive Statistics

The sample for this study consisted of 98 students enrolled in the College Experience 101 course at Christopher Newport University. The students were assessed using three research instruments and a demographics questionnaire at the beginning of the fall semester. Administration of the three research instruments was repeated at the end of the fall semester. Fifteen students failed to complete all of the research instruments; one student withdrew during the initial class and did not participate in the pre testing; and four students withdrew from the program during the semester. All of the above were excluded from the statistical analyses. This yielded a total of 82 subjects for the research. The students were divided into four self-selected classes that became the subject groups for the study. There were two classes composing the experimental group and two classes composing the comparison group. The experimental group contained 42 subjects, with 21

students in each of the two classes designated as Group E 3 and Group E 4, and the comparison group contained 40 subjects, with 18 students in one class designated as Group C 1, and 22 students in the other class designated as Group C 2.

At the beginning of the semester, each student participating in the study signed a consent form attesting awareness that he or she could withdraw from participation in the study at any time, and that this would in no way affect the grade in the course. Students' grades were determined by meeting the requirements of the class in which they were registered and not by participating or not participating in the research. The students also completed a descriptive personal data questionnaire that included age, race, marital status, educational level, student status and living arrangements, and an added description of the student's family education and student intended major.

Of the 82 subjects, 56.1% were females and 43.9% were males. The experimental group consisted of 23 females and 19 males while the comparison group consisted of 23 females and 17 males (Table 2). The mean age for the entire sample was 18.13 years with a range of 17 to 22 years. The 17-year-olds were split with six in the comparison group and five in the experimental group. Of the 18-year-olds, twenty-two were in the comparison group and thirty-one were in the experimental group. The majority of the 19-year-olds were in the comparison group and the 20 and 22 year-olds were split with one in the comparison group and one in the experimental group (Table 3). The majority of

students in the sample were freshmen with 95.1% freshmen, 3.7% sophomores and 1.2% a senior. Group divisions by class rank are presented in Table 4.

Table 2.

Description of Gender of Students (n=82)

	Comparison Group (n=40)		Experimental Group (n=42)		
Gender	Group 1	Group2	Group3	Group 4	Total
Female					
Frequency	14	9	13	10	46
Percent	63.6	50.0	61.9	47.6	56.1
Male					
Frequency	8	9	8	11	36
Percent	36.4	50.0	38.1	52.4	43.9
Total					
Frequency	22	18	21	21	82
Percent	100.0	100.0	100.0	100.0	100.0

Table 3

Description of Age of Students (n=82)

		Comparison Group (n=40)		Experimental Group (n=42)		
Age		Group1	Group 2	Group3	Group 4	Total
17	Frequency	3	3		5	11
	Percent	13.6	16.7		23.8	13.4
18	Frequency	12	10	19	12	53
	Percent	54.5	55.6	90.5	57.1	64.6
19	Frequency	6	5	2	3	16
	Percent	27.3	27.8	9.5	14.3	19.5
20	Frequency				1	1
	Percent				4.8	1.2
22	Frequency	1				1
	Percent	4.5				1.2
Total	Frequency	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

Table 4

Description of Current Educational Level of Students (n=82)

		Comparison Group (n=40)		Experimental Group (n=42)		
Class		Group1	Group2	Group 3	Group 4	Total
Freshman	Freq.	20	18	21	19	78
	Percent	90.9	100.0	100.0	90.5	95.1
Sophomore	Freq.	1			2	3
	Percent	4.5			9.5	3.7
Senior	Freq.	1				1
	Percent	4.5				1.2
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

The majority of students (87.8%) entered the class with a high school diploma only. The remaining 12.2% of the students had earned college credit before entering the course as illustrated in Table 5. Scores were also included in Table 5 for a senior with 100 college credit hours whose college history was not discovered until near the end of the semester. Despite that academic history, his scores on the testing instruments were similar to the rest of the class and were, thus, used in the study.

Table 5 **Description of Previous College Credit Earned by Students (n=82)**

		Comparison (n=40)		Experimental (n=42)		
High School or College Credit		Group 1	Group 2	Group 3	Group4	Total
HighSchool	Freq.	19	17	20	16	72
Only	Percent	86.4	94.4	95.2	76.2	87.8
2 College	Freq.				1	1
Credits	Percent				4.8	1.2
5 College	Freq.			1		1
Credits	Percent			4.8		1.2
6 College	Freq.	1			1	2
Credits	Percent	4.5			4.8	2.4
12 College	Freq.		1			1
Credits	Percent		5.6			1.2
15 College	Freq.				1	1
Credits	Percent				4.6	1.2
17 College	Freq.				1	1
Credits	Percent				4.8	1.2
27 College	Freq.	1			1	2
Credits	Percent	4.5			4.8	2.4
100 College	Freq.	1				1
Credits	Percent	4.5				1.2
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

Enrollment status of the subjects is presented in Table 6. Of the sample, 97.6% of the students were full time college students and 2.4% were part time students. Table 7 provides the resident status of the students. The university opened the first campus residence hall five years ago, and although the majority of the students, 61%, live in the residence halls, a large number of students, 39%, continue to commute. Of the commuter students, 28% lived with their parents and 11% lived in an apartment.

Table 6

Description of Enrollment Status of Students (n=82)

		Comparison Group (n=40) Experimental Group (n=42)				
Status		Group 1	Group2	Group 3	Group 4	Total
Full Time	Freq.	21	18	20	21	80
Student	Percent	95.5	100.0	95.2	100.0	97.6
Part Time	Freq.	1		1		2
Student	Percent	4.5		4.8		2.4
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

Table 7

Description of Living Arrangements of Students (n=82)

		Comparison Group (n=40)		Experimental Group (n=42)		
Living Arrangements		Group 1	Group 2	Group 3	Group 4	Total
Apartment	Freq.	5	2		2	9
	Percent	22.7	11.1		9.5	11.0
With Parents	Freq.	6	8	5	4	23
	Percent	27.3	44.4	23.8	19.0	28.0
Residence Hall	Freq.	11	8	16	15	50
	Percent	50.0	44.4	76.2	71.4	61.0
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

With regard to the racial makeup of the students, the combined groups consisted of 84.1% Caucasian, 12.2% African American, and 1% Native American. Mixed racial heritage was identified by 2% of the respondents, including one who was Caucasian and African American and another who was Latino and Hawaiian. Complete statistics for racial heritage are presented in Table 8.

Table 8

Description of Racial Heritage of Students (n=82)

		Comparison Group (n= 40)		Experimental Group(n=42)		
Race		Group 1	Group 2	Group 3	Group 4	Total
African	Freq.	3	5		2	10
American	Percent	13.6	27.8		9.5	12.2
Multi	Freq.				2	2
Racial	Percent				9.5	2.4
Native	Freq.	1				1
American	Percent	5.6				1.2
Caucasian	Freq.	19	12	21	17	69
	Percent	86.4	66.7	100.0	81.0	84.1
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

The marital status of the students shown in Table 9 included 93.9% who identified themselves as having never been married, 3.7% as being unmarried but living in a committed relationship, and 2.4% as being unmarried single parents raising a child.

Table 9

Description of Marital Status of Students (n=82)

		Comparison Group (n=40) Experimental Group (n=42)				
Marital		Group 1	Group 2	Group 3	Group 4	Total
Never	Freq.	12	17	21	19	77
Married	Percent	90.9	94.4	100.0	90.5	93.9
Unmarried	Freq.	2			1	3
Committed	Percent	9.1			4.8	3.7
Unmarried	Freq.		1		1	2
With Child	Percent		5.6		4.8	2.4
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

Students appear to have varied reasons for taking the College Experience 101 course as shown in Table 10. A total of 51.3 % of the students were taking the course as a requirement of attending the university. Of these, 47.6% of the students were required to take the course during their freshman year based on being at high risk for academic failure, and 3.7% of the students were taking the course as part of a probation period to see whether they could maintain grades high enough to remain in college. The remaining 48.8% students identified that

they were taking the course as an elective. The elective counted at CNU for college credit but was not considered transferable credit for other institutions. It is hypothesized that some of the students, such as the identified senior, may have taken the course for elective credit rather than a more demanding content course such as art history.

Table 10

Description of Students' Motivation for Taking Course (n=82)

		Comparison Group (n=40)		Experimental Group (n=42)		
Motivation		Group 1	Group 2	Group 3	Group 4	Total
Elective	Freq.	14	11	9	6	40
	Percent	63.6	61.1	42.9	28.6	48.8
On Probation	Freq.	1		2		3
	Percent	4.5		9.5		3.7
Required	Freq.	7	7	10	15	39
	Percent	31.8	38.9	47.6	71.4	47.6
Total	Freq.	22	18	21	21	82
	Percent	100.0	100.0	100.0	100.0	100.0

The family education component of the demographic data collection provided additional information about the students' family education and intended major while in college as shown in Table 11. More students came from homes where parents were educated than not educated. Students from homes where their father had a college education comprised 63.4% of the sample, while 36.6% reported that their father was not college-educated. The mothers were college-educated in 56.1% of the families, and 43.9% reported their mother was not college-educated. Of siblings of the students, 27% of sisters and 17.1% of brothers were in college or had attended college. Of the sample, 22% of the students were the first in their family to attend college and 78% were from families with other college-educated members.

Table 11

<u>Description of Students' Family Education (n=82)</u>			<u>Comparison Group (n=40)</u>		<u>Experimental Group (n=42)</u>		<u>Total</u>
<u>Family Education</u>			<u>Group</u>	<u>Group</u>	<u>Group</u>	<u>Group</u>	
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	
Father	College	Freq.	14	12	13	13	52
	Education	Percent	63.6	66.7	61.9	61.9	63.4
	No	Freq.	8	6	8	8	30
	Education	Percent	36.4	33.3	38.1	38.1	36.6
Mother	College	Freq.	10	9	12	15	46
	Education	Percent	45.5	50.0	57.1	71.4	56.1
	No	Freq.	12	9	9	6	36
	Education	Percent	54.5	50.0	42.9	28.6	43.9
Brother	College	Freq.	1	4	5	4	14
	Education	Percent	4.5	22.2	23.8	19.0	17.1
	No	Freq.	21	14	16	17	68
	Education	Percent	95.5	77.8	76.2	81.0	82.9
Sister	College	Freq.	5	5	7	5	22
	Education	Percent	22.7	27.8	33.3	23.8	26.8
	No	Freq.	17	13	14	16	60
	Education	Percent	77.3	72.2	66.7	76.2	73.2
1 st to go		Freq.	6	1	5	6	18
	College	Percent	27.3	5.6	23.8	28.6	22.0
		Freq.	16	17	16	15	64
	No	Percent	72.7	94.4	76.2	71.4	78.0
Total		Freq.	22	18	21	21	82
		Percent	100.0	100.0	100.0	100.0	100.0

The students were asked to identify their major or intended major, and 39% of the 82 students in the sample identified that they were undeclared in major status. Those who declared a major were evenly divided among a large variety of majors in the experimental and comparison groups. These majors are shown in Appendix K.

Analysis of the Research Hypotheses

This section will include each research hypothesis restated with the results presented for the hypothesis. The following table shows the means of the

subjects' pretest and the posttest scores for all the instruments used in the study (Table 12). There were no significant pretest differences identified and so an ANCOVA was not necessary.

Table 12

Means of All Scores (n=82)

		Comparison Group (C) (n=40)		Experimental Group (E) (n=42)	
Test	Group	Number	Mean	Standard Deviation	
Pre CCI	C1	17	303.82	41.73	
	C2	22	309.23	40.61	
	E3	21	309.52	50.32	
	E4	21	307.29	43.16	
	Total	81	307.67	43.41	
CCI	C1	17	319.35	49.55	
	C2	22	308.86	41.65	
	E3	21	316.57	44.70	
	E4	21	322.48	36.51	
	Total	81	316.59	42.50	
Pre PCM	C1	18	1.66	.31	
	C2	22	1.62	.30	
	E3	21	1.56	.34	
	E4	21	1.84	.35	
	Total	82	1.67	.34	
Post PCM	C1	18	1.44	.45	
	C2	22	1.65	.34	
	E3	21	1.65	.25	
	E4	21	1.71	.33	
	Total	82	1.62	.35	
Pre CTA	C1	18	22.67	4.35	
	C2	22	21.86	4.13	
	E3	21	24.19	4.57	
	E4	21	22.95	3.96	
	Total	82	22.91	4.26	
Post CTA	C1	18	24.39	4.63	
	C2	22	20.91	4.37	
	E3	21	23.43	5.64	
	E4	21	22.43	4.62	
	Total	82	22.71	4.92	

Hypothesis 1: Subjects in the College Experience 101 experimental group will show higher levels of intellectual development than those in the comparison group on the posttest as indicated by higher scores on the Learning Environment Preferences (LEP).

The pre and post data for the LEP (CCI score) were entered into a 2 (Time) by 4 (Group) repeated measures ANOVA (Table 13).

Table 13

ANOVA Results for Hypothesis 1.

Source	SS	Df	MS	F	Sig
Between					
<u>Group</u>	781.82	3	260.61	.09	.97
Error	234257.9	77	3042.31		
Within					
<u>Time</u>	3506.10	1	3506.10	4.62	.04
Time*Group	1769.02	3	589.67	.77	.51
Error	58468.76	77	759.34		

The test of within-subjects effects revealed that the groups changed significantly over time ($p = .04$) from pretest to posttest but, the absence of time by group interaction ($p = .51$) also indicated that change over time was no greater in the experimental than the comparison group. Specifically the identified difference in posttest levels of intellectual development was an increase in the

means scores over time. The combined experimental and comparison group mean scores in Time 1 is 307 and in Time 2 is 316, showing that intellectual development increased for both experimental and comparison subjects from pretest to posttest. However, because there were no statistically significant difference between the experimental and comparison groups in posttest LEP scores Hypothesis 1 was not supported. The description of the mean scores are shown in Table 14.

Table 14

Description of Within Time Differences for the LEP

Group	Time	Mean	Standard Error
1	1	303.82	10.71
	2	319.35	10.43
2	1	309.23	9.42
	2	308.86	9.16
3	1	309.52	9.65
	2	316.57	9.38
4	1	307.28	9.65
	2	322.47	9.38

Hypothesis 2: Subjects in the College Experience 101 experimental group will show higher posttest levels of cognitive complexity than those in the comparison group as indicated by higher scores on the Paragraph Completion Method (PCM).

The pretest and posttest data for the PCM were entered into a 2 (Time) by 4 (Group) repeated measures ANOVA (Table 15).

Table 15

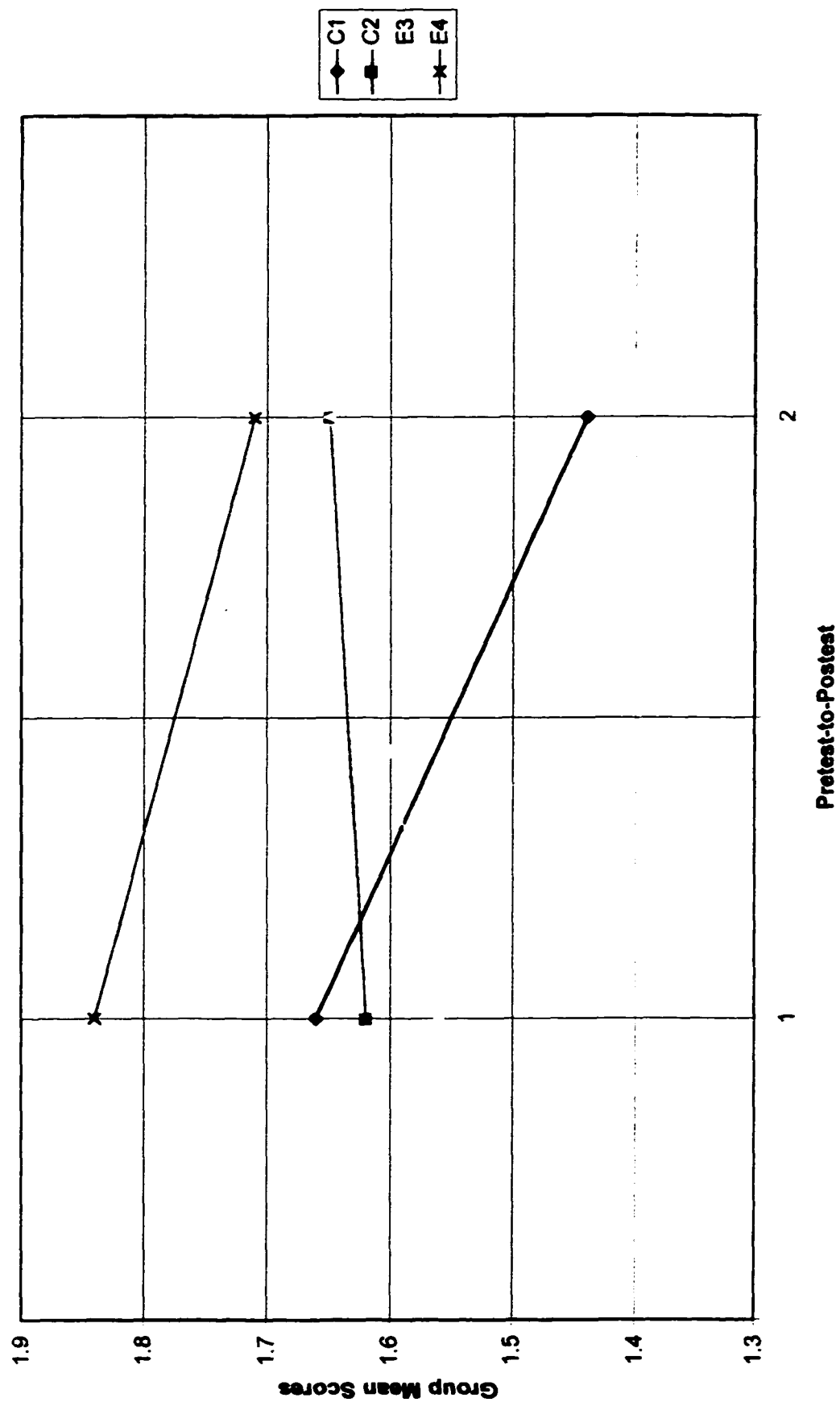
ANOVA Results for Hypothesis 2:

Source	SS	Df	MS	F	Sig
Between					
<u>Group</u>	1.07	3	.36	2.29	.09
Error	12.22	78	.16		
Within					
<u>Time</u>	.14	1	.144	2.14	.15
Time*Group	.613	3	.204	3.03	.034
Error	5.62	78	6.74E		

The results show in the tests of within-subjects effects that there was no time effect ($p = .15$), that is there was no change when looking at each group from the pretest to the posttest. There was, however, a group by time interaction ($p = .034$). An interaction occurs when the effect of one independent variable depends on the level of the other independent variables. When looking at the differences of each group in pretest to each group in posttest and then viewing all of the pretest and posttest scores, there is a wide spread between the highest score and

the lowest score. In the initial analysis this appeared as a significant difference ($p=.034$) that suggests that the groups changed differentially over time. Follow up study was required because this significance was not supported either by the between group significance score ($p=.09$) or the within time significance score ($p=.15$). Therefore, the scores were examined further with a manual analysis that involved plotting the interaction means and checking for significant differences (Figure 1). The means of each group and time, in pretest and posttest were plotted. Time was plotted as the pretest scores and posttest scores on the X axis. While groups, C1, C2, E3, and E4 were plotted on the Y axis, mean scores for Comparison Group 1 started at 1.66 on the pretest and decreased to 1.44 on the posttest. Mean scores for Comparison Group 2 started at 1.62 and increased up to 1.65 on the posttest. Mean scores for Experimental Group 3 started at 1.55 and increased up to 1.64 on the posttest. Mean scores for Experimental Group 4 started at 1.83 and decreased to 1.70 on the posttest. In fact, the difference that was initially detected was the difference between the low score of Group C1 on the posttest of 1.44 and the high score of Group E on the pretest of 1.83. Because change on the PCM was not isolated to the experimental groups and change that did occur was not significant ($p = .085$), Hypothesis 2 was not supported.

Figure 1: Group X Time Interaction



Hypothesis 3: Subjects in the College Experience 101 experimental group will show higher posttest levels of critical thinking than those in the comparison group as indicated by higher scores on the Watson-Glaser Critical Thinking Appraisal (WGCTA) Form S.

The pretest and posttest data for the WGCTA FORM S were entered into a 2 (Time) by 4 (Group) repeated measures ANOVA (Table 16).

Table 16

ANOVA Results for Hypothesis 3.

Source	SS	Df	MS	F	Sig
Between					
<u>Group</u>	150.28	3	50.09	1.68	.18
Error	2328.36	78	29.85		
Within					
<u>Time</u>	.68	1	.68	.06	.81
Time* Group	43.93	3	14.64	1.25	.30
Error	910.80	78	11.68		

The results show in the test of within-subjects effects that there was no time effect ($p = .81$), that is, there was no change when looking at each group from the pretest to the posttest. There was also no group by time interaction ($p = .30$). There were no significant group differences of the tests of between subjects

effects ($p = .18$) meaning that in looking at the all the pretests and all the posttests, there were no significant differences.

The WGCTA Form S showed no increase in the scores of critical thinking ability between the groups, no increase in the posttest scores of critical thinking over time and no differences in scores of critical thinking ability among the groups over time using scores of the WGCTA Form S. Therefore, Hypothesis 3 was not supported.

Summary

This chapter reported the results of the investigation of the College Experience 101 course and the cognitive development of the students using the Learning Environment Preferences (LEP), the Paragraph Completion Method (PCM), and the Watson-Glaser Critical Thinking Appraisal (WGCTA) Form S. Descriptive statistics and data analyses of the hypotheses were reported. The next chapter will discuss the research findings and their implications.

CHAPTER SIX

Discussion and Conclusions

Introduction

This research was designed to investigate the cognitive development of high-risk college students enrolled in a college experience course developed to support the students academically and personally. The study sought to demonstrate that students in the experimental groups who were taught using a Deliberate Psychological Education instructional method would show greater growth than the comparison groups within the intellectual, and conceptual domains of cognitive development, as well as in critical thinking ability. These domains and critical thinking were measured respectively by the Learning Environment Preference (LEP) (Moore, 1989), the Paragraph Completion Method (PCM) (Hunt, Butler, Noy, & Rosser, 1977), and the Watson-Glaser Critical Thinking Appraisal (WGCTA) (Watson & Glasser, 1994). The students in this study did not achieve the anticipated growth in the domains of conceptual, or intellectual development, or in critical thinking ability.

This chapter will discuss the results as well as the implications of the findings for the continued study of high-risk college students. Limitations of the research will also be examined.

Review of the Hypotheses

The research hypotheses presented in chapter three are summarized here:

Hypothesis 1: Subjects in the College Experience 101 experimental group will show higher posttest levels of intellectual development than those in the

comparison group as indicated by their scores on the Learning Environment Preferences (LEP).

Hypothesis 2: Subjects in the College Experience 101 experimental group will show higher posttest levels of cognitive complexity than those in the comparison group as indicated by their scores on the Paragraph Completion Method (PCM).

Hypothesis 3: Subjects in the College Experience 101 experimental group will show higher posttest levels of critical thinking than those in the comparison group as indicated by their scores on the Watson-Glaser Critical Thinking Appraisal (WGCTA) Form S.

Discussion of Major Findings

The findings of the study did not support the hypotheses, and there are a variety of reasons possible for the lack of significant results. These findings will be discussed in the categories of psychological development within the intellectual and conceptual domains, critical thinking development, and study limitations. The study limitation section will examine the nature of the sample, the duration of the study, the experimental process and the instrumentation. Conclusions will be drawn and recommendations for further research will be offered.

Psychological Development

This section will discuss the findings and implications with regard to the intellectual and conceptual domains of psychological development.

Intellectual Development

The findings regarding intellectual development as demonstrated by subject scores on the LEP did not support the hypothesis. However, slight growth was detected in intellectual development, and it occurred in the predicted direction. The mean pretest CCI score for all of the groups was 307.47; this falls within the Perry Position 3. The mean posttest CCI score was 316.82, placing the students even more firmly into Perry Position 3. The scores shifted in the desired direction of the hypothesis, but they did not increase enough to reach the level of significance. To shift to the next level, transition Position 3-4, they would have had to increase to a CCI of greater than 330. When looking at the individual group-over-time mean scores, the developmental growth occurred for subjects in three of the groups, two experimental and one comparison. In that the mean within-group scores were higher in three of the four groups, it appears an increase in cognitive complexity or intellectual development occurred for the majority of the students. There may be several possible reasons for this increase not having reached the expected level of significance.

Resistance in high-risk students. One explanation for the lack of significant findings might be the impact of greater than expected resistance in the high-risk student. The sample of students is unique in that they are high-risk students and not easily trusting of new experiences or willing to change patterns which have supported them in the past. As mentioned in chapter 2, the college student is engaged in the process of organizing experiences and changes encountered into meaning within the context of his or her level of development. Kitchener (1983)

described knowing as clear, limited, or unknown. She also explained that assumptions are used to sort experiences that are taken into meaning. The experiences are sorted as knowledge to preserve, or as an interest to continue to question, or as alien puzzles. The student sorts then integrates the new experiences into meaningful understanding and reciprocally uses this understanding in making sense of the next new experience. Thus, the assumptions underlying students' retained knowledge base are used to make meaning of their new college experience (Baxter-Magolda, 1992). According to McAdams (1988), high-risk students often approach the new college learning process with discomfort and resistance. When high-risk students encounter new experiences that are not easily understood, they may reject rather than integrate the information and deny the legitimacy of the perception. Only when enough similar experiences have been amassed does the resistance break down and change allow acceptance and new awareness. Students are considered high-risk due to previous failures or lack of successes in educational situations. Combining their previous failures in education with expected resistance and denial would certainly explain a greater than normal unwillingness of these high-risk students to consider new educational concepts. Therefore, the students in this study may have made slower progress in psychological growth than students who were not high-risk and who might more willingly conform to, rather than resist, the new instructional format.

The meaning of Perry Position 3. Another explanation for the findings not reaching a level of significance may be factors unique to Perry's (1970) Position 3. Students all fell into Perry's Position 3. As indicated in chapter 2, the critical assumptions a student would possess to function in Position 3 include the understanding that authority is still trusted even though authority may not have all the answers. This is because all the absolute answers are not yet known, and authority is still seeking those answers. Students who are in Perry's (1970) Position 3 are characterized as beginning to tolerate uncertainty and diversity of opinion but, at the same time, they are critical when they think instructors are unwilling or incapable of providing all knowledge to the class. Because these students still trust in an ultimate authority, they may be more likely to feel that the immediate authority does not have all the answers rather than to consider that the answer does not exist. Students in the Perry Position 3 are seen as advanced from Position 2 because they come to understand for the first time that individual authority is not absolute. Students now recognize that there are situational unknowns, but they believe authority is actively seeking and, ultimately, can find the answer. The students in Position 3 may assume that professors who do not provide the information they think is needed are inadequate or puzzling. These students often feel the instructor is fumbling to find the right answer when that instructor asks them for more than a dichotomous response. For example, a student who is asked to explain or provide interpretation as an answer may struggle with wondering which is the right answer expected and why isn't the professor more clear in the demand. It is possible that the subjects in this study

felt their instructors were unwilling or incapable of providing answers since many exercises were created to have multiple answers.

Another assumption characteristic of students in Position 3 relates to the demand of professors that the student begin to seek multiple answers or points of view. When Position 3 students are asked to think in terms of a multiplicity of answers or points of view, they will, according to Perry (1970), respond in one of two ways. They will either enjoy the exercise or reject the work. Those who enjoy the activity tend to see the work as creating “an aggregate of discretes without internal structure or external relation” and find later that they have opened the door to multiplistic thinking and are in a “more flexible position for further growth” (Perry, 1970, p. 73). These students will develop a list of possible multiple answers but will not likely connect them or associate this list with expanding the point of view they are addressing. They simply make the list and satisfy the professor. However, according to Perry (1970), once they have engaged in this list building, they have given away their previously firmly held possession of the dichotomous view and they have begun the process of developing pluralism. This is the arrangement that is necessary for further growth to occur. They do not acknowledge that they are looking at multiple possibilities at this time, but the process of development is begun (Perry, 1970).

Those who reject the work of seeking multiple answers or points of view are uncomprehending of what the professor is expected of them and move firmly into protecting themselves by resisting the experience. These students often go to great lengths to defend their dichotomous beliefs. These students will spend as

much time arguing with the professor concerning their dichotomous views as the previously mentioned students will spend making their multiplistic list. Those who work through this resistance in thinking and begin to even see one or two instances of multiplicity or uncertainty become liberated from their dichotomous beliefs, begin to develop and experience pleasure in the new freedom of thought according to Perry (1970). Students in this study were asked to think multiplistically and did respond with both of these characteristic styles. One student was heard to say in frustration to her group members “All she wants you to do is make a list!” Another student when encouraged to move beyond his passionately stated reasoning, “No, I believe what I just said!” The student was able to explain that he did “not intend to think any other way” regarding that subject. It is possible that the students in the study who did not learn to think multiplistically were experiencing dissonance with the exercise and responded through rejecting the work.

The third critical assumption possessed by a student in the Perry (1970) Position 3 would be a lack of understanding of how their work is judged. Students commonly judge their work in terms of the quantity of work rather than the quality of their work. They enter college expecting to provide a certain number of pages in a report or a certain number of supporting arguments in an essay. They compare grades with classmates according to scores achieved. This previously held gauge of quantity is no longer applicable in the college setting. Students in college find their work being judged by professors who want multiple answers. Students wonder how a professor who seeks to evaluate everything by

looking at multiple answers, can judge work right or wrong. This is a procedural problem for many college students and particularly for those at high-risk (Perry, 1970). These students see instructors as evaluating 'something' other than the underlying rightness or wrongs of their responses. Because they are used to simple responses that they know are meeting or not meeting the expected standard, when the expectation is to think pluralistically, the student becomes confused. The students also believe the answers are judged right or wrong, or that they are judged comparatively with peers, even when the instructor doesn't know the real answer or the real answer is yet unknown. This creates dissonance for students seeking to supply the desired concrete answer. They are also used to providing the results of their hard work with just the correct number of pages in just the right format as described in an assignment. Comments made by students in the College Experience 101 course such as "I turned in the right number of pages on the subject" demonstrate the lack of awareness. When the standards for judging and grading work are no longer concrete and the expectations are for quality and skill, all the old rules seem to vanish and the student is left confused. This may have occurred for the subjects in this study in as much as the response papers were judged on quality and skill, not on length, and many students struggled with what was expected.

Perry (1970) stated that students actively seek more possibilities for explaining new phenomenon if they are in transition positions than they do when they have moved to the next order of thinking. This is the disequilibrium that drives cognitive development, but if the amount of dissonance is overwhelming,

the student will not progress or develop, but will fixate according to Widick (1977). According to Perry (1970) if the dissonance is too great, the student will just pause and hold in the growth process. Perry was referring to normally admitted college students that he studied as they struggled with this process of development. Therefore, in considering this pausing and holding or retreating through active denial as a pattern for normally admitted students faced with overwhelming new experiences, that pattern might even be more likely for students who enter college at high-risk. It is possible that the students in this study experienced missededucative dissonance that may have been demonstrated by their non-significant scores on developmental measures.

The students in this study began the semester in Perry Position 3 and became even more firmly positioned in the Perry Position 3 as the semester moved on according to their scores on the LEP. It could be anticipated that these students would respond to the challenge of the experimental curriculum as described by the Perry Scheme Position 3, with resistance and uncertainty about changing their views concerning authority, reluctance in changing old trusted patterns of thinking, and great worry over how they would be graded or judged. Their scores and movement on the LEP may reflect the increased confusion, dissatisfaction and resistance they experienced as they became more firmly entrenched in Perry Position 3 (1970).

Conceptual Development

The findings regarding conceptual development as demonstrated by the subject scores on the PCM did not support the hypothesis. Slight growth occurred

in conceptual development, but this development was mixed between the experimental and comparison groups. PCM scores for one experimental group and one comparison group indicated slight growth while the remaining two groups, one experimental and one comparison, experienced a slight drop in PCM scores. There are several possible reasons for these findings.

Impact of subjects' conceptual level. Factors unique to the students' achieved stage of conceptual complexity offer an explanation as to why the findings did not support the hypothesis regarding conceptual development. As indicated in chapter 2, the conceptual level (CL) indicated by the PCM describes two variables of a person's behavior. One is the ability to view contrasting opinions, resolve the differences, and correlate or integrate the solution to those differences. The second variable is that of developing an increasing level of self-responsibility (Hunt, 1975). According to Hunt, a person's interaction with the environment occurs on a continuum from a basic, concrete way of thinking and knowing to a cognitively complex way of thinking and knowing (Khalili & Hood, 1983). During this interchange with the environment, responsibility, discriminations, distinctions and integration of learning take place. A person who reaches higher levels of conceptual complexity, more easily adapts to changes by using multiple options and more readily takes on responsibility (Holloway & Wampold, 1986). As noted in Chapter 2, high-risk students often enter college with a conceptual level between the stage 1.0 and stage 2.0 levels (Khalili & Hood, 1983). In the current study, the students' mean scores were just over Hunt's mid-range (1.6 stage) with a standard deviation of .35. Students in this

range are concerned with being accepted, and they think in terms of right and wrong or good and bad. Such students are not yet in the stage 2.0 where they would be more likely to seek independence and would be more comfortable tolerating ambiguity or questioning ideas. Since high-risk students are more likely to hold onto an educational method that has worked in the past and not try a new method, the conceptual stage growth process as indicated by the CL scores may have occurred more slowly than anticipated during this freshman semester.

Impact of small groups. Another possible reason for a lack of significant findings on the conceptual complexity measure may have been the difficulty of maintaining optimal matching while working in small groups. The developmental matching of students to the environment was intended to provide challenges that would move them from their current stage toward stage 2.0 concepts and strategies without overwhelming them. In view of the lack of significant findings, it is possible that the matching process was sub-optimal. It may be that the researcher's choice of small group work did not challenge the students early enough or forcefully enough during the semester, to create the dissonance necessary for change to occur. For example, class exercises were one of the methods for creating ambiguity and fostering alternative perspectives. Since the class work was often accomplished in small groups, it is possible that the students who were lower stage 1.0 individuals did not actually participate enough to alter thinking but remained in their previously held reasoning. Students who were quiet and reserved may not have entered into discussion enough and may have not engaged in the process of alternative thinking. Students with higher cognitive

complexity in each group often engineered the group discussion. When the researcher entered the small group and encouraged the less active students to participate, it may not have been sufficient to stimulate dissonance toward change. It is also possible that the group process simply overwhelmed the lower-stage students leading them to more denial and resistance to change. It may be that the lower CL students simply substituted the group leaders for authority figures and followed their leadership to obtain the high structure to which they were accustomed. The small group work may inadvertently have provided the lower CL students with the high structured leadership they needed and, thus, may not have supported their making a significant change in their own conceptual levels.

Reflective process inadequacy. Another factor that might have potentially confounded the results is inadequacy in the reflective process. McAdams and Foster (1998) suggested that the DPE model with its reflection and support may positively affect the students at lower conceptual levels. As discussed in chapter 3, students completed weekly response papers in answer to instructor chosen controversial topics such as: "Discuss the issue of assisted suicide; Would you consider that option for yourself? Someone you love? Why or why not?" Response papers were written, handed in, and graded, and the student issues identified within the paper were the subject of a reflection response that the instructor returned in writing to the student. Students did not have to confirm or acknowledge these reflection responses from the instructor. Consequently, because the instructor had no way of knowing how his or her reflection response

was incorporated into the students' perspective, it could be that the students read the responses but mentally discarded them because they exceeded the students' present stage of cognitive complexity. Perhaps if the response papers had been kept in a notebook and recycled from week to week, the instructor would have been able to build a dialogue individual to each student. The understanding would have been reciprocal, in that the instructor would know whether there was any movement for the student, and the student would receive more support for developing change as the semester progressed. Since it was unknown whether the students received any meaningful reflection or support from the reflection response, it is hypothesized that they may not have, as demonstrated in the lack of significant conceptual level growth.

Timing of the posttesting process. The timing of the posttest may also have impacted the results. Most students did not want to complete posttesting just before the December holiday, and it is possible that they simply rushed to get through. The instructor in comparison Group 1 which experienced a decline in scores, allowed the students to leave when they handed in the test, and the students, in a hurry to finish, may not have been as thoughtful as necessary to complete the test accurately. Students are eager in the beginning of the freshman year and attack interesting assignments with more fervor but as the semester wears on and the excitement wears off, they tend to become more disillusioned with the demanding work and changes expected for the multiplistic work of college. The PCM is scored on responses to sentence stems and responses must be thoughtfully constructed, not hurried. This perplexing difference in scores could

support further study to view whether testing schedule should be altered to add more structure to the posttest process to maximize test completion.

Critical Thinking Development

The findings regarding critical thinking analysis, as demonstrated by the student scores on the WGCTA Form S, did not support the hypothesis. As with the other measures, there are several possible explanations for the findings.

Generalized nature of the measure. Factors related to the very nature of the WGCTA measure may have confounded the testing results. The WGCTA is one of the most widely used outcome measures for critical thinking (Pascarella & Terrenzini, 1991). However, it is a measure of the general ability to think critically, and not a measure of critical thinking related to a specific topic. The use of an assessment and criteria that did not relate directly to a specific course topic or content area may have contributed to the lack of significant results in the critical thinking analysis with regard to a single course. It may be that the WGCTA simply did not detect specific critical thinking development that occurred during the College Experience 101 course. As an example, question from the WGCTA Form S, regarding 'strength of argument' in which the respondent is supposed to determine whether the argument is strong or weak. The question is followed by several arguments. The respondent is told to consider the argument as true and to also consider the strengths and weaknesses of various arguments supporting it. Each of the following arguments was to be judged by the respondent as strong or weak.

“Should groups in this country who are opposed to some of our government policies be permitted unrestricted freedom of press and speech?”

1. Yes; a democratic state thrives on free and unrestricted discussion, including criticism.
2. No; the countries opposed to our form of government do not permit the free expression of our points of view in their territories.

1. strong_____ weak_____
2. strong_____ weak_____ (WGCTA, 1994, p. 7).

The College Experience 101 students are just moving into thinking in terms of multiple alternatives. The focus of the question, ‘the strength of argument’ is the issue as opposed to the content of the question. Students are more familiar with content questions. Using a generalized assessment instrument where students had to direct their focus to the process of thinking rather than to a familiar content area may have been overly difficult. The purpose of testing critical thinking was to assess the course experience on critical thinking, rather than a particular course content and so the WGCTA Form S was chosen. The assessment criteria may have been too broad and general to detect developmental growth occurring specific to the 101 course. Thus, the generalized nature may have confounded the results. It should be noted that despite the lack of significant findings on the WGCTA, there were advantages reported from students in the experimental group of the current study, who stated that they had learned the critical thinking process and used it in their other classes where they were having problems explaining their thinking and had gained positive results. For example,

one student wrote “ I used the critical thinking in my chemistry explanation and was finally able to explain my experiment to the professor.” Another student stated, “I tried the critical thinking in my psychology class and the professor loved my essay on the test!” Students were asked to apply techniques or methods from the College Experience course while in their other college courses during the semester and report results to identify successful application of the knowledge gained and the possible impact on success. Students were encouraged to view their new techniques as alternative methods to use in approaching college assignments. It appears that some students who were willing to try the new alternative techniques were rewarded with success.

Scope of the learning process. As described in chapter two, McMillan (1987) determined that one should test the same content as one was teaching to get any significant critical thinking skill results. This experimental course taught critical thinking skills according to the skills measured by the WGCTA. A list of these skills with definitions was in a handout that was provided experimental group students and referred to throughout the semester (Appendix G). The researcher may have been too zealous in expectation of the students assimilating such a large amount of material regarding critical thinking. The researcher hoped that the group work, response papers and their project, would have provided the appropriate balance of challenge and support needed to make a significant difference in testing. The challenge of a vast amount of material may have exceeded the available supports, and created dissonance for the students which affected the test results.

Small group activity. Small groups may have had an impact on the current study. Student intellectual and social involvement proved to be areas positively correlated with critical thinking. Referring to chapter 2, Astin (1984) said that the amount and quality of involvement in college life by college students are salient factors in the impact on college student development. In the current study, small group work was used for intellectual and social involvement in the experimental groups, and students became more open with each other and developed a belonging for the small groups. Resistance to working in groups broke down over the semester and students requested to work in groups instead of having large class experiences. Students stated that they liked the small groups because it was easier to speak out on a topic in the small group, “everyone gets involved and we learn”. It is possible that the students in this study used the small group experience as a comfort zone with the higher CL students functioning as group leaders who understood the expectation of the exercise, while the lower CL students responding as followers. Since there would be limited challenge in this familiar environment, the students may not have experienced significant dissonance to promote growth or behave differently.

Premature assessment. As mentioned in chapter 2, in a study using the WGCTA at the University of Illinois, College of Education, Pascarella (1989) determined that there was an increase in scores of students who attended college over those who did not attend college but this encompassed a full year of study, not just one semester. It may be that the College Experience 101 students would reap the benefits of the critical thinking aspect of the course after a longer period

of time than the semester of teaching, but this is not known. As mentioned in chapter two, McMillan (1987) found that the nature of the college environment, rather than attendance in college affected the results in analysis of critical thinking in the first year. The author determined a gain in general critical thinking skills in one college in a longitudinal analysis but not on the short-term analysis. The conclusion is that upperclassmen demonstrate higher levels of general critical thinking skills which shows promise for using critical thinking skills in developmental research (Pascarella & Terrenzini, 1991). Determining methods for testing freshmen for this process may be grounds for further research.

Study Limitations

There may have been limitations in the research design and methodology as described in chapter three. Potential problem areas noted include the nature of the sample, the duration of the study, the experimental process, and the instrumentation chosen.

Nature of the Sample. As identified in chapter two, the organization, construction, or configuration a person uses to create knowing, changes with each new discovery or understanding. Change is unique for each individual based on the complexity of the situation, the motivation to change and the complexity of the insight of the person. High-risk students may exhibit high resistance to learning new techniques for logical decisions due to their previous struggle with success and due to the newness of the experience of college and general dissonance regarding the new environment. They may regress for comfort and safety until they feel they can move forward into dissonance again (Perry, 1970).

About half the students in the experimental and comparison groups were required to take the course upon entry to the university or as part of probation to remain in the university, and the remaining half chose or were advised to take the course as an elective. Many students who were required to take the course considered it as an unfair requirement that identified them as somehow inadequate or inappropriate for college. These students were in dissonance due to being required to take the course, and this may have hindered their process of growth. Many of these students were able to address the anger through a response paper with reflective response from the instructor, in the beginning of the course, and the anger subsided when they found out they were not the only 'required' students. Because they were required to take the course they may have not been easily accepting of the differences in the DPE-based curriculum. The snowball effect of being upset about being in the freshman orientation course and struggling with the demands of the syllabus and class experiences, may have created further resistance despite the fact that attempts were made to reach resolution. The impact of this potential snowball effect could inhibit progress and would be grounds for further research.

Duration of the Study. The single semester that was allowed by the university for the college experience class may not have been enough time to allow these high-risk students to overcome their dissonance and invest in the DPE program and move cognitively in the intellectual and conceptual arenas. Studies support the DPE-based education model as an effective intervention tool for development in college freshmen (Sprinthall & Scott, 1989; McAdams & Foster,

1998). However it is recommended by Peace (1992) that a year is the optimal time frame to expect changes to occur. This study's limited time frame may have begun the changes necessary as demonstrated by the positive movement of subjects' scores on the LEP. Within the shorter time frame, the DPE may have influenced the development but may have been less than optimal to promote significant growth in light of the resistance of the high-risk college student. The researcher may have overestimated the capacity of the instructional method to drive changes, in light of the shorter duration and the high-risk student resistance. Research by Foster and McAdams (1996) using the DPE-based curriculum to promote moral development and skills of supervision with counselor supervisors in residential treatment centers demonstrated increases in moral reasoning by subjects within a shorter than optimal time frame. Later, McAdams and Foster (1998) used the DPE model in an orientation course for college freshmen and obtained significant positive results within the shorter one semester time frame. The instructional method has such demonstrated strength that it was hoped that differences would also develop with these students. This study may have been more impacted by the short duration than was originally expected.

The Experimental Process. The intended differences between the experimental and comparison curricula have been explained in Chapter Four. The researcher did not participate in the comparison groups and, therefore, had no data to document or authenticate that the curricula presented to the students in the different groups were, in fact, different other than through communication with the respective instructors. Treatment diffusion may have occurred if there were

no real differences in the manner in which curriculum plans were carried out (Gall, Borg & Gall, 1996). There are some indicators that some diffusion may have occurred. The instructors in the comparison groups planned initially to not use small groups and later altered their plans. The researcher was unaware until the end of the semester that small groups were used throughout the semester in comparison group classes to create questions for the exams. Additionally, large group discussions were carried out regularly which broke into factions of students who had affiliation with one or more of the opinions being discussed. This clearly simulated the small group support offered in the experimental curriculum. Contrary to expectations, comparison group papers received written feedback from instructors and were kept in a folder to provide continuous and contiguous instructor feedback. Also, it appears that there was a great deal of verbal feedback during class to support the students as reported by both instructors of the comparison groups.

Meetings between the researcher and the comparison group instructors were held prior to the beginning of the semester to discuss plans for the upcoming research and to ensure the presence of curriculum differences needed between the experimental and comparison groups. Despite these efforts, there appears to have been substantial treatment diffusion. In interviews with the comparison group instructors at the semester's end the instructors questioned their own adherence to the DPE-based curriculum. Their use of reflective responses to student written assignments, class debates, and small groups to create test questions confirmed their departure from the planned agenda. One instructor stated "I clearly taught

critical thinking and expected my students to respond with new thinking skills”, while the other instructor declared that a strong emphasis in the class had been on “teaching and really emphasizing the searching for multiple views in answer to questions in class. Some of my students really got mad with this but I persevered and they eventually got it”. The instructors may have unwittingly provided for the needs of their students based on their previous knowledge of the DPE- based instructional method. It is hypothesized that they experienced compensatory equalization of treatments without being aware of it. Compensatory equalization of treatments occurs if the experimental group treatment is perceived as desirable and therefore those administering to the comparison group compensate by providing similar goods and services (Gall, Borg & Gall, 1996).

It is also just as plausible that the researcher did not succeed in executing the DPE-based curriculum to the fullest possible teaching intervention for the needs of the experimental group students. The matching of the students by the instructor may not have been consistent or insistent enough to encourage the student to enter a dissonance based on the class curriculum and begin facilitated change. As mentioned previously, the written reflection comments may have been ignored by students, as there was no follow up by the instructor to check for this.

Instrumentation. While limits in instrumentation have been discussed previously, those instruments selected appear to have been the most appropriate instruments available. The potential for measuring psychological growth accurately was strengthened by using two well-established instruments, the LEP

and the PCM and having them scored by experts. The measures yielded results that were in the expected directions for high-risk freshmen college students. The effect of the single semester intervention as opposed to a longer period are evident in the literature and may have compounded the results produced by the measures in this study. The instrument chosen for the measurement of critical thinking may have been too general a test of the critical thinking skill. The short duration of the intervention may have also compounded the inability of this measure to detect significant growth. This limitation of the WGCTA in assessing only general critical thinking skills may explain the lack of significant results on this measure.

Suggestions for Further Research

Increasing demand for accountability in educational methods sustains the need for further study of high-risk students in college even though the current study did not produce the expected results. The results of this study produced change in intellectual development for the majority of the experimental and comparison group students. This change was in a positive direction but it was not significant. Since the change was in the right direction, further study should include either changing the course to a full year of study, or incorporating planned follow up testing at the end of the college year to account for growth subsequent to the intervention period. Either of these method changes might lead to greater gains in the scores of intellectual development.

The results of the PCM produced perplexing results with comparison Group 1 and experimental Group 4 declining in scores while the comparison Group 2 and experimental Group 3 had slight increases in scores. Two issues emerge for

further study here. The treatment diffusion noted earlier must be prevented in further research to clarify the underlying reason for the confusing results. Educators who have no knowledge of the DPE process must teach the control groups. It is apparent that erosion of the comparison groups traditional educational methods occurred through inadvertent inclusion of DPE process by the course instructors. It is suggested that the use of two different but comparable university sites for the experimental and comparison groups would further reduce such diffusion. The age of the student does not indicate the development of the student but the older students may have had life experiences that allowed them to understand multiplicity in decision making.

A second issue with regard to the conceptual complexity results is the presence of a number of older students in the groups whose PCM scores declined. Including only freshmen students in a future study could prevent or reduce the confounding potential of having older students involved in classroom discussion. It may be that the more independent older students engaged in classroom discussion involving alternative multiplistic thinking which may have presented excessive dissonance for the newly incoming freshmen who still think in terms of right and wrong.

The dissonance that is necessary for the developmental process to occur may in itself impede growth. Freshmen enter a new environment with multiple demands, and by the addition of the dissonance of the DPE educational model, they may, unless well supported, experience increased disequilibrium leading to

resistance. Further study should examine optimal support strategies for the freshman orientation course experience.

Students who are firmly rooted in Perry's (1970) Position 3 can become resistant when dissonance occurs in their learning. Further study is needed to determine how the DPE model can promote movement through the resistance. Further study is also needed to determine if certain elements of the DPE model should be enhanced for particular groups of students. Perhaps freshmen should have individual monthly interviews to stimulate reflection and promote multiplicity. Determining an optimal level of challenge for a reticent freshman student in the classroom contrasted with a sophomore who seeks to learn more in each skill area because it may be his or her last opportunity, would be fertile ground for further study.

Finally, further study is necessary to determine whether critical thinking is a valid indicator of developmental growth. Perhaps infusing critical thinking skills into a freshman orientation course added unnecessary dissonance because it did not relate directly to a particular subject matter. Students who struggled with the difference between fact and opinion and multiplistic thinking may not have considered critical thinking a skill worth valuing. The value of the skill as previously mentioned, was demonstrated by some students in practical terms which may be the ultimate critical thinking value. If the study were replicated, methods are needed to determine the most advantageous methods for the testing of critical thinking skills for freshmen students.

Conclusions

This chapter has reviewed the research findings and examined the implications of the results. The results of the study are not significant nonetheless, offer contributions to research with this population. The findings for Perry's (1970) intellectual development are in the right direction for the majority of students indicating that developmental growth occurred within half the necessary time suggested. The findings for Hunt's (1971) conceptual development were mixed and perplexing, suggesting the need for further study. Cognitive development is a complicated process, and to build a program to stimulate growth requires vigilance to detail. Affecting the cognitive development of high-risk students may require longer treatment duration. Further research in this area is recommended. The DPE model has been effectively used in research, and study should continue in the college environment to seek DPE effectiveness. The DPE curriculum appears to have been successful promoting movement for the students more firmly into the Perry Position 3. There is a need for additional strategies to deal with the resistance encountered at that position. Strategies may include the provision of more individualized interaction with students. The DPE curriculum provided paradoxical results for the Hunt Scheme with observed growth occurring in comparison as well as experimental groups. Further investigation in this area is recommended, particularly with respect to the aforementioned issue of treatment diffusion.

This study of high-risk college students utilized cognitive developmental theory as the framework for the educational curriculum, and although the results

were not significant, this researcher believes the developmental growth that was observed offers support for the continued use of DPE in the College Experience 101 course and for continued research in this area.

APPENDICES

Appendix A

Informed Consent Form

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INFORMED CONSENT

1. The purpose of this study is to evaluate the effectiveness of this study skills course in assisting students in the development of critical thinking and study skills in order to enhance their ability to succeed in college.
2. You may choose not to participate in this study by taking this course at another time. Should you choose to participate, you will be asked to complete all of the assessments at the beginning and the end of the semester, and you will also be asked to complete a demographics questionnaire. You may withdraw from this study at any time.
3. The assessments and the demographic questionnaire will be confidential and identified by a code that you will choose for instrument matching purposes. The study results will report class averages rather than individual scores and NO identifying information will be reported. The assessments will not comprise a part of your grade.
4. You may request that your results be made available to you but you must disclose your identification code to the researcher. The researcher will maintain the confidentiality of your results. You will need to schedule an appointment with the researcher to discuss your results.
5. You may receive a copy of the results of this study upon written request.

PLEASE COMPLETE AND SIGN

I, _____ have read the above
(Print Name)
information and fully understand my rights and the terms and conditions of my participation on non-participation in this study.

Signature

Date

Appendix B
Demographic Data Form

QUESTIONNAIRE

Code (for instrument matching purposes) _____

Age (in years) _____

Gender: Male _____ Female _____

Race: _____ African American _____ Asian American
 _____ Caucasian _____ Latin American/Hispanic
 _____ Native American _____ Pacific Islander
 _____ Multiracial (if so identify) _____

Marital Status:

_____ Never Married _____ Married
 _____ Unmarried (living in a committed relationship)
 _____ Unmarried (single parent raising child(ren))
 _____ Divorced _____ Divorced with child(ren)
 _____ Separated _____ Widowed

Educational Level:

_____ High School Diploma _____ GED
 _____ Number of College Credit Hours Earned

Student Status: _____ Full Time _____ Part Time

Living Arrangements: _____ Residence Hall _____ Apartment
 _____ Parents

Reason for taking this course: _____ Required _____ Elective _____ On
 Probation

Family Education: Father _____ Mother _____
 Sister _____ Brother _____

I am the first in my family to attend college (Or Explain)

Reason for attending
 college _____

Appendix C
Paragraph Completion Method
(PCM)

PARAGRAPH COMPLETION METHOD

On the following pages, you will be asked to give your ideas about several topics. Please write at least three sentences on each topic.

There are not right or wrong answers, so give your own ideas or opinions about each topic. Indicate the way you really feel about each topic, not the way others feel or the way you think you should feel.

In general spend about three minutes for each item.

What I think about rules.....

When I am criticized.....

What I think about parents.....

,

When someone does not agree with me.....

When I am not sure.....

When I am told what to do.....

Appendix D
Learning Environment Preferences
(LEP)

LEARNING ENVIRONMENT PREFERENCES

This survey asks you to describe what you believe to be the most significant issues in your **IDEAL LEARNING ENVIRONMENT**. Your opinions are important to us as we study teaching and learning concerns in college. We ask, therefore, that you take this task seriously and give your responses some thought. We appreciate your cooperation in sharing what you find most important in a learning environment.

The survey consists of five sections, each representing a different aspect of learning environments. In each section, you are presented with a list of specific statements about that particular area. Try not to focus on a specific class or classes as you think about these items; focus on their significance in an *ideal* learning environment *for you*.

We ask that you do two things for each area:

- First, please rate each statement in the area in terms of its significance or importance to your learning using the scale below.
- Once you've rated all of the items in a section, go back through the list and rank the three items most significant to you as you think about your ideal learning environment.

Please mark your answers on the separate answer sheet provided, and be sure to indicate both your ratings of individual items and your ranking of the top 3 items in each section. It is very important that you indicate your top three choices for each question area by writing the **ITEM NUMBER** in the spaces provided (1st choice, 2nd choice, 3rd choice) at the bottom of the answer sheet.

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

Before you begin, we ask that you provide us with the background information requested at the top of the answer sheet. This information will be used to examine group differences; your name or social security number may be used at some point in the future if a follow-up survey is required. **AT NO TIME WILL THIS INFORMATION BE USED TO REPORT YOUR INDIVIDUAL RESPONSES TO ANYONE BUT YOU; ALL SURVEYS WILL BE KEPT CONFIDENTIAL.** Again, thank you very much for sharing with us your ideas about learning.

DOMAIN ONE:
COURSE CONTENT/VIEW OF LEARNING

MY IDEAL LEARNING ENVIRONMENT WOULD:

1. Emphasize basic facts and definitions.
2. Focus more on having the right answers than on discussing methods or how to solve problems.
3. Insure that I get all the course knowledge from the professor.
4. Provide me with an opportunity to learn methods and solve problems.
5. Allow me a chance to think and reason, applying facts to support my opinions.
6. Emphasize learning simply for the sake of learning or gaining new expertise.
7. Let me decide for myself whether issues discussed in class are right or wrong, based on my own interpretations and ideas.
8. Stress the practical applications of the material.
9. Focus on the socio-psycho, cultural and historical implications and ramifications of the subject matter.
10. Serve primarily as a catalyst for research and learning on my own, integrating the knowledge gained into my thinking.
11. Stress learning and thinking on my own, not being spoonfed learning by the instructor.
12. Provide me with appropriate learning situations for thinking about and seeking personal truths.
13. Emphasize a good positive relationship among the students and between the students and teacher.

AFTER YOU HAVE RATED ALL OF THE ITEMS, PLEASE BE SURE TO REVIEW THE WHOLE SET AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE SECTION AT THE BOTTOM OF THE ANSWER SHEET.

Rating Scale			
1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

ROLE OF INSTRUCTOR**IN MY IDEAL LEARNING ENVIRONMENT, THE TEACHER WOULD:**

1. Teach me all the facts and information I am supposed to learn.
2. Use up-to-date textbooks and materials and teach from them, not ignore them.
3. Give clear directions and guidance for all course activities and assignments.
4. Have only a minimal role in the class, turning much of the control of course content and class discussions over to the students.
5. Be not just an instructor, but more an explainer, entertainer and friend.
6. Recognize that learning is mutual—individual class members contribute fully to the teaching and learning in the class.
7. Provide a model for conceptualizing living and learning rather than solving problems.
8. Utilize his/her expertise to provide me with a critique of my work.
9. Demonstrate a way to think about the subject matter and then help me explore the issues and come to my own conclusions.
10. Offer extensive comments and reactions about my performance in class(papers, exams, etc.).
11. Challenge students to present their own ideas, argue with positions taken, and demand evidence for their beliefs.
12. Put a lot of effort into the class, making it interesting and worthwhile.
13. Present arguments on course issues based on his/her expertise to stimulate active debate among class members.

AFTER YOU HAVE RATED ALL OF THE ITEMS, PLEASE BE SURE TO REVIEW THE WHOLE SET AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE SECTION AT THE BOTTOM OF THE ANSWER SHEET.

Rating Scale			
Not at all significant	Slightly significant	Moderately significant	Very significant

ROLE OF STUDENT/PEERSIN MY IDEAL LEARNING ENVIRONMENT, AS A STUDENT I WOULD:

1. Study and memorize the subject matter--the teacher is there to teach it.
2. Take good notes on what's presented in class and reproduce that information on the tests.
3. Enjoy having my friends in the class, but other than that classmates don't add much to what I would get from a class.
4. Hope to develop my ability to reason and judge based on standards defined by the subject.
5. Prefer to do independent research allowing me to produce my own ideas and arguments.
6. Expect to be challenged to work hard in the class.
7. Prefer that my classmates be concerned with increasing their awareness of themselves to others in relation to the world.
8. Anticipate that my classmates would contribute significantly to the course learning through their own expertise in the content.
9. Want opportunities to think on my own, making connections between the issues discussed in class and other areas I'm studying.
10. Take some leadership, along with my classmates, in deciding how the class will be run.
11. Participate actively with my peers in class discussions and ask as many questions as necessary to fully understand the topic.
12. Expect to take learning seriously and be personally motivated to learn the subject.
13. Want to learn methods and procedures related to the subject--learn how to learn.

AFTER YOU HAVE RATED ALL OF THE ITEMS, PLEASE BE SURE TO REVIEW THE WHOLE SET AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE SECTION AT THE BOTTOM OF THE ANSWER SHEET.

Rating Scale:

Not at all
significantSomewhat
significantModerately
significantVery
significant

CLASSROOM ATMOSPHERE/ACTIVITIES

IN MY IDEAL LEARNING ENVIRONMENT, THE CLASSROOM ATMOSPHERE AND ACTIVITIES WOULD:

1. Be organized and well-structured--there should be clear expectations set (like a structured syllabus that's followed).
2. Consist of lectures(with a chance to ask questions) because I can get all the facts I need to know more efficiently that way.
3. Include specific, detailed instructions for all activities and assignments.
4. Focus on step-by-step procedures so that if you did the procedure correctly each time, your answer would be correct.
5. Provide opportunities for me to pull together connections among various subject areas and then construct an adequate argument.
6. Be only loosely structured, with the students themselves taking most of the responsibility for what structure there is.
7. Include research papers, since they demand that I consult sources and then offer my own interpretation and thinking.
8. Have enough variety in content areas and learning experiences to keep me interested.
9. Be practiced and internalized but be balanced by group experimentation, intuition, comprehension, and imagination.
10. Consist of a seminar format, providing an exchange of ideas so that I can critique my own perspectives on the subject matter.
11. Emphasize discussions of personal answers based on relevant evidence rather than just right and wrong answers.
12. Be an intellectual dialogue and debate among a small group of peers motivated to learn for the sake of learning.
13. Include lots of projects and assignments with practical, everyday applications.

AFTER YOU HAVE RATED ALL OF THE ITEMS, PLEASE BE SURE TO REVIEW THE WHOLE SET AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE SECTION AT THE BOTTOM OF THE ANSWER SHEET.

Rating Scale			
1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

EVALUATION PROCEDURES IN MY IDEAL LEARNING ENVIRONMENT WOULD:

1. Include straightforward, not "tricky," tests, covering only what has been taught and nothing else.
2. Be up to the teacher, since s/he knows the material best.
3. Consist of objective-style tests because they have clearcut right or wrong answers.
4. Be based on how much students have improved in the class and on how hard they have worked in class.
5. Provide an opportunity for me to judge my own work along with the teacher and learn from the critique at the same time.
6. Not include grades, since there aren't really any objective standards teachers can use to evaluate students' thinking.
7. Include grading by a prearranged point system(homework, participation, tests, etc.), since I think it seems the most fair.
8. Represent a synthesis of internal and external opportunities for judgement and learning enhancing the quality of the class.
9. Consist of thoughtful criticism of my work by someone with appropriate expertise.
10. Emphasize essay exams, papers, etc. rather than objective-style tests so that I can show how much I've learned.
11. Allow students to demonstrate that they can think on their own and make connections not made in class.
12. Include judgments of the quality of my oral and written work as a way to enhance my learning in the class.
13. Emphasize independent thinking by each student, but include some focus on the quality of one's arguments and evidence.

AFTER YOU HAVE RATED ALL OF THE ITEMS, PLEASE BE SURE TO REVIEW THE WHOLE SET AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE SECTION AT THE BOTTOM OF THE ANSWER SHEET.

Rating Scale			
1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

LEARNING ENVIRONMENT PREFERENCES ANSWER SHEET

NAME (optional): _____ DATE: _____
 SOCIAL SECURITY NO. (or Student ID): _____
 SEX (check one): Male ___ Female ___ AGE: _____
 ETHNIC HERITAGE(optional): _____
 CLASSIFICATION (check one): Frosh ___ Soph ___ Jr. ___ Sr ___ Grad ___
 MAJOR (If undeclared, please indicate): _____

Rating Scales:

1 2 3 4
 Not at all Somewhat Moderately Very
 significant significant significant significant

DOMAIN: COURSE CONTENT/VIEW OF LEARNING (INDICATE RATING, 1-4)

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___
 8. ___ 9. ___ 10. ___ 11. ___ 12. ___ 13. ___

DOMAIN: ROLE OF INSTRUCTOR (INDICATE RATING, 1-4)

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___
 8. ___ 9. ___ 10. ___ 11. ___ 12. ___ 13. ___

DOMAIN: ROLE OF STUDENT/PEERS (INDICATE RATING, 1-4)

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___
 8. ___ 9. ___ 10. ___ 11. ___ 12. ___ 13. ___

DOMAIN: CLASSROOM ATMOSPHERE (INDICATE RATING, 1-4)

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___
 8. ___ 9. ___ 10. ___ 11. ___ 12. ___ 13. ___

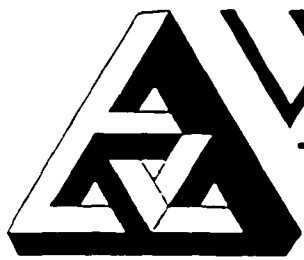
DOMAIN: EVALUATION PROCEDURES (INDICATE RATING, 1-4)

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___
 8. ___ 9. ___ 10. ___ 11. ___ 12. ___ 13. ___

INDICATE TOP THREE CHOICES IN EACH AREA (MARK ITEM NUMBER)

<u>COURSE</u> <u>CONTENT</u>	<u>ROLE OF</u> <u>INSTRUCTOR</u>	<u>ROLE OF</u> <u>STUDENT/PEERS</u>	<u>CLASSROOM</u> <u>ATMOSPHERE</u>	<u>EVALUATION</u> <u>PROCEDURES</u>
1ST ___	1ST ___	1ST ___	1ST ___	1ST ___
2ND ___	2ND ___	2ND ___	2ND ___	2ND ___
3RD ___	3RD ___	3RD ___	3RD ___	3RD ___

Appendix E
Watson-Glaser Critical Thinking Appraisal
(WGCTA)



WGCTA

High-risk College Students 185

Watson-Glaser
Critical Thinking Appraisal®

Form S

Directions

This booklet contains five types of tests designed to find out how well you are able to reason analytically and logically. *Each test has separate directions that should be read carefully.*

Do not turn this page until instructed to do so.

Do not make any marks in this test booklet.

All answers are to be marked on the separate answer sheet provided. Use a sharp No. 2 pencil to mark your answers. If you wish to change an answer, be sure to erase your old answer completely.



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DIRECTIONS

An inference is a conclusion a person can draw from certain observed or supposed facts. For example, if the lights are on in a house and music can be heard coming from the house, a person might infer that someone is at home. But this inference may or may not be correct. Possibly the people in the house did not turn the lights and the radio off when they left the house.

In this test, each exercise begins with a statement of facts that you are to regard as true. After each statement of facts you will find several possible inferences—that is, conclusions that some persons might draw from the stated facts. Examine each inference separately and make a decision as to its degree of truth or falsity.

For each inference you will find spaces on the answer sheet labeled T, PT, ID, PF, and F. For each inference make a mark on the answer sheet under the appropriate heading as follows:

- T** if you think the inference is definitely **TRUE**; that it properly follows beyond a reasonable doubt from the statement of facts given.
- PT** if, in the light of the facts given, you think the inference is **PROBABLY TRUE**; that it is more likely to be true than false.
- ID** if you decide that there are **INSUFFICIENT DATA**; that you cannot tell from the facts given whether the inference is likely to be true or false; if the facts provide no basis for judging one way or the other.
- PF** if, in the light of the facts given, you think the inference is **PROBABLY FALSE**; that it is more likely to be false than true.
- F** if you think the inference is definitely **FALSE**; that it is wrong, either because it misinterprets the facts given, or because it contradicts the facts or necessary inferences from those facts.

Sometimes, in deciding whether an inference is probably true or probably false, you will have to use certain commonly accepted knowledge or information that practically every person has. This will be illustrated in the example that follows.

Look at the example in the next column; the correct answers are indicated in the block at the right.

EXAMPLE

Two hundred students in their early teens voluntarily attended a recent weekend student conference in a Midwestern city. At this conference, the topic of race relations and means of achieving lasting world peace were discussed, since these were the problems the students selected as being most vital in today's world.

		Test 1				
	T	PT	ID	PF	F	
1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
5	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

- As a group, the students who attended this conference showed a keener interest in broad social problems than do most other students in their early teens.
- The majority of the students had not previously discussed the conference topics in their schools.
- The students came from all sections of the country.
- The students discussed mainly labor relations problems.
- Some teenage students felt it worthwhile to discuss problems of race relations and ways of achieving world peace.

In the above example, inference 1 is probably true (PT) because (as is common knowledge) most people in their early teens do not show so much serious concern with broad social problems. It cannot be considered definitely true from the facts given because these facts do not tell *how much* concern other young teenagers may have. It is also possible that some of the students volunteered to attend mainly because they wanted a weekend outing.

Inference 2 is probably false (PF) because the students' growing awareness of these topics probably stemmed at least in part from discussions with teachers and classmates.

There is no evidence for inference 3. Thus, there are insufficient data (ID) for making a judgment on the matter.

Inference 4 is definitely false (F) because it is given in the statement of facts that the topics of race relations and means of achieving world peace were the problems chosen for discussion.

Inference 5 necessarily follows from the given facts; it therefore is true (T).

In the exercises that follow, more than one of the inferences from a given statement of facts may be true (T), or false (F), or probably true (PT), or probably false (PF), or have insufficient data (ID) to warrant any conclusion. Thus, you are to judge each inference independently.

Make a heavy black mark in the space under the heading that you think best describes each inference. If you change an answer, erase it thoroughly. Make no extra marks on the answer sheet.

Go on to the next page •

In 1946 the United States Armed Forces conducted an experiment called "Operation Snowdrop" to find out what kinds of military personnel seemed to function best under severe arctic climatic conditions. Some of the factors examined were weight, age, blood pressure, and national origin. All of the participants in "Operation Snowdrop" were given a training course in how to survive and function in extreme cold. At the conclusion of the experiment, it was found that only two factors among those studied distinguished between personnel whose performance was rated as "effective" and those rated as "not effective" on the arctic exercises. These factors were: (1) desire to participate in the experiment, and (2) degree of knowledge and skill regarding how to live and protect oneself under arctic conditions.

1. Despite the training course given to all of the participants in "Operation Snowdrop," some participants exhibited greater arctic survival knowledge or skill than others.
2. It was believed by the Armed Forces that military operations might someday be carried out in an arctic-like environment.
3. A majority of the personnel who participated in "Operation Snowdrop" thoroughly disliked the experience.
4. Participants having normal weight and blood pressure were rated as significantly more effective on the arctic exercises than were the other participants.

Some time ago a crowd gathered in Middletown to hear the new president of the local Chamber of Commerce speak. The president said, "I am not asking, but demanding, that labor unions now accept their full share of responsibility for civic improvement and community welfare. I am not asking, but demanding, that they join the Chamber of Commerce." The members of the Central Labor Unions who were present applauded enthusiastically. Three months later all the labor unions in Middletown were represented in the Chamber of Commerce. These representatives worked with representatives of other groups on committees, spoke their minds, participated actively in the civic improvement projects, and helped the Chamber reach the goals set in connection with those projects.

5. Both the labor union representatives and the other members of the committees came to a better recognition of one another's viewpoints through their Chamber of Commerce contacts.
6. Union participation in the Middletown Chamber of Commerce greatly reduced worker-management disputes in that town.
7. Most of the union representatives regretted having accepted the invitation to participate in the Chamber of Commerce.

Go on to the next page ►

TEST 2: RECOGNITION OF ASSUMPTIONS

DIRECTIONS

An assumption is something presupposed or taken for granted. When you say, "I'll graduate in June," you take for granted or assume that you will be alive in June, that your school will judge you to be eligible for graduation in June, and similar things.

Below are a number of statements. Each statement is followed by several proposed assumptions. You are to decide for each assumption whether a person, in making the given statement, is really making that assumption — that is, taking it for granted, justifiably or not.

If you think that the given assumption is taken for granted in the statement, make a heavy black mark under "ASSUMPTION MADE" in the proper place on the answer sheet. If you think the assumption is *not* necessarily taken for granted in the statement, blacken the space under "ASSUMPTION NOT MADE." Remember to judge each assumption independently.

Below is an example. The block at right shows how these items should be marked on the answer sheet.

EXAMPLE

Statement: "We need to save time in getting there so we'd better go by plane."

Proposed Assumptions:

1. Going by plane will take less time than going by some other means of transportation. (It is assumed in the statement that the greater speed of a plane over the speeds of other means of transportation will enable the group to reach its destination in less time.)
2. There is plane service available to us for at least part of the distance to the destination. (This is necessarily assumed in the statement since, in order to save time by plane, it must be possible to go by plane.)
3. Travel by plane is more convenient than travel by train. (This assumption is not made in the statement — the statement has nothing to do with saving time, and says nothing about convenience or about any other specific mode of travel).

Test 2 Assumption	
Made	Not Made
1 ●	○
2 ●	○
3 ○	●

EXERCISES

Statement: "Zenith is the city to move to — it has the lowest taxes."

Proposed assumptions:

8. Lower taxes imply efficient city management.
9. In deciding where to live, it is important to avoid high taxes.
10. The majority of the residents in Zenith are content with their present city government.

Statement: "I'm traveling to South America. I want to be sure that I do not get typhoid fever, so I shall go to my physician and get vaccinated against typhoid fever before I begin my trip."

Proposed assumptions:

11. If I don't take the injection, I shall become ill with the fever.
12. By getting vaccinated against typhoid fever, I decrease the chances that I will get the disease.
13. Typhoid fever is more common in South America than it is where I live.

Statement: "If war is inevitable, we'd better launch a preventive war now while we have the advantage."

Proposed assumptions:

14. If we fight now, we are more likely to win than we would be if forced to fight later.
15. If we don't launch a preventive war now, we'll lose any war that may be started by an enemy later.

Go on to the next page ►

DIRECTIONS

In this test, each exercise consists of several statements (premises) followed by several suggested conclusions. *For the purposes of this test, consider the statements in each exercise as true without exception.* Read the first conclusion beneath the statements. If you think it *necessarily follows* from the statements given, make a heavy black mark under "CONCLUSION FOLLOWS" in the proper place on the answer sheet. If you think it is *not a necessary conclusion* from the statements given, put a heavy black mark under "CONCLUSION DOES NOT FOLLOW," even though you may believe it to be true from your general knowledge.

Likewise, read and judge each of the other conclusions. Try not to let your prejudices influence your judgment - just stick to the given statements (premises) and judge each conclusion as to whether it *necessarily follows* from them.

The word "some" in any of these statements means an indefinite part or quantity of a class of things. "Some" means *at least* a portion, and *perhaps* all of the class. Thus, "Some holidays are rainy" means *at least* one, possibly more than one, and *perhaps* even all holidays are rainy.

Study the example carefully before starting the test.

EXAMPLE

Some holidays are rainy. All rainy days are boring. Therefore —

1. No clear days are boring. (The conclusion does not follow. You cannot tell from the statements whether or not clear days are boring. Some may be).
2. Some holidays are boring. (The conclusion necessarily follows from the statements since, according to them, the rainy holidays must be boring.)
3. Some holidays are not boring. (The conclusion does not follow, even though you may know that some holidays are very pleasant.)

Test 3	
Conclusion	
	Does Not
	Follows Follow
1	<input type="radio"/> <input checked="" type="radio"/>
2	<input checked="" type="radio"/> <input type="radio"/>
3	<input type="radio"/> <input checked="" type="radio"/>

EXERCISES

No person who thinks scientifically places any faith in the predictions of astrologers. Nevertheless, there are many people who rely on horoscopes provided by astrologers. Therefore -

16. People who lack confidence in horoscopes think scientifically.
17. Many people do not think scientifically.

All members of symphony orchestras enjoy playing classical music. All members of symphony orchestras spend long hours practicing. Therefore -

18. Musicians who play classical music do not mind spending long hours practicing.
19. Some musicians who spend long hours practicing enjoy playing classical music.

Rice and celery must have a good deal of moisture in order to grow well, but rye and cotton grow best where it is relatively dry. Rice and cotton grow where it is hot, and celery and rye where it is cool. In Timbuktu, it is very hot and damp. Therefore -

20. Neither the temperature nor the moisture conditions in Timbuktu are favorable for growing a celery crop.
21. The temperature and moisture conditions in Timbuktu are more favorable for growing rice than for growing celery, cotton, or rye.
22. Conditions in Timbuktu are not altogether favorable for growing a cotton or a rye crop.

Most persons who attempt to break their smoking habit find that it is something that they can accomplish only with difficulty, or cannot accomplish at all. Nevertheless, there is a growing number of individuals whose strong desire to stop smoking has enabled them to break the habit permanently. Therefore -

23. Only smokers who strongly desire to stop smoking will succeed in doing so.
24. A strong desire to stop smoking helps some people to permanently break the habit.

Go on to the next page ►

DIRECTIONS

Each exercise below consists of a short paragraph followed by several suggested conclusions.

For the purpose of this test, assume that everything in the short paragraph is true. The problem is to judge whether or not each of the proposed conclusions logically follows beyond a reasonable doubt from the information given in the paragraph.

If you think that the proposed conclusion follows beyond a reasonable doubt (even though it may not follow absolutely and necessarily), then make a heavy black mark under "CONCLUSION FOLLOWS" in the proper place on the answer sheet. If you think that the conclusion does not follow beyond a reasonable doubt from the facts given, then blacken the space under "CONCLUSION DOES NOT FOLLOW." Remember to judge each conclusion independently.

Look at the example below; the block at the right shows how the answers should be marked on the answer sheet.

EXAMPLE

A study of vocabulary growth in children from eight months to six years old shows that the size of spoken vocabulary increases from zero words at age eight months to 2562 words at age six years.

1. None of the children in this study had learned to talk by the age of six months. (The conclusion follows beyond a reasonable doubt since, according to the statement, the size of the spoken vocabulary at eight months was zero words.)
2. Vocabulary growth is slowest during the period when children are learning to walk. (The conclusion does not follow since there is no information given that relates growth of vocabulary to walking.)

Test 4		
Conclusion		
	Follows	Does Not Follow
1	●	○
2	○	●

EXERCISES

When the United States Steel Corporation was created in 1902, it was the largest corporation America had known up to that time. It produced twice as much steel as all of its domestic competitors put together. Today, the United States Steel Corporation produces about 20 percent of the steel that is made in this country.

25. In 1902, the United States Steel Corporation produced not less than 66 percent of the total domestic output of steel.
26. Today, domestic competitors produce more than three times as much steel as does the United States Steel Corporation.
27. The United States Steel Corporation produces less steel today than it did in 1902.

Pat had poor posture, had very few friends, was ill at ease in company, and in general was very unhappy. Then, a close friend recommended that Pat visit Dr. Baldwin, a reputed expert on helping people improve their personalities. Pat took this recommendation and, after three months of treatment by Dr. Baldwin, developed more friendships, was more at ease, and in general felt happier.

28. Without Dr. Baldwin's treatment, Pat would not have improved.
29. Without a friend's advice, Pat would not have heard of Dr. Baldwin.

When I go to bed at night, I usually fall asleep quite promptly. But about twice a month I drink coffee during the evening, and whenever I do, I lie awake and toss for hours.

30. My problem is mostly psychological; I expect that the coffee will keep me awake and therefore it does.
31. On nights when I want to fall asleep promptly, I'd better not drink coffee in the evening.

Go on to the next page ►

TEST 5: EVALUATION OF ARGUMENTS

DIRECTIONS

In making decisions about important questions, it is desirable to be able to distinguish between arguments that are strong and arguments that are weak, as far as the question at issue is concerned. *For an argument to be strong, it must be both important and directly related to the question.*

An argument is weak if it is not directly related to the question (even though it may be of great general importance), or if it is of minor importance, or if it is related only to trivial aspects of the question.

Below is a series of questions. Each question is followed by several arguments. *For the purpose of this test, you are to regard each argument as true.* The problem then is to decide whether it is a *strong* or a *weak* argument.

Make a heavy black mark on the answer sheet under "ARGUMENT STRONG" if you think the argument is strong, or under "ARGUMENT WEAK" if you think the argument is weak. Judge each argument separately on its own merit. *Try not to let your personal attitude toward the question influence your evaluation of the argument, since each argument is to be regarded as true.*

In the example, note that the argument is evaluated as to how well it supports the side of the question indicated.

<p>EXAMPLE</p> <p>Should all young men in the United States go to college?</p> <p>1. Yes; college provides an opportunity for them to learn school songs and cheers. (This would be a silly reason for spending years in college.)</p> <p>2. No; a large percent of young men do not have enough ability or interest to derive any benefit from college training. (If this is true, as the directions require us to assume, it is a weighty argument against all young men going to college.)</p> <p>3. No; excessive studying permanently warps an individual's personality. (This argument, although of great general importance when accepted as true, is not directly related to the question, because attendance at college does not necessarily require excessive studying.)</p>	<table border="1"> <tr> <th colspan="2">Test 5 Argument</th></tr> <tr> <th>Strong</th><th>Weak</th></tr> <tr> <td>1 ○</td><td>●</td></tr> <tr> <td>2 ●</td><td>○</td></tr> <tr> <td>3 ○</td><td>●</td></tr> </table>	Test 5 Argument		Strong	Weak	1 ○	●	2 ●	○	3 ○	●
Test 5 Argument											
Strong	Weak										
1 ○	●										
2 ●	○										
3 ○	●										

When the word "should" is used as the first word in any of the following questions, its meaning is, "Would the proposed action promote the general welfare of the people in the United States?"

EXERCISES

Should groups in this country who are opposed to some of our government's policies be permitted unrestricted freedom of press and speech?

32. Yes; a democratic state thrives on free and unrestricted discussion, including criticism.

33. No; the countries opposed to our form of government do not permit the free expression of our points of view in their territories.

Should the United States Department of Defense keep the public informed of its anticipated scientific research programs by publicizing ahead of time the needs that would be served by each program?

34. No; some become critical of the government when widely publicized projects turn out unsuccessfully.

35. Yes; only a public so informed will support vital research and development activities with its tax dollars.

Do juries decide court cases fairly when one of the opposing parties is rich and the other is poor?

36. No; because rich people are more likely to settle their cases out of court.

37. No; most jurors are more sympathetic to poor people than to the rich, and the jurors' sympathies affect their findings.

38. No; because rich people can afford to hire better lawyers than poor people, and juries are influenced by the skill of the opposing lawyers.

Should pupils be excused from public schools to receive religious instruction in their own churches during school hours?

39. No; having public school children go off to their separate churches during school hours would seriously interfere with the educational process and create friction among children of different religions.

40. No; religious instruction during school hours would violate our constitutional separation of church and state; those who desire such instruction are free to get it after school hours.

STOP.

You may go back and check your work.

Appendix F

Syllabus for the Experimental Groups

COLLEGE EXPERIENCE 101

THE COLLEGE EXPERIENCE: BECOMING A MASTER STUDENT

FALL SEMESTER 1999

Instructor: Cynthia M. Loiacono, Ed. S.

Office: Ferguson English Office

Phone & E-Mail

Office Hours: By appointment

COURSE DESCRIPTION:

This course is designed to teach you how to have a successful college experience both academically and personally. The focus will be on the development of practical knowledge and skills to assist you toward that goal. Topics include time-management, test-taking, communication skills, critical thinking, study techniques, campus resources and managing the personal issues that face many college students.

REQUIRED TEXTBOOK:

Becoming a Master Student, Updated 8th Edition, by David B. Ellis. Published by College Survival, Inc.

OBJECTIVES: Upon completion of this course, you will be able to:

Describe how you are responsible for, and can create a successful college experience.

List and describe the specific methods to:

Improve ability to recall information

Manage time more effectively

Read a textbook with improved retention

Prepare for and take tests

Present reports, both written and oral

Listen to and comprehend a lecture

Apply creative and critical thinking skills.

Utilize a model of communication that facilitates interactions with friends, family and professors that is helpful to the learning process.

Match resources that are available on campus and in the community that can assist you with problems related to health, academics, relationships, discrimination, substance abuse, library research, financial aid, social issues, etc. Be able to report to fellow students and the professor, both orally and in written form, the current experiences of college life.

List several guidelines for making plans that effectively promote success.

TEACHING STRATEGIES: The objectives of this course will be achieved by lectures, class discussions, small group discussions, individual and group exercises, guest lectures, and assignments outside of class.

EVALUATIONS AND GRADING:**ATTENDANCE AND PARTICIPATION:**

Your success in this course will depend in large measure on the interest and enthusiasm that you and your classmates bring to the experience. This course is interactive in nature, therefore, daily attendance and participation are required. If, FOR ANY REASON, you must miss a class, please call my office or tell me in person prior to your expected absence. It is YOUR RESPONSIBILITY TO MAKE UP ANY MISSED WORK OR ASSIGNMENTS. Arriving late and leaving early are disruptive to the class and preclude active participation, so neither is acceptable. Make appointments after your class.

TESTS:

There will be three tests given during the semester. Each test will be worth 50 points. The tests may contain questions covering the content of the class, the reading assignments covered in class or not covered, and experiences related to college.

RESPONSE PAPER:

On designated weeks, you will hand in a 1 page typed, double spaced paper relating to material covered in class or to your college experience as assigned. The paper will have only the heading of your name on the left and the date on the right. The paper will begin on the next line. The paper will be in a font of 12 at the largest and fill the page. You may make the paper longer if desired, but not shorter. These have specific due dates.

CLASS PRESENTATION:

You will work with an assigned group of 2 or more to present a program to the class related to the course material.

GRADING:

Tests	3 @ 50 points each	150
Response Papers	10 @ 10 points each	100
Class Presentation*		60
Attendance and Participation		50
Final Project*		<u>140</u>
TOTAL		500

***Missing these activities results in failing the course!! Speak to me if you need to!!**

GRADING SCALE:

A	480-500	A-	460-479	
B+	440-459	B	420-439	B- 400-419
C+	380-399	C	360-379	C- 340-359
D	300-339	F	299 pts and below.	

OUTLINE OF COURSE:

**Week 1: August 24, 26
Chapter 1, First Step**

**Week 2: August 31, September 2
Chapter 2, Time**

**** Response Paper RP # 1 due on 9/2**

**Week 3: September 7, 9
Chapter 8, Thinking**

RP # 2 due on 9/9

**Week 4: September 14, 16
Resources on CNU campus**

RP #3 due on 9/16

**Week 5: September 21, 23
Chapter 7, Diversity**

RP # 4 due on 9/23

TEST #1 on 9/23

**Week 6: September 28, 30*
Chapter 4 Reading**

**Week 7: October 5, 7
Chapter 3, Memory**

RP # 5 due on 10/7

**Week 8: October 12 No Class Today FALL BREAK !! HAVE FUN !!
October 14 CLASS IN SESSION
Arrange class presentation groups and determine topics**

**Week 9: October 19, 21
Chapter 5, Notes**

RP #6 due on 10/21

**Week 10: October 26, 28
Chapter 6, Tests**

RP # 7 due on 10/28

**Week 11: November 2, 4
Chapter 9, Writing**

TEST # 2 on 11/2

RP# 8 due on 11/4

**Week 12: November 9*, 11
Chapter 10, Relationships**

**RP# 9 due on 11/11
CLASS PRESENTATION #1 and #2 on 11/11**

**Week 13: November 16, 18
Chapter 10: Relationships**

RP#10 due on 11/18

**Week 14: November 23 CLASS IN SESSION
Chapter 11, Health**

November 25, No Class Today HAPPY THANKSGIVING !!!!!!!

**Week 15: November 30, December 2*
Chapter 12, What's Next?**

CLASS PRESENTATION #3 and #4 on 11/30

******* TEST # 3 on 12/2**

**Week 16: December 7, 9
FINALS WEEK**

******* FINAL PROJECT DUE
*****SEE FOLLOWING REQUIREMENTS FOR PROJECT**

**Due at the time of your final exam. 8:00-9:15 due at 8:00a.m. Thursday,
12/9/1999**

FINAL PROJECT: In a neatly tabbed folder, include the following items:

- 1. A monthly calendar with important dates marked (exams, appointments, papers, etc.)**
- 2. List the other classes you are taking concurrently. What grades do you expect in those classes? What have you learned in this class that has helped you in those classes?**
- 3. Sample note taking pages from another class.**
- 4. What personal contributions have you made to this class? What have you done to make the class better? Make a list of the strengths and weaknesses of the class.**
- 5. Which student in this class had a positive impact on you? Explain why.**
- 6. Write a short essay telling of: something you have learned or found personally useful from this class; something you especially enjoyed; and something you didn't like.**
- 7. Discuss at least three strategies that you are using to communicate effectively.**
- 8. Discuss the core skills for critical thinkers in a short essay describing how you have applied them in one of your courses this semester.**
- 9. Describe something creative you did this semester.**
- 10. What are some specific health goals you have for yourself, now and in the future?**
- 11. What do you expect to be doing in the next five years? Be specific.**

12. How has this class or a technique covered here helped you in your present job or college career?
13. What have you gained from writing the Response Papers?
14. How close are you to becoming a Master Student? Suggest a grade for yourself based on your own honest assessment. Describe your reasoning for this critically.

Appendix G

Description of Sessions for the Experimental Groups

Description of Sessions for Experimental Groups

Session 1 – Tuesday, 8/24/99 –Course Introduction

Learning Goals

1. Distribute and review the course syllabus.
2. Introduction of students to each other.
3. Describe group work to include benefits and problems.

Agenda

1. Housekeeping
2. Distribute and review the course syllabus.
3. Discuss response papers and their due dates.
4. Name tag exercise.
5. Engages students in small group oriented activity.
6. Challenges students experientially toward individual and small group interaction.

Name tag exercise –

4x6 card; name in the middle;

upper right corner: name a place you would like to visit

upper left corner: 2 things you like to do

lower right corner: 2 favorite foods

lower left corner: 2 qualities you look for in a friend

Students pair up and chose either A or B. A's explain their card to B. B's explain their card to A. Return to class format and each introduce their partner.

3X4 name card for file with code name on back for research.

Name

Address

City, State Zip

Telephone to contact student.

Major or planned major

Number of credits obtained.

3 objectives of attending college

Read College Instructor's Statement on Disabilities

Session 2 –Thursday, 8/26/99 – 1st Step

Learning Goals:

1. Introduce the chapter and student's responsibility to be aware of the entire chapter.
2. Introduce the needs wheel and assign the learning style graph.
3. Review important chapter points.

Agenda

1. Housekeeping
2. Roster and changes
3. Answer any questions regarding text or syllabus or class
4. Needs Wheel individually and in small groups
5. Explain Learning Style Graph and assign

Relation to Theory

1. Define further the class and course structure
2. Engages students in exploring the text and in understanding their personal involvement
3. Challenges students individually and toward small group interaction.

Needs Wheel

From the text – discuss how the students make time for things that are important but not urgent. Students fill out wheel and note the percentage of time they give to each area. Students then brainstorm ways a person could improve each area. Students are encouraged that what may work for one may not work for another. They are also encouraged to include each area to the fullest.

Session 3 – Tuesday, 8/31/99 – Research Testing

Learning Goals

1. Provide students with knowledge of the testing and provide them with information so they can give informed consent.
2. Provide Informed Consent and Demographics Questionnaire
3. Provide Watson-Glaser Critical Thinking Appraisal Form S

Agenda

1. Testing the entire session

Relation to Theory

1. Demonstrates the importance of the class to the Instructor, the University and hopefully to the students

Session 4 - Thursday 9/2/99 - Research Testing

Learning Goals

1. Reassert the testing information and ask for questions
2. Provide the Paragraph Completion Method
3. Provide the Learning Environment Preferences

Agenda

1. Testing the entire session
2. Collect the Response paper

Relation to Theory

1. Demonstrates the importance of the class to the Instructor, the University and hopefully to the students

Session 5 - Tuesday, 9/7/99 – Learning Styles Inventory and Time Management

Learning Goals

1. Teach students about Learning Styles Inventory
2. Teach students about time management and skills to use time wisely
3. Teach students to use the time management skills to solve problems in their college schedules.
4. Provide students with calendars for their time management portion of final project and to use now
5. Discuss the 25 ways to get the most out of now; and perfectionism
6. Discuss the discovery wheel and do if students haven't
7. Discuss the Power Process – Get the most out of now
8. Describe time as a nonrenewable resource
9. Discuss seven strategies for dealing with procrastination

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Introduce Learning Styles Inventory topic; discuss relation to their studies and their possible study problems
4. Collect inventories for credit
5. Present weekly time management hourly schedule and ask students to compare their own schedules.
6. Reflect on the schedules as small group and problems which may arise due to time management as class
7. Time management handout
8. Introduce calendars and their use; provide calendars to schedule school requirements, activities, events and appointments
9. Group activity of choosing the 25 ways of getting the most out of now and reporting to the class; followed by a class discussion of “is it a piano” and perfectionism
10. Tie the 25 ways, and perfectionism to use of the calendar, and to their learning style
11. Complete the discovery wheel; tie to the use of time
12. Introduce the Power Process and study; connect to the learning style
13. Introduce the nonrenewable resource and tie to 2-6 and introduce procrastination
14. Each group agree on best way to deal with procrastination

Relation to Theory

1. Builds on previous learning regarding groups and class expression
2. Promote reflective thinking regarding their individuality and application of the Learning Inventory to success in college
3. Engage students in understanding their use of time and needs while in college
4. Promote reflective thinking regarding their use of time and the differences among the groups
5. Promote role taking as college student engaged in individual time management
6. Encourage attention to differences and alternatives

Time and The Student Week

120hrs	plus 48 hrs weekend
<u>40</u> sleep	
80	
<u>15</u> class	
65	
<u>30</u> study	What percentage of time is given to each area?
35	
<u>10</u> chores	Brainstorm ways to do more in each area.
25	
<u>15</u> meals	
10 free hrs	

Session 6 – Thursday, 9/9/99- Thinking Skills and Critical Thinking

Learning Goals

1. Provide students with information regarding thinking skills and critical thinking
2. Define the introductory terms
3. Provide students with a method for problem solving
4. Provide exercises in critical thinking

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Introduce the difference between critical and creative thinking
4. Define terms used in regard to critical thinking: thinking, truth, contradiction, opinions, solutions, beliefs, arguments, evidence, familiarity, and honesty

5. Provide and explain the method for problem solving
6. Values Clarification Exercise
7. National Football League Exercise
8. Collect the response paper

Relation to Theory

1. Engages students in group building activity
2. Promotes role taking of higher level thinking skills- critical and creative
3. Promotes role taking in context as college student
4. Promotes reflective thinking

Session 7 – Tuesday, 9/14/99 – Critical Thinking Skills

Learning Goals

1. Review critical thinking skills and provide and explain the method for problem solving
2. Provide students with an opportunity to practice critical thinking skills using an example suggested by the students

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Introduce Village exercise for small group solution
4. Instructor moves about room and interacts with individual students
5. Have students put results on the board and verbally describe solution reached
6. Remind students to meet in the Library next time

Relation to Theory

1. Engages students in group building activity
2. Promotes role taking of higher level critical thinking skills
3. Promotes role taking in context as college student
4. Promotes alternative ideas within the small group and class as whole
5. Allows instructor to interact with individual students, flexing with student responses to create dialogue and support mixing and matching response to stimulate advancing thinking to promote reflective thinking

Session 8 – Thursday, 9/16/99 – Resources – Campus Library and Computer Center

Learning Goals

1. Resources are available on the campus for college student use
2. Resources are available in the community for all citizens
3. Familiarity with resources and personnel available to assist student needs

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Introduce Librarian and encourage students to ask any questions regarding library use even if information is needed for another class
4. Remind students to meet in the Career Center next time
5. Collect the response paper

Relation to Theory

1. Promotes student's feeling they belong to a group as move through library together
2. Promotes role taking in context as college student
3. Promotes knowledge of available resource useful for successful college work

Session 9 – Tuesday, 9/21/99 – Resources – Campus Career and Counseling Center

Learning Goals

1. Resources are available on the campus for college student use
2. Resources are available in the community for all citizens
3. Familiarity with resources and personnel available to assist student needs

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Introduce Head of Career and Counseling Center and encourage students to ask any questions regarding the center use even if information is needed for another class

Relation to Theory

1. Promotes students feeling as though they belong to a group as move through Career and Counseling Center together
2. Promotes role taking in context as college student
3. Promotes knowledge of available resource useful to support successful college work

Session 10 – Thursday, 9/23/99 – Diversity

Learning Goals

1. To provide students with information about diversity
2. To increase students' awareness of social issues
3. To encourage students to become aware of their personal values, beliefs, and attitudes
4. To introduce social responsibility and encourage understanding of the value of differences

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Introduce diversity
4. Show film "The eye of the Storm"
5. Test #1
6. Collect response paper

Relation to Theory

1. Promotes an open discussion of value of differences
2. Builds on alternative view and critical thinking to analyze responses
3. Supplement the group work with video information
4. Allows difficult subject (diversity) to be viewed abstractly

Session 11- Tuesday, 9/28/99 – Diversity & begin Reading

Learning Goals

1. Review the test
2. Return response papers
3. Understand diversity through discussion and exercise
4. To provide students with effective methods of reading on the college level
5. Teaching students how to recognize common difficulties in reading college course materials and strategies to overcoming the barriers

Agenda

1. Housekeeping
2. Review test and discuss answers
3. Return response papers and discuss issues raised giving students opportunity to engage their ideas or keep them private
4. Review last class and reflect on application to role as college student
5. Lemon exercise
6. Reflect on video and exercise regarding diversity and relate to differences in learning styles; Instructor opportunity to read and flex with student responses to support more complex thinking regarding diversity
7. Introduce reading and review text information

Relation to Theory

1. Promotes skill development and connect to learning style (a previous lesson)
2. Engages students in ongoing group work and communication
3. Introduces alternative thinking and analysis
4. Promotes reflective thinking
5. Promote difficult topic issue and view from less stressful view (lemons)

Exercises:

Lemon exercise: Students sit in circle on floor; provide lemon for each student. Identify this as new best friend. Student must be able to identify the lemon among all other lemons-study scent, color, shape, unusual markings, size, weight, etc.; pass lemons around circle and stop when first person has own lemon again (do not identify they will stop until moving so no one will count); ask to all students to describe how they know which is their lemon to their neighbor in terms of 'my friend'; collect lemons in bag and tumble to mix; pass bag and each student identifies own lemon and describes it to the group; ask students to pass lemons again and collect own again. Students are usually noting their lemons characteristics at this time. Return to formal class situation and discuss the issue in terms of people, opportunities to learn and added value in life that is derived from diversity.

Session 12 – Thursday, 9/30/99 – Reading- continued

Learning goals:

1. To provide students with information and effective methods of reading on the college level
2. To teach students the effective alternative strategies for reading college course materials
3. Teaching students how to recognize common difficulties in reading and strategies to overcoming the barriers

Agenda

1. Review last class and reflect on application to role as college student
2. Introduce reading and review text information
4. Rocky the Wrestler and Rocky the Prisoner exercise
5. Reading for comprehension exercise
6. Reading editorials and working small groups to explain them to each other

Relation to Theory

1. Promotes skill development
2. Engages students in ongoing group work and communication

Introduces alternative views thinking and analysis; defending an issue opposite personal views in order to engage student in thinking “what others could be thinking”; to take a stand that they might not agree with and develop an argument by taking the other side of their original position or belief
Promotes reflective thinking

Exercises:

Rocky the Wrestler, Rocky the Prisoner: Handout with half page description of seeking release, same paragraph for each title, handout each to half the class and ask them to read and discuss the situation, when it becomes apparent that some have different outlook, collect the papers and redistribute, then discuss the differences and the impact of impressions when reading, prior knowledge when reading, information acquisition when reading, and describing what one reads.

Reading for Comprehension: Handout with description paragraph and back of handout with questions, asked to read and turn over and each asked to answer questions without rereading data, then get into group and determine answers again, and then to share from each group on board, provides reading, auditory and visual understanding of differences in persons who read same data

Reading Editorials: Work in small groups, chose an editorial for each group, read and discuss the authors bias, assumption and the influence the editorial might have, then determine a debate with the information and an opposite view rebuttal and present this to the class.

Sessions 13 and 14 – Memory – Tuesday-10/5/99 and continue on - Thursday – 10/7/99

Learning goals

1. To provide students with information and effective memory techniques
2. To teach students the effective alternative strategies for memorizing different types of course materials
3. Teaching students how to recognize common difficulties encountered in memory work and strategies to overcoming the barriers

Agenda

1. Review last class and reflect on application to role as college student
2. Introduce lesson on memory and review text information
3. Each student identify one memory technique they already use and share with the class

4. **Group memory exercises**
5. **Bag of tricks exercise**

Relation to Theory

1. **Promotes skill development**
2. **Engages students in ongoing group work and communication.**
3. **Students speak out in class and reduce fear of presenting; students are expected to express themselves regarding knowledge gained while in college; fun experiences can help overcome fears in public speaking**
4. **Exercise new information and experience positive results; to encourage openness to new theory and feeling of success; promote belonging within class and group; encouraged to exercise this experience outside of class with friends; and to exchange information on old methods of memory used and new methods of memory and compare success.**
5. **Promotes alternative views and reflective thinking**

Exercises:

Group Memory Exercises-

1. **Call the roll slowly and look at each student; after Review of last class, ask students to take out a piece of paper, remind them that you take roll every day, ask them to list the names of as many classmates as they can remember. Can make it a game when the students ask whether they need last names, real names etc.**
2. **After ½ the lecture on memory, ask students to list and describe 5 important items from the last class they attended in College 101. Compare lists and make it fun again. Remind students that their memory is normal and that there are techniques to memory.**
3. **After second ½ of lecture on memory, ask students to list and describe 5 important Items they had learned during the present class; ask students to form groups (small) And begin comparing lists; have students share lists-but only new items so much of lecture is restated. Remind students the value of working in groups; being involved in their learning and retaining more; sharing information and building on each others knowledge base; the sharing supporting encouraging exciting learning memory process.**

Bag of tricks exercise- Clear desk in front of room and place bag with 20 household items on table; explain to whole class that the items will be removed and they should memorize them without writing the list; slowly remove each item and name it while placing on the desk; slowly return each to the bag while naming the item; remove the items again slowly and name each and place on desk; return each to bag slowly but not naming items; ask students to break into

two groups; ask each group to develop a group story to use each item in the bag; allow time; 2 students from opposite group come to front of room to remove items from the bag as their rival group recites their story without notes or lists; each person in the group must speak (choose students who are shy- this is easy and fun – gets them in front of the class with their groups support for encouragement); allow second group to have their turn with 2 students from the opposite group as supervisors of the bag of tricks; cheer the groups for their stories and for their ability to take a dry topic such as memory and make it fun. Remind students that they have used most of the memory techniques in this exercise and ask students to list them; encourage students to use these in their other memory assignments and report back. Allows students to interrelate the process of learning from one content area to another.

Session 15- Fall break – Tuesday – 10/12/99-no class

NO CLASS ON Tuesday

Session 16 –Class Presentations–Thursday– 10/14/99

Learning goals

1. To provide students with information regarding public speaking and presenting topics for peers.
2. To discuss the work of a presentation group and positive and negative possible circumstances
3. To support groups to form, choose topics and dates.

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Handout on public speaking and point out important points- ask who has taken speech and open discussion regarding speaking- remind students they have all spoken in class and been in front of the class and that they may arrange the presentation in most any manner they chose.
4. Ask students to describe groups they have worked in before and encourage discussion
5. Encourage groups to form and choose topics and dates to present

Relation to Theory

1. Promotes skill development
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college; help overcome fears in public speaking

4. Promotes alternative views and reflective thinking

Session 17 and 18– Notes – Tuesday and Thursday – 10/19/99 and 10/21/99

Learning goals

1. To provide students with information and effective techniques of note taking
2. To teach students the effective strategies for taking notes in different types of subject matter (ie. Biology, poetry, history) ; and to give students note taking practice
3. Teaching students how to recognize common difficulties encountered in note taking
and strategies to overcoming the barriers
4. Assist students in the choice of the most appropriate personal note taking style

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Short lecture on techniques of note taking
4. Small group and each assigned different type of note taking; students take notes from video (any video can be used) and place notes on board
5. Students describe note taking to class
6. Reflect on the exercise and tie to student activities in other classes

Relation to Theory

1. Promotes skill development; use of additional teaching aide with video
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college; help overcome fears in public speaking
4. Promotes alternative views and reflective thinking

Session 19 and 20–Tests – Tuesday and Thursday – 10/26/99 and 10/28/99

Learning goals

1. To provide students with information and effective techniques for test taking
2. To teach students the effective strategies for taking different types of tests in different subjects (ie. essay in history and essay in literature, statistics and 3x5 cards, multiple choice in psychology and multiple choice in chemistry)
3. Teaching students how to recognize common difficulties encountered in test taking and strategies to overcoming the barriers; pre test techniques and during test techniques

4. Assist students in the choice of the most appropriate methods to reduce test anxiety
5. Group Quiz Exercise

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Short lecture on techniques of test taking
4. Two groups and one assigned pre test techniques and second assigned during test techniques and place notes on board; each member of class must describe one of the techniques while standing at their desk
5. Students describe note taking to class
6. Reflect on the exercise and tie to student activities in other classes

Relation to Theory

1. Promotes skill development just prior to test in class
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college; standing at desk to speak is raising the demand on each student; help overcome fears in public speaking; identify for each student that they have spoken in front of class
4. Promotes alternative views and reflective thinking

Exercise:

Group Quiz Exercise-

Legitimate quiz is given which is followed by humorous quiz in which last sentence states the questions should not be answered. Object is to have students review tests prior to taking them.

Session 21 - 22 – Writing – Tuesday –and Thursday - 11/2/99 – 11/4/99

Learning goals

1. To provide students with information and effective techniques for assignments in Writing
2. To teach students the effective strategies for different types of writing assignments
3. Teaching students how to recognize common difficulties encountered in writing assignments and strategies to improve written assignments
4. Assist students in understanding plagiarism

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student

3. Short lecture on writing; small groups to share writing of students; insight gained by writing shared in aggregate by groups to build support in their creative writing and technical writing skills
4. Small groups and do Strange Sentences Exercise and Police department exercise
5. Students describe their rendition of police department exercise to class
6. Reflect on the exercise and tie to writing in other classes

Relation to Theory

1. Promotes skill development just prior to test in class
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college;
4. Promotes alternative critical views and reflective thinking

Exercises:

Strange Sentences Exercise:

Students determine the common phrase within each of 10 sentences. The sentences include phrases such as Twinkle, twinkle, little star, that are written in scientific terms. This provides experience in deciphering unknowns using alternative thinking and then relating the alternatives to common remembered themes.

Police Department Statements Exercise:

Statements from police departments which are poorly written providing humorous sentences. Students decipher real meaning and create group story to share with class.

Session 23 – Relationships – Tuesday – 11/9/99

Learning goals

1. To provide students with information and effective techniques for relationships
2. To teach students the effective strategies for different types of relationships
3. Teaching students how to recognize common difficulties encountered in relationships and solutions to problems
4. Assist students in understanding communications theory and its value in relationships

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Short lecture on relationships
4. Short lecture on communications

5. **Communications Exercise with Blocks**
6. **Small groups in support of each working block builder and cheer them on**
7. **Reflect on the exercise and tie relationships and communications to in other situations and classes**

Relation to Theory

1. **Promotes skill development in relationships and communications**
2. **Engages students in ongoing group work and communication.**
3. **Students are expected to express themselves regarding knowledge gained while in college; Communications techniques for college and personal success**
4. **Promotes alternative critical views and reflective thinking**

Communications Exercise with Blocks:

Two volunteers sit opposite each other at a table with a blockade between to prevent viewing their work space. Each volunteer has ½ of the blocks with exactly the same shapes. Volunteer one asked to build anything. Volunteer one must explain to Volunteer two how to duplicate the building exactly. Groups of students may assist when difficulty ensues. Instructor to discuss the difficulty in terms of communications theory and relate this to relationship communications.

Session 24 – Relationships – Tuesday – 11/11/99

Learning goals:

1. **To provide students with information and effective techniques for relationships**
2. **To teach students the effective strategies for different types of relationships**
3. **Teaching students how to recognize common difficulties encountered in relationships and solutions to problems**
4. **Assist students in understanding communications theory and its value in relationships**

Agenda

1. **Housekeeping**
2. **Review last class and reflect on application to role as college student**
3. **Short refresher on relationships and communications**
4. **Class presentations from group one and group two regarding relationship issues.**

Relation to Theory

1. Promotes skill development in relationships and communications
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college
4. Communications techniques for college and personal success
5. Promotes student presented alternative critical views to stimulate reflective thinking

Session 25– Restesting – Tuesday - 11/16/99

Learning goals

1. Provide students with knowledge of the testing and remind them that they are through informed consent entitled to cease testing at any time.
2. Provide Watson-Glaser Critical Thinking Appraisal Form S

Agenda

1. Testing the entire session

Relation to Theory

1. Demonstrates the importance of the class to the Instructor, the University and hopefully to the students

Session 26 – Retesting – Thursday – 11/18/99

Learning goals

1. Reassert the testing information and ask for questions
2. Provide the Paragraph Completion Method
3. Provide the Learning Environment Preferences

Agenda

1. Testing the entire session
2. Collect the Response paper

Relation to Theory

Demonstrates the importance of the class to the Instructor, the University and to the students

Session 27 – Health – Tuesday – 11/23/99

Learning goals

1. Community Aids Educator
2. Health and student sexual safety

Agenda

1. Housekeeping
2. Ask if students have any questions regarding testing and make individual time with student as desired to discuss their needs
3. Introduce Community Aids Educator

Relation to Theory

1. Knowledge of personal health and safety for independent living

Session 28 – Thanksgiving Holiday – Thursday – 11/25/99 – no class

Session 29 – What's Next – Tuesday – 11/30/99

Learning goals

1. To provide students with information and effective techniques for goals and for future planning.
2. To teach students the effective strategies for different types of goals
3. Teaching students how to recognize common difficulties encountered in goal setting and planning

Agenda

1. Housekeeping
2. Review last class and reflect on application to role as college student
3. Lecture on What's Next and continuing education and goal attainment
4. Class presentations from group three and group four regarding goal issues and what's next for students.

Relation to Theory

1. Promotes skill development in goal setting and planning
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college
4. Communications techniques for college and personal success
5. Promotes student presented alternative critical views to stimulate reflective thinking

Session 30 – What's Next – Thursday – 12/2/99

Learning goals

1. To review with students information regarding goals and future planning.
2. Test #3

Agenda

1. Agenda
2. Housekeeping
3. Review last class and reflect on application to role as college student
4. Test #3

Relation to Theory

1. Promotes skill development in goal setting and planning
2. Engages students in ongoing group work and communication.
3. Students are expected to express themselves regarding knowledge gained while in college
4. Final test to complete course.

Session 31 – Final Exam – According to College Assignment

Learning goals

1. Timely completion of tasks

Agenda

1. Collect Final Projects

Relation to Theory

1. Project is overview of course in students' own interpretation (see syllabus)

Appendix H

Syllabus for the Comparison Groups

COLLEGE STUDIES
THE COLLEGE EXPERIENCE: BECOMING A MASTER STUDENT
FALL SEMESTER 1999

Instructor:
Office:
Phone:
e-mail:
Office Hours:

Course Description:

This course is designed to help you have a successful college experience both academically and personally. The focus will be on the development of practical knowledge and skills to assist you toward that goal. Topics include time-management, test-taking, communication skills, study techniques, campus resources, and managing the personal issues that face many college students.

Required Textbook:

Becoming a Master Student, 8th edition, by David B. Ellis, Published by College Survival, Inc.

Objectives:

On completion of this course, you will be able to:

1. describe how you are responsible for, and can create a successful college experience;
2. list and describe the specific methods to:
 - a. improve ability to recall information,
 - b. manage time more effectively,
 - c. read a textbook with improved retention,
 - d. prepare for and take tests,
 - e. present reports, both written and oral,
 - f. listen to and comprehend a lecture, and
 - g. apply creative and critical thinking skills;
3. utilize a model of communication that facilitates interactions with friends, family, and instructors which is helpful to the learning process;
4. match resources that are available on campus and in the community that can assist you with problems related to health, academics, relationships, discrimination, substance abuse, library research, financial aid, social issues, etc.;
5. be able to report to fellow students and the instructor, both in written and oral form, the current experiences of college life; and
6. list several guidelines for making plans that effectively promote success.

Teaching Strategies:

The objectives of this course will be achieved through lectures, class discussions, small group discussions, individual and group exercises, guest lectures, and assignments to be completed outside of class.

EVALUATION AND GRADING

Attendance and Participation:

Your success in this course will depend in a large measure on the interest and enthusiasm that you and your classmates bring to the experience. This ours is interactive in nature, therefore, attendance and participation are essential. If, FOR ANY REASON, you must miss a class, please call my office, e-mail me, or tell me in person prior to your expected absence. It is your responsibility to make up any missed work or assignments. Arriving late and leaving early are disruptive to the class and are not acceptable.

Examinations:

- There will be three exams given during the semester, each worth 100 points. The exams may contain questions covering the content of the class, the reading assignments, evaluation of the class, and a section asking you to share college related experiences.

Response Papers:

During the semester, on dates shown on the course schedule, you will hand in a 1-2 page paper. These papers will be typed, doubled-spaced, with 1" margins, and using reasonable font size (Times New Roman 12-14). The content of the papers will focus on relating the material covered in the course to experiences in your college life.

Class Presentation:

You will work with an assigned group of 2 or more classmates to make a presentation to the class related to the material covered in the course.

Final Project:

In a neatly tabbed folder, include the following items:

1. A calendar covering one month, including your weekly schedule of classes, study times, exams and other activities,
2. A list of the other classes you are taking this semester, the grades you expect in those classes, and a brief description of how this course has helped you in each of those classes,
3. A sample of note-taking from another class,
4. A description of what personal contributions you have made to this class, identify a student in the class who had a positive impact on you this semester, and include a list of the strengths and weaknesses you found in this class,
5. A short essay characterizing: something you learned or found personally useful from this class, something you personally enjoyed, and something you did not like,
6. A brief description of three strategies you are using to communicate more effectively,
7. An essay describing you most memorable experience in college this semester,
8. A description of something creative you did this semester,
9. A list of specific health goals you have and how you plan to reach them,
10. A description of what you plan to be doing in five years (be specific),
11. A report on how this class or a technique covered in this class has helped you in your present job or college career,

12. All of your response papers in order by date and an evaluation of the value of the response paper assignment,
13. An assessment of how close you are to becoming a Master Student including a suggestion for your grade in this course based on an honest assessment of your work.

Grading:

Exams (3 @ 100 points each)	300
Response Papers (6 @ 10 points each)	60
Class attendance and participation	40
Class Group Presentation*	50
Final Project*	<u>150</u>
Total	600

*Not completing these assignments results in an automatic course failure

Grading Scale:

A	600-570	A-	569-540	
B+	539-510	B	509-480	B- 479-450
C+	449-420	C	419-390	C- 489-360
D	359-320	F	319 and below	

**Course Outline and Schedule
Fall 1999**

Week 1: August 23, 25, 27
Chapter 1, First Step
Introductions, Syllabus review, Pre-test

Week 2: August 30, September 1, 3
Chapter 2, Time
Complete First Step

Week 3: September 6, 8, 10
Chapter 7, Diversity
Response Paper #1 due 9/8

Week 4: September 13, 15, 17
Chapter 3, Memory

Week 5: September 20, 22, 24
Resources
Response Paper #2 due 9/22

Week 6: September 27, 29, October 1
Chapter 4, Reading
Exam #1 on 10/1

Week 7: October 4, 6, 8
Chapter 5, Notes
Response Paper # 3 due on 10/6

Fall Break: No Class 10/11

Week 8: October 13, 15
Chapter 6 Tests

Week 9: October 18, 20, 22
Chapter 8, Thinking
Response Paper #4 due 10/20

Week 10: October 25, 27, 29
Chapter 9: Writing
Exam #2 on 10/29

Week 11: November 1, 3, 5
Chapter 10, Relationships
Response Paper #5 due 11/3

Week 12: November 8, 10, 12
Complete Relationships
Class Presentations #1 and 2

Week 13: November 15, 17, 19
Chapter 11, Health
Response Paper #6 due 10/17
Class Presentations #3 and 4

Week 14: November 22
Health
Class Presentation #5

Week 15: November 29. Dec. 1, 3
Chapter 12, What's Next
Review
Final Project due 12/3

Final Exam:

RESPONSE PAPERS

You will be responsible for handing in eight response papers which are 1 ½ to 2 pages each. The intention of these papers is to provide a means for you to reflect upon your experience in this course, both in and out of the classroom.

Specifically, you are to elaborate on any change, personal growth, or new knowledge that you are experiencing as a student CNU and as a member of this class. I want to know how much you are allowing this experience to influence you and to what extent you are taking advantage of opportunities for your intellectual social, and psychological development.

You will be graded according to the following criteria:

1. Use of standard (i.e. college level) English.
2. All response papers must be typed.
3. Your involvement with the material in the course is essential and must be articulated. In order to distinguish between the hastily written report and those vignettes carefully and thoughtfully written, you will be graded on the nature of your paper and how it relates to any process discussed in class.

The list below can serve as a stimulus for your creativity. Keep in mind you can generally respond to any three spheres of personal influence. These areas are:

- behaviorally – what has changed or needs changing to benefit you academically?
- affectively - how is this experience, growth, or change influencing you emotionally?
- cognitively - what thoughts about your beliefs have changed or need changing?

Specific statements that may surface include:

- ◆ Since last week, one of the unexpected things I learned about myself was . . .
- ◆ The best thing that has happened to me in class last week was . . .
- ◆ A problem that I am dealing with in this class regarding study habits is . . .
- ◆ Something new I am trying out as a result of this class is . . .
- ◆ I found that I became really interested in the readings this week on . . .
- ◆ The class this week was particularly . . .

Be thoughtful in your responses. As you may have already perceived, self-examination is at the core of this course. This is the crucial first-step towards self-awareness and self-improvement. Know your strengths. Do not be afraid to find out weaknesses, nor be afraid to change them. This the key to unlocking your potential for educational improvement and personal advancement. You have a tremendous support system all around you. Use it!

College Studies 101
The College Experience: Becoming A Master Student
Fall Semester 1999

Instructor:

Office:

Phone:

Office Hours:

Course Description:

This course is designed to teach you how to have a successful college experience both academically and personally. The focus will be on the development of practical knowledge and skills to assist you toward that goal. Topics include time-management, test-taking, communication skills, study techniques, campus resources and managing the personal issues that face many college students.

Required Textbook:

Becoming a Master Student, 8th Edition, by David B. Ellis. Published by College Survival, Inc.

Objectives:

Upon completion of this course, you will be able to:

1. Describe how you are responsible for, and can create a successful college experience.
2. List and describe the specific methods to:
 - a. Improve ability to recall information
 - b. Manage time more effectively
 - c. Read a textbook with improved retention
 - d. Prepare for and take tests
 - e. Present reports, both written and oral
 - f. Listen to and comprehend a lecture
 - g. Apply creative and critical thinking skills
3. Utilize a model of communication that facilitates interactions with friends, family and instructors which is helpful to learning process.
4. Match resources that are available on campus and in the community that can assist you with the problems related to health, academics, relationships, discrimination, substance abuse, library research, financial aid, social issues, etc.
5. Be able to report to fellow students and the instructor, both orally and in written form, the current experiences of college life.
6. List several guidelines for making plans that effectively promote success.

Teaching Strategies

The objectives of this course will be achieved by lectures, class discussions, small group discussions, individual and group exercises, guest lectures, and assignments outside of the class.

Evaluations and Grading:

- **Attendance and Participation-**

Your success in this course will depend in large measure on the interest and enthusiasm that you and your classmates bring to the experience. This course is interactive in nature, therefore, attendance and participation are essential. If, FOR ANY REASON, you must miss a class, please call my office to tell me in person prior to your expected absence. It is YOUR RESPONSIBILITY TO MAKE UP ANY MISSED WORK OR ASSIGNMENTS. Arriving late and leaving early are disruptive to the class and preclude active participation, so neither is acceptable.

- **Tests -**

There will be three tests given during the semester. Each test will be worth 40 points. The tests may contain questions covering the content of the class, the reading assignments, evaluation of the class and a section to share experiences related to college.

- **Response Paper -**

On designated weeks, you will hand in a 1 ½ to 2 page typed, double-spaced paper relating material covered in class to your college experience. These papers will be kept in a folder and handed in collectively.

- **Class Presentation -**

You will work with an assigned group of 2 or more to present a program to the class related to the current material.

Grading:

Tests	3@ 40 points each	120
Response Papers	8@ 15 points each	120
Class Presentation*		60
Attendance and Participation		60
Final Project*		140

TOTAL		500

*Missing these activities results in failing the course!!

Grading Scale:

A	480-500	A-	460-479		
B+	440-459	B	420-439	B-	400-419
C+	380-399	C	360-379	C-	340-359
D	300-339	F	299 pts and below		

OUTLINE OF COURSE:

Week 1: August 23, 25 and 27
Chapter 1 – First Step

Week 2: August 30, September 1 and 3
Chapter 2 – Time
Response Paper (RP) #1 due on Sept 3

Week 3: September 6, 8 and 10
Chapter 7 - Diversity

Week 4: September 13, 15, and 17
Chapter 3 – Memory
RP #2 due on Sept 20

Week 5: September 20, 22 and 24
Resources

Week 6: September 27, 29 and Oct 1
Chapter 4
RP #3 due Oct 1
***TEST #1 on Sept 29

Week 7: October 4, 6 and 8
Chapter 5 – Notes

Week 8: October 11 FALL BREAK
October 13 and 15
Chapter 6 – Tests
RP #4 due Oct 15

Week 9: October 18, 20 and 22
Chapter 8 - Thinking
CLASS PRESENTATION #1 on Oct 22

Week 10: October 25, 27 and 29
Chapter 9 – Writing
RP#5 due Oct 29
(CLASS PRESENTATION #2 on Oct 27)
***TEST #2 on Oct 29

Week 11: November 1, 3 and 5
Chapter 10 – Relationships
CLASS PRESENTATION #3 on Nov 5

Week 12: November 8, 10 and 12
Chapter 10 – Relationships
CLASS PRESENTATION #4 on Nov 12
RP #6 due Nov 12

Week 13: November 15, 17 and 19
Chapter 11 – Health
CLASS PRESENTATION #4 on Nov 19

Week 14: November 22
November 24 and 26 THANKSGIVING BREAK
Chapter 11 – Health
CLASS PRESENTATION #5 on Nov 22
RP #7 due Nov 22

Week 15: November 29, Dec 1 and Dec 3
Chapter 12 – What's next?
***TEST #3 on Dec 3
FINAL PROJECT DUE: Dec 3

FINAL PROJECT: In a neatly tabbed folder, include the following items:

1. A monthly calendar with important dates marked (exams, appointments, etc)
2. List the other classes you are taking concurrently. What grades do you expect in those classes? What have you learned in this class that has helped you in those classes?
3. Sample note-taking pages from another class.
4. What personal contributions have you made to this class? What have you done to make the class better? Make a list of the strengths and weaknesses of this class.
5. Which student in this class had a positive impact on you? Explain why.
6. Write a short essay telling of:
 - something you have learned or found personally useful from this class,
 - something you especially enjoyed,
 - and something you didn't like.
7. Discuss at least three strategies that you are using to communicate effectively.
8. List five practical ways in which you manage your money.
9. Describe something creative you did this semester.
10. What are some specific health goals you have for yourself, now and in the future?
11. What do you expect to be doing in the next five years? Be specific.
12. How has this class or a technique covered here helped you in your present job or college career?
13. Response Papers: What was the value of these assignments?
14. How close are you to becoming a Master Student? Suggest a grade for yourself based on your own honest assessment.

RESPONSE PAPERS

You will be responsible for handing in eight response papers which are 1 ½ to 2 pages each. The intention of these papers is to provide a means for you to reflect upon your experience in this course, both in and out of the classroom.

Specifically, you are to elaborate on any change, personal growth, or new knowledge that you are experiencing as a student CNU and as a member of this class. I want to know how much you are allowing this experience to influence you and to what extent you are taking advantage of opportunities for your intellectual social, and psychological development.

You will be graded according to the following criteria:

1. Use of standard (i.e. college level) English.
2. All response papers must be typed.
3. Your involvement with the material in the course is essential and must be articulated. In order to distinguish between the hastily written report and those vignettes carefully and thoughtfully written, you will be graded on the nature of your paper and how it relates to any process discussed in class.

The list below can serve as a stimulus for your creativity. Keep in mind you can generally respond to any three spheres of personal influence. These areas are:

- behaviorally – what has changed or needs changing to benefit you academically?
- affectively - how is this experience, growth, or change influencing you emotionally?
- cognitively - what thoughts about your beliefs have changed or need changing?

Specific statements that may surface include:

- ◆ Since last week, one of the unexpected things I learned about myself was . . .
- ◆ The best thing that has happened to me in class last week was . . .
- ◆ A problem that I am dealing with in this class regarding study habits is . . .
- ◆ Something new I am trying out as a result of this class is . . .
- ◆ I found that I became really interested in the readings this week on . . .
- ◆ The class this week was particularly . . .

Be thoughtful in your responses. As you may have already perceived, self-examination is at the core of this course. This is the crucial first-step towards self-awareness and self-improvement. Know your strengths. Do not be afraid to find out weaknesses, nor be afraid to change them. This the key to unlocking your potential for educational improvement and personal advancement. You have a tremendous support system all around you. Use it!

Appendix I
Response Paper List

Topics for Response Papers

- 1. Introduce yourself to a stranger, include your greatest personal strengths and your personal weaknesses.**
- 2. How important are friends to you? Would you want them to be attending college with you?**
- 3. Discuss a conflict in your life caused by others and your solution.**
- 4. Discuss homosexuality and how you would feel if your best friend disclosed he or she is a homosexual. Would your friendship change? Argue for and against friendship.**
- 5. Discuss capital punishment and your position.**
- 6. Discuss the issue of assisted suicide and your position regarding yourself and regarding a family member.**
- 7. Discuss abortion and provide arguments for both sides.**
- 8. Discuss spending the tax dollars provided to the government and defend your choices.**
- 9. Discuss your role as a student. Discuss how you feel you have evolved since entering college.**
- 10. Write your own epitaph to include your planned accomplishments ... "Here lies..."**

Appendix J

Critical Thinking Ability

CRITICAL THINKING ABILITY

Abilities related to critical thinking:

1. The ability to define a problem
2. The ability to select pertinent information for the solution to a problem
3. The ability to recognize stated and unstated assumptions
4. The ability to formulate and select relevant and promising hypotheses
5. The ability to draw valid conclusions and judge the validity of inferences

Definitions:

1. Inference – Discriminating among degrees of truth or falsity of inferences drawn from given data
 2. Recognition of assumptions – Recognizing unstated assumptions or presuppositions in given statements or assertions
 3. Deduction – Determining whether certain conclusions necessarily follow from information in given statements or premises
 4. Interpretation – Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted
 5. Evaluation of arguments – Distinguishing between arguments that are strong and relevant and those that are weak or irrelevant to a particular question at issue
- Watson-Glaser Critical Thinking, 1994.

Steps in critical thinking:

1. Analyze – Consider the whole and break it into its component parts to examine them separately and note how they interrelate
2. Summarize – State the main message or central point to include key facts, line of reasoning or central details; no supporting evidence, details, or reaction to it
3. Interpret – Identify inferences about assumptions unstated but implied; note the distinctions between fact and opinion; quality of evidence, reasoning and logic
4. Synthesize – Link what you have summarized, analyzed, and interpreted and connect to your prior knowledge or what you are learning; weave together ideas or create new connections among ideas
5. Assess critically – Judge the quality of the material and how it relates in your synthesis

Troyka, L.Q., Quick Access. 1997, Prentice-Hall, Inc., Upper Saddle River.

Appendix K
Description of College Major

Appendix K

MAJOR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ACCTING	1	1.2	1.2	1.2
	BUS ADM	1	1.2	1.2	2.4
	BUSINESS	5	6.1	6.1	8.5
	COMMUN	1	1.2	1.2	9.8
	COMP ENG	1	1.2	1.2	11.0
	COMP SCI	2	2.4	2.4	13.4
	CRIM JUST	1	1.2	1.2	14.6
	ED	2	2.4	2.4	17.1
	ENGLISH	1	1.2	1.2	18.3
	FINANCE	1	1.2	1.2	19.5
	FITNESS	1	1.2	1.2	20.7
	GOV ADMIN	1	1.2	1.2	22.0
	HISTORY	2	2.4	2.4	24.4
	LEISURE	1	1.2	1.2	25.6
	LSPE	1	1.2	1.2	26.8
	MAR BIO	1	1.2	1.2	28.0
	MATH	1	1.2	1.2	29.3
	MUSIC	1	1.2	1.2	30.5
	NURSING	6	7.3	7.3	37.8
	PE	2	2.4	2.4	40.2
	PHY THER	1	1.2	1.2	41.5
	PRE LAW	1	1.2	1.2	42.7
	PSYCH	4	4.9	4.9	47.6
	SOCIAL WK	3	3.7	3.7	51.2
	SPRT MED	1	1.2	1.2	52.4
	UNDECL	39	47.6	47.6	100.0
	Total	82	100.0	100.0	

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