2007

Using group dynamics and personality characteristics to form learning groups in high school multimedia courses

Kimberly Nichols LaPrairie
Louisiana State University and Agricultural and Mechanical College, kimazd@aol.com

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_dissertations

Part of the Education Commons

Recommended Citation
LaPrairie, Kimberly Nichols, "Using group dynamics and personality characteristics to form learning groups in high school multimedia courses" (2007). LSU Doctoral Dissertations. 3801.
https://digitalcommons.lsu.edu/gradschool_dissertations/3801

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.
USING GROUP DYNAMICS AND PERSONALITY CHARACTERISTICS TO FORM LEARNING GROUPS IN HIGH SCHOOL MULTIMEDIA COURSES

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in

The Department of Educational Theory, Policy, and Practice

by

Kimberly Nichols LaPrairie
B.B.A., Henderson State University, 1997
M.Ed., University of Louisiana at Lafayette, 2002
May 2007
DEDICATION

This dissertation is dedicated to my husband, Brandon, my children, Landon and Lylli, and my parents, Paul and Bobbie Nichols. This is as much your degree as it is mine. You have sacrificed more for me than I thought humanly possible and I know God holds a special place in his heart for each of you.
ACKNOWLEDGMENTS

As I come to the end of this journey, I would like to express my sincere gratitude to the individuals who have helped make my dream a reality. In particular, I would like to thank my husband. Without your support, both financially and emotionally, I would have never attempted, much less accomplished, such a feat. You demanded that I pursue my life’s ambition and would not take no for an answer. Thank you for enduring all that you have to help me succeed. It is your turn now!

Appreciation also goes to all my academic and life teachers. These individuals include, but are not limited to Paul and Bobbie Nichols, A.M. and Betty Choate, Barbara Gilbert, Linda Scales, Armenia Hawkins, Orenne Niven, Mary Galloway, Karen Pyle, Jackie Clark, Ann Tarwater, Dr. Margaret Hoskins, Dr. William Rieck, and Dr. Janice Hinson. Without the encouragement and support of each of you, I would not have grown into the person I am today.

I would also like to extend an enormous thank you to the members of my committee for your knowledge and dedication; to my mother, Dr. Janice Hinson, Dr. Teri Fowler, Armenia Hawkins, and Lori Ables for your endless hours of editing and guidance; and to the Browning Group, Dr. Greg Brandao, and the students and teachers who made it possible for me to conduct my study.

Finally, I would like to thank my family – all of you. To Ms. Connie, you were my babysitter and confidant. You supported me even when it hurt to do so and I cannot thank you enough. To my mother and father, you were my parents when it would have been easier and more fun to be my friend. I love you both more than you will ever know for that sacrifice. And to my son, without your smiles and words of understanding, I would have quit long ago. Thank you all so very much!
# TABLE OF CONTENTS

DEDICATION ................................................................................................................................ ii

ACKNOWLEDGMENTS ............................................................................................................. iii

LIST OF TABLES ....................................................................................................................... viii

LIST OF FIGURES ....................................................................................................................... ix

ABSTRACT .................................................................................................................................... x

CHAPTER ONE: INTRODUCTION ............................................................................................. 1
  Statement of the Problem ............................................................................................................ 4
  Purpose of the Study ................................................................................................................... 7
  Research Questions ..................................................................................................................... 7
  Significance of the Study ............................................................................................................ 8
  Limitations .................................................................................................................................. 9
  Definition of Terms ..................................................................................................................... 9

CHAPTER TWO: REVIEW OF RELATED LITERATURE ................................................................ 11
  Group-learning Paradigms ........................................................................................................ 12
    Cooperative Learning ............................................................................................................. 12
    Collaborative Learning ......................................................................................................... 15
    Role of Teacher ..................................................................................................................... 17
  Learning Group Configuration ................................................................................................. 18
    Group Size ............................................................................................................................ 18
    Gender ................................................................................................................................... 19
    Race and Ethnicity .................................................................................................................. 20
    Ability-Level Grouping ......................................................................................................... 20
    Personality Predisposition Profiling ...................................................................................... 22
      Myers-Briggs Type Indicator® .......................................................................................... 22
      Emergenetics® and The STEPTM Program .................................................................... 26
  Student Leadership in Academic Work Groups ...................................................................... 30
    Situational Factors ................................................................................................................ 30
    Leadership Style .................................................................................................................... 31
      Participative Leaders .......................................................................................................... 31
      Shared Leadership .............................................................................................................. 33
    Leader Attributes .................................................................................................................. 33
      Personality .......................................................................................................................... 33
      Planning Skills .................................................................................................................... 34
      Communication Skills ....................................................................................................... 35
    Self-Monitoring Behavior .................................................................................................... 36
    Various Leadership Characteristics ..................................................................................... 38
    Gender ................................................................................................................................... 38
  In Conclusion ............................................................................................................................ 39
CHAPTER FIVE: CROSS-GROUP ANALYSES ..................................................................... 114
Student Leadership ........................................................................................................ 114
Teamwork ....................................................................................................................... 114
  Group 1 – WEteam® ........................................................................................................ 115
  Group 2 – WEteam® ....................................................................................................... 116
  Group 3 – Conceptual Learning Group .......................................................................... 117
Passive Leadership ........................................................................................................... 118
Free Rein .......................................................................................................................... 119
  Group 5 – Social/Conceptual Learning Group ............................................................... 119
  Group 6 – WEteam® (Randomly Selected) .................................................................... 120
Student Feelings toward Learning Group ....................................................................... 122
Member Relationships ..................................................................................................... 124
  Group 1 – WEteam® ........................................................................................................ 124
  Group 2 – WEteam® ....................................................................................................... 125
  Group 3 – Conceptual Learning Group .......................................................................... 126
  Group 4 – Structural/Conceptual Learning Group .................................................................. 127
  Group 5 – Social/Conceptual Learning Group .................................................................. 127
  Group 6 – WEteam® (Randomly Selected) .................................................................... 128
In Conclusion ................................................................................................................... 129

CHAPTER SIX: DISCUSSION AND CONCLUSIONS ........................................................... 130
Effective Grouping Using Emergenetics® ........................................................................ 131
Less Effective Learning Groups .......................................................................................... 133
Low Member Participation ................................................................................................. 135
LIST OF TABLES

Table 3.1  Sequence of Study ................................................................. 52
Table 3.2  Terminal Course Project Grading Scale ...................................... 53
Table 3.3  Coefficient Alphas ..................................................................... 55
Table 3.4  Test/Re-test Statistical Correlations............................................... 55
Table 3.5  Inter-Attribute Correlations Table ............................................... 56
Table 4.1  Group 1 Learning Group Composition.......................................... 64
Table 4.2  Group 1 Student Cumulative Grade Point Averages ....................... 65
Table 4.3  Quality Point Scale .................................................................... 65
Table 4.4  Group 2 Learning Group Composition.......................................... 70
Table 4.5  Group 2 Student Cumulative Grade Point Averages ....................... 67
Table 4.6  Group 3 Learning Group Composition.......................................... 68
Table 4.7  Group 3 Student Cumulative Grade Point Averages ....................... 68
Table 4.8  Group 4 Learning Group Composition.......................................... 69
Table 4.9  Group 4 Student Cumulative Grade Point Averages ....................... 70
Table 4.10 Group 5 Learning Group Composition......................................... 71
Table 4.11 Group 5 Student Cumulative Grade Point Averages ..................... 71
Table 4.12 Group 6 Learning Group Composition......................................... 72
Table 4.13 Group 6 Student Cumulative Grade Point Averages ..................... 73
Table 6.1  Cross-Group Summary of Data .................................................. 132
LIST OF FIGURES

Figure 3.1. Sample Emergenetics® Profile Thinking Attributes Pie Chart.................... 58

Figure 3.2. Sample Emergenetics® Profile Behavioral Attributes Continuums........... 59

Figure 4.1 Group 1 Students Previously Grouped Together............................................. 66

Figure 4.2 Group 2 Students Previously Grouped Together............................................. 67

Figure 4.3 Group 3 Students Previously Grouped Together............................................. 69

Figure 4.4 Group 4 Students Previously Grouped Together............................................. 70

Figure 4.5 Group 5 Students Previously Grouped Together............................................. 71

Figure 4.6 Group 6 Students Previously Grouped Together............................................. 73
ABSTRACT

The purpose of this study was to provide insights into Emergenetics® STEP™ personality profiling as a selection and placement strategy to enhance process and performance in high school learning groups. An explanatory case study was conducted in a private high school currently subscribing to the Emergenetics® STEP™ program. Emergenetics® STEP™ Profile results of students enrolled in the school’s six Multimedia Productions courses were analyzed as the basis for learning group construction. Key individual thinking preferences (Analytical, Structural, Social, Conceptual) identified by the STEP™ Profile was the main variable of analysis. One learning group from each of the six classes (n = 30) served as the unit of analysis.

Data were collected from learning group observations, student journals, project assessments, and student and teacher interviews. Results of the study indicated Emergenetics® personality profiling may be a useful approach for grouping students. In particular, grouping students in WEteam® combinations, where all Thinking Attributes are adequately represented, may produce stronger, more creative, and productive learning groups, as Emergenetics® theory suggests (The Browning Group International Inc., n.d.).

Groups where all Thinking Attributes were present also tended to adopt teamwork as their primary leadership style. The adoption of this participative leadership style, whether by an individual leader or through shared group leadership, appeared to generate a more successful and enjoyable group learning experience than other leadership styles. This is consistent with previous research (Chen & Lawson, 1996; French, Waas, Stright, & Baker, 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990).

Factors possibly contributing to lower member participation were also identified. These factors included lack of or flawed prior relationships, adverse perception of group learning, and presence of specific levels of Behavioral Attributes. Specific levels of Behavioral Attributes
associated with diminished participation included first-third Expressives, first-third Assertiveness, and third-third Flexibles. However, this should not be taken to imply people with these preferences would always participate less than those holding other levels of these Behavioral Attributes. Instead, these Behavioral Attributes offer insight into why some people in certain circumstances participate less in group work.
CHAPTER ONE: INTRODUCTION

Over the past several decades approaches to classroom instruction have undergone major restructuring. Prior to the paradigm shift, typical classroom instruction was teacher centered with an emphasis on rote memorization and application of procedures and basic skills. According to Panitz and Panitz (1998), this approach to learning was one of competition for grades and recognition which discouraged student interaction. Over time and with the emergence of other paradigms, instruction shifted to more student-centered models. Included in this shift was a focus on critical thinking, communication, and collaborative learning (Smith & MacGregor, 1992).

With collaborative learning came the expectation students learn better when they learn together (Nastasi & Clements, 1991), prompting a search for the most effective way to organize learning groups. Presently, grouping students by ability level has received the most attention in the research, even though its effectiveness is still debated.

As an alternative, Bradley and Hebert (1997) and Culp and Smith (2001) promote personality-type theory as vital to understanding how learning group members interact and how personality predispositions influence group functioning and success. Yet, few studies probe personality-type theory as a selection and placement strategy to enhance process and performance in education-based learning groups (Klimoski & Jones, 1995). However, the business industry makes routine use of personality profiling for teambuilding. Two psychometric instruments used in business that hold promise as analytical tools to enhance group performance in education are the Myers-Briggs Type Indicator® (MBTI) and Emergenetics®.

Carl Jung’s theory of psychological types, on which the MBTI® is based, suggests certain aspects of normal human behavior, such as the way people prefer to receive information, organize information, and reach conclusions, are predictable (Culp & Smith, 2001). The MBTI®,
one of the most widely used psychological instruments, extracts information related to specific personality type differences in people using a forced-choice questionnaire, and provides specific information on how to relate to people who are different (I.B. Myers, McCauley, Quenk, & Hammer, 1998). The combinations of scores on the four dimensions of Extroversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perceiving, produce 16 possible personality types. By understanding and capitalizing on these different behavioral styles related to psychological type, proponents of the MBTI® suggest learning groups can improve working relationships and achieve greater project success. However, studies investigating the MBTI® as an analytical tool to enhance group performance in learning groups reveal confounding results. Results of several studies suggest diversity of psychological types in learning groups results in successful group performance (Blaylock, 1983; Bradley & Hebert, 1997; Dilworth & Richter, 1995; Neuman, Wagner, & Christiansen, 1999). Conversely, Muchinsky and Monanhan (1987) found homogenous grouping by psychological types resulted in improved group performance. Varvel, Adams, Pridie, and Ulloa (2004) found no direct effect of personality-type preference on group performance. These studies gave little or no attention to the instrument’s flawed reliability and validity measures (Fleenor & Mastrangelo, 2005).

Emergenetics®, unlike the MBTI®, is a brain-based approach to personality profiling that distinguishes between a person’s preferred behavior and thought processes (Browning, 2006). Emergenetics® proposes the combination of a person’s experiences and genetics intertwine to form recognizable patterns of personality traits that can be used to improve communication and productivity in group learning. These patterns are identified through the Emergenetics® Profile for ages 19 and older or the Student/Teacher Emergenetics Profile (STEP™) for ages 9 through 18, by measuring a person’s unique preferences on four distinct Thinking Attributes, including Analytical, Structural, Social, and Conceptual, and the three Behavioral Attributes of
Expressiveness, Assertiveness, and Flexibility (Browning, 2006; The Browning Group International Inc., 2004, n.d.). A detailed description of these attributes is provided in Chapter 2 and sample profiles appear in Appendices E and J.

To enhance learning group creativity and productivity, Emergenetics® suggests assembling a Whole Emergenetics team (WEteam®). A WEteam® consists of five members, one person to represent each of the four Thinking Attributes and one Multimodal thinker. The ideal WEteam® also has a combination of different Behavioral Attributes represented in the learning group. The WEteam® combination helps group members to improve group effectiveness by enhancing intelligence and decision making, accessing their creativity, improving relationships, and changing how they approach work (Browning, 2006). Since Emergenetics® STEP™, piloted in 2001, is a relatively new instrument in the education arena there is no supporting research outside the Browning Group International, Inc. to substantiate these claims. A more detailed description of a WEteam® is presented in Chapter 2.

In addition to learning group construction, student leadership within learning groups warrants consideration. Research regarding student leadership has centered on student leadership within organizations and extra-curricular activities, not peer-led academic learning groups (Duemer et al., 2004; Yamaguchi, 2001; Yamaguchi & Maehr, 2004). However, selected research does suggest to maximize group effectiveness the leadership role in learning groups should be a shared responsibility of all group members, with each student contributing ideas and skills as necessary (Browning, 2006; Duemer et al., 2004; M.R. Myers & Slavin, 1990; Renegar & Haertling, 1993; Webb, Farivar, & Mastergeorge, 2002; Yamaguchi, 2001; Yamaguchi & Maehr, 2004). The idea of shared leadership allows group members to recognize and to appreciate one another’s talents.
Research investigating student leadership under varied circumstances identified group-learning conditions also play an important role in group effectiveness. Conditions supporting mastery of material over material coverage result in effective and cooperative task completion (Bruffee, 1995; Nastasi & Clements, 1991; Webb et al., 2002; Yamaguchi, 2001).

The adoption of a participative leadership style, whether by an individual leader or through shared group leadership, also generates a more successful and enjoyable group-learning experience (Browning, 2006; Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990). Participative leadership involves soliciting and synthesizing the ideas and cooperation of the group, organizing the decision-making process, and refraining from stressing individual beliefs. Group members engaging in participative leadership are more productive, more socially satisfied, and demonstrate greater originality and independence in their product (Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990).

Research investigating the relationship between gender, leadership, and specific attributes such as personality, planning skills, communication skills, and self-monitoring is inconclusive. However, people demonstrating a regard for human needs and values and those seeking involvement of others tend to be viewed as possessing leadership qualities (M.R. Myers & Slavin, 1990; Thatcher & De la Cour, 2003). Additionally, influential group members are able to produce effective requests and explanations in peer-directed groups (Thatcher & De la Cour, 2003; Webb et al., 2002; L.C. Wilkinson, 1985).

**Statement of the Problem**

As mentioned previously, current philosophies support student discussion and hands-on work with course content to encourage critical thinking, communication, and collaborative learning (Smith & MacGregor, 1992). A substantial body of research supports the effectiveness
of group learning in realizing these goals. However, there are many factors to consider in facilitating effective group learning. Particularly, the effects of group learning depend on how the group is organized (Blumenfeld, Marx, Soloway, & Krajcik, 1996; D.W. Johnson & Johnson, 1999).

Creating a successful learning group is more than just seating students together and calling them a cooperative group (Blumenfeld et al., 1996; D.W. Johnson & Johnson, 1999). An infinite number of ways learning groups can be organized exist, yet teachers are not generally trained in effective grouping strategies (Panitz & Panitz, 1998), nor does the research literature provide them with much guidance. Presently, ability-level grouping is the most widely used means of grouping students (Lou, Abrami, & Spence, 2000). However, ability-level grouping is continuously debated in the research literature, resulting in conflicting opinions as to its usefulness. Once again, teachers are provided with little direction for effective grouping strategies.

Current business practices may provide a model for educators to apply personality typing to grouping strategies. Corporations recognize the importance of personality typing to understand how team members interact and how personality predispositions influence group functioning and success (Bradley & Hebert, 1997; Culp & Smith, 2001). In fact, numerous major corporations, including AT&T, IBM, Intel, and Target, use Emergenetics® in the training of their employees. However, educational research has yet to probe extensively personality-type theory as a selection and placement strategy to enhance process and performance in learning groups (Klimoski & Jones, 1995).

Currently, the most widely used psychometric instrument to explain individual behavioral preferences is the MBTI®. Supporters of the instrument suggest its use can help learning groups improve their working relationships and achieve greater project success. However, studies
investigating the MBTI® as an analytical tool to enhance group performance in learning groups reveal confounding results. These findings, combined with concerns raised regarding the instrument’s reliability and validity (Fleenor & Mastrangelo, 2005), lower the MBTI’s® credibility as a grouping tool.

As stated previously, Emergenetics® is a brain-based approach to personality profiling that distinguishes between a person’s preferred behavior and thought processes (Browning, 2006). Rather than reducing an individual to a set of personality traits, Emergenetics® STEPTM claims to provide valuable insight as to how students can enhance communication, creativity, and productivity in learning groups (The Browning Group International Inc., n.d.). STEPTM program services include individualized student Profiles, faculty training, student workshops, parent training, family consultations and workshops, and assistance in building effective, research-based learning communities. Because this program was piloted in 2001 and no supporting research has been conducted outside of the Browning Group International, Inc., this study investigated how participating in the STEPTM program and organizing WEteams® equips students to communicate, solve problems, and reach goals together through stronger, more creative, and productive learning groups.

Research investigating the relationship between personality and student leadership is inconclusive, while research on emergent student leadership in academic learning groups is limited at best (Duemer et al., 2004; Yamaguchi, 2001; Yamaguchi & Maehr, 2004). According to Emergenetics®, there is no such thing as a perfect Emergenetics® leadership Profile (Browning, 2006). Instead, Emergenetics® suggests leaders are those people who employ the strengths of their Profile and allow others to work from their preferred attributes. Consequently, learning groups that are more creative and ultimately productive have representatives from all the Thinking Attributes (WEteams®) and encourage participatory leadership. Again, this claim
has not been documented in research outside of the Browning Group International, Inc.; therefore, this study investigated how participatory leadership and representation of all Thinking Attributes in the learning group promote harmonious and effective group work.

**Purpose of the Study**

Having students work together in learning groups, rather than competing with each other for grades and recognition, has positive effects on self-esteem, intergroup relations, attitudes toward school, social-emotional skills, cognitive development, and academic learning (D.W. Johnson & Johnson, 1999; Mueller & Fleming, 2001; Nastasi & Clements, 1991; Slavin, 1991, 1996). However, beyond ability-level and gender grouping, little research has been conducted to identify effective grouping strategies (Kutnick, Blatchford, Clark, MacIntyre, & Baines, 2005).

The purpose of this study was to provide insights into an innovative approach to probing personality-type theory as a selection and placement strategy to enhance process and performance in high school learning groups. An explanatory case study was conducted in a private high school currently subscribing to the Emergenetics® STEPTM program.

**Research Questions**

This research investigated the impact of personality-profile grouping using Emergenetics® STEPTM Profiles on group process and product. The fundamental research questions guiding this study were:

- What are the implications of personality profiling for use as a group learning selection and placement strategy in high schools?
- How does WEteam® group learning compare with the Emergenetics® STEPTM program outcomes?

The following sub-questions were addressed in this study to gather pertinent information pertaining to the previously stated research questions:
• What is the nature and quality of interactions in learning groups and how is it affected by group composition?

• How does group composition affect conflict resolution, students’ feelings toward the group-learning experience, and personal relationships within the learning group?

• What are the nature and quality of projects in learning groups and how are they affected by group composition?

• What is the nature of emergent student leadership in the learning groups and how is it affected by group composition?

**Significance of the Study**

Group learning is now a standard educational practice in almost every elementary and secondary school (D.W. Johnson & Johnson, 2002). This recent emphasis on student-led academic grouping reflects the popularity of teamwork in industry and the need to prepare students to function within team environments (Clinebell & Stecher, 2003). However, one of the major problems with the implementation of academic learning groups is teachers are not currently afforded sufficient training or research in effective grouping strategies. With the exception of ability grouping and gender identity, there is minimal research concerning the organization of academic student groupings in secondary schools (Kutnick et al., 2005). Emergenetics® STEP™ personality profiling may offer teachers a valuable solution to this dilemma.

Emergenetics® STEP™ advertising claims participating in the STEP™ program and organizing WEteams® better equips students to communicate, solve problems, and reach goals together through stronger, more creative, and productive learning groups (The Browning Group International Inc., n.d.). There is a need for outside research to investigate the authenticity of
these allegations. This study addressed this need by investigating the impact of personality-profile grouping using Emergenetics® STEP™ Profiles on group process and product.

**Limitations**

When interpreting the results of this study, readers should take into account the following limitations, which may affect the generalizability of the results. Since all subjects were from one private, all girls, parochial school, generalizability of results is limited.

The purpose of this research was to provide a complete picture of the impact of personality-profile grouping using Emergenetics® STEP™ Profiles on group process and product. This could not be accomplished using quantitative methods. Since generalizability is a natural limitation of qualitative inquiry (Gall, Gall, & Borg, 2003), thick description of group learning context and data generated from the study are presented to enable the reader to determine the generalizability of results to other settings.

Finally, it is important to remember diagnostic psychometric instruments measure only a few aspects of personality, such as thinking and behavioral preferences. They do not predict a person’s performance or measure ability or intelligence. No psychometric instrument, including MBTI® or Emergenetics® STEP™, provides a comprehensive or clinical picture of a person’s total psyche (Browning, 2006; Fleenor & Mastrangelo, 2005). However, understanding the insights these instruments provide into interpersonal dynamics can be beneficial for teachers seeking to organize effective learning groups.

**Definition of Terms**

- **Group Learning** – interactive learning involving more than one learner, such as collaborative learning, cooperative learning, student-team learning, group investigation, small-group research, etc.
• **Personality-Type Profile** – a stable set of characteristics and tendencies that determine the psychological behavior (thoughts, feeling, and actions) of people (Maddi, 1976).

• **Emergenetics®** - patterns of thinking and behaving that emerge from the combination of a person’s genetics and environment (Browning, 2006).

• **Student/Teacher Emergenetics® Profile (STEP™)** – a psychometric instrument that measures a person’s (age 9-18) unique preferences on four distinct Thinking Attributes (Analytical, Structural, Social, and Conceptual) and three Behavioral Attributes (Expressiveness, Assertiveness, and Flexibility) (Browning, 2006; The Browning Group International Inc., 2004, n.d.).

• **Whole Emergenetics team (WEteam®)** – a learning group composed of people who represent each Thinking Attribute and a Multimodal thinker. The ideal WEteam® also has a combination of different Behavioral Attributes represented in the learning group (Browning, 2006); also known as a whole brain trust.

• **Student Leadership** – influencing and directing the performance of group members towards the achievement of a common goal; may be participatory, shared, passive, or directive.
CHAPTER TWO: REVIEW OF RELATED LITERATURE

The literature review is organized under three major topics: group-learning paradigms, learning group configuration, and student leadership in academic work groups. Given the confusion arising from the interchangeable use of terms associated with group learning (Dillenbourg, Baker, Blaye, & O'Malley, 1996), a detailed comparison of cooperative and collaborative group-learning paradigms is presented first. In particular, definitions, common attributes, and practices that vary among the approaches are examined. Grouping strategies influencing group-learning composition are then investigated to determine best practices and research deficiencies. Grouping strategies considered include group size, gender, race, ethnicity, ability level, and personality predisposition profiling. Personality profiles identified include the Myers-Briggs Type Indicator®, Emergenetics®, and the STEP™ Program.

In the final focus of the literature review, student leadership in small academic work groups is organized under three subtopics: situational demands, leadership styles, and leader attributes. Situational demands associated with student leadership emergence in peer work groups are addressed first, because it is believed individual leadership qualities are less important when considered in isolation of the nature of the task (Burns, 1978). Leadership style and leader attributes are then examined to determine whether the success of student leaders and peer work groups also depend on how each individual confronts the demands of a task. Leadership styles of student leaders are examined by subdividing the literature into two topics of interest: participative leadership and shared leadership. This division is made to highlight the similarities and success of these styles of leadership. Finally, given the most common approaches to understanding leader emergence remain somewhat behaviorally based (Browning, 2006; Marta, Leritz, & Mumford, 2005), leader attributes are considered.
Group-learning Paradigms

Cooperative Learning

Although the terms cooperative and collaborative learning were often used interchangeably, key researchers and theorists drew sharp and sometimes contrary distinctions between the two (Mueller & Fleming, 2001). Regardless, there were commonalities between the two approaches.

Slavin (1983, p. 3) defined cooperative as “the use of cooperative tasks and incentive structures in programmed educational environments.” It is based on the creation, analysis, and systematic application of a series of steps leading toward predetermined academic, cognitive, and social objectives (Kagan, 1989). Through this teacher-centered approach to instruction, students work together in groups to accomplish a specific end product or goal, with the teacher maintaining complete control of the process. Dillenbourg and associates (1996) emphasized cooperative work is completed by dividing the labor among group members, with each student becoming responsible for a portion of the assignment. Cooperative work ensures all students remain meaningfully and actively involved in learning (D.W. Johnson & Johnson, 1999). For example, a teacher may ask specific questions, provide supplemental content for students to analyze, assign roles to group members, and then instruct students to work in groups to develop a final outcome. Often a content-specific product, such as a presentation, is required of the learning groups (Panitz, 1997).

Numerous research studies on cooperative learning approaches to instruction have found these methods to have positive effects on self-esteem, intergroup relations, acceptance of academically handicapped students, attitudes toward school, and ability to work cooperatively (D.W. Johnson & Johnson, 1999; Mueller & Fleming, 2001; Nastasi & Clements, 1991; Slavin, 1991, 1996). Johnson, Johnson, and Holubec (1994) define five basic elements of cooperative
learning situations: positive interdependence, promotive interaction, individual accountability, interpersonal and small group skills, and group processing. Positive interdependence is present when group members acknowledge that individual contributions are required for the group’s success and draw from their individual resources to benefit the group as a whole. In other words, students appreciate they will “sink or swim together” (D.W. Johnson & Johnson, 2002; R.T. Johnson & Johnson, 1994; Panitz, 1997).

Slavin (1996) reported teachers can promote positive interdependence within learning groups by establishing a clear group goal, thereby uniting the group around a mutual goal. Rewarding group efforts and success also enhances the quality of cooperation. Providing students with limited resources that must be shared amongst the group is another means of structuring positive interdependence. This requires students to combine their resources in order to achieve the group’s goal. Additionally, specifying responsibilities by assigning complementary and interconnected roles to each member promotes role interdependence within the group. Promoting positive interdependence is crucial, because research indicates it provides the framework for promotive interaction (R.T. Johnson & Johnson, 1994).

Promotive interaction or reciprocal sense-making involves individual group members encouraging and facilitating each other’s learning by discussing and explaining what they know to their peers (Nastasi & Clements, 1991; Panitz, 1997). Group members provide each other with feedback to facilitate improved subsequent performance and challenge one another’s conclusions and reasoning to promote higher quality decision making and greater insight into problems.

Individual accountability or personal responsibility is also central to ensuring that all group members are strengthened by the experience and are better prepared to complete similar tasks on their own (Nastasi & Clements, 1991; Slavin, 1991, 1996; Vygotsky, 1962). Individual
accountability is encouraged through the assessment of individual student performance and by sharing the results with the group as well as the individual group member. This ensures the group knows which members need more guidance in completing the assignment, holding all members responsible for contributions and the final outcome; it deters “social loafing” (R.T. Johnson & Johnson, 1994). Individual accountability can be structured by maintaining small group sizes, individually testing group members, randomly examining students orally, and promoting simultaneous explaining. This approach may seem contradictory to interdependence; however, the two actually are complimentary (Panitz & Panitz, 1998).

In spite of the essential components already discussed, cooperative learning groups will only be productive if members also possess and use appropriate interpersonal and small group skills. The skills students must be taught include leadership, decision making, trust building, accurate and clear communication, and constructive conflict management (D.W. Johnson, 1990, 1991; D.W. Johnson & Johnson, 2000; Panitz, 1997). Without these skills, cooperative groups cannot function effectively; they are key to group productivity (D.W. Johnson & Johnson, 2000). Research further supports the mixture of positive interdependence, a contingency for academic achievement on performance and a reward contingency for using social skills promote high achievement (Lew, Mesch, Johnson, & Johnson, 1986a, 1986b; Mesch, Johnson, & Johnson, 1988; Mesch, Lew, Johnson, & Johnson, 1986; Panitz, 1997; Yager, Johnson, Johnson, & Snider, 1986).

The last essential component of cooperative learning is group processing, which involves members reflecting on cooperative group sessions to determine the effectiveness of the group’s contributions toward the set goals. It is a time for the group to identify actions that were useful and ineffective in aiding the group to achieve its goals and to determine how to improve the group’s efforts in the future (R.T. Johnson & Johnson, 1994; Yager et al., 1986). By engaging in
group processing, it is expected group members will maintain healthy, positive working relationships while learning cooperative skills, will receive feedback on their participation and reinforcement for positive behaviors, and will think on the metacognitive level (B.P. Cohen & Cohen, 1991; R.T. Johnson & Johnson, 1994). Self-evaluation data gathered by Mueller and Fleming (2001) endorsed the expected advantage of group learning, with 42% of the study’s participants reporting learning about group cooperation. What is more, there is research evidence that group processing has a sizable and positive effect on student achievement as well (Yager et al., 1986). Support for group processing includes allocating specific and ample time along with communicating clear expectations for student involvement and anticipated outcomes.

**Collaborative Learning**

Many elements of cooperative learning apply to collaborative learning as well (Panitz & Panitz, 1998). In fact, Bruffee (1995) deems collaborative learning as a continuation of cooperative learning. Collaborative learning, however, differs from cooperative learning because it is fundamentally student-centered; it focuses on building learning communities to develop a shared concept of a problem (Dillenbourg et al., 1996; Smith & MacGregor, 1992). This approach shifts the responsibility for learning away from the teacher, making individual group members responsible for their actions, while prompting respect for the abilities and contributions of their peers (Panitz, 1997). Ideally, the teacher poses an open-ended problem or task focusing on an overall goal; the collaborative learning group members then interact with each other to share ideas and information, analyze the problem, identify pertinent resources, determine and develop the final product, and evaluate the success of their efforts (Dillenbourg et al., 1996; Nastasi & Clements, 1991; Slavin, 1995). This technique encourages students to develop their own means of understanding material; when students are actively engaged in the
learning process, critical thinking skills are developed and performance rises (Panitz & Panitz, 1998).

Collaborative learning challenges cooperative learning’s essential component of accountability by recommending teachers allow groups to govern themselves as much as possible; teachers should avoid intervening in working groups and policing students’ equal participation (Bruffee, 1995). Group questions regarding substance, procedure, or social role should be redirected back to the group to be solved on their own. Furthermore, students are graded individually, not on group process, but on how well they can explain or apply what they learned collaboratively. Collaborative learning tasks, therefore, should be designed so there is not an absolute answer or a solution.

Orr, as cited in Panitz (1997), identified several principles on which collaborative learning is based. Foremost, greater understanding emerges when students work together rather than independently (D.W. Johnson & Johnson, 1999; Yager et al., 1986). Working together to stimulate deeper understanding includes both oral and written interaction (Farivar & Webb, 1994). Opportunities thus emerge for students’ awareness of the relationship between social interactions and increased understanding to arise.

Additionally, collaborative learning includes numerous assumptions about the learning process. To begin with, learning is an active, constructive process; students assimilate ideas and create “new” knowledge (Caplow & Kardash, 1995; Smith & MacGregor, 1992; Vygotsky, 1962). Learning also depends on rich contexts. Collaborative learning activities employ problems that challenge students to practice and to develop higher order reasoning and problem-solving skills (D.W. Johnson & Johnson, 1999; Nastasi & Clements, 1991).

Learning is inherently social as well; learning occurs through conversation. Thus, communication among group members is stressed as a vital tool for building knowledge and for
achieving success in collaborative learning groups (Blumenfeld et al., 1996). Students are encouraged to use their knowledge to help answer each other’s questions, drawing on the expertise of other members and learning from them through constructive conversation. The teacher’s responsibility in collaborative learning then shifts from expert information presenter to facilitator, providing suggestions, mediation, and consultation to the group (Bruffee, 1995; Nastasi & Clements, 1991).

**Role of Teacher**

The optimal cooperative learning environment for promoting successful interactions implements a collaborative philosophy of education. Here, the teacher’s role is central in the effective employment of learning groups. The teacher’s charge progresses from the traditional role of director of learning to facilitator, supporting students’ thinking through scaffolding until they can function autonomously (Bruffee, 1995; Mueller & Fleming, 2001; Nastasi & Clements, 1991). For example, specific communication skills, such as active listening, effective questioning, helpful explaining, and debating techniques may need to be taught. Prerequisite academic and social skills of students must be secured. Conflict resolutions skills, such as negotiation, compromise, and cooperative problem-solving, may need to be taught and should always be modeled by the teacher (Webb et al., 2002).

Teaching and modeling appropriate interactive behaviors are also the teacher’s obligation. The teaching of interactive behaviors is accomplished by actively monitoring group work and by providing students with specific and concrete feedback and reinforcement regarding their social interactions (D.W. Johnson & Johnson, 1999; Webb et al., 2002).

Teachers are responsible for encouraging interaction and cooperation in groups, as well as, conveying to students the importance of working together to understand instead of merely finding a “correct” answer (Bruffee, 1995; Nastasi & Clements, 1991; Webb et al., 2002).
Attention to the goal for all students to learn and be successful is vital. The teacher must underscore the importance of social support to reach this goal and encourage seeking and giving help. The teacher can further promote productive helping by persuading students to provide elaborated help as an alternative to giving answers and to focus on internalizing concepts instead of rote memorization (Slavin, 1991).

**Learning Group Configuration**

There are an infinite variety of ways in which learning groups can be organized. Their composition embraces numerous variables, including the number of members, gender, ethnicity, achievement levels, and personality types. The mixture of these variables influences how members “…interact, who benefits, and whether students actually engage in serious thought” (Blumenfeld et al., 1996, p. 39). “How well any small group performs depends on how it is structured. Seating [students] together and calling them a cooperative group does not make them one” (D.W. Johnson & Johnson, 1999, p. 68). Consequently, effective group learning requires mechanisms to identify the appropriateness of group members.

**Group Size**

Fuchs et al. (2000) undertook an extensive review of the literature regarding implications of workgroup size on group dynamics. The literature recognized dyads (pairs) and small groups’ (three to five students; (Nastasi & Clements, 1991)) presence in effective learning groups. However, few studies were found to have “…experimentally manipulated the productivity of student interactions as a function of workgroup size while keeping other structural variables constant and while using complex tasks” (p. 185). This lack of clear empirical evidence fails to provide a sufficient research basis, making it virtually impossible to formulate sound conclusions regarding optimum group size.
The majority of research on group size, however, does indicate a negative relationship between the number of students in a group and learning outcomes (I.A.G. Wilkinson & Fung, 2002). In their own study examining the effects of workgroup structure and size on student productivity during group learning, Fuchs et al. (2000) identified several main effects favoring dyadic over small group composition. Dyads rated statistically and significantly higher than small groups on procedural and conceptual talk, helpfulness, and cooperation. With regard to cognitive conflict and resolution ratings, however, findings supported small groups over dyads. Added research shows small groups provide participants more opportunities to participate actively; whereas, larger groups offer a wider range of perspectives and background knowledge (Nastasi & Clements, 1991). Groups of three or more and dyads also have been shown to promote a level of discussion and debate within groups substantially greater than whole class teacher led discussion (Panitz & Panitz, 1998). The results of a meta-analysis of research on the effects of within-class grouping on student achievement by Lou, Abrami, and Spence (2000) further support these findings. Therefore, matching workgroup size with the intended learning outcomes is recommended (Fuchs et al., 2000).

**Gender**

Research investigating the effect of group composition on the basis of student ethnicity and gender is limited (I.A.G. Wilkinson & Fung, 2002). In a study of middle school learning groups, Webb (1991) found learning groups with equal numbers of males and females performed better than groups with unequal gender composition. Additionally, males out performed females on achievement measures in groups with unequal male-female ratios. In a parallel study, Lee (1993) reported similar results. R. T. Johnson, Johnson, Scott, and Ramolae (1985) also investigated student grouping with regard to gender. They found students working in homogeneous gender groups experienced lower levels of cognitive conflict than those working in
heterogeneous gender groups. Working with homogeneous groups was also found to discourage consideration of working with members of the opposite sex in the future.

**Race and Ethnicity**

Research shows positive effects of interethnic cooperation, the equal-status interaction between students of different ethnicity, on intergroup relations (Renegar & Haertling, 1993; Slavin, 1991, 1996; Slavin & Hansell, 1983). In particular, participating in racially and ethnically diverse learning groups facilitates learning and increases student achievement (Slavin & Oickle, 1981). Interethnic learning group members also develop significantly more cross-ethnic friendships and have improved attitudes and behaviors toward classmates of different ethnic backgrounds than students who are not involved in interethnic cooperation (Renegar & Haertling, 1993; Slavin, 1991, 1996; Slavin & Hansell, 1983).

Conversely, research by Cohen (1986) suggests group work promotes status differences, with majority students viewing minority students as less competent, begetting rejection and exclusion. These findings support expectations theory which “…claims that when a group is faced with a collective task, participants look for ways to judge the usefulness of their own contributions and those of others in the group” (I.A.G. Wilkinson & Fung, 2002, p. 433). Even if these characteristics have no direct relevance to the task, students use status characteristics, such as ethnicity and gender, to make judgments regarding members’ competence when there is a lack of direct information.

**Ability-Level Grouping**

Whether student-learning groups should be homogeneous or heterogeneous with regard to ability level, has been the topic of much debate. Research findings suggest high-ability level students be grouped homogeneously so cognitive conflict and resolution can occur (Fuchs, Fuchs, Hamlettt, & Karns, 1998; Fuchs et al., 2000). Additional research by Fuchs (Fuchs et al.,
1996; Fuchs et al., 2000) finds low-ability level students learn routine tasks better and are more productive in heterogeneous groups containing high rather than middle-ability level students. Quite the opposite, Blumenfeld, Marx, Soloway, and Krajcik (1996) found the following:

Generally, groups are more successful when members are drawn from high and middle or middle and low [ability] levels or where students are all in the middle. When three levels are included, middle students benefit less because they are less likely to give explanations (p. 39).

Research by Nastasi and Clements (1991) and Panitz and Panitz (1998) support these findings and recommend the heterogeneous grouping of students with a moderate range of abilities. Nastasi and Clements (1991) also suggest the homogenous grouping of middle-ability students but warn against the homogenous grouping of high- or low-ability students. Brush’s (1997) research strengthens the case for the heterogeneous grouping of students and the evading of low-ability homogenous grouping, yet it found high-ability homogenous grouping to be effective. The evidence seems to lean toward supporting heterogeneous student grouping; nevertheless, research provides no definitive solution.

Nastasi and Clements (1991) also advise against wide-range heterogeneous groupings. “Researchers have attempted to determine the optimal degree of [group heterogeneity]. If [the difference] is too small, it may fail to trigger interactions. If [it] is too large, there may be no interaction at all” (Dillenbourg et al., 1996, p. 9). In a study of mechanisms of change in a cognitive structure, Kuhn (1972) found a large difference in cognitive level between collaborating peers was less conducive to cognitive growth than a small difference. This supports the supposition for group learning to be beneficial, learning groups should be reasonably homogeneous with regard to members’ cognitive abilities (Dillenbourg et al., 1996; McNamara & Waugh, 1993). The results of Lou, Abrami, and Spence’s (2000) meta-analysis both replicate and extend these findings with homogeneous ability grouping appearing more
effective than heterogeneous ability grouping in the studies examined. Nevertheless, Nastasi and Clements (1991) insist some diversity in ability levels is required to ensure the range of perspectives and knowledge needed to facilitate high levels of communication.

**Personality Predisposition Profiling**

Students with different personalities deal with group learning in very different ways; therefore, personality-type theory is crucial in understanding members’ strengths and weaknesses and the ways these factors influence group formation and development (Bradley & Hebert, 1997; Culp & Smith, 2001). In spite of this, research evaluating selection and placement strategies to enhance process and performance in learning groups is scarce, especially for variables such as personality (Klimoski & Jones, 1995).

**Myers-Briggs Type Indicator®.** Developed by Katharine Briggs and Isabel Briggs Myers in 1942, the Myers-Briggs Type Indicator® (MBTI) is a psychometric instrument that explains individual preferences according to Carl Jung’s theory of psychological types. Jung’s theory suggests certain aspects of normal human behavior, such as the way people prefer to receive information, organize information, and reach conclusions, are predictable and classifiable (Culp & Smith, 2001). As a result, the MBTI® is intended to be an inventory of basic style preferences rather than measure of traits (I.B. Myers et al., 1998). It does not measure a person’s competencies, and there is no right or wrong preference (Culp & Smith, 2001; Fleenor & Mastrangelo, 2005; Varvel et al., 2004).

The MBTI® extracts information related to specific personality type differences in people and provides specific information on how to relate to people who are different (I.B. Myers et al., 1998). The MBTI® measures four different dichotomous dimensions of human preferences, Extroversion-Introversion (EI); Sensing-Intuition (SN); Thinking-Feeling (TF); and Judging-Perceiving (JP), through a forced-choice, self-evaluating questionnaire that can be completed in
15-20 minutes (Culp & Smith, 2001; Varvel et al., 2004). According to Jung’s theory, as cited in Culp and Smith (2001):

…everyone has a natural preference for one of the two poles on each of the four preferences scales. A person may use both poles at different times, but not both at once and not with equal confidence. There is one pole that a person prefers, and when using it, the person generally feels most at ease, competent, and energetic (p. 25).

The first dimension, Extroversion-Introversion (EI) indicates whether a person prefers social or solitary settings (Wethayanugoon, 1994) or from where a person gets energy (Bradley & Hebert, 1997; Clinebell & Stecher, 2003; Culp & Smith, 2001; Varvel et al., 2004). Extroverts (E) receive their energy from interacting with other people and things, while introverts (I) are renewed through their thoughts and ideas. The second dimension, Sensing-Intuition (SN) focuses on a person’s preference for how information is perceived. Sensing (S) individuals prefer immediate realities or factual details of a situation. Intuitive (N) individuals, on the other hand, seek the overall picture of an experience as it relates to future possibilities and meanings. The third dimension, Thinking-Feeling (TF) reflects a person’s preferred function by which decisions are made. Individuals with a thinking (T) preference use logic and objectivity to make rational judgments, while feeling (F) individuals employ personal and social values when making decisions. The final dimension, Judging-Perceiving (JP) indicates the type of lifestyle a person adopts or prefers for relationship with the outside world. Judgers (J) prefer planning and decisiveness, and carefully regulate and control their lives. Perceivers (P) live spontaneously and are open to new ideas (Bradley & Hebert, 1997; Clinebell & Stecher, 2003; Culp & Smith, 2001; I.B. Myers et al., 1998; Varvel et al., 2004; Wethayanugoon, 1994). The combinations of scores on the four dimensions produce 16 different possible personality types.

The MBTI® was first used as an analytical tool to enhance group effectiveness in 1974 (I.B. Myers et al., 1998). It was hypothesized that by understanding and capitalizing on different
behavioral styles related to psychological type, learning groups could improve working relationships and achieve project success. Since then, several studies investigating this assumption have suggested diversity of psychological types result in successful group performance. In a study by Blaylock (1983), project groups with complementary preferences in Thinking-Feeling (TF) and Sensing-Intuition (SN) outperformed groups in which all group members had the same preferences. Likewise, in a case evaluation of two software development teams by Bradley and Hebert (1997), analyses revealed the team with a greater balance of extroverts and introverts, sensing types and intuitive types, and thinking and feeling types performed at a higher level than the less balanced team. Conversely, a large percent of judging types on the more successful team ensured the project was completed in a timely manner. Dilworth and Richter (1995) also acknowledged in their case study research group performance was facilitated by diversity in personality types. Neuman, Wagner, and Christiansen (1999) strengthened this argument, stating diversity in group members’ personalities adds unique attributes that are necessary for group success. Specific examples of how opposing types help groups process provided by Bradley and Hebert (1997) follow:

- Extroverts (Es) help open up lines of communication between group members, while introverts (Is) provide internal reflection of group discussions. Sensing (S) types bring up pertinent facts and “what is,” while intuitive (Ns) types bring up new possibilities and provide ideas of “what might be.” Thinking (Ts) types present a logical analysis of the decision-making situation, while feelers (Fs) offer insights into how feelings of other group members and customers might affect the situation. Judgers (Js) help keep the team on schedule, while perceivers (Ps) help the team consider other alternatives in the decision-making process (p. 343).

Nonetheless, the results are not undisputed. Muchinsky and Monahan (1987) suggest job performance is improved when group members possess characteristics similar to other individuals in the group. More importantly, research by Varvel et al. (2004) did not find any particular combination of personality-type preferences to have a direct effect on group performance.
achievement. However, group members did improve their communication skills, trust, and interdependence by knowing and understanding group members’ psychological type.

The largest part of research dealing with the MBTI® does not relate to its use as an analytical tool to enhance group effectiveness. Instead, most investigations of the MBTI® in education have dealt with pre-service/in-service teacher and principal personality types (Brightman, 1984; Cano, Garton, & Raven, 1992; Connor, 2001; Fisher & Kent, 1998; Gordon & Yocke, 1999; Rojewski & Holder, 1990; Sears, Kennedy, & Kaye, 1997; Smith, Munday, & Windham, 1995; Wendel, Kilgore, & Spurzem, 1991), the matching of student personality types to various forms of instruction and subject matter (Baker, 1985; Conwell, Helgeson, & Wachowiak, 1987; Hawkins, 1997; Holliday, 2000; Moody, 1988; Reigstad, 1991; Rollins, 1990), and student career counseling (Humes, 1992; McCaulley, 1990; Pinkney, 1983; Routh, Chretien, & Rakes, 1995).

With more than 2 million people completing the MBTI® each year, it is one of the most widely used psychological instruments (Culp & Smith, 2001). Regrettably, the MBTI’s® popularity rests with professionals who lack training in psychological assessment. Professionals who are trained in psychometrics hold severe criticisms of the misleading research in the test manual. For instance, the typical estimates of reliability are relatively high (mostly > .90); however, they provide an inappropriate estimate for the scoring system because they are based on the use of continuous preference scores from the instrument (Fleenor & Mastrangelo, 2005). The MBTI® is meant to identify a person’s whole type, not assign continuous scores to them. Consequently, the appropriate reliability estimate shows consistent classification for only 65% of respondents. Similarly, demonstrations of validity violate the assumptions of the theory underlying MBTI® by employing continuous scores. Nevertheless, the MBTI® does demonstrate
evidence of validity as four separate personality scales, but there is insufficient evidence of a synergistic combination that creates the 16 types.

The authors continue to report studies that employ continuous scores as evidence of reliability and validity for the MBTI®, even though they continue to stress it is not designed to measure personality traits on a continuous scale. Because of this, neither reviewer for Mental Measurements Yearbook would recommend the test without more rigorous research (Fleenor & Mastrangelo, 2005). In spite of this, in the studies reviewed to this point, little or no attention was paid to the concerns raised regarding the MBTI’s® reliability and validity.

Emergenetics® and The STEP™ Program. In 1991, Dr. Geil Browning and Dr. Wendell Williams developed a brain-based approach to personality profiling called Emergenetics®. Emergenetics® is built on a theory of behavior and learning developed by researcher David Lykken known as emergenesis. Emergenesis suggests humans are wired or genetically programmed (nature) to think and process information in certain preferred patterns. Then as people interact and socialize with other people and their surroundings (nurture), their genetic preferences are tempered into productive behaviors (Browning, 2006; The Browning Group International Inc., 2004).

Emergenetics® extends emergenesis to propose the combination of experiences and genetics intertwine to form recognizable patterns of personality traits that can be used to improve communication and productivity. These patterns are identified through the Emergenetics® Profile (age 19 and older) or the Student/Teacher Emergenetics Profile (STEP™) (age 9-18), self-descriptive Likert scale questionnaire, which measures a person’s unique preferences on seven basic sets of attributes including four distinct Thinking Attributes and three Behavioral Attributes (Browning, 2006; The Browning Group International Inc., 2004, n.d.). Emergenetics® does not measure a person’s abilities. Previous psychological tests, such as the MBTI®, did not
distinguish between behavior and thought processes. Subsequently, when the Emergenetics® Profile was being developed it was assumed certain kinds of thinking and behaviors would naturally go together. However, research found Thinking and Behavioral Attributes are independent of each other, meaning the Emergenetics® Profile has successfully identified traits that do not overlap (Browning, 2006).

The four Thinking Attributes measured by the Emergenetics® Profile are Analytical, Structural, Social, and Conceptual. Analytical thinking combines logical thought with a preference for abstract ideas. People who have a strong preference for Analytical thinking often choose to work alone and may be perceived as unemotional or uncaring. With Structural thinking, sequential thought is merged with a prevailing preference for practical application. People who are highly Structural thinkers are frequently hands-on learners who like to follow procedures, which can cause them to appear unimaginative.

Social thinking unites intuitive thought with a devotion to people. People who have a strong preference for Social thinking are often sensitive and appreciate the opinion of others. Social thinkers may be perceived as too emotional; however, not all are animated and extroverted. Conceptual thinking also prefers intuitive thought, but combines it with a preference for abstract ideas. Conceptual thinkers are commonly theoretical and creative while searching for new ways to solve old problems. This sometimes causes them to be perceived as bizarre, but they would declare they are merely unconventional. It should be noted here, people of any thinking style can be creative, not just Conceptual thinkers.

A person’s Emergenetics® Profile illustrates the unique way in which an individual combines these preferred Thinking Attributes with Behavioral Attributes (Browning, 2006; The Browning Group International Inc., 2004). Specifically, a pie chart is used to exhibit how a person’s thinking preferences compare to each other. Any percentage score of 23% or greater
indicates a preference in the Thinking Attribute. Every person possesses each Thinking Attribute to some degree. The basic combinations of Thinking Attributes can be broken down into four categories: Uni-modal, Bi-modal, Tri-modal (or Multimodal), and Quadra-modal. A Uni-modal thinker prefers to think and, therefore, is extremely strong in only one Thinking Attribute. A Bi-modal thinker is strong in two Thinking Attributes. These two preferences may come from the same half of the brain; Analytical/Structural, Social/Conceptual, Analytical/Conceptual, or Structural/Social; or they may be diametrically opposite; Analytical/Social or Structural/Conceptual.

Tri-modal or Multimodal thinkers access three Thinking Attributes and, therefore, can empathize with other ways of thinking. There are two categories of Tri-modal thinkers: Tri-left and Tri-right. Tri-left thinkers have two Thinking Attributes from the “left brain” and one from the “right brain”: Analytical/Structural/Social or Analytical/Structural/Conceptual. Tri-right thinkers employ two Thinking Attributes from the “right brain” and one from the “left brain”: Analytical/Social/Conceptual or Structural/Social/Conceptual. Quadra-modal thinkers use all four Thinking Attributes to about the same degree and tend to be good communicators (Browning, 2006; The Browning Group International Inc., 2004).

The four Thinking Attributes are tempered by the three Behavioral Attributes: Expressiveness, Assertiveness, and Flexibility. These attributes are what people perceive in other people (Browning, 2006; The Browning Group International Inc., 2004). Individual responses to the Emergenetics® Questionnaire are measured as a percentile point on a spectrum for each Behavioral Attribute, which divides into thirds by strength of behavior. If scores fall in the second-third percentages on a particular Behavioral Attribute, it is assumed adaptation to any situation is possible, making them especially hard to read. Motivation to adapt in a particular
direction can result internally, or may be swayed by the arguments promoted by the people involved in the decision.

The Expressiveness Attribute indicates a person’s level of participation in social situations. First-third Expressives think before they speak, tend to avoid participation in large group situations, and may appear thoughtful and shy. Third-third Expressives are energized by interacting with others, easily initiate conversations, and are comfortable drawing attention to themselves. These qualities may lead to them being viewed as overbearing.

The Assertiveness Attribute specifies a person’s interest in controlling results and reflects the amount of energy the person is willing to invest in expressing thoughts, feelings, and beliefs. First-third Assertives regularly go along with other peoples’ decisions and do not voluntarily express their opinion. They may be viewed as peacemakers and as a result may be disregarded. Third-third Assertives are direct, confrontational, challenging, and in charge, which may lead to their being over competitive.

The Flexibility Attribute measures a person’s willingness to accommodate the thoughts and actions of others in order to create an environment that encourages others to become comfortable. First-third Flexibles prefer focusing and defined situations, causing them to be sensed as rigid or inflexible. Third-third Flexibles, on the other hand, accept most ideas and are patient with difficult people. Consequently, they run the risk of being viewed as inconsistent.

Emergenetics® not only helps people to understand how their Behavioral Attributes affect the way in which others perceive them; it also possesses major implications for enhancing learning group (or team) creativity and productivity. The group-learning process is influenced by the personal style and individual behaviors of every member of the group. In view of this, Emergenetics® suggests the best decisions are made with input from different Profiles (Browning, 2006; The Browning Group International Inc., 2004). This is accomplished by
assembling a Whole Emergenetics team (WEteam®), also known as a Whole Emergenetics “brain trust.” A WEteam® is composed of people who represent each Thinking Attribute in the Emergenetics® model. In addition, a Multimodal thinker’s membership is needed in the group to promote understanding among team members. The ideal WEteam® also has a combination of different Behavioral Attributes since people with different Behavioral preferences bring various degrees of energy to issues involving people, tasks, and adaptability. When an Attribute is missing or scarcely represented in a team, problems tend to arise because each Attribute makes an important contribution to the problem-solving process. Even in WEteams®, where Profiles are balanced, conflicts may arise. Members’ knowledge of Emergenetics® principles can then be applied to the issue in order to gain a greater understanding of each person’s point of view and to make compromise possible.

**Student Leadership in Academic Work Groups**

Research pertaining to individual leadership qualities has proven to be less important when considered in isolation of the nature of the task (Burns, 1978). Nevertheless, research literature regarding informal student leadership within academic work groups is still limited (Duemer et al., 2004; Yamaguchi, 2001; Yamaguchi & Maehr, 2004).

**Situational Factors**

In particular, literature identifying situational factors associated with informal student leadership is limited. In response, Yamaguchi (2001) enlisted fourth-, fifth-, and sixth-grade students to explore emergent student leadership, dominance, and group effectiveness under different learning conditions. Ten triads of students were formed and participated in a cooperative math activity. Groups of students were given either mastery or performance instructions as the learning condition variable. The groups with a mastery goal were instructed to complete the math task to the best of their ability, but the purpose of the task was learning and
improving. Throughout the activity, students in the mastery group were continuously reminded the focus was on learning, understanding, and improving. On the other hand, performance goal groups were instructed to complete the activity to the best of their ability, but the purpose of the task was to test their math aptitude and to see who was most proficient at math. Students in the performance goal groups were reminded throughout the cooperative activity the focus was on doing better than other groups and identify who was the best at math.

Analysis of cooperative group interactions revealed a significant impact of learning condition on the emergence of leadership and dominance. In performance groups, one member dominated by bullying and controlling the math and group process; however, in mastery groups leadership emerged in all students. All members shared the responsibility of completing the task, with each member leading the group at different times. In addition, the learning condition affected the group effectiveness. Performance group members exhibited more negative group interactions and communication, inhibiting performance groups’ cooperative completion of the activity. Conversely, mastery group members displayed more positive group interactions and communication, resulting in effective and cooperative task completion. Data, therefore, indicate the learning condition plays an important role in the emergence of leadership, dominance, and group effectiveness. Several studies (Bruffee, 1995; Nastasi & Clements, 1991; Webb et al., 2002) support these findings, asserting that making understanding the goal of group work is a key element of emergent leadership and group success.

Leadership Style

**Participative Leaders.** Leadership style is the manner and approach of directing and mobilizing people and/or their ideas (Kotter, 2001). The majority of educational literature supports the widely shared belief that the adoption of a participative leadership style generates a more enjoyable and successful learning experience.
Myers and Slavin (1990) considered the effectiveness of various leadership styles in group problem-solving through a study of the Governor’s Summer Institute for the Gifted and Talented at Bowling Green State University, a program designed to provide gifted students opportunities for self-expression, exploration of various media, and the appearance and exercise of leadership. To measure leadership style effectiveness, student survey data regarding assessment of the most effective and salient group leaders were compared with project staff production assessments, group cohesiveness and effectiveness, and the development and maintenance of leadership within each group. Analyses revealed participative leaders to be more successful in soliciting and synthesizing the ideas and cooperation of the group than other types of leaders, thus often producing higher quality products. Other groups, whose leaders did not enact a participative leadership style, regularly defined project success as merely meeting the deadline rather than producing quality products. An investigation by Mueller and Fleming (2001) also found students in groups with a participative leader were more productive, socially satisfied, and demonstrated greater originality and independence in their product, lending support to Myers and Slavin’s findings (1990).

Chen and Lawson (1996) expanded the research by comparing the effects of directive and participative leadership styles on the quality of group decisions. When evaluated, directive leadership yielded significantly lower quality decisions than participative leadership, but did not significantly influence the number of disagreements in group decision making. Their results are consistent with those of Myers and Slavin (1990) and Mueller and Fleming (2001).

The effectiveness of participative leadership is also supported by French, Waas, Stright, and Baker (1986) who investigated the decision reaching behavior of students in same- and mixed-age triads. Results showed higher leadership nomination scores for students engaged in behaviors that promoted the effectiveness of group effort. There was insignificant indication of
the utilization of simple dominance by older students; instead, participative leadership was employed to facilitate the participation of younger group members. Specifically, participative leaders solicited the opinions of other group members, organized the decision-making process, and refrained from stressing their own beliefs.

**Shared Leadership.** Similar to participative leadership, selected research suggests the leadership role in cooperative learning groups should be assumed by all members (Browning, 2006; Duemer et al., 2004; M.R. Myers & Slavin, 1990; Renegar & Haertling, 1993; Webb et al., 2002; Yamaguchi, 2001; Yamaguchi & Maehr, 2004). Through shared leadership, each student can potentially become a leader by contributing individual ideas and skills as necessary and accepting others in the same way. However, these roles will be assumed only when other areas, such as interest and social skills, are addressed (Renegar & Haertling, 1993). Also, it requires a willingness and an ability to do so (Webb et al., 2002). Myers and Slavin (1990) and Browning (2006) support the idea of shared leadership, explaining success with unstructured tasks requires input and collaboration from every member of the group. Yamaguchi (2001) corroborated this assertion through her discovery that mastery group members shared the responsibility of completing the task. Emergent leadership roles were not static. As noted earlier, both task and social leadership roles were shared among mastery group members, with each member leading the group at different times.

**Leader Attributes**

**Personality.** The lack of literature on personality and small group decision–making prompted Thatcher and De la Cour (2003) to explore the emergent relationships between personality and leadership. The Myers Briggs Type Indicator (MBTI) was used to obtain data on leader personality preferences. The only statistically significant relationship found in the correlations of personality preference and leadership was for the Thinking-Feeling dimension.
Results indicated as a subject’s preference moved closer to the feeling pole, the leadership score tended to increase. Repeated-measures ANOVA also showed subjects with a feeling preference scored significantly higher on leadership than those subjects with a thinking preference. These results were not considered surprising given that feeling types regard human needs and values as important aspects, are empathetic and accepting, and seek involvement with others in meetings. These findings add additional support to the employment of a participative leadership style.

Myers and Slavin (1990) also investigated the effect of personality on leadership in group problem-solving. In their study, the strength of personality seemed a major force in maintaining leadership. Leaders perceived as too negative, domineering or frivolous tended to lose the group’s attention, while passive leaders often maintained their position by assuming the majority of tasks within the group.

Gnagey (1979), on the other hand, found an apparent contradiction between the personality traits associated with being an elected leader and those related to team effectiveness. Students who were elected team leader were significantly more sensitive and effeminate and less tough and realistic than non-leaders. It seems group members voted for students who were more introverted and imaginative and less practical than non-leaders. However, when team effectiveness ratings were analyzed, leader sensitivity was negatively correlated with group effectiveness. Evidently, the personality traits that were associated with being elected a group leader were either not pertinent or counterproductive to the success of the group. Effective group leaders tended to be less intelligent, more emotionally stable, more conscientious, but less shrewd than less effective elected leaders.

**Planning Skills.** Recently, the role of cognitive skills in influencing leader performance has received consideration. In 1995, Marta et al. examined planning skills with respect to leader emergence and group performance. Results indicated planning skills and effective structuring
behavior contributed to the production of higher quality plans but inhibited the production of original plans, perhaps because effective leader structuring limited the group’s consideration of other options. These results suggest the requirements imposed on performance may demand additional skills, such as thinking skills and social skills, on the part of leaders.

**Communication Skills.** Wilkinson (1985) addressed communication skills of student leaders in cooperative work groups through studies that focused on how children attempt to complete academic tasks and how they regulate their behavior in small peer-directed instructional groups. The model the investigations were based on, which describes students’ use of requests and responses in peer-directed groups, centered on effective speaking. It labeled an effective speaker as one who received appropriate responses to requests. Proposed characteristics of competent requests employed by efficient student speakers include expressed clearly and directly in an attempt to minimize misinterpretation or miscommunication of the request; on task and refer to shared activities in teaching and learning; sincere; and persistent. The model claims an effective speaker should revise the request if the information/action requested is not offered immediately.

Another application of the same communications model just described studied second- and third-grade students divided into mathematics learning groups. Results showed a positive relationship between the ability of students to produce effective requests and their level of math achievement. Effective speakers also monitored the group in order to manage their time efficiently and to keep them on task. This study supported Thatcher and De La Cour’s (2003) suggestion that the amount and type of communication a person performs in a group is related to the probability of that person being perceived as the leader.

Webb et al. (2002) expanded the research regarding communication skills of student leaders in cooperative work groups through their focus on the mechanism of helping behaviors.
Help-givers were examined during a semester-long study of cooperative learning in six seventh-grade mathematics classrooms. Analyses revealed the level of help student leaders offered was significantly related to learning outcomes. High levels of help, such as explanations or the clarification of numerical rules, was positively related to both help-givers and help-seekers mathematics achievement. Groups emphasizing the importance of working together, helping each other, explaining, and understanding were more likely to give high-level help than were other groups. Effective student explanations were also found to be relevant to the help-seekers need for help, timely, correct, and elaborate enough to aid the help-seeker in understanding the material. Furthermore, the importance of students monitoring each other’s work and level of understanding was acknowledged, supporting not only the worth of communication skills, but also the significance of shared leadership.

**Self-Monitoring Behavior.** Kolb (1998) carried communication skills research in another direction by examining the relationship between self-monitoring and leadership in student project groups. Specifically, two studies were initiated to consider whether self-reported scores on a measure of self-monitoring would relate to leader emergence in student groups working on realistic, sustained projects. The extent to which students observed and controlled their expressive and self-presentational behavior was regarded as self-monitoring and was often undertaken to produce favorable impressions or to remain in good standing with others. Participants in Kolb’s first study were 60 undergraduate students enrolled in two upper-division applied organizational communication courses.

Results of Kolb’s (1998) study support research (Browning, 2006; French et al., 1986; I.B. Myers et al., 1998; M.R. Myers & Slavin, 1990) showing high self-monitors to emerge as leaders of small groups. However, Kolb felt the results did not justify labeling self-monitoring as a meaningful factor in explaining the emergence of individuals as leaders in extended task-
oriented groups; therefore, she undertook a second study exploring the relationship between self-monitoring and self- and group-reported leader emergence. Results from this study indicated a moderate relationship between self-monitoring and leader emergence when group members were asked to select only one leader and a low, but statistically significant, relationship when all members were scored on a leadership emergence scale. Kolb then concluded self-monitoring appeared to be a significant factor affecting perceptions of leadership for student groups but warranted further research.

Rubin, Bartels, and Bommer (2002) extended research examining student self-monitoring as a predictor of leadership perceptions and emergence in small groups by proposing perceived intellectual competence as a potential mediator in the leadership emergence process. Perceived intellectual competence is described as a combination of task- and group-process abilities involving both intelligence and self-monitoring. In particular, the study examined the influence of self-monitoring, intelligence, and perceived intellectual competence on leadership emergence.

Study participants partook in a developmental assessment designed to measure and develop their managerial skills in conjunction with a skill-based course in organizational behavior. A strong relationship between perceived intellectual competence and leadership emergence was established. These results suggest it is possible for less intelligent students to emerge as leaders by creating the perception of intelligence or by being emotionally stable, as reported earlier (Gnagey, 1979). Producing the perception of intelligence thus requires leaders to possess certain social skills, such as self-monitoring, in order to assess the environment and communicate effectively with other group members. The findings of Rubin et al. (2002) also substantiate perceived intellectual competence as a strong predictor of leadership emergence and a mediating variable between self-monitoring, intelligence, and leadership emergence. This finding supports the notion that leaders combine several perceived traits to match their existing
leadership prototype. However, caution should be taken when applying these findings since previous research identified significant negative correlations between group cohesion and self-monitoring (Chen & Lawson, 1996).

**Various Leadership Characteristics.** Duemer et al. (2004) adopted a phenomenological approach to student leadership in an attempt to determine the effective leadership characteristics of graduate students working in a collaborative setting. Four themes regarding effective group leadership materialized during analysis: interpersonal skills, group management, time management, and expertise. Specific interpersonal skills exhibited by effective group leaders were confidence, assertiveness, and facilitation. The ability of leaders to manage the group was established by leaders utilizing humor to reduce group stress, demonstrating inner drive, exhibiting an understanding of the task, and portraying a determination to accomplish the task in both a timely and productive manner.

Effective time management skills and expertise also emerged as important attributes of effective leadership in research by Duemer et al. (2004). Leaders who were knowledgeable and who possessed the specific skills needed for a particular project were better able to manage the group effectively. In addition to the identified themes, leaders who employed facilitative skills – such as empowerment, organization, and decision-making skills – were able to develop a sense of ownership and cooperation among group members. More specifically, efficiency, good planning, and structure were shared attributes of leaders that possessed solid organizational skills. These findings also support the idea of shared leadership.

**Gender.** The existence of sex-role stereotype has been the cause of much research, not excluding peer-led learning group leadership. Yamaguchi and Maehr (2004) considered gender in their study of the relationships between children’s emergent leadership and differing group characteristics and outcomes. Students assessed their own leadership behaviors and perceptions.
of group cohesion and regulation. Results did not show student gender to be related to task- or relationship-focused emergent leadership or dominance (Yamaguchi, 2001). However, group gender composition was acknowledged as influencing self-perceived task-focused emergent leadership, with task-focused leadership being used less in female majority groups than in male-majority groups. Alternatively, in Mueller and Fleming’s (2001) study on student cooperative learning, females emerged as group leaders in all six groups, necessitating further research.

In Conclusion

The terms cooperative and collaborative learning are often used interchangeably in the classroom and in the research literature. While it is true many elements of cooperative learning apply to collaborative learning (Panitz & Panitz, 1998), collaborative learning is a much more student-centered approach (Dillenbourg et al., 1996; Smith & MacGregor, 1992). In collaborative learning students assimilate ideas and create knowledge (Caplow & Kardash, 1995; Smith & MacGregor, 1992; Vygotsky, 1962). Activities used in collaborative learning employ rich contexts that require students to practice and develop higher order reasoning and problem-solving skills (D.W. Johnson & Johnson, 1999; Nastasi & Clements, 1991). Alternatively, cooperative learning calls for students working together to apply a series of steps leading toward predetermined objectives (Kagan, 1989).

The teacher’s role is another major distinction between the two approaches to learning. In cooperative learning, the traditional role of teacher as director of learning is utilized. Specifically, the teacher sets the students’ goals, provides the content required to reach the goals, and decides what student outcomes are required for goal attainment (Panitz, 1997; Slavin, 1991, 1996). Collaborative learning requires the teacher to shift roles from information expert to facilitator. The teacher provides suggestions, mediation, and consultation to the students,
ensuring students have the academic and social skills necessary for collaboration (Bruffee, 1995; Mueller & Fleming, 2001; Nastasi & Clements, 1991).

Member composition of cooperative and collaborative learning groups influences how well any group will perform as a team. Variables to consider when structuring learning groups include group size, gender, race and ethnicity, ability level, and personality types. While optimal group size has yet to be determined (Nastasi & Clements, 1991), research does suggest matching group size with intended outcomes (Fuchs et al., 2000). Specifically, small groups provide active discussion and debate, while larger groups offer a wider range of perspectives and background knowledge (Nastasi & Clements, 1991; Panitz & Panitz, 1998). Research also indicates heterogeneous equal gender group composition encourages cognitive conflict (R.T. Johnson et al., 1985) and raises performance (Lee, 1993; Webb, 1991). Research dealing with race and ethnicity presents conflicting results; however, the majority of research reviewed suggests positive effects of interethnic cooperation (Renegar & Haertling, 1993; Slavin, 1991, 1996; Slavin & Hansell, 1983). Ability-level grouping research also presents inconsistent results. Even so, some diversity in groups is suggested in most research (Blumenfeld et al., 1996; Brush, 1997; Dillenbourg et al., 1996; Nastasi & Clements, 1991; Panitz & Panitz, 1998).

Research evaluating selection and placement strategies using personality traits was reviewed by concentrating on two psychometric instruments: Myers-Briggs Type Indicator® (MBTI) and Emergenetics®. Studies investigating the MBTI® as an analytical tool to enhance group performance revealed perplexing results. Both homogeneous (Muchinsky & Monanhan, 1987) and heterogeneous (Blaylock, 1983; Bradley & Hebert, 1997; Dilworth & Richter, 1995; Neuman et al., 1999) grouping by psychological types resulted in successful group performance in various research, while others found no particular combination of personality-type preferences to have a direct effect on group performance (Varvel et al., 2004). Also of interest, independent
reviews of the MBTI® raised concerns regarding the test’s reliability and validity (Fleenor & Mastrangelo, 2005), however little or no attention was given to these concerns in the reviewed research.

Unlike the MBTI’s® forced-choice instrument, Emergenetics’® Likert scale questionnaire distinguishes between a person’s preferred behavior and thought processes (Browning, 2006). Given the group-learning process is influenced by the personal style and individual behaviors of every member of the group, Emergenetics® suggests the most creative and productive groups, called WEteams®, are made-up of people with different Profiles (Browning, 2006; The Browning Group International Inc., 2004). Unfortunately, the only research to support this claim was conducted by the owners of Emergenetics®, The Browning Group International, Inc, necessitating further research.

Leadership research has traditionally focused on specific characteristics of leaders. Additionally, research regarding student leadership has tended to center on student leadership in organizations, not peer-led academic learning groups. As a result, the portion of the research literature review concerning emergent student leadership in academic work groups is a patchwork piece demonstrating the need for further research.

Analysis of research exploring student leadership under different learning conditions indicates group-learning conditions play an important role in group effectiveness. When group conditions support understanding over aptitude, effective and cooperative task completion results (Bruffee, 1995; Nastasi & Clements, 1991; Webb et al., 2002; Yamaguchi, 2001). The adoption of a participative leadership style, whether by an individual leader or through shared group leadership, also generated a more successful and enjoyable cooperative learning experience (Browning, 2006; Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990).
The relationship between leader attributes and emergent leadership was explored by considering leader personality, planning skills, communication skills, self-monitoring behaviors, leadership characteristics, and gender. Research investigating the relationship between specific attributes and leadership is inconclusive. However, people showing a regard for human needs and values and those seeking the involvement of others tended to be seen as possessing leadership qualities (M.R. Myers & Slavin, 1990; Thatcher & De la Cour, 2003). Additionally, influential group members were able to produce effective requests and explanations in peer-directed groups (Thatcher & De la Cour, 2003; Webb et al., 2002; L.C. Wilkinson, 1985).

Self-monitoring materialized from the research literature as a significant factor affecting perceptions of leadership in student groups, with high self-monitors emerging as leaders of small groups (Browning, 2006; French et al., 1986; Kolb, 1998; I.B. Myers et al., 1998; M.R. Myers & Slavin, 1990). Findings also established a strong positive relationship between perceived intellectual competence and leadership emergence (Gnagey, 1979; Rubin et al., 2002). Furthermore, leaders who employed facilitative skills, such as empowerment, organization, and decision-making skills, were able to cultivate a sense of ownership and cooperation among group members (Duemer et al., 2004). Gender did not emerge in the literature as being conclusively related to student leadership (Yamaguchi, 2001); however, in one study females did emerge as leader in all groups (Mueller & Fleming, 2001).

As noted earlier, individual leader attributes contribute to the satisfaction and success derived from cooperative learning groups. However, their value is less significant when examined devoid of the situation surrounding the task (Burns, 1978). Unfortunately, the literature identifying situational factors associated with emergent student leadership is sparse, indicating the need for further research.
CHAPTER THREE: RESEARCH METHODOLOGY

The research employed a qualitative research design through an explanatory case study. An explanatory case study goes beyond descriptive case study research by matching the experiences of program participants to a program’s theoretical expectations (Yin, 2003). Accordingly, this study ascertained whether grouping students using Emergenetics® STEPTM Profiles builds stronger, more creative and productive learning groups, as Emergenetics® theory suggests (The Browning Group International Inc., n.d.).

Explanatory case study research assumes particular importance in education because it is consistent with the principles of scientific research advocated by the National Research Council (Shavelson & Towne, 2002). Although case studies do not have statistical generalizability, explanatory case studies have analytic generalizability due to the links between theory and evidence (Yin, 2003). This counters criticisms that qualitative research is exploratory, descriptive, lacking in scientific rigor, and not generalizable (Yin, 2003).

Research Questions

Using Emergenetics® STEPTM Profiles, this research investigated the impact of personality-profile grouping on group process and product. The research questions were:

- What are the implications of personality profiling for use as a group learning selection and placement strategy in high schools?
- How does WEteam® group learning compare with the Emergenetics® STEPTM program outcomes?

The following sub-questions were addressed in this study to gather pertinent information pertaining to the main research questions:

- What is the nature and quality of interactions in learning groups and how is it affected by group composition?
• How does group composition affect conflict resolution, students’ feelings toward the group-learning experience, and personal relationships within the learning group?

• What are the nature and quality of projects in learning groups and how are they affected by group composition?

• What is the nature of emergent student leadership in the learning groups and how is it affected by group composition?

**Research Design**

The design of this study was an explanatory case study design. Qualitative case study research typically has been conducted for the purpose of description (Bassey, 1999; Yin, 2003). For this reason, case studies previously have not been recognized as avenues for explanatory analysis, which was traditionally considered the domain of experimental inquiry (Yin, 1999). Only recently has this perception been challenged through Yin’s (2003) submission of a theoretical framework supporting the applicability of explanatory case studies as a valid and rigorous research methodology.

Case study design involves an empirical inquiry that investigates a phenomenon for which boundaries between the phenomenon and its context are not clearly evident (Yin, 2003). Yin (2003) argues these boundaries require clarification as part of the case study. An explanatory case study design is the only qualitative design appropriate for explanation of phenomenon and theory testing (Gall et al., 2003; Yin, 2003). Explanations of a phenomenon are referred to as patterns, meaning one type of variation observed in a case study is systematically related to another observed variation (Gall et al., 2003). If data suggest one variation has a causal effect on the other, it is described as a causal pattern; if causality is not claimed, it is termed relational.
Emergenetics® theory suggests a positive causal pattern between participating in the STEP™ program and WEteams® and students’ ability to communicate and solve problems effectively within learning groups. Emergenetics® theory also suggests a positive causal pattern between participating in the STEP™ program and WEteams® and learning group creativity and productivity. Another positive causal pattern suggested by Emergenetics® theory is the relationship between participatory leadership and WEteams® and harmonious and effective group learning.

Emergenetics® theory was tested in this study by operationalizing it through WEteam® construction and implementation and by testing the assertions associated with the learning goals for the STEP™ program. Emergenetics® theory asserts the STEP™ program provides valuable insight into how students can enhance communication, creativity, and productivity in learning groups (The Browning Group International Inc., n.d.). It also asserts the implementation of WEteams® better equips students to communicate, solve problems, and reach goals together through stronger, more creative, and productive learning groups. By testing this theory, the researcher was able to ascertain whether Emergenetics® is a valid approach for grouping students.

**Setting**

The setting for this study was a Catholic, college-preparatory secondary school for girls, serving grades 9-12. Located in a capital city with a population of 412,000 and two major universities, this school is the only all girls school in the city. Admission to the school is based upon a review of applicants’ elementary school record and standardized tests scores, results of the STS High School Placement Tests, a personal interview with each applicant and her parents, and the recommendations of applicants’ elementary school principal.
At the time of this study, the school enrolled 796 students, including 214 freshmen, 201 sophomores, 182 juniors, and 199 seniors. Student ethnicity was divided as follows: White/Caucasian (93.4%), African American (4.2%), Hispanic (1.1%), Asian (0.5%), Native American (0.1%) and other (0.6%). Approximately 13% of students (105) lived with either their mother or father but not both.

Tuition and fees for the 2005-2006 school year were $7,469. Currently, the school does not offer scholarships; however, it does provide tuition assistance. At the time of this study, approximately 8% of students (64) were receiving tuition assistance.

The school has been named a “Blue Ribbon School of Excellence,” a “Blue Ribbon School of Excellence in Technology” by the U.S. Department of Education, and has been recognized by Catholic Schools of Tomorrow with its Award for Innovation in Technology. Approximately 99% of the school’s graduates attend four-year colleges or universities. The faculty consists of professional educators, more than 60% with advanced degrees.

All students and teachers of the school are provided e-mail accounts and laptop computers equipped with wireless Internet access. The school’s wired and wireless network hosts a majority of the school’s operations and communications, including class management software, parental access to student grades, online shopping, billing, and student enrollment. Furthermore, network teleconferencing capabilities allow students to interact with experts outside the school. The school also maintains a computer warranty shop staffed primarily by students, who are trained in computer architecture maintenance. Once certified, students become paid, part-time technicians, who often volunteer their services to disadvantaged schools in the surrounding community and abroad.

This was the first school chosen by Emergenetics® creator and administrator, the Browning Group, to pilot STEP™ as a learning tool. STEP™ recently completed its four-year
pilot program at this school and entered phase II with the start of the 2005-06 school year. Phase II of STEP™ is used by the faculty in the classroom and within departments. Teachers are encouraged to apply their knowledge of STEP™ in their teaching, especially when it relates to comparing their thinking and behavioral preferences with those of their students.

**Participants**

The unit of analysis for this study was learning groups. Students, grades 9-12, enrolled in six Multimedia Productions courses taught by the school’s computer science department head (N = 95) made up the study’s population. Criterion sampling was used to identify students best suited for learning group placement based on their Emergenetics® STEP™ Profile. Unspecified to the teacher or students, one learning group from each of the six classes (n = 30) served as the unit of analysis. The grouping outcomes of these six learning groups are presented in extensive detail in the next chapter.

After learning groups were organized and implemented, observational data were used to identify two extreme or deviant cases from each group for individual interviewing. Extreme or deviant cases included emergent student leaders and disengaged group members. The course instructor also participated in the study by providing supplemental interview and assessment data regarding learning group outcomes.

**Procedures**

The Sequence of the Study (see Table 3.1) briefly describes the phases of the research study. The following is a more detailed explanation. An application for exemption was submitted and approved by the Louisiana State University Institutional Review Board (IRB) before the study was conducted (Appendix A). Consent and assent forms were distributed to every student and every student’s parents/caregivers (Appendix B, C, and D) enrolled in Multimedia Productions. All students participating in this study, along with their
parents/caregivers, submitted signed and dated consent and assent forms before the start of the study.

Table 3.1
Sequence of the Study

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request IRB approval</td>
<td>Submitted appropriate forms to LSU IRB (Appendix A)</td>
</tr>
<tr>
<td>Request student and parental/caregiver consent and student assent</td>
<td>Students were given consent and assent forms (Appendix B and C) as well as the students’ parents or caregivers (Appendix D).</td>
</tr>
<tr>
<td>Organize learning groups</td>
<td>With the help of a certified Emergenetics® trainer, the population’s STEP™ Profiles were analyzed. Based on Profile results, samples were identified and organized into learning groups.</td>
</tr>
<tr>
<td>Conduct STEP™ workshop</td>
<td>A certified Emergenetics® trainer was commissioned to conduct a one class period workshop, on using STEP™ to enhance communication, creativity, and productivity in learning groups, for all students enrolled in the course affected by this study.</td>
</tr>
<tr>
<td>Implement learning groups</td>
<td>Students were organized into learning groups and provided their terminal course project.</td>
</tr>
<tr>
<td>Conduct observations</td>
<td>Five in-class observations of learning groups were conducted over 6 weeks.</td>
</tr>
<tr>
<td>Collect student journals</td>
<td>Student journals were submitted via BlackBoard once a week for the duration of the study.</td>
</tr>
<tr>
<td>Conduct project assessment</td>
<td>Projects were assessed by the teacher and researcher using grading rubrics employed in the judging of the Kansas Student Technology Leadership Digital Media Competition (Appendix H).</td>
</tr>
<tr>
<td>Conduct student interviews</td>
<td>Emergent student leaders and disengaged group members were interviewed individually.</td>
</tr>
<tr>
<td>Conduct teacher interview</td>
<td>The course instructor was interviewed at the end of the study to gain insight into the quality of learning group processes and outcomes.</td>
</tr>
</tbody>
</table>

Students enrolled in six Multimedia Productions courses taught by the school’s computer science department head provided the population for this study. Multimedia Productions is a two-semester course that combines text, graphics, sound, animation, and video delivered by computer or other electronic means. The course focuses on the creative design and development
of effective, efficient and appealing visual productions. Current and emerging technologies, such as digitized audio, digitized still and motion video, scanned images, and CD technology are incorporated into multimedia projects as well as searching and downloading Internet images and information. Extensive use of Adobe Premiere, After Effects and PhotoShop Elements, Macromedia Studio MX (freehand, Flash, Fireworks), Macromedia Director 8.5, and a variety of software for use with digital cameras and camcorders are incorporated into the course.

Emergenetics® STEPTM Profiles are obtained for all students the summer before their freshman year. Students are then trained to understand and use their STEPTM results to communicate, solve problems, and work together more effectively (The Browning Group International Inc., n.d.), through a one-day workshop performed in the fall semester of their freshman year. Since Multimedia Productions is offered to students in grade 9-12, some students enrolled in the course may have been trained in applying STEPTM results more recently than others. With this in mind, all students affected by this study were presented with a one-class period (50 minutes) workshop on using STEPTM to enhance communication, creativity, and productivity in learning groups before the study begins. A certified Emergenetics® trainer conducted the workshop.

All students in Multimedia Productions were organized into learning groups; each group was comprised of five members enrolled in the same section of the course. Emergenetics® STEPTM Profile results, already on file with the school, were analyzed as the basis for learning group construction. Key individual thinking preferences (Analytical, Structural, Social, Conceptual) identified by the STEPTM Profile was the main variable of analysis. One learning group, unspecified to the teacher or students, from each of the six classes (n = 30) served as the unit of analysis. Specifically, two WEteams®, consisting of one student representing each of the four thinking preferences and a Multimodal thinker (three or four thinking preferences), were
assembled. Three other learning groups were assembled around specific thinking preferences. Because 92% of the population prefers to use more than one thinking attribute (Browning, 2006), these groups were grouped using more than one thinking preference. All other learning groups were constructed by randomly selecting three to five members to form the remaining groups. One of the randomly constructed groups of five was selected as an additional unit of analysis.

Emergenetics® can identify over 400 unique thinking and behavior Profiles, therefore, the various combinations of percentages are endless (see Appendix E for examples). Consequently, for the purpose of this study, students indicating a preference in a particular thinking attribute (any percentage score over 23%) were considered equal to other students indicating the same thinking preference, regardless of their specific percentage score. An attempt was made to match students on behavioral preferences and grade level also; nevertheless, this was not possible due to the small sample size (n = 30), individual class schedules, and the large number of unique Profiles. However, Emergenetics® theory accounts for part of this dilemma, suggesting the student who comes closest to the missing preference be instructed to make a conscious choice to fill the void. Final grouping outcomes are presented in Appendix E and detailed in the next chapter.

Once learning groups were structured and students were retrained on employing STEP™ to enhance communication, creativity, and productivity in learning groups, groups were given their terminal course project assignment. Data were collected across 6 weeks through learning group observations and student journals. Terminal project presentations were observed at the end of the sixth week, and individual student and teacher interviews were conducted in the seventh and final week of the study.
Terminal Course Project

In learning groups, students were to design an effective, efficient, and appealing multimedia production in the form of a public service announcement to educate the public and influence public opinion. The presentation topic and production type was the decision of individual learning groups. Any media covered in the course could be employed to complete this project, including digitized audio, digitized still and motion video, scanned images, and CD technology. Learning groups presented their final product to their class during the last week of the study.

Data Collection

Explanatory case studies are characterized by research questions that investigate the relationships proposed between components of a theory (Yin, 2003). Therefore, qualitative data were collected from multiple sources in an attempt to collect more in-depth data to analyze the relationship between implementation of the STEPTM program, within the real-life educational setting, and learning group processes and outcomes. Data collection began the first week of April and continued through the last week of May, covering a 7-week period.

Emergenetics® STEPTM

Emergenetics® STEPTM Profiles were conducted on the 95 students enrolled in the six Multimedia Productions courses taught by the school’s computer science department head, the summer before their freshman year. The Emergenetics® STEPTM Profile questionnaire consists of 84 questions with respondents selecting their answer on a Likert scale of 1 (Never) to 4 (Always). The instrument measures a person’s unique preferences on seven basic sets of attributes including four distinct Thinking Attributes (Analytical, Structural, Social, and Conceptual) and three Behavioral Attributes (Expressiveness, Assertiveness, and Flexibility). These results were already on file at the school.
Learning Group Observations

By including selected observations, a more complete description of a phenomenon is provided than is possible through interview statements and documents alone (Gall et al., 2003). Therefore, this study utilized direct observations to provide insight into the usefulness of Emergenetics® STEP™ as a selection and placement strategy to enhance process and performance in high school learning groups. In particular, observations provided insight into the social interactions of the students in their learning groups, focusing mainly on the quality of explanation and discussions, conflict resolution, student leadership, and personal relationships within each group. An observation protocol guided these observations (Appendix F). The nine elements of Spradley’s Descriptive Question Matrix (1980) were also used to formulate specific questions during the observations. Each of the six learning groups was observed during 5 of the 15 meetings across 6 weeks and during presentation of final projects, resulting in over 30 hours of observations.

Student Journals

Students were required to keep a reflective journal expressing their thoughts and feelings concerning their experiences in their learning group, any problems they encountered with other group members, how the problems were resolved, and any positive experiences during group learning. Students submitted journals once a week over the extent of the project through the school’s BlackBoard course management system. However, only students’ journals of the six learning groups selected for observation were analyzed. This amounted to approximately 30 journals submitted for analysis each week for 6 weeks (180 journal submissions). Students were informed no one but the instructor and researcher would read these reflections and were encouraged to be candid and truthful. Student journal guidelines may be found in Appendix G.
Terminal Course Project Assessment

Grading rubrics were provided to learning groups when the project was assigned (Appendix H). The rubrics provided to students were used by both the researcher and teacher to evaluate group projects when they were presented during the last week of the study. Project quality was judged by the total score received on the grading rubric, which matched the schools grading policy (see Table 3.2). Rubrics employed in this study were obtained from the Kansas Student Technology Leadership Digital Media Competition (Kansas State Department of Education, 2005) and were only modified to fit on a single typed page. Scoring content of the rubrics was not altered.

Table 3.2
Terminal Course Project Grading Scale

<table>
<thead>
<tr>
<th>Total Score</th>
<th>Letter Grade</th>
<th>Project Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-28</td>
<td>A</td>
<td>Distinguished</td>
</tr>
<tr>
<td>18-24</td>
<td>B</td>
<td>Accomplishment</td>
</tr>
<tr>
<td>11-17</td>
<td>C</td>
<td>Developing</td>
</tr>
<tr>
<td>7-10</td>
<td>D</td>
<td>Beginning</td>
</tr>
<tr>
<td>0</td>
<td>F</td>
<td>No Project</td>
</tr>
</tbody>
</table>

Interviews

Through group-learning observation and student journal analyses, two extreme or deviant cases from each group were identified for individual interviewing (12 students). Extreme or deviant cases included emergent student leaders and disengaged group members. The 12 students selected were interviewed at the end of the study to gain insight into how they interpreted the quality of learning group processes and outcomes and student leadership emergence within their learning group. The student interviews were used as points of comparison; by studying extremes, possible reasons for observed differences were identified.
Using a standardized open-ended interview approach, students were asked to elaborate on a series of questions (Appendix I). These questions were supplemented by other questions arising from group observations and student interviews when deemed relevant. Students were also asked to confirm the accuracy of interpretations.

Students were informed of the interview’s purpose and insured their answers would remain anonymous and not affect anyone’s grade on the final project. With students’ permission, recordings of individual student interviews were made and supplemental fieldnotes were written. Keeping supplemental fieldnotes is important when conducting taped interviews, since recorders miss “…the sights, smells, impressions, and extra remarks said before and after the interview” (Bogdan & Biklen, 2003, p. 111).

The course instructor was also interviewed at the end of the study to gain insight into the quality of learning group processes and outcomes. The instructor was asked to elaborate on his interpretation of the quality of terminal group project outcomes. Completed rubric forms were used to stimulate the discussion.

**Emergenetics® Reliability and Validity**

Emergenetics® tested over 10,000 people in the initial research phase. To date, over 250,000 people have completed the instrument. Statistical procedures used in the development of the Emergenetics® Profile instrument include inter-item reliability, split-half reliability, and test/re-test reliability. Coefficient alpha measured split-half reliability (see Table 3.3).

Test/re-test measures conducted during the development of the instrument indicate persons who completed the test after two years tended to respond in much the same manner (see Table 3.4). Further test/re-test studies were completed in 2004. Data were examined using Analysis of Variance (ANOVA) to determine whether change in test scores were due to chance. Results showed Conceptual scores increased slightly between the first testing and second testing.
Browning (2006) suggests this may be due to an Emergenetics® “workshop effect” where participants learned being Conceptual may have advantages.

Table 3.3
Coefficient Alphas

<table>
<thead>
<tr>
<th>Construct</th>
<th>Coefficient Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical</td>
<td>.83</td>
</tr>
<tr>
<td>Structural</td>
<td>.76</td>
</tr>
<tr>
<td>Social</td>
<td>.76</td>
</tr>
<tr>
<td>Conceptual</td>
<td>.76</td>
</tr>
<tr>
<td>Expressiveness</td>
<td>.83</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>.83</td>
</tr>
<tr>
<td>Flexibility</td>
<td>.80</td>
</tr>
</tbody>
</table>


Table 3.4
Test/Re-test Statistical Correlations

<table>
<thead>
<tr>
<th>Construct</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical</td>
<td>.84</td>
</tr>
<tr>
<td>Structural</td>
<td>.77</td>
</tr>
<tr>
<td>Social</td>
<td>.74</td>
</tr>
<tr>
<td>Conceptual</td>
<td>.82</td>
</tr>
<tr>
<td>Expressiveness</td>
<td>.80</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>.78</td>
</tr>
<tr>
<td>Flexibility</td>
<td>.82</td>
</tr>
</tbody>
</table>

Note. Any number .70 or greater is considered a very strong correlation; From *Emergenetics: Tap into the New Science of Success* (p. 304-305), by G. Browning, 2006, New York: Harper-Collins Publishers. Copyright 2006 by Geil Browning, PhD. Adapted with permission of the author (see Appendix L).

Face validity, content validity, and construct validity of the Emergenetics® Profile instrument were also investigated. Because the Emergenetics® Profile instrument was not developed to predict or measure performance in specific jobs, information about criterion validity was not collected. Interrelationships among the four Thinking Attributes and three Behavioral Attributes were statistically examined and are presented in Table 3.5. Based on the
results presented, the Emergenetics® Profile instrument meets the criteria for face validity, construct validity, content validity, split-half reliability, and inter-item reliability.

Gender-based norms are used to avoid sexual bias in the reporting. Emergenetics® norms have a standard error of less than 1.0 and the test is re-normed every 18 months to account for test bias and to reflect changes in the culture (Browning, 2006).

Table 3.5
Inter-Attribute Correlations Table

<table>
<thead>
<tr>
<th></th>
<th>Analytical</th>
<th>Structural</th>
<th>Social</th>
<th>Conceptual</th>
<th>Expressiveness</th>
<th>Assertiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>.18*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>-.04</td>
<td>-.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conceptual</td>
<td>.11*</td>
<td>-.74*</td>
<td>.26*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressiveness</td>
<td>.10*</td>
<td>-.51*</td>
<td>.55*</td>
<td>.52*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assertiveness</td>
<td>.25*</td>
<td>-.50*</td>
<td>.15*</td>
<td>.49*</td>
<td>.80*</td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>.07</td>
<td>-.20*</td>
<td>.84*</td>
<td>.38*</td>
<td>.66*</td>
<td>.30*</td>
</tr>
</tbody>
</table>

Note. Correlations are significant at the P =<.01 level using a two-tailed test of significance; From Emergenetics: Tap into the New Science of Success (p. 307), by G. Browning, 2006, New York: Harper-Collins Publishers. Copyright 2006 by Geil Browning, PhD. Adapted with permission of the author (see Appendix L). *represents a significant correlation.

**Trustworthiness Issues**

The trustworthiness of qualitative research is determined by its credibility, transferability, dependability, and confirmability. Triangulation is one means of increasing the trustworthiness of the results from a research study (Gall et al., 2003). Data source triangulation was accomplished by collecting data through learning group observations, student journals, and individual student interviews. Triangulation through multiple analysts was also employed to reduce the potential bias that comes from a single analyst (Patton, 2002). This was accomplished by drawing on the Multimedia Production teacher’s expertise when judging terminal group projects. The use of the same rubrics, by both the researcher and teacher, allowed
for comparison between analysts’ findings. The use of multiple sources of evidence provided various measures of the same phenomenon, which helped insure the trustworthiness of case study findings (Gall et al., 2003).

Additionally, referential adequacy was employed to ensure credibility of the study by recording student interviews. Videotaping student interviews provided an audit trail which allowed preliminary findings to be checked against raw data and additional evidence (Lincoln & Guba, 1985). Videotaping of student interviews was further used to decrease researcher bias, by reducing the researcher’s tendency to make an unconscious selection of data (Gall et al., 2003).

To insure confirmability and dependability, an inquiry audit of the study was performed by an external auditor (Lincoln & Guba, 1985). The auditor examined research findings, interpretations, and conclusions to determine if they were reasonable and logical in accordance with the data. The external auditor engaged in this study has earned a doctorate in supervision, curriculum, and instruction, and is an associate professor at a university in a southern state.

Member checks were also performed to check the accuracy of observation interpretations. This strategy increases the “truthfulness” of the data (Creswell, 1998). Students were asked, during selected individual interviews, to review the interpretations of their group processes throughout data analysis. Finally, since difficulty of transferability is a natural limitation of qualitative inquiry (Gall et al., 2003), thick description of group learning context and data generated from the study are presented to enable the reader to determine the transferability of results to other settings (Creswell, 1998).

**Data Analysis**

**Emergenetics® STEPTM**

Emergenetics® STEPTM Profile results were analyzed, with the help of a certified Emergenetics® trainer, as a basis for learning group construction. The assistance of a certified
Emergenetics® trainer was employed because the researcher was not trained to interpret
Emergenetics® STEP™ Profile results. This is not the case for teachers involved with
Emergenetics® STEP™; they are provided with professional development on how to interpret
and use Emergenetics® STEP™ Profile results in their classroom as part of the program.

Key individual thinking preferences identified by the STEP™ Profile were the main
variable of analysis. Any percentage score of 23% or greater indicates a preference in the
Thinking Attribute. For example, Figure 3.1 exhibits the profile of a person who has a
preference in Analytical (24%) and Structural (62%) thinking. A complete sample
Emergenetics® Profile is included in Appendix J.

Behavioral Attributes were of secondary consideration. Emergenetics® STEP™ Profile
reports behavioral preferences as a percentile point on a continuum for each Behavioral
Attribute, which is divided into thirds by strength of behavior. The percentiles are referred to as
the first-third (0-33% of the population), second-third (34-66% of the population), and third-third
(67-100% of the population) to discourage value association. If a person is in the first-third of a
Behavioral Attribute, the majority of the population expresses more of the attribute (the exact
amount depends on a person’s specific score). People in the third-third of the population express
more of a particular Behavioral Attribute than most people.

![Sample Emergenetics® Profile Thinking Attributes Pie Chart](image)

Figure 3.1. Sample Emergenetics® Profile Thinking Attributes Pie Chart
Figure 3.2 exhibits the behavioral preferences of a person who is second-third Expressive, second-third Assertive, and first-third Flexible. These results indicate this person can easily adapt to any situation with regard to the degree of Expressiveness and Assertiveness she exercises. However, being a first-third Flexible, this person is likely to have strong opinions, a strong agenda, and not be persuaded to change her mind easily.

Figure 3.2. Sample Emergenetics® Profile Behavioral Attributes Continuums

**Qualitative Data**

Qualitative data collected from learning group observations, student journals, student interviews, and a teacher interview were analyzed using constant comparative analysis in order to identify common patterns, themes, and relationships (Glaser & Strauss, 1967; Lincoln & Guba, 1985). Data from each of these sources were triangulated for each of the six groups.

Using constant comparative analysis for each group’s triangulated data involved two general processes, unitizing and categorizing. Unitizing involved breaking the data into small units of information that served as the basis for defining categories. Units were then reviewed, compared, and categorized to bring those units relating to the same content into provisional categories. This process continued until all data collected from each group were compared within that group, and no new or relevant data emerged. Provisional categories were then
compared to determine if there was any overlap between categories, and to ensure all categories were applicable to the study. Through this analysis, theoretically significant categories were defined.

After the data for each group were analyzed, cross-group analyses were conducted to compare and contrast themes emerging from each group. If a theme from one learning group was corroborated by the evidence from another, the finding was considered stronger. When evidence conflicted, deeper probing of the differences was carried out in an attempt to identify the cause or source of conflict. These results were reported to and confirmed by the Multimedia Productions teacher to eliminate researcher bias. Implications of the identified patterns, themes, and relationships on learning group placement and emergent student leadership are discussed.
CHAPTER FOUR: INDIVIDUAL GROUP RESEARCH RESULTS

The purpose of this study was to provide a complete picture of the impact of personality-profile grouping using Emergenetics® STEP™ Profiles on group process and product in high school learning groups. This chapter presents the findings from student Emergenetics® STEP™ Profiles, learning group observations, student journals, project assessments, and student and teacher interviews as they relate to the research questions. In each section, a grade-level and thinking preference abbreviation follows each student’s name to help the reader interpret results more quickly. For example, a student in grade 9 with a Conceptual (C) thinking preference would be labeled 9/***C. The asterisks (*) in this label indicate the student did not prefer Analytical (A), Structural (T), or Social (S) Thinking.

Individual group research results are organized under two main topics: learning group profiles and learning group process and product. Learning group profiles, including details regarding each group member’s individual Emergenetics® STEP™ Profile, grade level, cumulative grade point average, and previous collaboration within the current group are offered first. Next, interactions within each individual learning group are described through a detailed narrative compiled from observations, personal journals, and interviews. Finally, project assessments are combined with interview and journal data to provide a complete view of each learning group product.

Learning Group Profiles

With the help of a certified Emergenetics® trainer, Emergenetics® STEP™ Profiles of 95 students enrolled in six Multimedia Productions courses were analyzed. The main variable of analysis was key individual thinking preferences. Percentage scores of 23% or greater indicated a preference in the Thinking Attribute. Of secondary consideration were Behavioral Attributes and student grade level.
Based on individual Profile analysis, students were placed in learning groups, with one from each of the six Multimedia Productions classes serving as a unit of analysis. In particular, two WEteams® were assembled. These groups were comprised of students representing each of the four Thinking Attributes and no less than one Multimodal thinking student. Three more learning groups were assembled around particular Thinking Attributes. Given the majority of people possess more than one thinking preference, two of these groups were clustered based on two preferred Thinking Attributes (Browning, 2006). Finally, the remaining students were randomly placed in groups of two to five members. One of these arbitrarily constructed groups was then randomly selected as the sixth group for observation. Each group under analysis is described in more detail in the pages that follow (see Appendix E for students’ specific Thinking Attribute percents and Behavioral Attribute percentiles).

An attempt was made to ensure all behavioral preferences were represented within each group and students were grouped with students of the same grade level. Due to the small sample size, individual class schedules, and the large number of unique Profiles, this was not possible in every group. However, as suggested by Emergenetics® theory, groups with missing preferences were instructed to make a conscious effort to fill the void (Browning, 2006).

Attribute Review

The four Thinking Attributes measured by the Emergenetics® Profile are Analytical (A), Structural (T), Social (S), and Conceptual (C). Analytical thinking combines logical thought with a preference for abstract ideas. People who have a strong preference for Analytical thinking often choose to work alone and may be perceived as unemotional or uncaring. With Structural thinking, sequential thought is merged with a prevailing preference for practical application. People who are highly Structural thinkers are frequently hands-on learners who like to follow procedures, which can cause them to appear unimaginative.
Social thinking unites intuitive thought with a devotion to people. People who have a strong preference for Social thinking are often sensitive and appreciate the opinion of others. Social thinkers may be perceived as too emotional; however, not all are animated and extroverted. Conceptual thinking also prefers intuitive thought but combines it with a preference for abstract ideas. Conceptual thinkers are commonly theoretical and creative while searching for new ways to solve old problems. This sometimes causes them to be perceived as bizarre, but they would declare they are merely unconventional.

The four Thinking Attributes are tempered by the three Behavioral Attributes: Expressiveness, Assertiveness, and Flexibility. These attributes are what people perceive in other people (Browning, 2006; The Browning Group International Inc., 2004). The Expressiveness Attribute indicates a person’s level of participation in social situations. First-third Expressives think before they speak, tend to avoid participation in large group situations, and may appear thoughtful and shy. Third-third Expressives are energized by interacting with others, easily initiate conversations, and are comfortable drawing attention to themselves. These qualities may lead to them being seen as overbearing.

The Assertiveness Attribute specifies a person’s interest in controlling results and reflects the amount of energy the person is willing to invest in expressing thoughts, feelings, and beliefs. First-third Assertives regularly go along with other peoples’ decisions and do not voluntarily express their opinion. They may be viewed as peacemakers and as a result may be disregarded. Third-third Assertives are direct, confrontational, challenging, and in charge, which may lead to their being over competitive.

The Flexibility Attribute measures a person’s willingness to accommodate the thoughts and actions of others in order to create an environment that encourages others to become comfortable. First-third Flexibles prefer focusing and defined situations, causing them to be seen
sometimes as rigid or inflexible. Third-third Flexibles, on the other hand, are accepting of most ideas and patient with difficult people. Consequently, they run the risk of being viewed as inconsistent.

**Group 1 – WEteam®**

A preference for each of the four Thinking Attributes was present in Group 1, making it a WEteam®. Individual group members’ specific preferences are presented in Table 4.1. All behavioral preferences, except Expressiveness, were represented within this group. No first-third Expressives were present in Group 1. With the exception of Alicia (10/A*S*), all members were Multimodal. Based on Emergenetics® theory, it is expected that the energy emerging from the varied Thinking and Behavioral Attributes of a WEteam® will create an impressive combination of creative and productive results (Browning, 2006). More information regarding specific attributes may be found in Chapter 2 and the previous section of this chapter titled “Attribute Review”.

### Table 4.1
Group 1 Learning Group Composition

<table>
<thead>
<tr>
<th>Student</th>
<th>Grade</th>
<th>Thinking Attribute Preference(s)</th>
<th>Behavioral Attributes (1st, 2nd, or 3rd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addison</td>
<td>10</td>
<td>ATS*</td>
<td>2, 1, 3</td>
</tr>
<tr>
<td>Alison</td>
<td>9</td>
<td>*TSC</td>
<td>2, 1, 3</td>
</tr>
<tr>
<td>Alicia</td>
<td>10</td>
<td>A<em>S</em></td>
<td>2, 3, 2</td>
</tr>
<tr>
<td>Annie</td>
<td>10</td>
<td>A*SC</td>
<td>3, 2, 1</td>
</tr>
<tr>
<td>Avery</td>
<td>9</td>
<td>A*SC</td>
<td>2, 1, 1</td>
</tr>
</tbody>
</table>

Note. Thinking Attributes: Analytical (A), Structural (T), Social (S), Conceptual (C)

Group 1 members’ cumulative grade point averages (GPA), supplied by the school counselor, are presented in Table 4.2. Cumulative grade point averages were calculated at the end of the 2006 school year by dividing historical grade points plus year grade points by
historical credits attempted plus year credits attempted. GPA letter grades, as they correspond to the school’s quality point scale, are also offered in Table 4.2 (see Table 4.3 for the quality grade point scale).

Table 4.2
Group 1 Student Cumulative Grade Point Averages

<table>
<thead>
<tr>
<th>Student</th>
<th>GPA</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addison</td>
<td>2.88</td>
<td>B-</td>
</tr>
<tr>
<td>Alison</td>
<td>3.76</td>
<td>A-</td>
</tr>
<tr>
<td>Alicia</td>
<td>3.30</td>
<td>B</td>
</tr>
<tr>
<td>Annie</td>
<td>3.23</td>
<td>B</td>
</tr>
<tr>
<td>Avery</td>
<td>3.00</td>
<td>B</td>
</tr>
</tbody>
</table>

Table 4.3
Quality Point Scale

<table>
<thead>
<tr>
<th>Cumulative GPA</th>
<th>Letter Grade</th>
<th>Cumulative GPA</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.00</td>
<td>A</td>
<td>2.67</td>
<td>B-</td>
</tr>
<tr>
<td>3.67</td>
<td>A-</td>
<td>2.33</td>
<td>C+</td>
</tr>
<tr>
<td>3.33</td>
<td>B+</td>
<td>2.00</td>
<td>C</td>
</tr>
<tr>
<td>3.00</td>
<td>B</td>
<td>1.67</td>
<td>C-</td>
</tr>
</tbody>
</table>

Students in Group 1 who worked together prior to this study are specified in Figure 4.1. Those students connected by a solid line worked together in Multimedia Productions and those connected by a dashed line worked together previously, but not in Multimedia Productions. Only Alison (9/TSC) and Avery (9/A*SC) worked together previously in Multimedia Productions. Addison (10/ATS*) worked with Alicia (10/A*S*) and Annie (10/A*SC) separately outside of this class.
Figure 4.1  Group 1 Students Previously Grouped Together

**Group 2 – WEteam®**

In line with Emergenetics® theory, the same outcomes as Group 1 are expected of Group 2 since it was also organized as a WEteam®. As required in WEteam® construction, each of the four Thinking Attributes was present in Group 2. Unlike Group 1, Group 2 contains only one Multimodal thinker – Ethel (9/A*SC), a Structural/Social/Conceptual thinker. The Structural/Social/Conceptual thinker represents 4% of the population (Browning, 2006). Table 4.4 lists each group member’s specific preferences. Once again, with the exception of first-third Expressives, all behavioral preferences were represented within this group.

Table 4.4
**Group 2 Learning Group Composition**

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Grade</th>
<th>Thinking Attribute Preference(s)</th>
<th>Behavioral Attributes (1st, 2nd, or 3rd –third)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edith</td>
<td>10</td>
<td>AT**</td>
<td>2 3 2</td>
</tr>
<tr>
<td>Elise</td>
<td>10</td>
<td><em>T</em>C</td>
<td>2 2 1</td>
</tr>
<tr>
<td>Ellen</td>
<td>10</td>
<td>**SC</td>
<td>3 2 2</td>
</tr>
<tr>
<td>Erica</td>
<td>10</td>
<td>**SC</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Ethel</td>
<td>9</td>
<td>A*SC</td>
<td>2 1 3</td>
</tr>
</tbody>
</table>

Note. Thinking Attributes: Analytical (A), Structural (T), Social (S), Conceptual (C)

It should be noted that Ethel (9/A*SC) had a life changing experience after her original Profile was established. According to Emergenetics® theory, this can cause a person’s profile to
change. Therefore, the Profile that was used to place her in this group, and used to interpret her behavior may no longer represent her preferred attributes.

Group 2 members’ cumulative grade point averages are presented in Table 4.5 and Figure 4.2 highlights Group 2 students who worked together previously. Elise (10/*T*C), Ellen (10/**SC), and Erica (10/**SC) worked together in a Multimedia Productions group prior to this study. Ethel (9/A*SC) worked with Elise (10/*T*C) out of this class.

Table 4.5
Group 2 Student Cumulative Grade Point Averages

<table>
<thead>
<tr>
<th>Student</th>
<th>GPA</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edith</td>
<td>3.82</td>
<td>A-</td>
</tr>
<tr>
<td>Elise</td>
<td>3.12</td>
<td>B-</td>
</tr>
<tr>
<td>Ellen</td>
<td>3.11</td>
<td>B-</td>
</tr>
<tr>
<td>Erica</td>
<td>3.41</td>
<td>B+</td>
</tr>
<tr>
<td>Ethel</td>
<td>4.00</td>
<td>A</td>
</tr>
</tbody>
</table>

Figure 4.2  Group 2 Students Previously Grouped Together

**Group 3 – Conceptual Learning Group**

The third group was organized around the Conceptual Thinking Attribute (see Table 4.6). Betty (10/***C), and Brooks’ (10/***C) Profiles found them to be Uni-modal, preferring Conceptual thinking and representing only 1% of the population (Browning, 2006). Bailey (9/A*SC), Bonnie (9/A*SC), and Brittany’s (9/A**C) Profiles categorized them as Multimodal thinkers. All behavioral preferences within the Expressiveness attribute were present in Group 3.
However, no third-third Assertives or first-third Flexibles were included. Based on Emergenetics® theory, this group is expected to approach the problem by taking in as much stimulus as possible, mentally exploring all the options, and then walking away from the problem until an answer comes to them. They are not likely to proceed in a linear or logical manner (Browning, 2006).

Table 4.6  
Group 3 Learning Group Composition

<table>
<thead>
<tr>
<th>Conceptual Learning Group</th>
<th>Behavioral Attributes (1st, 2nd, or 3rd-third)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expressive Assertive Flexible</td>
</tr>
<tr>
<td>Student</td>
<td>Thinking Attribute Preference(s)</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Bailey</td>
<td>2</td>
</tr>
<tr>
<td>Betty</td>
<td>3</td>
</tr>
<tr>
<td>Bonnie</td>
<td>3</td>
</tr>
<tr>
<td>Brittany</td>
<td>2</td>
</tr>
<tr>
<td>Brook</td>
<td>2</td>
</tr>
</tbody>
</table>

Note. Thinking Attributes: Analytical (A), Structural (T), Social (S), Conceptual (C)

The cumulative grade point averages of students in Group 3 are presented in Table 4.7.

Figure 4.3 highlights students in the group who worked together on prior Multimedia Productions projects; none of the students previously worked together outside of this class. Bailey (9/A*SC) worked with Brittany (9/A**C) and Betty (10/***C) worked with Brook (10/***C) previously. Bonnie (9/A*SC) had not worked with any of the other students in this group prior to this study.

Table 4.7  
Group 3 Student Cumulative Grade Point Averages

<table>
<thead>
<tr>
<th>Grade Point Average</th>
<th>Student</th>
<th>GPA</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bailey</td>
<td>3.51</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>Betty</td>
<td>3.59</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>Bonnie</td>
<td>2.44</td>
<td>C+</td>
<td></td>
</tr>
<tr>
<td>Brittany</td>
<td>3.33</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>Brook</td>
<td>2.44</td>
<td>C+</td>
<td></td>
</tr>
</tbody>
</table>
**Group 4 – Structural/Conceptual Learning Group**

Group 4 members all exhibited a preference for Structural and Conceptual thinking (see Table 4.8). Chelsea (10/*T*C), Courtney (10/*T*C), and Christy’s (11/*T*C) Profiles were strictly Bi-modal, representing less than 2% of the population (Browning, 2006). Charley (10/*TSC) and Cheri (9/*TSC) were both Multimodal Structural/Social/Conceptual thinkers. All behavioral preferences were represented within this group. According to Emergenetics® theory, work in this group will likely be comparable to “Nailing Jello-O to the wall” (Browning, 2006). It is probable that the group’s diametrically opposite attributes will cause them great difficulty if they are not able to harness their preferences. However, if the group is able to exploit their attributes, the Conceptual part of their brain will likely come up with great ideas, while their Structural preference will sort out the crazy or weird ideas and implement the plan.

<table>
<thead>
<tr>
<th>Structural/Conceptual Learning Group</th>
<th>Thinking Attribute(s)</th>
<th>Behavioral Attributes (1st, 2nd, or 3rd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charley 10</td>
<td>*TSC</td>
<td>Expressive 2, Assertive 3, Flexible 2</td>
</tr>
<tr>
<td>Chelsea 10</td>
<td><em>T</em>C</td>
<td>3, 2, 2</td>
</tr>
<tr>
<td>Cheri 9</td>
<td>*TSC</td>
<td>3, 2, 1</td>
</tr>
<tr>
<td>Courtney 10</td>
<td><em>T</em>C</td>
<td>1, 1, 3</td>
</tr>
<tr>
<td>Christy 11</td>
<td><em>T</em>C</td>
<td>2, 2, 2</td>
</tr>
</tbody>
</table>

Note. Thinking Attributes: Analytical (A), Structural (T), Social (S), Conceptual (C)
Table 4.9 lists Group 4 members’ cumulative grade point averages. Students grouped together on previous projects are illustrated in Figure 4.4. Charley (10/*TSC) and Courtney (10/*T*C) worked together previously outside of this class. None of the students in this group worked together in Multimedia Productions before this project.

Table 4.9
Group 4 Student Cumulative Grade Point Averages

<table>
<thead>
<tr>
<th>Student</th>
<th>GPA</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charley</td>
<td>3.36</td>
<td>B+</td>
</tr>
<tr>
<td>Chelsea</td>
<td>3.87</td>
<td>A-</td>
</tr>
<tr>
<td>Cheri</td>
<td>3.31</td>
<td>B</td>
</tr>
<tr>
<td>Courtney</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Christy</td>
<td>2.71</td>
<td>B-</td>
</tr>
</tbody>
</table>

Note. * GPA not available

Figure 4.4 Group 4 Students Previously Grouped Together

**Group 5 – Social/Conceptual Learning Group**

Establishment of the fifth group was based on preferences in Social and Conceptual thinking. All members of this group, except Francis (10/A*SC), had strictly Social/Conceptual Profiles (see Table 4.10). Social/Conceptual Profiles are found in 12% of the population (Browning, 2006). Francis’s (10/A*SC) Profile showed her to be a Structural/Social/Conceptual Multimodal thinker. No first-third Expressives, third-third Assertives, or second-third Flexibles were present in this group. Based on Emergenetics® theory, this group can be expected to experience a conflict between their desire to be liked and to make everyone happy, and their desire to do what needs to be done to implement their vision (Browning, 2006).
Table 4.10
Group 5 Learning Group Composition

<table>
<thead>
<tr>
<th>Student</th>
<th>Name</th>
<th>Grade</th>
<th>Thinking Attribute Preference(s)</th>
<th>Behavioral Attributes (1\textsuperscript{st}, 2\textsuperscript{nd}, or 3\textsuperscript{rd} –third)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Expressive Assertive Flexible</td>
</tr>
<tr>
<td>Faith</td>
<td>10</td>
<td>**SC</td>
<td>3</td>
<td>2 1</td>
</tr>
<tr>
<td>Fancy</td>
<td>10</td>
<td>**SC</td>
<td>2</td>
<td>1 3</td>
</tr>
<tr>
<td>Faye</td>
<td>10</td>
<td>**SC</td>
<td>3</td>
<td>2 1</td>
</tr>
<tr>
<td>Fern</td>
<td>10</td>
<td>**SC</td>
<td>3</td>
<td>2 1</td>
</tr>
<tr>
<td>Francis</td>
<td>10</td>
<td>A*SC</td>
<td>2</td>
<td>1 1</td>
</tr>
</tbody>
</table>

Note. Thinking Attributes: Analytical (A), Structural (T), Social (S), Conceptual (C)

Students’ cumulative grade point averages in Group 5 are listed in Table 4.11. Figure 4.5 draws attention to students in the group who have worked together previously. Prior to this study, Faith (10/**SC) and Fancy (10/**SC) teamed together and Faye (10/**SC), Fern (10/**SC), and Francis (10/A*SC) worked in a group in Multimedia Productions. Francis (10/A*SC) and Faith (10/**SC) worked together outside of this class.

Table 4.11
Group 5 Student Cumulative Grade Point Averages

<table>
<thead>
<tr>
<th>Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
</tr>
<tr>
<td>Faith</td>
</tr>
<tr>
<td>Fancy</td>
</tr>
<tr>
<td>Faye</td>
</tr>
<tr>
<td>Fern</td>
</tr>
<tr>
<td>Francis</td>
</tr>
</tbody>
</table>

Figure 4.5 Group 5 Students Previously Grouped Together
Group 6 – WEteam® (Randomly Selected)

As mentioned previously, the sixth group was formed by randomly selecting an indiscriminately constructed learning group. Group 6 was found to be a WEteam®, with each of the four Thinking Attributes present in at least one group member (see Table 4.12). Two of these students, Dana (10/ATS*) and Danielle (10/*TSC), were discovered to be Multimodal thinkers. Dana’s (10/ATS*) Thinking Attribute Profile represents 13% of the population, while Danielle’s (10/*TSC) represents 4% of the population at large (Browning, 2006). All behavioral preferences within the Expressiveness attribute were present; however, no third-third Assertives or second-third Flexibles were represented in Group 6. As with Group 1 and 2, it is expected that this WEteam® will create an impressive combination of creative and productive results in accordance with Emergenetics® theory (Browning, 2006).

Table 4.12
Group 6 Learning Group Composition

<table>
<thead>
<tr>
<th>Student</th>
<th>Grade</th>
<th>Thinking Attribute Preference(s)</th>
<th>Behavioral Attributes (1\textsuperscript{st}, 2\textsuperscript{nd}, or 3\textsuperscript{rd} -third)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td></td>
<td>Expressive</td>
</tr>
<tr>
<td>Daisy</td>
<td>9</td>
<td>A<em>S</em></td>
<td>1</td>
</tr>
<tr>
<td>Dana</td>
<td>10</td>
<td>ATS*</td>
<td>3</td>
</tr>
<tr>
<td>Danielle</td>
<td>10</td>
<td>*TSC</td>
<td>2</td>
</tr>
<tr>
<td>Darla</td>
<td>10</td>
<td>**SC</td>
<td>2</td>
</tr>
<tr>
<td>Dawn</td>
<td>9</td>
<td>A**C</td>
<td>2</td>
</tr>
</tbody>
</table>

Note. Thinking Attributes: Analytical (A), Structural (T), Social (S), Conceptual (C)

The cumulative grade point averages of students in Group 6 are presented in Table 4.13.

Figure 4.6 links students who worked together on prior projects. Dana (10/ATS*) worked with Dawn (9/A**C), while Danielle (10/*TSC) worked with Darla (10/**SC) previously in Multimedia Productions. Darla (10/**SC) worked separately with Dana (10/ATS*) and Dawn...
(9/A**C) outside of this course. Daisy (9/A*S*) had not worked with any of the other students in this group prior to this study.

Table 4.13
Group 6 Student Cumulative Grade Point Averages

<table>
<thead>
<tr>
<th>Student</th>
<th>GPA</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daisy</td>
<td>3.85</td>
<td>A-</td>
</tr>
<tr>
<td>Dana</td>
<td>3.68</td>
<td>A-</td>
</tr>
<tr>
<td>Danielle</td>
<td>2.95</td>
<td>B-</td>
</tr>
<tr>
<td>Darla</td>
<td>3.15</td>
<td>B</td>
</tr>
<tr>
<td>Dawn</td>
<td>3.98</td>
<td>A-</td>
</tr>
</tbody>
</table>

Figure 4.6  Group 6 Students Previously Grouped Together

Learning Group Process and Product

In accordance with the stated research question, “How does WEteam® group learning compare with the Emergenetics® STEP™ program’s claimed outcomes,” this study investigated how participating in the STEP™ program and organizing WEteams® might equip students to communicate, solve problems, and reach goals together through stronger, more creative, and productive learning groups. The interactions and feelings of students in each of the six learning groups were examined through observations, personal journals, and interviews to address this issue. The following paragraphs offer a detailed description of each learning group’s experience.

Additionally, this study addressed Emergenetics® claim that organizing groups in WEteams® can produce stronger, more creative, and productive learning groups by considering
the quality of each of the six learning group’s product in light of its specific group composition. The total scores received on the project assessment grading rubrics were used to ascertain the quality of each group’s terminal project (Appendix K). The teacher and investigator’s rubric scores were compared and differences explored in the teacher interview. These data, combined with student journal and interview data, are also presented below to provide the reader with a complete view of each group’s terminal project.

**Project Review**

In learning groups, students designed and produced a public service announcement to educate the public and influence public opinion. The presentation topic and production type was the decision of individual learning groups. Any media covered in the course could be employed to complete this project, including digitized audio, digitized still and motion video, scanned images, and CD technology. Each of the six learning groups was observed during 5 of their 15 class meetings (50 minutes each) across 6 weeks and during presentation of final projects.

**Group 1 – WEteam®**

**Brainstorming.** After the students were placed in groups, they were asked to brainstorm regarding their project topic. Annie (10/A*SC), Alison (9/*/TSC), and Avery (9/A*SC) began proposing and discussing various ideas for their project topic and choice of media. Addison (10/ATS*) and Alicia (10/A*S*) appeared to contribute little to the conversation. Examination of the students’ daily journals, however, revealed all members felt the group worked well together and participated suitably. Addison (10/ATS*) wrote, “My group is awesome!...We got a lot accomplished today. We thought of our group name, what we will be doing our video on and the song we will be using. I can’t wait to start the video …” Annie (10/A*SC) corroborated these feelings of group satisfaction by writing “Our group worked well together and got a lot accomplished. I think we’re going to work AWESOME together – love the group,” and Alison
(9/*TSC) wrote, “Today our group accomplished a lot of things. Everyone participated and we have all of our information gathered.”

**Planning for Production.** While planning for production, Annie (10/A*SC) and Alison (9/*TSC) lead the discussion. They offered a majority of the ideas and passed judgment on those ideas suggested by other members. For instance, when the teacher recommended the group add an additional verse to their anti-drug song, Annie (10/A*SC) and Alison (9/*TSC) resisted. Alison (9/*TSC) said, “It’s going to mess up the song.” Annie (10/A*SC) added, “We have already said all we need to say.” In contrast, Avery (9/A*SC) offered a suggestion for additional lyrics that was quickly rejected by Annie (10/A*SC) saying, “Oh, please no. That is gross. I don’t want to see a trace of that line …” Avery (9/A*SC), however, did not let this deter her from continuing to offer ideas. It is worthy to note that in spite of this cognitive conflict, Alison (9/*TSC) wrote in her journal, “We all talked together about pictures that we are using and how we are going to do it.” In addition, Avery (9/A*SC) wrote, “We are doing great. We have everything planned… I’m really happy about my group.”

Addison’s (10/ATS*) major contribution in production planning was not the generation of ideas but the providing of technical support. For example, she showed other group members how to search for photos stored on the school’s network. In her journal, she wrote the group continued to work well together during production planning.

Alicia (10/A*S*) interacted little with the other group members, but did ask the teacher questions to clarify the boundaries of the project. Her contributions included inquiring about the length of the video and explaining the group’s project idea to the teacher. This was interesting because in Alicia’s (10/A*S*) journal she wrote, “Our group always has good ideas. We tell each other if we like them and if we want to use them. But some people don’t contribute to the ideas.” In contrast, Annie (10/A*SC) wrote:
Today we decided what we would include in our video. We got everything done in ample time and worked together. No one was left out of the group, and everyone had their input.… I love our group because we all like to get things done right away and work well together.

**Film Production.** Annie (10/A*SC), Alison (9/*TSC), and Avery (9/A*SC) contributed most to the filming of the group’s video. Annie (10/A*SC) and Alison (9/*TSC) directed and took the lead roles in the video. Avery (9/A*SC) procured the video equipment and was in charge of filming. Addison (10/ATS*) and Alicia (10/A*S*) appeared in a small role in the video, but only participated after they noticed the investigator observing their group. Prior to seeing the investigator Addison (10/ATS*) and Alicia (10/A*S*) were not interacting with their group; instead they were across the school courtyard talking to another group of girls.

Once again, Annie (10/A*SC) and Alison recorded in their journals everyone participated and worked well together. In fact, Annie (10/A*SC) noted:

> We all participated and worked well together as usual. Our group gets along very well because we’re all willing to work to get things done when they’re supposed to be. We all had ideas and tried to use them all. Today was successful.

Alicia (10/A*S*), on the other hand, stated she did not really like what the group was doing and Addison (10/ATS*) admitted she “could have focused more.”

**Song Production.** The teacher suggested the group produce their song with a program called Acid and explained how to use the program. Alison (9/*TSC) and Addison (10/ATS*) seemed interested and agreed they could use the program. Annie (10/A*SC), on the other hand, resisted the teacher’s suggestion saying they already had a song and just needed to change the words. Eventually, Annie (10/A*SC) agreed to try to use the program. All of the group members assembled around one computer to build their track of music. According to Addison (10/ATS*), “[the] group has continued to work well together…. We all worked together to put the background music [together]. We all had a say in putting the music together.” Alicia
(10/A*S*) concurred, writing “…we all collaborated on the music; the way it sounded.” During observation, it was noted that Alicia (10/A*S*) directed the computer and Addison (10/ATS*) helped her navigate the program. Annie (10/A*SC), Alison (9/TSC), and Avery (9/A*SC) suggested various music clips, with Annie (10/A*SC) choosing most of the clips for their song. Annie (10/A*SC) also took over editing the background music, while the rest of the group watched. It was later discovered that the background track was not saved.

When asked by the teacher who would be singing the lyrics, Annie (10/A*SC) pointed to the other group members and Alicia (10/A*S*) stated, “I am not a very good singer.” However, Avery (9/A*SC) quickly responded to the teacher everyone would be singing. With this proclamation, all group members went to the teacher’s office to begin recording the lyrics. The teacher went with the group to help them get set up. When he asked questions regarding the length of the song and what recording program they were going to use, Annie (10/A*SC) responded. Interestingly, Addison (10/ATS*) wrote in her journal, “We decided as a group to all sing the song.”

Alicia (10/A*S*) suggested the group use one microphone. Avery (9/A*SC) offered help regarding how the equipment works and guided the group by asking them to think about how the song would be sung before they started. Annie (10/A*SC) then suggested they “…just do it like [they] were going to.” Following this statement, she directed the group to start singing when she pressed the start button. All of the girls complied, but were quickly halted by Annie (10/A*SC) when Alison (9/TSC) started laughing. Annie (10/A*SC) yelled, “We have to restart. No laughing!” The group complied. After the recording was finished, Alicia (10/A*S*) and Avery (9/A*SC) both criticized the product. Avery (9/A*SC) said, “It doesn’t go with our beat at all.” “Let’s just see,” Annie (10/A*SC) replied; however, the teacher also suggested the group try one more time. With this, the group proceeded to rerecord their lyrics. Rerecording the lyrics took
numerous attempts because Alison (9/TSC) kept laughing. She tried to blame her laughing on Annie (10/SC), but other group members were aware of her actions and became understandably frustrated. Avery (9/SC) told her to stop laughing with Alicia (10/S*) adding “…concentrate!” Annie (10/SC) recommended a number of other ways to record the song, but each resulted in Alison (9/TSC) erupting in laughter. Finally, Annie (10/SC) demanded Alison (9/TSC) leave the group and the class period ended without a usable recording.

Only two group members mentioned the problems the group had recording. Avery (9/SC) wrote, “We did our song, and had some trouble because we kept laughing. But we still worked good together, and we are almost finished.” Alison (9/TSC) also wrote, “We all sang, but some people were laughing too much.” Neither of the girls was specific about which girl caused the disruption. Addison (10/TS*) went as far as to write, “I am very happy with the outcome of today. We got a lot accomplished!” Annie (10/SC) did not record in her journal.

The group tried several more times over the next several meetings to record usable lyrics, while Annie (10/SC) worked on editing their video. Off-task behavior was not the cause of the unusable lyrics that resulted from these sessions; it was technical difficulties. In Avery (9/SC) and Alison’s (9/TSC) journals they wrote the group was frustrated because they could not figure out how to change the recording volume on the computer and the teacher was not there to help. Alicia (10/S*) offered a suggestion on how to possibly fix the problem, but they were not successful. Eventually, however, Alison (9/TSC) discovered there was a button pushed on the computer that was making it record their singing so low that it was inaudible. With this problem fixed, the group was able to record their lyrics.

Once the group prepared an audible recording, Alison (9/TSC) played it for Annie (10/SC). Alison (9/TSC) pointed out the areas that needed revising and Avery (9/SC)
suggested they record the lyrics with the music so they would be in sync. Annie (10/A*SC) agreed and directed them to go rerecord. Alison (9/*TSC) and Avery (9/A*SC) complied, and went to the teacher’s office to record. Alicia (10/A*S*) and Addison (10/ATS*) did not go with them and a few minutes later Alison (9/*TSC) returned to the classroom. When Annie (10/A*SC) told her again to go record, she said they could not without Alicia (10/A*S*) and Addison (10/ATS*). At once, the two girls followed Alison (9/*TSC) to help.

Annie (10/A*SC) noted in her journal that Alicia (10/A*S*) did not participate much in the lyric recording session previously described.

She seemed really tired. So she didn’t do much. I cut the video and put it all together while [Avery] and [Alison] tried to figure out the song that we needed to figure out. Everyone besides [Alicia] worked hard and tried to get things done. She probably was just having an off day.

Annie (10/A*SC) did not mention specifically how Addison (10/ATS*) contributed to the production. Addison (10/ATS*) wrote “...as a group we tried to figure out how we could record the song. We all sang the song.... [The] four of us decided to record the song again.”

Postproduction. According to Addison (10/ATS*), the group decided in week 5 it was time to start making cuts to their video. Addison (10/ATS*) uploaded the video to the school network and Annie (10/A*SC) edited it to match their song. It was during postproduction the group realized the background music they created had been lost. Annie (10/A*SC) stated, “We didn’t save it.” Since time was limited, they imported the song they initially proposed and edited it to include only the instrumental parts of the music.

Annie (10/A*SC) wrote in her journal, “We’re having a few problems with the music not being the right tempo. But, I think we have it figured out.” Therefore, the rest of the group worked on rerecording the lyrics, while she edited the video. Addison (10/ATS*) illustrated her appreciation for Annie’s (10/A*SC) contribution by writing, “[Annie] really helped out today
and it will help us finish our video on time. I feel really good about our video now.” Alicia (10/A*S*), on the other hand, wrote “…we weren’t really getting our ideas out.”

**Product.** Both the teacher and investigator rated the group’s anti-drug video a B. The teacher scored the group one scale lower than the investigator in creativity and design, mechanics, and teamwork. The teacher and investigator’s grading rubrics may be found in Appendix K.

In the teacher’s interview, he commented the group did an okay job; their video was average. He felt the students in the group were some of his “smarter girls” and they “just didn’t live up to their potential.” The teacher said he told the group several times they needed to fix their audio. He encouraged them to “come in after class, on their off hour, or whenever, and fix it,” but they did not comply. The teacher believed the reason the group’s audio would not work was because they could not stop laughing – “They couldn’t stop cutting up when it was time to.”

Group members’ opinions varied regarding the project’s quality. Alison (9/*TSC), Alicia (10/A*S*), and Annie (10/A*SC) declared the final video “turned out good.” Specifically, Alicia (10/A*S*) felt the video conveyed the point the group wanted to make. Nonetheless, Alison (9/*TSC) and Annie (10/A*SC) admitted there was a problem with the microphone the teacher wanted the group to fix. Alison (9/*TSC) maintained there was not enough time left in the project to address the problem. Both girls agreed even though there were “difficulties with the music,” the project came out nice. Yet, Annie (10/A*SC) commented, “…we had higher expectations…” Addison (10/ATS*), on the other hand, thought the final product could have been a lot better. She stated, “…the video was okay. …but we got kind of lazy towards the end.” Alternatively, Avery (9/A*SC) felt the video was “stupid,” but the group had done the best they could with the time allotted.
When asked if their last Multimedia Productions group was more productive than this group, Alicia (10/A*S*) and Annie (10/A*SC) both stated the current group was more productive. Alicia (10/A*S*) asserted her previous group members “didn’t really want to work” and she had to “push” them to complete the project. Alison (9/*TSC) and Avery (9/A*SC) felt both groups were the same with regard to productivity. Alison (9/*TSC) elaborated, saying both groups accomplished “things” and were productive. Addison (10/ATS*), however, considered her previous group to be more productive because she knew its members better.

**Group 2 – WEteam®**

**Brainstorming.** Before the group began brainstorming, Ellen (10/**SC) asked about their Profiles. The group discussed their preferred attributes for a short time and proceeded to brainstorm on a group name and project topic. Immediately, Elise (10/T*C) gave the group a name – Cotton Mouth Queens. Erica (10/**SC) dismissed her suggestion and asked the entire group to suggest a name. Elise (10/T*C) forcefully said, “I told you…!” To which Erica (10/**SC) retorted, “No one else wants that!” With this, Ellen (10/**SC) left the group and began writing ideas on the teachers dry-erase board. Erica (10/**SC) soon joined her and together they came up with the project topic of anti-laptops.

Subsequently, Elise (10/T*C) shouted various group names at the two girls. Eventually, Ellen (10/**SC) yelled back at her “No!” Erica (10/**SC) added, “We are getting away from the meaning.” She followed by asking the teacher to help them with their name. Elise (10/T*C) responded by continuing to insist the group be named Tater Tops and yelled Ethel (9/A*SC) agreed with her. In reality, Ethel (9/A*SC) nor Edith (10/AT**) said anything while Elise (10/T*C) was arguing for her suggestion. Ellen (10/**SC) ultimately proclaimed, “Losers love laptops is our motto.” Elise (10/T*C) wrote in her journal she thought the name “…suck[ed] but no one care[d]. Tater tops would have been a better choice.”
In Ellen’s (10/**SC) journal she made no mention of the conflict within the group. In fact, she wrote, “So far our group is working well together. We have good ideas…. I’m excited!” Edith (10/AT**) sustained this view writing, “I think our group is going to work well together. We seem to agree with each other and come up with good ideas.” Ethel (9/A*SC), however, felt differently:

Today was chaotic. I think our group will be able to get things done, but it just may take our group longer than the others and we may not be able to stay focused on the task at hand. [Elise] and the rest of the group obviously do not get along and I, being a freshman, may not be as opinionated in the group as others may be.

Erica (10/**SC) agreed writing, “My group is very unique. [Elise] will be hard to work with. She is very opinionated.” Elise (10/*T*C) had a different opinion, writing “...I can compromise.”

**Planning for Production.** At the beginning of the class period when the group was supposed to be planning for production, they were conversing about teachers at the school and playing a game on the computer. The teacher brought the group back to task by saying, “It looks like [this group is] a little behind.” Erica (10/**SC) replied, “This group sucks. I don’t know what we are doing.” She wrote in her journal the group was frustrated and could not decide together what theme they wanted. Elise (10/*T*C) interjected the group was anti-laptops. With this statement, Erica (10/**SC), Elise (10/*T*C), Edith (10/AT**), and Ellen (10/**SC) began putting forward various ideas for the project’s development. The teacher asked Ethel (9/A*SC) what she thought and she responded, “I don’t know.” In her journal, she was more open:

Today, I thought that our group started off bad because we couldn’t think of anything to do and we were all out of ideas. Then I thought that people didn’t really seem to care about the whole thing so they didn’t really work hard, and I admit that I didn’t either.

Once the group decided how they wanted to portray their topic, they began discussing the media they would choose to convey this idea. Elise (10/*T*C) suggested they use film,
however, Erica (10/**SC) and Ellen (10/**SC) thought photos were a better choice. Erica (10/**SC), Ellen (10/**SC), Edith (10/AT**), and Ethel (9/A*SC) proceeded to probe the teacher for more information about using photos to complete the project. This enraged Elise (10/*T*C), who started complaining that video would be a much better choice. Ellen (10/**SC) reacted, “Whatever! But, I am not editing it and I am not teaching you how.” To which Elise (10/*T*C) replied the teacher would do the editing. She then complained to the teacher that the group did not like her idea about using video. The teacher asked if that meant she was just not going to do anything and she responded, “Yeah, my other grades will bring it up.” In Elise’s (10/*T*C) journal, she wrote:

[Erica] hates my ideas. I try so hard to have so many ideas. And no one in my group appreciates me…. I gave many ideas and none of them were honored. So why even say anything? This is a destined to fail group.

However, Ellen (10/**SC) wrote she did not feel Elise (10/*T*C) worked at all.

Erica (10/**SC) and Ellen (10/**SC) storyboarded the project idea and then presented it to the group. Elise (10/*T*C) once again responded Edith (10/AT**) and Ethel (9/A*SC) also had ideas, but were scared to offer them. Erica (10/**SC) asked Ethel (9/A*SC) if this was true, and she replied, “No.” Elise (10/*T*C) continued to insist it was true. In her journal, however, Ethel (9/A*SC) made her feelings clear:

… [Elise] is bringing down the group and isn’t contributing because she complains when things don’t go her way like she always wants. Toward the end of class I thought we started to get some ideas together and finally started working together to get something done.

Edith (10/AT**) also acknowledged the group had some disagreements, but felt they were settled. She went on to write, “I think our project will go well if we all work together.” Ellen (10/**SC) supported the overall positive feeling by writing, “Today was a good day. We got a
lot done and all of our ideas organized. [Elise] didn’t work… But it’s okay because we have
good ideas now.”

**Photo Production.** On the first day of production, the group spent about 10 minutes
taking pictures around campus. When they returned to the classroom, the teacher looked at their
pictures and said they had some good shots. Ellen (10/**SC) continued setting up and taking
pictures in the classroom. Erica (10/**SC) and Ethel (9/A*SC) watched her, while Edith
(10/AT**) and Elise (10/*T*C) engaged in conversation with other classmates. Ethel (9/A*SC)
remarked, “Today my group worked well together…. There wasn’t near as much tension in our
group today as there has been in times before.”

At the beginning of the class period on the second day of production, Ethel (9/A*SC) was
working on the teacher’s printer and Elise (10/*T*C) was talking with another group. Erica
(10/**SC) and Ellen (10/**SC) discussed what pictures they still needed and decided to look for
an empty classroom to shoot the pictures. Erica (10/**SC), Ellen (10/**SC), and Edith
(10/AT**) left to work on the project.

Erica (10/**SC) wrote in her journal, “My group is getting along more and we are getting
things done. Today we broke into two groups. Me, [Ellen], and [Edith] went and took pictures.
[Elise] stayed in the multimedia room and did homework.” Ethel (9/A*SC) and Elise (10/*T*C)
viewed the situation somewhat differently. Elise (10/*T*C) wrote:

> Things are going pretty well for our group. Today I was sitting here and I was looking
> around, looking for my group!! [Ellen] and [Erica] and [Edith] left me and [Ethel] and
> went off and took pictures. But, oh well. I would have gone if I had known, but I didn’t
> know. I will help with the other stuff.

Ethel (9/A*SC) corroborated this view, writing:

> Today I didn’t get to work with the group because they left without telling me or [Elise]
> that they were leaving. It was fine with me because I had a test the next hour, but I wish
> that they would have [at] least made it known to me that they were leaving so I would
> have at least had a chance at being part of the work too.
However, when the investigator interviewed Ethel (9/ASC) and asked if the other group members tried to include her, she responded, “…if I wanted to I could. I wasn’t left out… but if I wasn’t there they’d just go on.”

While setting up to take the first pictures, Erica (10/**SC) stated, “Half our group isn’t even here. Story of my life.” She proceeded to direct Ellen (10/**SC) and Edith (10/AT**) on how to pose for the scene and then asked the investigator to take the picture stating, “We all need to be in it.” After the picture was taken, Erica (10/**SC) and Ellen (10/**SC) discussed other possibilities for photos. Edith (10/AT**) admitted she did not understand the point behind the pictures. Ellen (10/**SC) tried several times to explain to her they were campaigning against laptops, but Edith (10/AT**) continued to indicate she did not understand. Erica (10/**SC) and Ellen (10/**SC) continued to set up shots and Edith (10/AT**) acted in the scenes as she was directed. In the end, it was Erica (10/**SC) who decided the group had enough pictures. All three of these students wrote in their journals they worked well together to complete the photos. Specifically, Ellen (10/**SC) wrote:

I am still enjoying my group. We work really well together. [Ethel] and [Elise] don’t really do anything…. [Erica, Edith and I] laughed and had a good time. We work really well together because we like to get things done. I’m really enjoying this project!

**Postproduction.** At the end of production, Edith (10/AT**) uploaded the groups picture on to Erica’s (10/**SC) computer. While she was in the process of uploading, the class ended. The rest of the group left, but she stayed and completed the task.

At their next meeting, Erica (10/**SC), Ellen (10/**SC), and Edith (10/AT**) began editing their pictures in PhotoShop and building a slideshow for their project presentation. Erica (10/**SC) and Ellen (10/**SC) worked individually on their computers to find music for the slideshow, while the teacher showed Edith (10/AT**) how to add a lower third logo to pictures.
While creating the logo boxes, Edith (10/AT**) declared she did not understand why they were creating the logo boxes. Ellen (10/**SC) explained the boxes are used to add captions to photos and offered to help. Erica (10/**SC) and Ellen (10/**SC) then joined Edith (10/AT**) to help her finish creating the logo boxes. Next, the three girls worked together to compose captions for each picture included in the slideshow. At one point, they had difficulty spelling “carpel tunnel.” From outside the “group,” Elise (10/T*C) offered the correct spelling. Erica (10/**SC) chose to look it up on her own anyway.

Ethel (9/A*SC) and Elise (10/T*C) did not join the “group.” In her journal, Ellen (10/**SC) acknowledged she, Erica (10/**SC), and Edith (10/AT**) “…basically did the whole project.” Nevertheless, she insisted she loved working in the group and they worked well together. However, she then pointed out she “…worked well mostly with [Erica] and [Edith].” Ethel (9/A*SC) wrote, “Today we all got along but that was because we all did our own thing…” Elise (10/T*C) asserted “[Erica] and [Ellen] yelled at [her] about not doing that much.” She added, “Oh well, I did what I could.” The investigator observed no yelling or confrontation.

**Product.** The teacher and investigator both rated this group’s anti-laptop photo slideshow a B also. In this case, the teacher scored the group one scale higher than the investigator in mechanics, content, and oral presentation. The teacher mentioned he was surprised “they did a good job with their pictures” because the group was composed of a majority of “slack- ers.” Specifically, he named Elise (10/T*C), Ellen (10/**SC), and Erica (10/**SC) as students who do not normally “do a lot; they don’t care…” The teacher summarized his opinion of the group’s project as “creative in spots, but poorly presented.” He sensed the group put the final photo slideshow together at the last minute.

The investigator’s view of the group’s product was similar to that of the teacher. The photos were of high quality, but the slideshow presentation lacked organization. For example,
when the group presented the project to the class, Elise (10/T*C) insisted they had a song to play with the pictures. Erica (10/**SC) quickly shouted, “No! Veto! All against raise your hand.” Elise (10/T*C) continued to insist, but the group moved on to the presentation. During the presentation, the group offered little explanation regarding the pictures and the captions were difficult to read. Erica (10/**SC) even made note of the small print asking the class, “Can y’all read that?”

Each member of the group rated the final product as good or better. In particular, Erica (10/**SC) rated the project’s quality a B. She felt the “fact” that Elise (10/T*C) “refused” to work with her affected the project adversely. Ethel (9/A*SC) agreed the final project “turned out good, not outstanding, but just good.” She stated she did not think Elise (10/T*C) and Erica’s (10/**SC) dislike for one another “affected the progress of the project, but it affected the amount of teamwork.” Edith’s (10/AT**) opinion was the project was good for what they did and Elise (10/T*C) claimed the group did not have a lot of time but the project made its point. Ellen (10/**SC) was the most optimistic asserting, “The final [product] was very funny, and well put together.”

The majority of the group felt their last Multimedia Productions group was less productive than this group. Interestingly, Elise (10/T*C), Ellen (10/**SC), and Erica (10/**SC) were a group prior to this project. Ellen (10/**SC) noted in their previous group it took a “really long time to get a sample project done.” Elise (10/T*C) remarked, Ellen (10/**SC) and Erica (10/**SC) “always fought and there was no middle person” like Edith (10/AT**) and Ethel (9/A*SC) in the current group. Ethel (9/A*SC) also felt her previous group was less productive because she “did all the work” and the other member “didn’t do anything.” Edith (10/AT**), however, deemed her previous group more productive because the group had more time to work, allowing them to be more prepared.
Group 3 – Conceptual Learning Group

**Brainstorming.** When placed in their learning group, these students did not immediately start brainstorming. Instead, Betty (10/***C) and Brook (10/***C) went to the teacher’s dry-erase board and wrote a group name Brook (10/***C) had suggested. Bonnie (9/A*SC), Bailey (9/A*SC), and Brittany (9/A**C) sat quietly by themselves.

After leaving the board, Brook (10/***C) started talking with another group. With this, Betty (10/***C) asked the investigator if she was “writing bad stuff.” The investigator replied she was only writing what she observed. Subsequently, Betty (10/***C) engaged the teacher, Brook (10/***C), and Bonnie (9/A*SC) in a conversation about a local morning radio talk show. The exchange did not deal with the assigned project. Bailey (9/A*SC) acknowledged the situation and said to the investigator, “We’re out of our group. Write that down.” Then, she and Brittany (9/A**C) left the classroom. This may have been what Betty (10/***C) was referring to when she wrote in her journal, “I can tell [Bailey] is going to get on my nerves. This should be interesting. I have trouble holding my tongue with those kind of people.” However, Betty (10/***C) and Bailey (9/A*SC) both wrote in their journal the group worked well together.

Ultimately, the teacher stopped the conversation about the radio show and asked who was going to keep this group on track. Brook (10/***C) volunteered. Betty (10/***C) then asked, “Now, where did the rest of our group go?” At this moment, Bailey (9/A*SC) and Brittany (9/A**C) returned to the classroom. Betty (10/***C) informed them and the teacher of their project topic. The investigator did not observe the group discussing this idea, nor did any of the group members mention it in their journals. It should be mentioned that neither Brook (10/***C) nor Brittany (9/A**C) submitted any journals during the study.
Next, the teacher asked for more explanation regarding the idea, and Brook (10/***C) obliged. This sparked a conversation concerning the specifics of the project that included participation by everyone except Bonnie (9/A*SC).

At the next class meeting, the group once again did not immediately start working on their project. Betty (10/***C) left the classroom to get the group snacks while the rest of the group conversed on various topics, none of which related to the project. When Betty (10/***C) returned, she brought the group back to task asking, “Are you writing stuff down? We need to get started.” She took out a piece of paper and asked the group what they were going to do. At that time, Brook (10/***C) turned to the investigator and said, “Are you writing about us? That makes me nervous.”

The teacher soon joined the group, asking what medium they were going to use for the project. Brook (10/***C) suggested a cartoon. The teacher followed up by asking if anyone in the group drew well. When it was discovered that no one in the group was blessed with a talent in drawing, Betty (10/***C) asked the teacher how it could be done. During this inquiry, Bailey (9/A*SC), Brittany (9/A**C), and Brook (10/***C) engaged in off-topic conversation.

After the teacher and Betty (10/***C) finished their discussion, Betty (10/***C) announced “Alright, back to business.” Turning to another group of students that were talking to Bailey (9/A*SC), Brittany (9/A**C), and Brook (10/***C) she said, “Could you please quit distracting us. See, we can’t get an idea for our public service announcement with y’all distracting us.” She proceeded to bring the group back to task, telling Bailey (9/A*SC) to turn around and asking if the group wanted to continue with the animation idea.

With the group back on task, a productive discussion ensued. Bailey (9/A*SC) and Brook (10/***C) each offered plausible ideas. Betty (10/***C) probed the group for more detail with each idea. When Bailey (9/A*SC) suggested suicide as the groups topic, Betty (10/***C)
replied it was too controversial and could not be animated. Bonnie (9/A*SC) disagreed, stating “…you don’t have to show the person dying. Just the family crying.” However, the group moved on to another topic. Brook (10/***C) recommended MySpace. Brittany (9/A**C) aided in the probing by asking what the theme would be if they chose MySpace. Betty (10/***C) interjected, “MySpace is Everyone’s Space.” Brook (10/***C) reacted, “Okay, we need a skit.”

**Planning for Production.** Once the group chose a topic their ideas began to flow. Everyone in the group, with the exception of Bonnie (9/A*SC), contributed thoughts concerning what the project should convey to the viewer. When they had a clear picture of the project’s message, Betty (10/***C) directed them to storyboard. Bailey (9/A*SC) commented she was not a very good artist and asked Betty (10/***C) if she would construct the storyboard. Betty (10/***C) agreed. Brittany (9/A**C) described what she thought should be the first scene and the other group members offered details. Bonnie (9/A*SC), however, did not understand the concept behind the first scene. They worked together to explain to her that it depicted a predator on the Internet. Betty (10/***C) noted in her journal, “Our group worked well together… I guess [Bailey] is pretty cool. I think we’ll get along okay.”

The group started their second day of production planning by watching a video about MySpace. Bailey (9/A*SC) cued the video on her computer for the group to view. Betty (10/***C) was distracted from the video by a classmate playing Dance Dance Revolution (DDR), however, Brook (10/***C) brought her back on task. While the group watched the video the teacher asked, “How is the project coming?” Brook (10/***C) replied the video was inspiration for their project. Then she asked the investigator if she had written anything about her.

A few minutes later, the teacher asked the group again how they were coming along. Betty (10/***C) answered they were getting nothing done because they were too busy watching
the video to do their own project. Bailey (9/A*SC) interjected, “We only need about three more frames.” With this, the teacher asked the group to explain their idea to him. Betty (10/***C) proceeded to detail the storyboarding the group had already completed, while Brook (10/***C) added details.

The teacher asked, “What’s next?” Bailey (9/A*SC) offered a suggestion which started her, Betty (10/***C), and Brook (10/***C) discussing additional frames. Bonnie (9/A*SC) asked them to explain one of the ideas they were discussing and they did. Betty (10/***C) added, “Who’s storyboarding? [Brook]?” Brook (10/***C) agreed. Betty (10/***C) proceeded to make a list of materials the group needed for each shot. Brittany (9/A**C) did not take part in this session of storyboarding.

**Photo Production.** Bailey (9/A*SC) decided she was going to take the first photo. Betty (10/***C) told her they were not ready to begin taking photos, but Bailey (9/A*SC) took a picture anyway. Commenting on the photo, Brook (10/***C) said, “No, it has to look like a MySpace picture.” Betty (10/***C) and Brook (10/***C) agreed the photo subject (their teacher) should take his own picture. Everyone in the group participated in instructing the subject on how to pose and how to capture the photo.

The group’s second day of production started with Betty (10/***C) and Brook (10/***C) leaving the classroom to get snacks. The girls were gone about 15 minutes, during which time the rest of the group was also off task. Brittany (9/A**C) was absent from school.

When Betty (10/***C) and Brook (10/***C) returned to the classroom, Betty (10/***C) said, “Okay, are y’all ready?” At that time, Bailey (9/A*SC) pulled up the pictures that had been taken during the previous work session and showed them to Betty (10/***C). Bailey (9/A*SC) had taken the pictures home and her sister, a high school senior who knew how to use PhotoShop extensively, helped her edit. Betty (10/***C) pointed out the pictures she thought were the best.
Brook (10/***C) followed with, “Hey, what’s her name? [Bailey], can you send those pictures to me so we can get it on this computer?” Bailey (9/A*SC) complied.

**Film Production.** The group developed their MySpace site in the teacher’s office, where the school’s firewall did not block the site. Brook (10/***C) volunteered her MySpace account, but Bonnie (9/A*SC) suggested they create an original MySpace site. Brook (10/***C) explained to create and populate a new MySpace account would take too long. Afterward, Brook (10/***C) proceeded to add Bailey’s (9/A*SC) edited pictures to her MySpace account. Brook (10/***C) continued to edit the MySpace site, using the suggestions offered by Betty (10/***C) and Bailey (9/A*SC). Bailey (9/A*SC) also provided technical support, showing Brook (10/***C) how to use safe mode and add code to the site. Betty (10/***C) wrote in her journal the group worked well together again today.

On the final day of production, Betty (10/***C) and Bailey (9/A*SC) set up the video equipment in the teacher’s office, while Brook (10/***C) added the finishing touches to their MySpace site. Brittany (9/A**C) stayed in the classroom, working on something not related to the project. When the group was ready to film, Brittany (9/A**C) had still not joined the group. As a result, Betty (10/***C) directed Bonnie (9/A*SC) to act in the part that Brittany (9/A**C) was originally supposed to play. However, Brittany (9/A**C) showed up before they began filming and Betty (10/***C) told her to hurry up and get ready. Bonnie (9/A*SC) moved away from the computer, so Brittany (9/A**C) could take her place. Brook (10/***C) filmed the scene.

Bailey (9/A*SC) summoned the teacher to take part in the next scene. Brook (10/***C) and Betty (10/***C) directed him in his part, with Betty (10/***C) giving most of the directions. Brook (10/***C) filmed the scene. After the scene was finished, Betty (10/***C) noticed Brittany (9/A**C) had left the room again. When she returned, everyone in the group instructed
her on how to act out the scene. Once again, Betty (10/***C) provided most of the direction. Bonnie (9/A*SC) suggested they cover the door window, but Betty (10/***C) explained it needed to be open so they could capture the actor’s face. Again, Brook (10/***C) filmed the scene.

After they finished filming the previous scene, Brook (10/***C) asked the group “What else do we need?” The teacher responded they needed to take a picture of Brittany (9/A**C) up close. Brook (10/***C) reminded Betty (10/***C) they also needed to film the dialog. Betty (10/***C) responded she did not feel like being on video today, but complied anyway. Brook (10/***C) was filming Betty’s (10/***C) dialog when the bell signaling the end of the class period rang. The rest of the group left the classroom while Brook (10/***C) and Betty (10/***C) finished filming. Betty (10/***C) wrote in her journal, “Everyone worked well together. We definitely made progress.”

**Postproduction.** No postproduction was observed by the investigator, however, the photos were edited during production and Bailey (9/A*SC) wrote the film was edited in Adobe Premiere. Betty (10/***C) had previously mentioned, when Brook (10/***C) expressed concern the film might not be finished in time to edit, it would not take long to edit since it was only a 30-second video. In addition, the teacher provided the group editing suggestions during production. Betty (10/***C) later recorded she and Brook (10/***C) edited the video, and “everyone else just sat around and did nothing.” However, Brittany (9/A**C) wrote only Brook (10/***C) edited the film. Interestingly, when asked to journal about her responsibilities towards completion of the project, Bonnie (9/A*SC) wrote she also helped edit the movie.

**Product.** Even though their scoring rubrics varied slightly, the teacher and investigator agreed this group produced the best product when compared to the other group products. The teacher highlighted the group had successfully carried over previously learned concepts, such as
framing, to the new project. This surprised him since, according to him, Betty (10/***C) and Brook (10/***C) are usually “cut-ups” and “all about slacking.”

The teacher placed the group one scale lower than the investigator in creativity and design and mechanics. He sensed the group may have “dreamed of [the video] being a little bit bigger, like more of a story line to it and all, but they didn’t have time.” Bailey (9/A*SC), Bonnie (9/A*SC), and Brittany (9/A**C) echoed this sentiment in their final journal, each stating the project turned out good but their previous group project had been of higher quality because they were given more time to complete the assignment. Bailey (9/A*SC) added her previous group “slacked less.” Neither Betty (10/***C) nor Brook (10/***C) submitted a final journal, therefore it was not clear how they felt about the final video.

**Group 4 – Structural/Conceptual Learning Group**

**Brainstorming.** The group started the brainstorming session by talking about their individual profiles. Everyone contributed except Christy (11/*T*C); she had left the classroom to work on something other than this project, but returned during the conversation. Chelsea (10/*T*C) divulged she hates to be late and Charley (10/*TSC) disclosed she has to be organized but her room has to be messy. Through this discussion, the group became aware they each possessed a preference for Structural thinking. They did not discuss the fact they all also possessed a preference for Conceptual thinking.

Next, the group turned their attention to choosing a project topic. Cheri (9/SC) was the first group member to offer a suggestion. Charley (10/SC) and Courtney (10/T*C) joined the discussion, ultimately suggesting the group’s topic of promoting natural beauty. During the discussion, Cheri (9/TSC) became off task and started talking to the teacher about an incident that occurred earlier in the school year. She eventually returned to the group and asked, “So, what are we doing?”
According to each student’s journal, Christy (11/T*C) also made suggestions pertaining to the project topic and group name, however, they were very different from the rest of the group. Courtney (10/T*C) noted, “We have decided to support natural beauty. [Christy] wanted to do something about j-rockers. She wanted the name The Movie Patrons so that is what our name is.” Charley (10/TSC) wrote, “I think our group members are good, but [Christy] seems a little in control at times and that may be a conflict.” Cheri’s (9/TSC) opinion of the situation differed, writing “… [Christy] had a different idea from us, but she agreed to do our idea.” Chelsea (10/T*C) attributed the “trouble figuring out a topic” to a difference of “likes and hobbies”; she never mentioned anyone by name.

Christy (11/T*C) did not submit any journals, but was interviewed by the investigator at the end of the project. In her individual interview, she stated she felt as if she were giving ideas and everyone else was “sitting there shooting them down like, I don’t really like that, so I don’t want to do it.” Chelsea (10/T*C) noted in her interview she felt like she had to say no to Christy (11/T*C) because no one else would say anything. Christy (11/T*C) later declared:

…”I kind of felt like that with some people in my group anything I said, they were going to look at me like, wow, you’re weird. And I don’t mind being called weird, but I didn’t feel like I was being heard. And I’m the kind of person if I’m not going to be heard, then I’m not going to speak.

She went on to say, “…they didn’t want to take risks. I felt like my group didn’t want to do anything that stretched them out of their comfort zone.” Christy (11/T*C) believed the way the group’s topic was finally chosen was one person mentioned an idea everyone generally liked and “it was like ok, we’ll do that.” In her opinion, the rest of the group chose natural beauty because it was easy.

Planning for Production. On the day the group began planning for production, Christy (11/T*C) was absent. This was recorded in each group member’s journal. Charley (10/TSC)
started the group discussion saying, “Our name has nothing to do with this…” To which Chelsea (10/T*C) replied, “So let’s change it.” An off-topic conversation regarding the large amount of work they have at the end of school ensued. Cheri (9/TSC) brought the group back to task saying, “Wait, are we supposed to be working on our thing?” With that, Charley (10/TSC) and Cheri (9/TSC) asked the teacher what they were supposed to be doing. Together with the teacher, Courtney (10/T*C), Cheri (9/TSC), and Chelsea (10/T*C) went on to discuss what their video would entail and Chelsea (10/T*C) nominated Charley (10/TSC) for the only “acting role” in the video. The teacher commented, “You have a great idea. I think it is simple and effective.”

Courtney (10/T*C) reminded the group they still had not chosen a new name. Chelsea (10/T*C) suggested Natural Beauties. The group agreed. Total time spent on production planning during this class period amounted to approximately five minutes.

Each group member’s journal entry, once again, emphasized that Christy’s (11/T*C) ideas were not aligned with the rest of the group. For instance, Charley (10/TSC) wrote:

The group seems to be on the same page with each other and [Christy] seems to be not with us. We all agree on our ideas and like each others…. We decided to change our name and veto the Movie Patrons. I think [Christy] is going to be mad about all the changes.

Chelsea (10/T*C) agreed writing, “We vetoed [Christy’s] idea for a name because it does not speak to us as a group. [Christy] was not here but she has very different ideas of what we want to do as our public service announcement.”

The second day of production planning was accurately summarized in Chelsea’s (10/T*C) journal. She wrote, “We didn’t do anything actually.” Chelsea (10/T*C) contended the group did not realize they were going to be able to film, so they did not bring their materials.
Charley (10/*TSC) volunteered to bring her makeup to the next class so they could start production.

**Film Production.** The first day of production started with the group watching videos from their previous project. They spent about 15 minutes off task before the teacher turned off the videos. Chelsea (10/*T*C) responded, “We can’t work because we need a video camera.” The teacher immediately found a camera and brought it back to the group. When the teacher asked the group who would be filming, Courtney (10/*T*C) replied “[Chelsea] or me maybe.” The teacher proceeded to explain to Chelsea (10/*T*C) how to operate the video camera. Cheri (9/*TSC), Courtney (10/*T*C), and Charley (10/*TSC) also listened to the explanation, while Christy (11/*T*C) made origami figures.

After the teacher finished explaining how to use the video camera, Chelsea (10/*T*C) took it from him and asked the group where they were going to film. They decided on a location and all left together to film. Christy (11/*T*C) went with the group, but brought her computer and origami.

Once on location, Charley (10/*TSC) readied herself for filming and Chelsea (10/*T*C) set up the camera. Chelsea (10/*T*C) asked the group how long they should film. Christy (11/*T*C) replied, “Well, from start to finish.” Chelsea (10/*T*C) explained she meant how long should she film Charley (10/*TSC) without makeup. Christy (11/*T*C) followed by asking how pivotal the scene was to the finished product. The discussion went no further.

As Chelsea (10/*T*C) continued filming, Cheri (9/*TSC) asked, speaking to no one in particular, “What song should we play?” Chelsea (10/*T*C) named a song and no one else said anything. Filming continued and Christy (11/*T*C) commented they were all going to be in the video because of the large mirror. Chelsea (10/*T*C) replied she did not think so because she had zoomed in on Charley (10/*TSC). Christy (11/*T*C) acknowledged her forethought with
“Good job!” She then proceeded to look through the video camera and direct Charley (10/TSC) to put her hair behind her ears.

When filming was completed, Cheri (9/TSC) asked if they needed to video Charley (10/TSC) taking the makeup off she had just applied. Chelsea (10/T*C) explained they were going to reverse the tape to look like Charley (10/TSC) was taking off the makeup. Subsequently, the group returned to the classroom, leaving Chelsea (10/T*C) to pick up the video camera equipment. Christy (11/T*C) went to the school help desk to work.

Cheri (9/TSC) noted in her journal, “We didn’t really discuss much, and the filming was really easy.” Christy (11/T*C) mentioned in her interview there were too many people in her group and not enough roles. She said, “Everyone was just kind of standing around. So it was awkward.” However, Courtney (10/T*C) wrote, “Everything went well today.”

**Postproduction.** Upon returning from filming, the teacher asked the group if they remembered how to upload video. Chelsea (10/T*C) and Courtney (10/T*C) replied they did. However, the class ended before the group could upload their video.

When the investigator next observed the group, they had previously uploaded their video and begun editing. Unfortunately, none of the student’s journals mentioned specifically what anyone had done during their prior work session to get to that point. However, Chelsea (10/T*C) wrote:

> We are practically done because all we have to do is put the music on the program and then we are done… [Christy] has put like about 5% effort into this project. She has done I think a total of nothing. Everyone else has put their input and has been to every class unlike her.

Conversely, Christy (11/T*C) declared in her interview editing the video was something she wanted to do, but she felt uneasy asking to help because two of the girls were “spearheading.”
She alleged, “…they wanted to do it and not let anyone interfere.” Regrettably, Christy (11/*T*C) did not know the names of the two girls. Christy (11/*T*C) went on to admit she was also to blame because she was not more assertive. Charley (10/*TSC) wrote she was absent when the group started editing.

During postproduction the investigator did observe Chelsea (10/*T*C), Courtney (10/*T*C), and Charley (10/*TSC) editing the music for their video and adding screen titles. The teacher showed them how to cut and fade music while Chelsea (10/*T*C) navigated the computer. Courtney (10/*T*C) and Charley (10/*TSC) offered their opinion regarding the sound of the music and Courtney (10/*T*C) asked the teacher to show them how to add titles. The teacher complied with her request and Chelsea (10/*T*C) followed his directions on the computer. When Chelsea (10/*T*C) announced they were finished, the teacher suggested they might add fading to their video. Chelsea (10/*T*C) agreed, but was not observed making any changes. Cheri (9/*TSC) was not in the classroom for this editing session. She declared in her journal she helped film, but did not do much editing because she is “not very good at [it].” Christy (11/*T*C) sat away from the group by herself and only once spoke to the “group.” Nonetheless, she stated a second time in her interview she would have liked to help with the editing. Christy (11/*T*C) elaborated saying, “I feel there is so much more we could have done with the editing.”

**Product.** The teacher and investigator’s opinion of this group’s natural beauty video varied considerably. The teacher rated the group’s video an A, whereas the investigator narrowly rated the product a B. The investigator ranked the group one scale lower than the teacher did in content and mechanics and two scales lower in creativity and design, oral presentation skills, and teamwork.
The investigator saw the product as merely a segment of video speedup and played in reverse with minimal special effects added. The group’s intention was not clear in the video. In particular, it was difficult for the viewer to determine if the subject was putting on or removing her makeup. When the investigator shared her assessment of the video with the teacher, he justified his rating of the project saying, “My preference in art is very minimalist. I don’t like a lot of extra stuff.”

Even though the teacher felt the group’s initial idea was “one of the best,” he took issue with the length of the final product. He considered the final product too lengthy and thought it would have been more effective if shortened. The teacher shared this opinion with the group “a couple of times,” but the group took no action. He also mentioned the group should have added a pause to accentuate the fact the subject was wearing makeup in the beginning of the video and not wearing it at the end. To conclude, the teacher described the group’s execution of the video as “Let’s get it done. Not let’s get it done and do a great job of it.”

Every member of the group except Christy (11/T*C) thought the final video was good. Courtney (10/T*C) and Cheri (9/TSC) suggested because the group “worked well together,” the project quality was good. Chelsea (10/T*C) commented, “I liked the music and video. It was easy to make.” Charley (10/TSC), however, mentioned the video “messed up when the group put it on a disk but other than that it was good.” Christy (11/T*C), on the other hand, disagreed stating, “There is so much more we could have done with the editing.”

Although the majority of the group felt their final product was good, most deemed their previous Multimedia Productions groups more productive. Christy (11/T*C) felt her last group “got more done because it was easier to communicate.” She did not feel “constricted by anonymity” as she did in the current group. Charley (10/TSC) also thought the previous project “went smoother.” She attributed her last group’s success to group members being “calm and
easy going.” Likewise, Chelsea (10/*T*C) considered her previous group more productive “because everyone was on the same page.” Cheri (9/*TSC) did not comment on the productivity of her prior group and Courtney (10/*T*C) was not enrolled in this class prior to the study.

**Group 5 – Social/Conceptual Learning Group**

**Brainstorming.** Before the group had even assembled, they were offering ideas. Francis (10/A*SC) suggested creating a condom commercial, and Fancy (10/**SC) immediately produced a slogan – “I don’t have a virus. I have a Trojan.” She went on, however, to advise the group they should choose a more serious topic. Faye (10/**SC) warned abortion might be too serious of a topic. Fancy (10/**SC) suggested doing “something on drugs or drugs in general” and Francis (10/A*SC) advocated for the drug “X.” Faith (10/**SC) mentioned obesity or nutria. Both of these topics lead Francis (10/A*SC) into off-topic chatter about the subjects at hand. Faye (10/**SC) brought her back on task asking, “Okay, what are we doing?” Francis (10/A*SC) replied, “Mothers Against Drunk Driving.” This sparked a conversation between Faith (10/**SC) and Francis (10/A*SC) regarding whether the topic should be “MADD” or “just drinking and driving.” The class period ended without the group choosing a specific topic. Fern (10/**SC) was absent for the first brainstorming session.

Faith (10/**SC) was not optimistic about the group’s development when she composed her only journal entry. She wrote, “Our group is going to have a hard time focusing. We talk about everything imaginable EXCEPT our project.” Francis (10/A*SC) concurred writing, “Our group is sidetracked too easily, and we are not really focused on what we should be focused on.” Neither Faye (10/**SC) nor Fancy (10/**SC) submitted a journal entry for this session. However, Faye (10/**SC) made her feelings concerning the group’s fate known in class by telling the group, “We’re not very productive.”
When the investigator next observed this group, they had not yet picked a topic for their project. Noticing the group was not on task, the teacher asked how they were doing. Francis (10/A*SC) replied they were doing “that drunk driving thing.” Faith (10/**SC) reacted, saying she did not want to do that and asked if it was too late to change topics. Francis (10/A*SC) recommended “save the nutria.”

**Planning for Production.** The teacher asked the group how they were going to represent saving nutria. Faith (10/**SC) and Fancy (10/**SC) discussed a couple of options, but quickly joined the rest of the group in off-topic discussions. The teacher acknowledged their digression by shaking his head. Faith (10/**SC) noticed his reaction and alerted the group. Next, Faith (10/**SC) told the teacher the group’s topic was casinos. The investigator never heard the group mention casinos before this statement. Francis (10/A*SC) followed the declaration by talking about casinos. Faye (10/**SC) dealt with her continuous off-topic behavior saying, “[Francis] you are talking so much!” Francis (10/A*SC) later admitted in her journal the group was going to be difficult because she talks a lot. She went on to predict, as did Faye (10/**SC), the group would “have fun but not get a lot of work done.”

Observing the group must all have the same profile, Faith (10/**SC) tried to bring the group back to task. She commented, “…we have to do this. They keep looking at us.” At that time, the teacher once again offered to help the group. Nevertheless, Faye (10/**SC) insisted they already knew what they were doing. The teacher continued to probe, asking the group to walk him through their idea. Frustrated, Fern (10/**SC) remarked, “We have not done anything yet!” Francis (10/A*SC) suggested Fern (10/**SC) take charge, but Francis (10/A*SC) replied she did not care. Faye (10/**SC) interjected she had tried to take charge during the last session, but no one would listen.
Back on task, Francis (10/A*SC), Faith (10/**SC), and Fancy (10/**SC) tried again to discuss how to represent saving nutria. One suggestion was to use sock puppets. Yet again, Francis (10/A*SC) became sidetracked and started talking about her socks. Faith (10/**SC) yelled at her to stop talking.

Fancy (10/**SC), struggling to keep the group on task, asked Faye (10/**SC) to join the “group” and type notes. Faye (10/**SC) declined, stating she was busy. Aggravated, Fancy (10/**SC) declared she would take notes herself and hurriedly produced a self-described “simple and plain” outline for the group. Next, the teacher asked the group to explain their project “frame by frame.” When they could not, he tried to help them elaborate on their outline. Unfocused, Francis (10/A*SC) asked the teacher if they would have to buy materials for this project. Faye (10/**SC) reprimanded her saying, “Could you let him talk!” Fern (10/**SC) noted in her journal, “Our group is very difficult to work with because they will not shut up and don’t have ideas…”

Under the teacher’s direction, Faith (10/**SC) and Fancy (10/**SC) discussed a couple of concepts for their project and then proclaimed they were finished. The teacher replied he was worried about their form. Again, he asked them to explain to him what their project was going to look like. Instead of providing the teacher with an answer, Faye (10/**SC) and Fern (10/**SC) questioned if other groups were actually working and complained about their group’s profiles. Fancy (10/**SC) logged, “Our group is not showing progress whatsoever.”

Almost a month after the project was assigned the group had still not agreed on how their project would be accomplished. In fact, the investigator was not sure the group had even agreed on a topic at that point. As other groups were in production or postproduction, Faith (10/**SC) and Fancy (10/**SC) continued to discuss various ideas for their project, including attention
deficit disorder (ADD). Finally, Francis (10/A*SC) yelled, “…let’s just draw something.” No one in the group responded.

**Production.** Without a clear project vision, Fern (10/**SC) informed the group they needed to film. When no one in the group responded she asked, “Girls, are we going to film or what?” With that, the group left the classroom in search of a video camera. Video cameras were not readily available because most were checked out for production of the senior video. Consequently, the group returned a short time later without a video camera.

Upon returning to the classroom, a reporter asked the girls to answer some questions about a presentation an artist had given to their class earlier in the week. All of the girls in this group agreed to participate. Their attention did not immediately return to the group project. Eventually, Faith (10/**SC) said to the group, “Hey, let’s go do something!” and the group left the classroom again. They returned at the end of the period with a video camera. Francis (10/A*SC) was overheard asking the group, “What did we decide to do?”

According to Francis (10/A*SC) and Fern’s (10/**SC) journals, the group resolved to make a poster warning people about nutria rats. Francis (10/A*SC) wrote everyone was going to bring something for the poster and both girls suggested the group was now working together. Fern (10/**SC) even noted, “…it seems like it will be easier than we thought.” Fancy (10/**SC), on the other hand, had a different view of the situation. She wrote:

> Our group is not so great. We’re not getting anything made. I would be getting kinda frustrated but wouldn’t say anything, if this were for a big grade. I think we decided on making a poster of MySpace. We have no clue what we’re doing…. Well, I hope we get this project done.

No mention was made of a video.

Two days later, the group met again but immediately began off-topic discussions. Fancy (10/**SC) went to the teacher and asked if she could be placed in another group because they
were not getting anything done. The teacher told her to do what she could and she would do fine. The teacher later advised the investigator, Fancy (10/**SC) is not the most conscientious student and she was just putting on a show.

After her discussion with the teacher, Fancy (10/**SC) went to her computer and started looking for pictures of nutria by herself. Sometime later, Faith (10/**SC) joined her stating, “Hey, we can use that for our project!” Fancy (10/**SC) replied someone would need to print it out. In her (10/**SC) journal she wrote:

Our group is still not doing anything so I took it upon myself to make up an outline for a poster. And I will buy the poster board for the next class. Hopefully, [Faye] will print out the picture for next class so we can start working. She’s the only one with a color printer.

A week later and with less than a week left to work on the project, the group had still not begun any kind of project production. The teacher informed the class they only had one more class period left to work on the project. With this, Faith (10/**SC) asked Fancy (10/**SC) if she brought the poster board. Fancy (10/**SC) snapped, “No!” The group attempted no further discussion of the project during that session and no journals were turned in to the investigator.

In her interview, Faye (10/**SC) disclosed the day before the project was due she emailed everyone in her group reminding them the group had to put something together. She said she ended up making a date rape PowerPoint by herself on the day the project was due. Faith (10/**SC) also made a date rape commercial using PowerPoint. Both PowerPoint presentations were submitted for the group’s final project.

**Product.** The teacher narrowly rated the group’s date rape PowerPoint presentations a B, whereas the investigator rated the products a low C. The investigator ranked the group two scales lower in creativity and one scale lower in structure and organization, mechanics, content, and teamwork than did the teacher.
Although their scoring rubrics varied, the teacher and investigator agreed this group’s PowerPoint presentations were inadequate. To explain, the group presented two PowerPoint slideshows dealing with date rape. The first PowerPoint was strictly text, citing undocumented statistics. During the presentation, each member of the group took a turn reading text from the screen. Laughing, a student in the audience told the teacher the group put together the presentation in their prior class period. Disenchanted with the group, the teacher ranted, “I am not surprised one bit that they fully cheated…. I’m not surprised at all they turned in some Biology PowerPoint. I know they did it for Biology…”

The second PowerPoint the group submitted was more effective. It was informative and looked immensely like a professional advertisement. In fact, it may have been too professional. The teacher commented, “I’m guessing the second one they didn’t even make themselves.” Fancy (10/**SC) and Faye (10/**SC), however, denied all allegations the first presentation was made for another class and the second was not their own creation.

All members of the group were satisfied with their final products. Fern (10/**SC) claimed, “I think it turned out great because we worked hard on our project.” Fancy (10/**SC) was less upbeat writing, “It turned out fine; it was done.” Faith (10/**SC) believed the project turned out well considering the group members’ personalities. She added, “…we didn’t really care about the quality of our presentation. Instead, we cared more about having fun and goofing off.”

Despite being satisfied with their final product, group members felt their last Multimedia Productions groups were more productive than this group. Faye (10/**SC) and Fern (10/**SC) credited the fact they were not under the stress of final exams as they were while working in the current group. Fancy (10/**SC), however, attributed her previous group’s productivity to its members getting along. Faith (10/**SC), who was previously grouped with Fancy (10/**SC),
felt the current group was less productive because they “had a very hard time focusing and settling down.” She added, “We got off topic nearly the whole class.”

**Group 6 – WEteam® (Randomly Selected)**

**Brainstorming.** After the groups were assigned, this group gathered but sat quietly for several minutes. According to Danielle (10/*TSC), Darla (10/**SC) finally “broke the ice.” The teacher was also observed helping the group start the brainstorming process. Darla (10/**SC), Daisy (9/A*S*), and Dana (10/ATS*) all acknowledged in their journals it took the group a while to choose a project topic. However, Darla (10/**SC) wrote, “After our creativity started kicking in we were able to come up with many ideas and worked well together.” Daisy (9/A*S*) agreed, noting the group “got a lot of stuff accomplished.”

Dawn (9/A**C) and Dana (10/ATS*) were both observed offering suggestions, nonetheless, Dana (10/ATS*) wrote “[Darla] is the only person in our group that is good at coming up with creative things…” Dawn’s (9/A**C) opinion was the project would “be a creativeless mess.” Danielle (10/*TSC) was more optimistic, writing “I feel my group will be an awesome group!”

**Planning for Production.** Darla (10/**SC) started the first production planning session, suggesting the group use still pictures as their project medium. Subsequently, Dawn (9/A**C) listed the materials the group would need to start production. Darla (10/**SC) added, “Weren’t we going to research something?” To which Dawn (9/A**C) replied, “Cows.” Danielle (10/*TSC) questioned the exact theme and Darla (10/**SC) elaborated slightly mentioning cows and methane gas production. Dana (10/ATS*) was clearly confused asking, “So we are doing what?”

Without further explanation, everyone except Danielle (10/*TSC) commenced searching, using their computers, for pictures of cows. Danielle (10/*TSC) did not use her computer, but
occasionally made suggestions regarding pictures she noticed on Dana’s (10/ATS*) computer. She also engaged, along with Daisy (9/A*S*), in off-task behavior while the rest of the group continued to look for cow pictures.

While the group continued to search for pictures of cows, Darla (10/**SC) suggested they create a flyer and edit it in PhotoShop. Daisy (9/A*S*) and Danielle (10/*TSC) added to the idea, offering several suggestions. Shortly thereafter, the teacher commented the group was very quiet and asked them what topic they were addressing. Darla (10/**SC) replied and the teacher probed further, asking what medium the group would use. Once again, Darla (10/**SC) responded to his question. When she told the teacher the group would be using PhotoShop, she did so in a question manner, as to ask the group for their approval. No one in the group responded.

The teacher offered the group various suggestions regarding how they could represent their theme, while the group listened attentively. After he left the group, they went back to searching for cow pictures. When Dawn (9/A**C) located a picture she felt was usable, Dana (10/ATS*) and Danielle (10/*TSC) made suggestions for editing the photo. Daisy (9/A*S*) and Darla (10/**SC) stayed at their computer, presumably looking for more pictures of cows.

Dana (10/ATS*) summarized the first production planning session in her journal as follows:

Today we worked well together. We brainstormed on ideas and successfully agreed on what we are going to do. We don’t have one leader in particular. We all put our ideas out there and then agreed as a group on what to do.

Daisy (9/A*S*) agreed writing, “Today we got a lot accomplished; there [were] no negatives. Everyone worked together to get ideas and to start putting things together.” Darla (10/**SC) also concurred, stating the group had come up with “many ideas” and worked together
successfully because they were able to “compromise easily.” Dawn (9/A**C), however, had a different opinion of the event. She wrote:

I keep giving my opinions but they don’t acknowledge them, but then someone else says the idea and it gets acknowledged. I don’t take it personally, but it’s annoying. I am not sure the project will be completed because we haven’t really started doing anything.

Similarly, Danielle (10/*TSC) wrote she felt the group had not worked “too well” in this session.

When the investigator next observed the group, Darla (10/**SC) was absent. The teacher asked the group if they had finished production. Dana (10/ATS*) replied they were using PhotoShop and Dawn (9/A**C) agreed. Puzzled, the teacher asked if the group was going to take their own pictures. Once again, Dana (10/ATS*) replied saying, “No. We’re looking for photos now.”

Dana (10/ATS*) and Danielle (10/*TSC) identified and discussed a few of pictures, while Daisy (9/A*S*) and Dawn (9/A**C) sat with their laptop computers closed. Danielle (10/*TSC) noted, “Everyone looked up pictures of cows so we can decide on the ones we would like to use.” Dana (10/ATS*) added the group “found a bunch of good pictures” and “definitely” worked well together. Daisy (9/A*S*) and Dawn (9/A**C) agreed the group worked well together today. Dawn (9/A**C) explained, “People are starting to click a lot more than in the beginning.” However, she also added, “We weren’t able to get a lot done, but the project will not take a terribly long time anyway.”

**Photo Production.** Two days later when the group started production, their project had changed to include the group shooting their own cow photos instead of using the ones they had previously identified. None of the students mentioned the change in their personal journal, nor did they discuss the change while being observed.

With Darla (10/**SC) dressed in a cow costume that Daisy (9/A*S*) had provided, the group set out to take photos. It was obvious the group had not designed the shots before taking
them. For example, Darla (10/**SC) said, “I want to take one on the statue.” Danielle (10/*TSC) responded, “Cow’s don’t get on statues.” Everyone took turns suggesting poses, while Dawn (9/A**C) took the photos. In the end, it appeared to the investigator Darla (10/**SC) and Danielle (10/*TSC) had produced the majority of ideas for the photo shoot. Though, Dana (10/ATS*) noted, “Everyone did a good job of giving ideas for pictures.” Dawn (9/A**C) added, “The group worked really well together…. People are starting to relax a bit more and calm down.”

**Postproduction.** Upon completing the photo shoot, the group returned to the classroom to upload the pictures. Dawn (9/A**C) reminded the group the class was an abbreviated period today, and asked if they wanted to come in another day. Darla (10/**SC) declared the pictures needed to be uploaded today. With that, Dawn (9/A**C) and Danielle (10/*TSC) proceeded to try uploading the pictures to a classroom computer. They ran into technical difficulties and the teacher suggested they upload the pictures to one of their laptop computers. Ultimately, Darla (10/**SC) uploaded the pictures to her computer while the rest of the group talked with another group. Danielle (10/*TSC) noted in her journal the pictures “came out great” and she was “excited about editing the pictures.”

A week later when the investigator returned the group had not worked on the project at all, according to Danielle’s (10/*TSC) journal. The lack of work was reinforced when the group had to wait on Darla (10/**SC) to come to class because she had the only copy of the photos saved on her computer. Darla (10/**SC) finally came to class approximately 20 minutes late.

When Darla (10/**SC) arrived the group did not immediately start work on the project. Darla (10/**SC) brought them to task asking who was going to edit the pictures. Danielle (10/*TSC) quickly declined stating, “Not me, I don’t even know how.” Dawn (9/A**C)
retorted, “Just send them to me.” With that, the members of the group in grade 10 studied for a Biology test, while Daisy (9/A*S*) talked about basketball with another group.

Sighing loudly, Dawn (9/A**C) closed her laptop computer awhile later. Dana (10/ATS*) observed, “We have a lot of pictures.” Darla (10/**SC) replied, “We just need to PhotoShop them.” The group then engaged in off-topic conversation.

Later, Danielle (10/*TSC) asked Dawn (9/A**C) if she was good at PhotoShop. Darla (10/**SC) interjected, “Well we were going to work on it together.” Once again, Danielle (10/*TSC) exclaimed she did not know how to use PhotoShop and asked the group, “What do y’all want to do? What is our theme?” Still unsure about the project, Daisy (9/A*S*) reacted, “Are we doing a series of pictures?” Darla (10/**SC) moved on saying, “…we are definitely going to have to explain each picture.” Dana (10/ATS*) added, “We need one sentence that explains all the pictures.” Darla (10/**SC) agreed and the group resumed off-task behavior until the class ended.

The journals regarding this session revealed very different opinions regarding the projects progress. Dawn (9/A**C) summarized the session most accurately in the view of the investigator writing, “…we all worked together and got along good enough – though we did little actual work. This is going to be interesting.” Daisy (9/A*S*) supported this view noting, “…we got a little stuff done – not as much as usual but we are all working together and get along.”

Conversely, Danielle (10/*TSC) and Darla (10/**SC) both felt the session was a success, declaring the group had agreed on their final idea and they would wrap up the project at the next class meeting. Danielle (10/*TSC) even noted Dawn (9/A**C) was going to print the pictures for the group so they could work on them in the next session. Dana (10/ATS*) viewed the session in a completely different light writing, “[Dawn] decided to basically take over the project. Every idea anyone has mentioned she basically says she doesn’t like it.”
**Product.** While their scoring rubrics varied, the teacher and investigator agreed this group’s product was lacking. The teacher rated the group’s photo presentation of cows a B, whereas the investigator rated the product a C. The investigator ranked the group one scale lower in structure and organization, oral presentation skills, and teamwork and two scales lower in mechanics and content than the teacher.

The investigator noted, though the photos were of good quality they did not depict the theme the group had chosen nor did the group explain how they related to the theme. Additionally, the teacher required groups choosing photography to include 10 photos in their final product; this group submitted four poorly matted photos. Photos were matted using varying shades of black construction paper trimmed to a range of sizes. Dana (10/ATS*) attributed the inadequate matting to an individual member matting the photos in isolation. The teacher summarized the quality of the group’s product with “They did a pitiful job.” However, he added he was disappointed with many of the groups because he had seen them do better work. The teacher felt most of the groups were “extremely lazy” on this assignment because it was the end of the school year.

Every member of the group agreed the group’s final product could have been better. Danielle (10/*TSC) felt the group could have been more creative with the finished photos given more time. Dana (10/ATS*), on the other hand, believed the group simply did not put enough effort into the project. She thought the matting was “sloppy” and the photos needed either captions or dialog to make them “less boring and more interesting.” Darla (10/**SC) also felt the final product could have had more information, yet defended the group with “…but our thought process was there.” Dawn (9/A**C) agreed with Dana (10/ATS*) about the group’s lack of effort saying, “Everyone was like ‘Oh, I don’t want to do this.’” She felt the group could
have come up with something a lot better if there had not been so much “negativity” within the group.

The group shared split opinions when asked if their last Multimedia Productions group was more productive than this group. Darla (10/**SC) and Danielle (10/*TSC), who were grouped together previously, did not feel their last group was more productive than the current group. They stated their previous group was distracted easier because everyone in the group was close friends. Instead of working on their project, they “sat and talked the whole time.” Dawn (9/A**C) and Dana (10/ATS) were also grouped together previously. However, they considered their last group to be more productive than this one because there were fewer members – just the two of them. Dawn (9/A**C) suspected the previous group was easier to work in because there were less people to please. Daisy (9/A*S*) did not offer an opinion about her previous group’s productivity.

In Conclusion

In order to draw a complete picture of the impact of personality-profile grouping using Emergenetics® STEPTM Profiles on group process and product in high school learning groups, the findings from student Emergenetics® STEPTM Profiles, learning group observations, student journals, project assessments, and student and teacher interviews were presented by individual learning groups. Details regarding each group member’s individual Emergenetics® STEPTM Profile, grade level, cumulative grade point average, and previous collaboration within the current group, were preceded by an attribute review to facilitate the reader’s interpretation of group dynamics. A detailed narrative of each learning group’s process and product then followed learning group profiles. Cross-group analyses of data were also conducted and are discussed in the next chapter.
CHAPTER FIVE: CROSS-GROUP ANALYSES

In order to provide a more comprehensive view of the influences of Emergenetics® step personality-profile grouping on high school learning groups, cross-group analyses of data were conducted. Three themes emerged from this constant comparative analysis of learning group observations, student journals, and student and teacher interviews. Identified themes were:

• student leadership,
• student feelings toward learning group, and
• member relationships.

This chapter presents these themes as they relate to the research questions. Again, each student’s name is followed by a grade-level and thinking preference abbreviation to help the reader interpret results more quickly.

Student Leadership

One goal of this research was to investigate the nature of emergent student leadership within learning groups and how it is affected by group composition. For this study, student leadership was defined as the directing and mobilizing of people and/or their ideas (Kotter, 2001). Three leadership styles were identified through constant comparative analysis: teamwork, passive leadership, and free rein.

Teamwork

A great deal of research agrees the adoption of a participative leadership style generates a more enjoyable and successful learning experience (Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990). In participative leadership, group members are involved in the decision-making process by contributing their ideas and suggestions. Similarly, in shared leadership all members assume the leadership role,
contributing ideas and skills as necessary and accepting others in the same manner (Browning, 2006; Duemner et al., 2004; M.R. Myers & Slavin, 1990; Renegar & Haertling, 1993; Webb et al., 2002; Yamaguchi, 2001; Yamaguchi & Maehr, 2004). Because the investigator was unable to make a true distinction within this study between the two leadership styles, joint action by a group to complete the project was regarded as teamwork. Groups exhibiting teamwork as their dominate leadership style are examined below.

**Group 1 – WEteam®.** Alison (9/*TSC) summarized this group’s leadership style writing, “We all stepped up and took part in the project. We kind of switched out positions of being the leader.” Annie (10/A*SC) agreed everyone in the group “pitched in” and no one person was the main leader. Nevertheless, she added if “anybody had to take charge and say you do this,” it was probably her. Addison (10/ATS*) and Avery (9/*A*SC) concurred, noting everyone took on responsibilities for completion of the project; however, Annie (10/A*SC) took on more than others when needed. At one point, Addison (10/ATS*) seemed grateful for Annie’s (10/A*SC) contribution writing, “[Annie] really helped out today and it will help us finish our video on time.” Yet, in her interview, she stated Annie (10/A*SC) was controlling and bossy. Interestingly, Alicia (10/A*S*) acknowledged the work of other members, but felt she took the leadership role journaling, “I was the one that said we need to do this now so let’s do it now.”

The investigator regarded Annie (10/A*SC) and Alison (9/*TSC) as the most influential members of the group, with Annie (10/A*SC) taking on the largest leadership role. Annie (10/A*SC) and Alison (9/*TSC) offered the majority of the ideas when planning for the project, but considered and included other member’s ideas. They also directed and acted in the group’s video, while employing the talents of others to get things accomplished. For instance, Avery
(9/*A*SC) was put in charge of filming the group’s video and Addison (10/ATS*) and Alicia (10/A*S*) were included as actors in the video when they joined the group.

Annie (10/A*SC) did most of the music and film editing, while Alison (9/*TSC) took charge of song production. Alison (9/TSC) enlisted Avery (9/AIDS*), Addison (10/ATS*), and Alicia (10/A*S*) in recording the song. Avery (9/AIDS*) made herself readily available to help with production. Addison (10/ATS*) and Alicia (10/A*S*), on the other hand, participated only after being directed to do so by Annie (10/A*SC). This level of leadership surprised the teacher who commented, Annie (10/A*SC) has a “strong personality” and tends to “cut up a lot.” He felt she might lead the group in off-task behavior, but instead kept them on task.

**Group 2 – WEteam®.** This group also engaged in teamwork, however, it was within a subgroup of the members. Ellen (10/SC), Erica (10/SC), and Edith (10/AT**) contributed most to the completion of the project. Ellen (10/SC) and Erica (10/SC) were the most influential members of the group. They developed the picture ideas, shot and edited photos, and contributed to the final slideshow. Ellen (10/SC) suggested that Erica (10/SC) “took charge” of the editing and sometimes did not want anyone else to do it. This, however, was not observed. Edith (10/AT**) kept herself active in the group by making herself available throughout the project. She offered suggestions during production planning, posed in photos, and took a major role in composing the final PowerPoint.

Ethel (9/A*SC) and Elise (10/T*C), however, contributed little to the completion of the project. Elise (10/T*C) offered suggestions at the beginning and end of the project, but did so in a bullying manner. Neither Erica (10/SC) or Ellen (10/SC) would allow this type of conduct, but dealt with Elise (10/T*C) in very different ways. Ellen (10/SC) mostly ignored Elise’s (10/T*C) badgering, while Erica (10/SC) often argued back. Ellen (10/SC)
confirmed this was typical behavior for Elise (10/*T*C) writing, “I had a project with her earlier this year, and she did the same thing. She didn’t do anything the whole time.” Ethel (9/A*SC) stated she did not think Elise (10/*T*C) and Erica’s (10/**SC) dislike for one another “affected the progress of the project, but it affected the amount of teamwork.”

Alternatively, Ethel (9/A*SC) often kept to herself and was not observed trying to participate in the group at all. The teacher acknowledged Ethel (9/A*SC) was a “very quiet” student and she “probably had no control in the group whatsoever.” She agreed with these observations noting, “I didn’t really help others in the group because I didn’t really say much being the only freshman.” However, she also claimed she “didn’t contribute a lot because most of the time the rest of the group would leave to work without [her] knowing they left.” Later, in her interview Ethel (9/A*SC) admitted she was not left out, but insisted if she “wasn’t there they’d just go on.” Ethel (9/A*SC) was referring to the day Ellen (10/**SC), Erica (10/**SC), and Edith (10/AT**) left the classroom and took photos without the rest of the group. The investigator, however, believed both Ethel (9/A*SC) and Elise (10/*T*C) saw the group leave and did not participate because they were not specifically asked. Ellen (10/**SC) agreed with this impression stating she thought Ethel (9/A*SC) would have helped if they had asked her. Erica (10/**SC) even gave Ethel (9/A*SC) credit for developing the group name and contributing other ideas; these occurrences were not observed.

**Group 3 – Conceptual Learning Group.** Betty (10/***C) and Brook (10/***C) were the most influential members of the group, with Betty (10/***C) playing a major role in keeping the group on task. Brook (10/***C) edited the MySpace site, filmed the video, and helped Betty (10/***C) edit the video. Bailey (9/A*SC) made herself useful to the group by enlisting outside help with photo editing, offering technical support for MySpace, and setting up for filming. Brittany (9/A**C) acted in the video at Betty’s (10/***C) request, but spent a majority of her
time off task. Everyone participated in offering ideas throughout the production process, however, Bonnie (9/A*SC), and Brittany (9/A**C) contributed the least. Betty (10/***C) conceded some group members had to be willing to “take a back seat.” She felt it was important to have the input and ideas of those members that really did not “have much to do as far as the meat of the project.”

The teacher admitted when he learned who was in the group, he thought, “Oh Lord, [Betty] and [Brook] in the same group. It’s gonna be out of control.” It surprised him the two girls took the lead and pushed the group since they are “cut-ups” and usually “all about slacking.” The teacher felt Bailey (9/A*SC), Bonnie (9/A*SC), and Brittany (9/A**C), being freshman, may have let Betty (10/***C) and Brook (10/***C) lead because they were older. Also, he expected Bailey (9/A*SC) to “shine more” in the group, but did acknowledge her contribution.

**Passive Leadership**

As distinguished in previous research, passive leaders often maintain their position by assuming the majority of tasks within the group (M.R. Myers & Slavin, 1990). This was the dominant type of leadership observed in Group 4, the Structural/Conceptual learning group. Although other group members offered minimal suggestions, Chelsea (10/*T*C) did all of the applied work for the project. She acknowledged this in her interview saying, “I am a control freak.”

The entire group, except Christy (11/*T*C), made themselves available throughout the project, but contributed little. Chelsea (10/*T*C) recognized their availability saying she felt others in the group would have taken on responsibilities had she delegated them, but she chose not to do so. Instead, she directed, filmed, and edited the video with modest input from the rest of the group. Chelsea (10/*T*C) justified her dominance saying, “…most of them didn’t care
and they let me do what I wanted to do.” Interestingly, Courtney (10/*T*C), Charley (10/*TSC) and Cheri (9/*TSC) contended the group did not have a specific leader. In particular, Courtney (10/*T*C) noted “We all did everything together and didn’t assign a specific thing to one person.”

Conversely, several members mentioned Christy (11/*T*C) tried to be the leader at the beginning of the project, but her ideas were too “different” for the rest of the group. After her ideas were vetoed when she was absent, she alienated herself from the group for the remainder of the project saying “…if I’m not going to be heard, then I’m not going to speak.” The teacher commented on this occurrence, declaring Christy (11/*T*C) was at “the other end of the spectrum” from the rest of the group as far as creativity and popularity was concerned. As a result, he expected Christy (11/*T*C) to “have a hard time working with the group because anything she suggested they were either going to shoot down or say ‘No thanks.’”

**Free Rein**

The investigator used the term free rein for groups who had no real leadership. In a group “led” by free rein, members fundamentally did what they wanted to do without much concern for other members of the group. Groups partaking in free rein are examined below.

**Group 5 – Social/Conceptual Learning Group.** Early in the project, Francis (10/A*SC) and Faye (10/**SC) predicted the group would “have fun but not get a lot of work done.” This is precisely what occurred. Initially, the group produced several good project ideas, but never followed through on any of them. When it became obvious the group was not making progress, Francis (10/A*SC) suggested Fern (10/**SC) “take charge” if she was worried. Faye (10/**SC) then claimed she had tried to take charge but no one listened. Eventually, Fancy (10/**SC) took the last idea offered in the group, saving nutria, and developed a “simple and plain” outline for the project, which was never employed.
More than a month into the project, the group had accomplished little. From nowhere, Fern (10/**SC) announced the group needed to film. The group spent almost an entire class period looking for a video camera and when they did locate a camera they did not use it. Later, Francis (10/A*SC) and Fern (10/**SC) claimed the group decided to make a poster warning people about nutria rats. Fancy (10/**SC), believing otherwise, noted the group was making a poster about MySpace.

At the group’s next meeting, Fancy (10/**SC) asked the teacher to remove her from the group. He denied her request and asked her to do what she could to complete the project. The teacher acknowledged Fancy’s (10/**SC) desire to get something done, but said, “She didn’t have the gumption to get up and tell the group they needed to do something.” Instead, Fancy (10/**SC) located pictures of nutria for the group’s poster on her own. She noted in her journal that “hopefully” Faye (10/**SC) would print the pictures because she was the only one with a color printer. Nothing ever became of the nutria poster and the day before the project was due, Faye (10/**SC) emailed the group reminding them about the project.

For the final product, Faye (10/**SC) created a PowerPoint about date rape and Faith (10/**SC) made a date rape commercial. The rest of the group helped present Faye’s (10/**SC) PowerPoint. It was obvious to the investigator and teacher the final products were produced in isolation, not through a group effort.

**Group 6 – WEteam® (Randomly Selected).** Dawn’s (9/A**C) prediction the project would “be a creativeness mess” more accurately described the group’s process. The group had difficulty interacting and spent much of their group time individually searching for pictures they never used. Several weeks into the project, Dawn (9/A**C) worried the project might not get completed because the group had yet to start really doing anything. The teacher accredited the
difficult start to the “lack of personality in the group.” He said the students in this group are not usually leaders.

When the group started production, their project had somehow changed to include shooting their own cow photos instead of using the ones they had previously identified. The group did not disclose how this change transpired; however, it was obvious to the investigator the group had not done much preplanning for the photo shoot. Darla (10/**SC) dressed in a cow costume Daisy (9/A*S*) provided, and Dawn (9/A**C) took the photos. Everyone in the group suggested poses, while Darla (10/**SC) and Danielle (10/*TSC) produced the majority of ideas.

When the photo shoot was complete, Dawn (9/A**C) and Danielle (10/*TSC) tried to upload the pictures to a classroom computer but encountered technical difficulties. In the end, Darla (10/**SC) uploaded the pictures to her computer. The photos were not copied for or by anyone else. A week later, Darla (10/**SC) asked the group who was going to edit the pictures. Danielle (10/*TSC) declined but Dawn (9/A**C) consented saying, “Just send them to me.” Curiously, later when Danielle (10/*TSC) was asking Dawn (9/A**C) about her PhotoShop abilities, Darla (10/**SC) acted upset that the whole group was not editing the photos together. Darla (10/**SC) went on to say she thought the photos would need explanation. Dana (10/ATS*) agreed.

When the investigator last observed the group, less than a week before the projects were due, it seemed the group had no clear plan how the project would be completed. However, Danielle (10/*TSC) noted Dawn (9/A**C) was going to print the pictures for the group so they could work on them in the next session. In the end, Dawn (9/A**C) printed the pictures and somehow ended up matting them. The entire group presented the photos without explanation how they related to their theme.
When the students were asked if they thought any one person took on a leadership role in their group, they unanimously named Dawn (9/A**C). Daisy (9/A*S*) felt “everybody was holding in their thoughts” so Dawn (9/A**C) volunteered to do the work, which she did by herself. Nevertheless, several in the group were displeased with Dawn’s (9/A**C) involvement saying it was “not a good kind of leadership.” Danielle (10/*TSC) said, “She was ruling the group.” Dana (10/ATS*) agreed saying, “She tried to take control too much.” She added the group had more ideas about what they were going to do, but Dawn (9/A**C) did not “take them into consideration” when she created the final photos. Dana (10/ATS*) was likely referring to what she considered “sloppy” matting and a need for either photo captions or dialog for the final product. She went on to insist the group “would have been able to work on the project easier had [Dawn] not been in the group.” Interestingly, Dana (10/ATS*) labeled “the fact that [Dawn] did take over” as the most successful interaction she witnessed in the group because the project got finished because of it.

Dawn (9/A**C) may have explained the adverse opinions of her contribution in her final journal stating:

I had a different personality from the other girls and it did not click extremely well. Though we got along, we were not able to work together well. I like to get everything done and am very driven. They were not.

**Student Feelings toward Learning Group**

To investigate how group composition affects students’ feelings toward the learning group experience, each student was asked how she liked working in her assigned group. The majority of students responded they enjoyed the experience. However, a few students were less keen on the experience. Therefore, the following paragraphs focus on why some students were displeased with their learning experience and identify suggestions offered by students to make future group projects more enjoyable.
Two students in Group 2 (WEteam®) declared their learning group experience was less than enjoyable. Ethel (9/A*SC) said she did not like working in the group because she was the only freshman in the group. She went on to say she does not “really like working in groups anyways.” Surprisingly, Erica (10/**SC) also stated she did not like working in this group. She felt the group members’ Emergenetics® Profiles clashed and they were “all too stubborn.” Erica (10/**SC) suggested future groups should be “picked randomly, not by Emergenetics® Profiles because they put people that are too different together.”

Fancy (10/**SC) from Group 5 (Social/Conceptual learning group) did not like working in her group because “it was unstructured” and the group “just didn’t get along.” Danielle (10/*TSC) from Group 6 (WEteam®) echoed this sentiment, stating she would prefer working in a smaller group (2-3 people) with people she could get along with. Instead, she felt she was being told what to do and the project was too pressed for time. Dana (10/ATS), also from Group 6 (WEteam®), merely stated she did not like working in the group because she “really doesn’t like working in groups at all.” Additionally, she believed “the project as a whole should be more structured” with less people in a group.

Several students who were satisfied with this learning group experience offered similar suggestions for future group projects. The number one suggestion these students offered was more time to work on the project. Edith (10/AT**), Bonnie (9/A*SC), and Brittany (9/A**C) all felt their last group was more productive because they had more time to prepare for the project. Bailey (9/A*SC), Christy (11/*T*C), and Faye (10/**SC) believed this project’s six week time limit put too many constraints on their productivity. An alternative suggestion offered for future grouping was employing smaller groups. Chelsea (10/*T*C), Christy (11/*T*C), and Dawn (9/A**C) sensed a smaller group with 2-3 students would result in more students participating and less conflict. Furthermore, Addison (10/ATS*) and Darla (10/**SC) felt more project
structure, such as due dates for portions of the project or providing a specific project topic, would help students focus and be more productive.

**Member Relationships**

While exploring how group composition affects personal relationships within learning groups, the investigator noted prior relationships within a group seemed to influence group dynamics also. Member relationships and the impact students perceived these relationships to have on the group process and product are described in the following paragraphs.

**Group 1 – WEteam®**

Students in Group 1 had varied responses when asked about their relationships with other members in the group and their responses did not seem to follow grade lines. Annie (10/A*SC) said she was not best friends with anyone in the group, but they were all her friends. She felt everyone being friends and getting along helped the group work together to complete the project.

Alison (9/*TSC) indicated her friends in the group were Avery (9/A*SC) and Annie (10/A*SC). She did not know Alicia (10/A*S*) or Addison (10/ATS*). Alison (9/*TSC) felt the group worked well together and claimed there were no disagreements or problems. She said she liked working in her group because everyone got along and they had a “good time.”

Avery (9/A*SC) maintained she was not friends with anyone in this group before the project, however, there was never any tension between her and any of the other group members. She mentioned Alison (9/*TSC) was in her prior group, but felt Alison (9/*TSC) was closer to Annie (10/A*SC) because they were on dance line together. Avery (9/A*SC) thought working in the group was “weird” because she did not know the other girls. She felt she would have worked better with friends.

Addison (10/ATS*) also declared she was not friends before the project with anyone in her group, though she had previously worked with Alicia (10/A*S*) and Annie (10/A*SC) in
other subjects. She indicated she did not know Alison (9/TSC) or Avery (9/SC) very well prior to the project because they were a grade below her in school. Addison (10/ATS) felt everyone got along very well; they were nice to one another and listened to each other’s ideas. Even though she normally does not like working in groups, she enjoyed working in this group because everyone had different ideas, she learned many new computer programs, and she got to know new people.

Alicia (10/AS) said she was only friends with Annie (10/SC) before this project. She felt the group members who were friends before the project stuck together and chose an idea they liked. Since the group did not choose her idea, Alicia (10/AS) asserted she did not learn as much as she would have liked. Even so, she took pleasure in working in the group because it gave her an opportunity to forge new friendships.

**Group 2 – WEteam ®**

Edith (10/AT), Elise (10/T), Ellen (10/**SC), and Erica (10/**SC) all knew each other and Erica (10/**SC) considered them all friends prior to this project. No one knew Ethel (9/SC) because she was a grade younger than the rest of the group. Ethel (9/SC) admitted if she had known the people in her group better, she may have been more comfortable giving ideas. However, she continued to insist she just does not like working in groups.

When each student was asked if there was anyone in their group they did not get along with before the project, Edith (10/AT), Ellen (10/**SC), and Erica (10/**SC) all named Elise (10/T). Edith (10/AT) said since everyone in the group knew how Elise (10/T) was, they almost expected it when she did not help with the project. Having worked with her before, Ellen (10/**SC) agreed, saying she was “hard to work with and a little stubborn.” If the decision were hers, she would not choose to work with Elise (10/T) in the future. Ellen (10/**SC) went on to say, “I like her as a person, but not as a groupmate.” Still, she enjoyed working in the
group because it gave her a chance to work with people she would not have usually worked with on a project.

It seemed the main conflict was between Erica (10/**SC) and Elise (10/*T*C). Elise (10/*T*C) noted she and Erica (10/**SC) “like to fight” but she still believes they like each other. Erica (10/**SC) could not say why the two did not get along, just Elise (10/*T*C) annoyed her. Elise (10/*T*C) acknowledged this tension, saying if the two were around each other they would fight. Erica (10/**SC) felt the project was adversely affected due to her relationship with Elise (10/*T*C), and the “fact” that Elise (10/*T*C) refused to work with her. Specifically, Erica (10/**SC) believed it took the group longer to get things accomplished, like choosing a group name, because Elise (10/*T*C) would “go against everything” the group proposed just to be annoying. Ellen (10/**SC) concurred, declaring the conflict in personality between Erica (10/**SC), Elise (10/*T*C), and herself made the project “very long and drawn out.” Ethel (9/A*SC), on the other hand, stated she did not think Elise (10/*T*C) and Erica’s (10/**SC) dislike for one another “affected the progress of the project, but it affected the amount of teamwork.”

**Group 3 – Conceptual Learning Group**

This group’s familiarity with one another was also split by grade level. Betty (10/***C) and Brook (10/***C) were friends prior to the project, as were Bonnie (9/A*SC), Bailey (9/A*SC), and Brittany (9/A**C). Brittany (9/A**C) considered the group interaction a success because she formed new friendships. Additionally, Bailey (9/A*SC) and Bonnie (9/A*SC) felt working with students they did not know helped them learn to cooperate with new people. Bailey (9/A*SC) said once the group was comfortable with one another, they worked together easily. Still, she wished the group could have been more open to other ideas.
Group 4 – Structural/Conceptual Learning Group

Friendships within this group were somewhat split by grade level, but more so by social status. Chelsea (10/*T*C) and Courtney (10/*T*C), labeled the smart girls of the group by the teacher, were friends prior to this project. Charley (10/*TSC), who the teacher said was “too cool for school,” claimed she did not really know any of the girls in the group. However, she also noted she attended middle school and dance with Cheri (9/*TSC). Neither Cheri (9/*TSC) nor Christy (11/*T*C) were friends with any group member before this project. They maintained this was because they were in different grades than the rest of the group.

When asked to identify anyone in the group they did not get along with before the project, Charley (10/*TSC), Chelsea (10/*T*C), and Courtney (10/*T*C) each specified Christy (11/*T*C). They all cited Christy’s (11/*T*C) “odd interests” as the reason they did not get along with her. Christy (11/*T*C), on the other hand, said she got along with everyone in the group; she asserted she did not know them well enough not to get along with them. According to the teacher, Christy (11/*T*C) was at “the other end of the spectrum” from the rest of the group as far as creativity and popularity was concerned, which may have contributed to some members disliking her. Christy (11/*T*C) agreed, noting her previous group was more open to her ideas making it easier to communicate with them. In addition, she had been able to pick people she knew for her prior group and did not feel “constricted by anonymity,” as she did in the current group.

Group 5 – Social/Conceptual Learning Group

This group consisted of only one grade level; therefore, student grade level was not a factor affecting member relationships. Everyone in this group, except Fancy (10/**SC), declared they were friends with everyone else in the group. Fancy (10/**SC), on the other hand, said she did not associate with any of the girls in the group. However, she said they had been
better friends last school year. Fancy (10/**SC) believed if people in the group had been better friends the project would have been more productive. Alternatively, Francis (10/A*SC) stated since everyone was such good friends in the group, they tended to “slack” and not focus on the project. Faith (10/**SC) agreed saying since everyone in the group was such good friends they “didn’t really care about the quality of [the] presentation.” Instead, they “cared more about having fun and goofing off.” Accordingly, everyone in the group, except Fancy (10/**SC), said they enjoyed the project because they were with their friends and most would not have changed anything.

**Group 6 – WEmate™ (Randomly Selected)**

Familiarity with other group members was not controlled by grade level in Group 6. Danielle (10/*TSC) was good friends with Darla (10/**SC) and Daisy (9/A*S*) individually before this project started. Darla (10/**SC), however, did not know Daisy (9/A*S*) very well. Danielle (10/*TSC) felt that she was friends with Darla (10/**SC) and Daisy (9/A*S*) it helped the three of them get along and work well together. Still, she would have preferred the group be smaller and just friends, instead of including people that did not know one another.

Daisy (9/A*S*) also felt she would have worked better with friends. According to her, she and Dawn (9/A**C) did not really know all of the sophomores so “everyone was kind of scared” to share their ideas. Even though Dawn (9/A**C) knew Dana (10/ATS*) and Darla (10/**SC) from another class, she concurred saying, “Those who knew each other better were more open with each other and more comfortable putting ideas on the table.” Interestingly, Darla (10/**SC) believed the group worked well together because they were “all somewhat good friends” which “made it easier to have good ideas.” However, she did note she and Dawn (9/A**C) did not get along on previous projects because Dawn (9/A**C) tended to disagree with all of her ideas, making her less motivated. Dawn (9/A**C), noted she “didn’t not get along
with the other group members” but did have “a different personality from the other girls and it did not click extremely well.” She went on to admit though the group got along, they were not able to work well together.

Dana (10/ATS*) had worked with Darla (10/**SC) and Dawn (9/A**C) on separate projects before, but did not consider any of the girls in the group her friend. She sensed the group “would have been able to work on the project easier had [Dawn] not been in the group” because “she tried to take control.” Nonetheless, the main reason she did not like working in the group was not a lack of friendship, but the fact she does not like working in groups at all.

**In Conclusion**

Cross-group analyses of data revealed three emergent themes: student leadership, student feelings toward learning group, and member relationships. Teamwork, passive leadership, and free rein were identified as specific leadership styles employed by groups in this study. Student feelings toward the learning group were also investigated, finding the majority of students enjoyed the learning group experience. Reasons why students were not completely satisfied with their group experience, such as time constraints, group size, and project structure, were established and suggestions for future grouping discussed. Finally, member relationships within groups were examined to determine their affect on group process and product. How students viewed their personal relationships within their group and how they felt these relationships affected the group were detailed. Implications of these findings are discussed in the next chapter.
CHAPTER SIX: DISCUSSION AND CONCLUSIONS

With collaborative learning has come a search for the most effective means of organizing learning groups. Research suggests personality-type theory plays a fundamental role in understanding how learning group members interact and how personality predispositions influence group functioning and success (Bradley & Hebert, 1997; Culp & Smith, 2001). Nevertheless, few studies probe personality-type theory as a selection and placement strategy to enhance process and performance in education-based learning groups (Klimoski & Jones, 1995). Therefore, the purpose of this research was to provide a more complete picture of the impact of personality-profile grouping using Emergenetics® STEPTM Profiles on group process and product in high school learning groups.

In this chapter, the investigator will illustrate a learning group’s functioning and success greatly depends on how it is structured and the appropriateness of its members (Blumenfeld et al., 1996; D.W. Johnson & Johnson, 1999). The discussion reveals Emergenetics® Thinking Attribute combinations that produced stronger, more creative, and productive learning groups and the factors fundamental to their success. Factors contributing to less successful group functioning and lower member participation are also identified. Specific findings yielded by this study to be discussed in this chapter include the following:

- Emergenetics® personality profiling appears to be a useful approach to grouping students.
- The WEteam® combination seems to help learning group members improve group process engagement.
- Learning groups appear to be less effective when an Attribute is missing or scarcely represented in a group.
• The adoption of a participative leadership style, whether by an individual leader or through shared group leadership, seems to generate a more successful and enjoyable group-learning experience than other leadership styles.

• Low member participation may be linked to Behavioral Attributes, prior relationships, and/or perception of group learning.

**Effective Grouping Using Emergenetics®**

Emergenetics® theory asserts the Emergenetics® STEP™ program provides valuable insight into how students can enhance communication, creativity, and productivity in learning groups (The Browning Group International Inc., n.d.). It emphasizes the implementation of WEteams® better equips students to communicate, solve problems, and reach goals together through stronger, more creative, and productive learning groups. By testing this theory, the investigator determined Emergenetics® personality profiling was an effective approach for grouping students in this situation. Consistent with Emergenetics® theory, the most effective learning groups in this study included representation from each of the four Thinking Attributes in the Emergenetics® model. Learning groups deemed effective by the investigator were Group 1 – WEteam®, Group 2 – WEteam®, and Group 3 – Conceptual.

Groups 1 and 2, WEteams®, consisted of five members, one person to represent each of the four Thinking Attributes and one Multimodal thinker. Conversely, Group 3 was assembled around the common Thinking Attribute, Conceptual, instead of intentionally including all Attributes. Conceptual thinkers tend to be inventive and imaginative, but are also inclined to jump from one task to another making it hard to complete any one task. Therefore, it was surprising a group who was strongly Conceptual performed so well (see Table 6.1). However, upon closer examination of individual group member’s Profiles, the investigator found the Profile’s of Betty (10/***C), Brook (10/***C), and Bailey (9/A*SC) very nearly constituted a
WEteam®. Bailey (9/A*SC) was only 2 percentage points from holding a preference in Structural thinking (Appendix E). This likely explains why the group was able to focus and work together productively.

Table 6.1
Cross-Group Summary of Data

<table>
<thead>
<tr>
<th>Learning Group</th>
<th>Emergenetics® Profile</th>
<th>Cumulative GPA</th>
<th>Product Rank (AVG)</th>
<th>Leadership Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Score</td>
<td>Letter</td>
<td>Rank</td>
<td></td>
</tr>
<tr>
<td>Group 1 WEteam®</td>
<td>3.23</td>
<td>B</td>
<td>4</td>
<td>3 Teamwork</td>
</tr>
<tr>
<td>Group 2 WEteam®</td>
<td>3.49</td>
<td>B+</td>
<td>2</td>
<td>4 Teamwork</td>
</tr>
<tr>
<td>Group 3 Conceptual</td>
<td>3.06</td>
<td>B</td>
<td>5</td>
<td>1 Teamwork</td>
</tr>
<tr>
<td>Group 4 Structural/Conceptual</td>
<td>3.31</td>
<td>B</td>
<td>3</td>
<td>2 Passive</td>
</tr>
<tr>
<td>Group 5 Social/Conceptual</td>
<td>2.85</td>
<td>B-</td>
<td>6</td>
<td>6 Free Rein</td>
</tr>
<tr>
<td>Group 6 WEteam®</td>
<td>3.52</td>
<td>B+</td>
<td>1</td>
<td>5 Free Rein</td>
</tr>
</tbody>
</table>

Additionally, effective learning groups in this study engaged in teamwork as their dominate leadership style (see Table 6.1). For example, even though in Group 1 Annie (10/A*SC) took on the largest leadership role, the group worked as a team to accomplish their goal of making an anti-drug public service announcement. Group 2 also engaged in teamwork, but within a subgroup of members including Ellen (10/**SC), Erica (10/**SC), and Edith (10/AT**). In teamwork, group members contribute their ideas and skills as necessary to complete the project, encompassing both participative and shared leadership styles. These findings are consistent with other research studies demonstrating the adoption of a participative leadership style generates a more enjoyable and successful learning experience (Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990).
Less Effective Learning Groups

Because each Attribute makes an important contribution to the problem-solving process, groups tend to be less effective when an Attribute is missing or scarcely represented (Browning, 2006). In addition, groups who do not enact a participative leadership style, regularly define project success as merely meeting the deadline rather than producing quality products (M.R. Myers & Slavin, 1990). Accordingly, Group 4 – Structural/Conceptual, Group 5 – Social/Conceptual, and Group 6 – WEteam® were deemed less effective learning groups by the investigator, than Groups 1, 2, and 3.

The level of success delivered by both Group 4 and 5 may be attributed to incomplete Attribute combinations and a lack of participative leadership. For example, the dominant type of leadership observed in the Group 4, the Structural/Conceptual learning group, was passive. As noted in previous research, passive leaders often maintain their position by assuming the majority of tasks within the group, instead of involving other group members in the decision-making process (M.R. Myers & Slavin, 1990). This was likely caused by the group lacking members with a preference in the Analytical and Social Attributes which in turn allowed Chelsea (10/*T*C) to take control of the group.

While the entire group displayed a preference for Structural thinking, Chelsea (10/*T*C) possessed one of the highest percentages for the attribute. Often times, Structural thinkers believe they can do certain tasks better and faster than anyone else, which makes it difficult for them to delegate to others. This might explain why Chelsea (10/*T*C) recognized that others in the group would have taken on responsibilities had she delegated them, but choose not to do so. Her dominance may also be described by her Expressiveness score. Chelsea (10/*T*C) was a third-third expressive, making her excellent at accomplishing a task, but often times in an
overbearing manner. In this case, the task was accomplished, but without affecting the learning of other group members.

A relevant notation pertained to why Christy (11/*T*C), who was 1 percentage point shy in the Analytical attribute from making the group a WEteam®, did not help sway the group to work more productively as a team. Data revealed relevant characteristics in her Profile. In particular, even though the entire group preferred Conceptual thinking, Christy (11/*T*C) had the highest preference in the group for Conceptual thinking and it was tied with the Structural attribute for her most preferred attribute. One drawback for predominantly Conceptual thinkers is being considered “too far out there” (Browning, 2006). This is definitely how the majority of the group viewed Christy’s (11/*T*C) ideas. Both Chelsea (10/*T*C) and Christy (11/*T*C) needed members with a preference in the Analytical and Social Attributes to help moderate the overwhelming effects of their preferred Attributes.

Likewise, the adverse effect of incomplete Attribute combinations and a lack of participative leadership could not have been more obvious than in Group 5, the Social/Conceptual learning group. This group turned out the worst process and product of all six groups (see Table 6.1). Initially, the group produced several good project ideas, but never followed through on any of them. This is not surprising given the group preferred Conceptual thinking. Nonetheless, this was not their major downfall. Instead, it was the group’s overwhelming preference for Social thinking that plagued them most. People who are extremely Social are willing to listen to everyone and tend to engage with information through anecdotes and personal information, making them easily sidetracked and less likely to take on leadership responsibilities. Unsurprisingly, the group spent most of the project off task engaged in free rein leadership; they needed representation of the other attributes to temper their preferences. Some may point to the group having the lowest combined GPA as their reason for lack of engagement.
However, the investigator would point out the group with the highest cumulative GPA’s project ranked next to last place and the group with the second to lowest GPA’s project ranked number one among all projects (see Table 6.1).

On the other hand, there was no obvious reason related to the Thinking Attribute combination of Group 6 that would explain why this group process and product was fatally flawed. However, even in WEteams®, where Profiles are balanced, conflicts may arise. Members’ knowledge of Emergenetics® principles can then be applied to the issue in order to gain a greater understanding of each person’s point of view and to make compromise possible (Browning, 2006). Nonetheless, this group did not follow these suggestions. Instead, free rein ensued with members acting on their own and not in the group’s best interest. This may indicate that the leadership style adopted by a group also plays a large role in the group’s success.

**Low Member Participation**

All groups, even the more effective ones, had members who offered lower quality participation than is acceptable in group learning. Specific factors that may be linked to low member participation are prior relationships, personal perception of group learning, and individual Behavioral Attributes.

Although dominance by grade level was not seen in groups, several students from separate grade levels felt uncomfortable participating because they did not know the other group members very well. The impact of prior relationship was also seen in groups where members had disagreed in the past. Group members who had been engaged in previous conflict were prone to bring negative feelings into the current group and participate less. For example, Edith (10/AT**), Ellen (10/**SC), and Erica (10/**SC) all named Elise (10/*T*C) as a person they did not get along with before the project. This hostility continued through the current project. Additionally, students who did not enjoy group work prior to this experience were likely to have
low levels of participation in their current group as well. For instance, Ethel (9/A*SC) maintained that she did not participate mainly because she does not like group work.

The presence of specific levels of Behavioral Attributes, however, seemed to have the most effect on student participation. In particular, a preference for first-third Expressiveness was seen in less participative students. As mentioned previously, the Expressiveness Attribute indicates a person’s level of participation in social situations. First-third Expressives tend to avoid participation in large group situations and enjoy working with things more than people. For example, Bonnie’s (9/A*SC) quiet and reserved nature is representative of the fact she is a first-third Expressive. People with this preference sometimes do not realize other people do not understand what they are thinking, and therefore their ideas are not included.

A preference for first-third Assertiveness was also seen in less participative students. Recall, the Assertiveness Attribute reflects the degree of energy a person is willing to invest in expressing thoughts, feelings, and beliefs. First-third Assertives are often peacekeepers. Their goal is to be agreeable; they regularly go along with other peoples’ decisions and do not voluntarily express their opinion. For instance, even though Fancy (10/**SC), a first-third Assertive, was obviously aggravated by her group’s lack of progress, she did not put a great deal of energy into sharing her ideas.

Finally, students with Flexibility Attribute scores falling in the third-third percentile were often viewed as less participative students. Flexibility Attribute measures a person’s willingness to accommodate the thoughts and actions of others in order to create an environment that encourages others to become comfortable. Third-third Flexibles are likely to be accepting of most ideas, patient with difficult people, and happy to accommodate everyone. Hence, these students were often seen being patient with their group’s digressions and contributing little to accomplishing the project.
Group 6 provides an excellent example of how the presence or lack of certain levels of Behavioral Attributes can lead to overall group malfunction. No one in the group was a third-third Assertive and the majority of the group fell in the third-third Flexible range. This means there was likely no one in charge and everyone accommodated each other’s ideas. From the investigator’s point of view this is exactly what occurred throughout most of the project.

Dawn (9/A**C), who ranked in the second-third range for Expressiveness and Assertiveness, finally took charge of the project in the end. Apparently, she shifted her preference in these areas to accommodate the project. Unfortunately, Dawn (9/A**C) either was not able or did not choose to enlist the help of others in the group. However, their lack of teamwork in the end may be associated with a perceived conflict between Dawn (9/A**C) and other members of the group.

**Implications for Practice**

Based on the finding of this research there is still no absolute formula for effective student grouping. However, Emergenetics® personality profiling does appear to be a useful approach for grouping students if the group’s process is considered as important as its product. The quality of group products was relatively close in this study, but group process varied tremendously. WEteams® tended to implement participative leadership, which appeared in this research as in previous research, to generate a more successful and enjoyable learning experience (Browning, 2006; Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990).

Nevertheless, Emergenetics® STEPTM Profiles should not be used in isolation to group students. As seen in this research, other factors may also affect group success, including student relationships. Teachers should take into account students’ prior relationships when forming groups and avoid grouping students who are unfamiliar with one another or who have had
previous confrontations. Students do not have to be friends; in fact, friendship can pose problems within itself. It simply means students need to feel comfortable offering ideas, and this seems to happen more easily in groups where students are familiar with one another. It also implies students should be grouped in same grade-level groups when possible, since students in lower grades are often unintentionally intimidated by older students.

**Recommendations for Further Research**

The group-learning process is influenced by the personal style and individual behaviors of every member. In view of this, Emergenetics® suggests the best decisions are made with input from different Profiles (Browning, 2006; The Browning Group International Inc., 2004). This research found groups composed of students who represented each Thinking Attribute in the Emergenetics® model did in fact help students to communicate, solve problems, and reach goals together through stronger, more creative, and productive learning groups in this situation. However, further research is still needed to support the claims made in this study and by Emergenetics® theory. Specifically, this design should be replicated in other contexts, especially in mixed gender groups, to increase generalizability. Experimental design and/or quasi-experimental designs should also be implemented to support stronger claims.

This research also suggested group members’ Behavioral Attributes might play as much, or more, of a role in group productivity than Thinking Attribute preferences. Since people with different Behavioral preferences bring various degrees of energy to issues involving people, task, and adaptability, further research placing Behavioral Attributes in primary consideration should be performed.

Additionally, optimal group size should be studied within WEteam® learning groups. Based on the recommendations of students and the sub-grouping within groups found in this study, optimal group size is around three students, consistent with previous research (Nastasi &
Clements, 1991). This needs to be confirmed through more extensive research focusing specifically on optimal group size within personality-profiled groupings.

**In Conclusion**

The purpose of this study was to provide insights into an innovative approach to probing personality-type theory as a selection and placement strategy to enhance process and performance in high school learning groups. Specifically, the investigator sought to identify the implications of personality profiling for use as a group learning selection and placement strategy in high schools and to compare WEteam® group-learning outcomes with Emergenetics® posed outcomes.

Results of the study indicated Emergenetics® personality profiling was a useful approach for grouping students. In particular, the quality of group products was relatively close in this study, but group process varied tremendously. Grouping students in WEteam® combinations, where all Thinking Attributes are adequately represented, appeared to produce stronger, more creative, and productive learning groups, as Emergenetics® theory suggests (The Browning Group International Inc., n.d.).

Groups where all Thinking Attributes were present also tended to adopt teamwork as their primary leadership style. The adoption of this participative leadership style, whether by an individual leader or through shared group leadership, appeared to generate a more successful and enjoyable group-learning experience than other leadership styles. This is consistent with previous research (Chen & Lawson, 1996; French et al., 1986; Mueller & Fleming, 2001; M.R. Myers & Slavin, 1990).

Factors possibly contributing to lower member participation were also identified. These factors included lack of or flawed prior relationships, adverse perception of group learning, and presence of specific levels of Behavioral Attributes. Specific levels of Behavioral Attributes
associated with diminished participation included first-third Expressives, first-third Assertiveness, and third-third Flexibles. However, this should not be taken to imply that people with these preferences would always participate less than those holding other levels of these Behavioral Attributes. Instead, these Behavioral Attributes offer insight into why some people in certain circumstances may participate less in group work.

These findings highlight the importance of personality typing in understanding how group members interact and how personality predispositions influence group functioning and success. Consequently, they add merit to the use of Emergenetics® personality profiling by educators as a selection and placement strategy to enhance process and performance in learning groups; however, not as an isolated approach to grouping.
REFERENCES


APPENDIX A: INSTITUTIONAL REVIEW BOARD (IRB) FORMS

IRB #: 3264  LSU Proposal #: 578-8692 FAX 6792
Revised: 04/15/2005
Office:203 B-1 David Boyd Hall

LSU INSTITUTIONAL REVIEW BOARD (IRB) for
HUMAN RESEARCH SUBJECT PROTECTION

APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT

Unless they are qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/projects
using living humans as subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved or
exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.

Instructions: Complete this form.
Exemption Applicant: If it appears that your study qualifies for exemption send:

(A) Two copies of this completed form,
(B) a brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts A & B).
(C) copies of all instruments to be used. If this proposal is part of a grant proposal include a copy of the proposal and all recruitment material.
(D) the consent form that you will use in the study. A Waiver of Written Informed Consent is attached and must be completed only if you do not intend to have a signed consent form.
(E) Certificate of Completion of Human Subjects Protection Training at http://home.cancer.gov/clinicaltrials/learning/humanparticipant-
protections.asp. (Unless already on file with the IRB.)

Study exempted by
Louisiana State University
Institutional Review Board
203 B-1 David Boyd Hall
225-578-8692

to: ONE screening committee member (listed at the end of this form)in the
most closely related department/discipline or to IRB office.

If exemption seems likely, submit it. If not, submit regular IRB application. Help is available from Dr. Robert Harden,
578-8692, irb@lsu.edu or any screening committee member.

Principal Investigator  Kimberly N LaPrairie  Student? Yes Y/N
Ph: 225-753-0531  E-mail  klapra2@lsu.edu  Dept/Unit  ELRC

If Student, name supervising professor  Dr. Janice Hinson  Ph: 225-578-2280
Mailing Address 18424 Doc Olena Dr, Baton Rouge, LA 70817  Ph
Project Title  Insights into Using Emergencetics® STEP™ as A Selection and Placement Strategy to
Enhance Process and Performance in High School Learning Groups

Agency expected to fund project  N/A
Subject pool (e.g. Psychology Students)  Multimedia Productions Students
Circle any “vulnerable populations” to be used: (children <18, the mentally impaired, pregnant women, the aged,
other). Projects with incarcerated persons cannot be exempted.
I certify my responses are accurate and complete. If the project
scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative
of all non-LSU institutions in which the study is conducted.

PI Signature  Kimberly N LaPrairie  Date 3/7/2006 (no per signatures)

Screening Committee Action: Exempted  X  Not Exempted  Category/Paragraph

Reviewer  Signature  Date 3/15/06

149
Part A: DETERMINATION OF "RESEARCH" and POTENTIAL FOR RISK

This section determines whether the project meets the Department of Health and Human Services (HSS) definition of research involving human subjects, and if not, whether it nevertheless presents more than "minimal risk" to human subjects that makes IRB review prudent and necessary.

1. Is the project involving human subjects a systematic investigation, including research, development, testing, or evaluation, designed to develop or contribute to generalizable knowledge? (Note some instructional development and service programs will include a "research" component that may fall within HSS' definition of human subject research).
   
   X  YES  
   □  NO  

2. Does the project present physical, psychological, social or legal risks to the participants reasonably expected to exceed those risks normally experienced in daily life or in routine diagnostic physical or psychological examination or testing? You must consider the consequences if individual data inadvertently become public.
   
   □  YES  Stop. This research cannot be exempted--submit application for IRB review. 
   X  Continue to see if research can be exempted from IRB oversight 

3. Are any of your participants incarcerated?
   
   □  YES  Stop. This research cannot be exempted--submit application for IRB review. 
   X  Continue to see if research can be exempted from IRB oversight. 

4. Are you obtaining any health information from a health care provider that contains any of the identifiers listed below?
   A. Names
   B. Address: street address, city, county, precinct, ZIP code, and their equivalent geocodes. Exception for ZIP codes: The initial three digits of the ZIP Code may be used, if according to current publicly available data from the Bureau of the Census: (1) The geographic unit formed by combining all ZIP codes with the same initial digits contains more than 20,000 people; and (2) the initial three digits of a ZIP code for all such geographic units containing 20,000 or fewer people is changed to ‘000’. (Note: The 17 currently restricted 3-digit ZIP codes to be replaced with ‘000’ include: 036, 059, 063, 102, 203, 556, 692, 790, 821, 823, 830, 831, 878, 879, 884, 890, and 893.)
   C. Dates related to individuals
      i. Birth date
      ii. Admission date
      iii. Discharge date
      iv. Date of death
      v. And all ages over 89 and all elements of dates (including year) indicative of such age. Such ages and elements may be aggregated into a single category of age 90 or older.
   D. Telephone numbers;
   E. Fax numbers;
   F. Electronic mail addresses;
   G. Social security numbers;
   H. Medical record numbers; (including prescription numbers and clinical trial numbers)
   I. Health plan beneficiary numbers;
J. Account numbers;
K. Certificate/license numbers;
L. Vehicle identifiers and serial numbers including license plate numbers;
M. Device identifiers and serial numbers;
N. Web Universal Resource Locators (URLs);
O. Internet Protocol (IP) address numbers;
P. Biometric identifiers, including finger and voice prints;
Q. Full face photographic images and any comparable images; and
R. Any other unique identifying number, characteristic, or code; except a code used for re-identification purposes; and
S. The facility does not have actual knowledge that the information could be used alone or in combination with other information to identify an individual who is the subject of the information.

☐ YES  Stop. This research cannot be exempted—submit application for IRB review.
☒ Continue to see if research can be exempted from IRB oversight.

Part B: EXEMPTION CRITERIA FOR RESEARCH PROJECTS

Research is exemptible when all research methods are one or more of the following five categories. Check statements that apply to your study:

☒ 1. In education setting, research to evaluate normal educational practices.

☒ 2. For research not involving vulnerable people [prisoner, fetus, pregnancy, children, or mentally impaired]: observe public behavior (including participatory observation), or do interviews or surveys or educational tests:

   The research must also comply with one of the following:
   either that
      ☒ a) the participants cannot be identified, directly or statistically;
      ☐ b) the responses/observations could not harm participants if made public;
      ☐ c) federal statute(s) completely protect all participants’ confidentiality;
      or that

☐ 3. For research not involving vulnerable people [prisoner, fetus, pregnancy, children, or mentally impaired]: observe public behavior (including participatory observation), or do interviews or surveys or educational tests:
   • all respondents are elected, appointed, or candidates for public officials.
4. Uses only existing data, documents, records, or specimens properly obtained.

The research must also comply with one of the following:

either that:

   a) subjects cannot be identified in the research data directly or statistically, and no-one can trace back from research data to identify a participant;

or that

   b) the sources are publicly available

5. Research or demonstration service/care programs, e.g. health care delivery.

The research must also comply with all of the following:

   a) it is directly conducted or approved by the head of a US Govt. department or agency.

and that

   b) it concerns only issues under usual administrative control (48 Fed Reg 9268-9), e.g., regulations, eligibility, services, or delivery systems;

and that

   c) its research/evaluation methods are also exempt from IRB review.

6. For research not involving vulnerable volunteers [see “2 & 3” above], do food research to evaluate quality, taste, or consumer acceptance.

The research must also comply with one of the following:

either that

   a) the food has no additives;

or that

   b) the food is certified safe by the USDA, FDA, or EPA.

NOTE: Copies of your IRB stamped consent form must be used in obtaining consent. Even when exempted, the researcher is required to exercise prudence in protecting the interests of research subjects, obtain informed consent if appropriate, and must conform to the Ethical Principles and Guidelines for the Protection of Human Subjects (Belmont Report), 45 CFR 46, and LSU Guide to Informed Consent. (Available from OSP or http://appi022.lsu.edu/osp/osp.nsf/$Content/LSU%20IRB%20Documents)

HUMAN SUBJECTS SCREENING COMMITTEE MEMBERS can assist & review:
APPENDIX B: PARTICIPANT CONSENT FORM

Study Title: Insights into Using Emergenetics® STEP™ as A Selection and Placement Strategy to Enhance Process and Performance in High School Learning Groups

Performance Site: St. Joseph’s Academy, Baton Rouge, LA

Investigator: Kimberly LaPrairie
225-753-0531
318-447-4859 (cell)
klapra2@lsu.edu
Available Monday-Friday, 8:00 a.m.– 4:30 p.m.

Purpose of the Study: The purpose of this research project is to investigate Emergenetics® usefulness in grouping students.

Subject Inclusion: The participants for this research will be high school students enrolled in a Multimedia Productions course. All students included will have taken the Emergenetics® STEP™ instrument.

Number of Subjects: 25

Study Procedures: Students will be placed into learning groups based on their Emergenetics® STEP™ Profile to complete their final class project. Students will be asked to write journal entries addressing their thoughts and feelings related to their group experience. Students will also be observed and videotaped while working in their groups. Upon completion of their projects, selected students will be interviewed individually. These interviews will be audio taped.

Benefits: The research may yield valuable information about how student learning groups are best organized, making future learning group use more productive and enjoyable.

Risks: There are no risks involved with this research.

Right to Refuse: Students may choose to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Student’s identity will remain confidential unless disclosure is required by law.

Financial Information: There is not cost for participation, nor is there any compensation to the subjects for participation.

This study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about subjects’ rights or other concerns, I can contact Robert C. Mathews, Institutional Review Board (225)578-8692. I agree to participate in the study described above and acknowledge the investigator’s obligation to provide me with a signed copy of this consent form.

________________________________
Student’s Signature

________________________________           ______________________
(Print name)         Date
APPENDIX C: STUDENT ASSENT FORM

My name is Kimberly LaPrairie. I am a graduate student at Louisiana State University. I am asking you to take part in this research study because I am trying to learn more about Emergenetics® STEP™ and how it can be used to help place students in groups.

If you agree to be in this study placed into learning groups based on your Emergenetics® STEP™ Profile to complete your final class project. You will be asked to write journal entries addressing your thoughts and feelings related to your group experience. You will also be observed and videotaped while working in your groups. Upon completion of your projects, some of you will be selected to be interviewed individually. These interviews will be audio taped. If you are chosen to be interviewed, you will be asked questions like the following:

1. Tell me about your relationship with the other students in your group. Are there any specific interactions, positive or negative, that stand out for you?
2. How did the relationships with students in your group influence the quality of your group project? Give examples.
3. How did the group learning environment affect your learning?
4. What was the most important thing you learned from another group member?
5. How did you promote and support other students’ learning while working in the group?
6. What were your responsibilities towards completion of the project?
7. What were the responsibilities of other group members?
8. Did anyone particular member of the group take on a leadership role in the group?
9. What was the most successful interaction that you witnessed in the group?
10. What suggestions can you offer to improve the group project in the future?

There are no risks involved with this research.

Please talk this over with your parents before you decide whether or not to participate. I will also ask your parents to give their permission for you to take part in this study. But even if your parents say “yes”, you can still decide not to do this.

If you don’t want to be in this study, you don’t have to participate. Remember, being in this study is up to you and no one will be upset if you don’t want to participate or even if you change your mind later and want to stop.

You can ask any questions that you have about the study. If you have a question later that you didn’t think of now, you can call me at 225-753-0531 or 318-447-4859 (cell) or you can e-mail me at klapra2@lsu.edu.

Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it.

_______________________               ________________ _______________
Student’s Signature   Student’s Age   Date

_____________________________             _______________
Witness Signature       Date
APPENDIX D: PARENTAL PERMISSION FORM

Study Title: Insights into Using Emergenetics® STEPTM as A Selection and Placement Strategy to Enhance Process and Performance in High School Learning Groups

Performance Site: St. Joseph’s Academy, Baton Rouge, LA

Investigator: Kimberly LaPrairie
225-753-0531
318-447-4859 (cell)
klapra2@lsu.edu
Available Monday-Friday, 8:00 a.m. – 4:30 p.m.

Purpose of the Study: The purpose of this research project is to investigate Emergenetics® usefulness in grouping students.

Subject Inclusion: The participants for this research will be high school students enrolled in a Multimedia Productions course. All students included will have taken the Emergenetics® STEPTM instrument.

Number of Subjects: 25

Study Procedures: Students will be placed into learning groups based on their Emergenetics® STEPTM Profile to complete their final class project. Students will be asked to write journal entries addressing their thoughts and feelings related to their group experience. Students will also be observed and videotaped while working in their groups. Upon completion of their projects, selected students will be interviewed individually. These interviews will be taped.

Benefits: The research may yield valuable information about how student learning groups are best organized, making future learning group use more productive and enjoyable.

Risks: There are no risks involved with this research.

Right to Refuse: Subjects may choose to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Subject identity will remain confidential unless disclosure is required by law.

Financial Information: There is not cost for participation, nor is there any compensation to the subjects for participation.

This study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about subjects’ rights or other concerns, I can contact Robert C. Mathews, Institutional Review Board (225)578-8692. I will allow my child to participate in the study described above and acknowledge the investigator’s obligation to provide me with a signed copy of this consent form.

____________________________________
Parent’s Signature

_____________________________           ________________________
(Print name)         Date
# APPENDIX E: LEARNING GROUP COMPOSITIONS

## Group 1 - WEteam®

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Grade</th>
<th>Preference</th>
<th>Analytical A</th>
<th>Structural T</th>
<th>Social S</th>
<th>Conceptual C</th>
<th>Expressive</th>
<th>Assertive</th>
<th>Flexible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addison</td>
<td>10</td>
<td>ATS*</td>
<td>27</td>
<td>24</td>
<td>27</td>
<td>21</td>
<td>34</td>
<td>26</td>
<td>95</td>
</tr>
<tr>
<td>Alison</td>
<td>9</td>
<td>*TSC</td>
<td>12</td>
<td>33</td>
<td>24</td>
<td>31</td>
<td>54</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>Alicia</td>
<td>10</td>
<td>A<em>S</em></td>
<td>29</td>
<td>19</td>
<td>30</td>
<td>22</td>
<td>55</td>
<td>89</td>
<td>40</td>
</tr>
<tr>
<td>Annie</td>
<td>10</td>
<td>A*SC</td>
<td>26</td>
<td>14</td>
<td>33</td>
<td>27</td>
<td>73</td>
<td>46</td>
<td>5</td>
</tr>
<tr>
<td>Avery</td>
<td>9</td>
<td>A*SC</td>
<td>28</td>
<td>19</td>
<td>27</td>
<td>26</td>
<td>60</td>
<td>33</td>
<td>9</td>
</tr>
</tbody>
</table>

## Group 2 - WEteam®

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Grade</th>
<th>Preference</th>
<th>Analytical A</th>
<th>Structural T</th>
<th>Social S</th>
<th>Conceptual C</th>
<th>Expressive</th>
<th>Assertive</th>
<th>Flexible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edith</td>
<td>10</td>
<td>AT**</td>
<td>34</td>
<td>28</td>
<td>16</td>
<td>22</td>
<td>34</td>
<td>70</td>
<td>59</td>
</tr>
<tr>
<td>Elise</td>
<td>10</td>
<td><em>T</em>C</td>
<td>11</td>
<td>26</td>
<td>20</td>
<td>43</td>
<td>48</td>
<td>53</td>
<td>32</td>
</tr>
<tr>
<td>Ellen</td>
<td>10</td>
<td>**SC</td>
<td>19</td>
<td>16</td>
<td>32</td>
<td>32</td>
<td>93</td>
<td>46</td>
<td>50</td>
</tr>
<tr>
<td>Erica</td>
<td>10</td>
<td>**SC</td>
<td>3</td>
<td>3</td>
<td>37</td>
<td>57</td>
<td>93</td>
<td>95</td>
<td>69</td>
</tr>
<tr>
<td>Ethel</td>
<td>9</td>
<td>A*SC</td>
<td>29</td>
<td>20</td>
<td>28</td>
<td>23</td>
<td>47</td>
<td>33</td>
<td>69</td>
</tr>
<tr>
<td>Student Name</td>
<td>Student Grade</td>
<td>Preference</td>
<td>Thinking Attributes (Pie Chart Percent)</td>
<td>Behavioral Attributes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>------------</td>
<td>----------------------------------------</td>
<td>-----------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analytical</td>
<td>Structural</td>
<td>Social</td>
<td>Conceptual</td>
<td>Expressive</td>
<td>Assertive</td>
<td>Flexible</td>
<td></td>
</tr>
<tr>
<td>Bailey</td>
<td>9</td>
<td>A*SC</td>
<td>29</td>
<td>21</td>
<td>24</td>
<td>26</td>
<td>41</td>
<td>18</td>
<td>59</td>
</tr>
<tr>
<td>Betty</td>
<td>10</td>
<td>***C</td>
<td>18</td>
<td>3</td>
<td>20</td>
<td>58</td>
<td>74</td>
<td>33</td>
<td>69</td>
</tr>
<tr>
<td>Bonnie</td>
<td>9</td>
<td>A*SC</td>
<td>24</td>
<td>20</td>
<td>25</td>
<td>31</td>
<td>27</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>Brittany</td>
<td>9</td>
<td>A**C</td>
<td>29</td>
<td>21</td>
<td>21</td>
<td>29</td>
<td>74</td>
<td>55</td>
<td>59</td>
</tr>
<tr>
<td>Brook</td>
<td>10</td>
<td>***C</td>
<td>13</td>
<td>17</td>
<td>14</td>
<td>56</td>
<td>60</td>
<td>33</td>
<td>39</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Grade</th>
<th>Preference</th>
<th>Thinking Attributes (Pie Chart Percent)</th>
<th>Behavioral Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Analytical</td>
<td>Structural</td>
<td>Social</td>
</tr>
<tr>
<td>Charley</td>
<td>10</td>
<td>*TSC</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Chelsea</td>
<td>10</td>
<td><em>T</em>C</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>Cheri</td>
<td>9</td>
<td>*TSC</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>Courtney</td>
<td>10</td>
<td><em>T</em>C</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>Christy</td>
<td>11</td>
<td><em>T</em>C</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Student Name</td>
<td>Student Grade</td>
<td>Group 5 - Social/ Conceptual Learning Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>-------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thinking Attributes (Pie Chart Percent)</td>
<td>Behavioral Attributes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preference</td>
<td>Analytical A</td>
<td>Structural T</td>
</tr>
<tr>
<td>Faith</td>
<td>10</td>
<td>**SC</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Fancy</td>
<td>10</td>
<td>**SC</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Faye</td>
<td>10</td>
<td>**SC</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Fern</td>
<td>10</td>
<td>**SC</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Francis</td>
<td>10</td>
<td>A*SC</td>
<td>23</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Grade</th>
<th>Group 6 - WEteam* (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Thinking Attributes (Pie Chart Percent)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preference</td>
</tr>
<tr>
<td>Daisy</td>
<td>9</td>
<td>A<em>S</em></td>
</tr>
<tr>
<td>Dana</td>
<td>10</td>
<td>ATS*</td>
</tr>
<tr>
<td>Danielle</td>
<td>10</td>
<td>*TSC</td>
</tr>
<tr>
<td>Darla</td>
<td>10</td>
<td>**SC</td>
</tr>
<tr>
<td>Dawn</td>
<td>9</td>
<td>A**C</td>
</tr>
</tbody>
</table>
### APPENDIX F: TERMINAL PROJECT GRADING RUBRICS


<table>
<thead>
<tr>
<th>Multimedia Public Service Announcement (other than video)</th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure &amp; Organization</strong></td>
<td>Not organized. Difficult to follow. Quality and flow needs improvement.</td>
<td>Portions may be in need of better organization. Sometimes hard to follow. Quality and flow need some improvement.</td>
<td>Project structure and organization are good. Format is easy to follow. Good flow for presentation.</td>
<td>Well organized. Format is easy to follow. Excellent, well thought out. Flow shows superior effort.</td>
</tr>
<tr>
<td><strong>Mechanics</strong></td>
<td>Technical function needs improvement; Navigation is unclear. Includes 5+ errors in grammar, spelling or punctuation. Mechanics distract viewer from presentation.</td>
<td>Technical function is adequate. Navigation is clear thru some of project. Includes several errors in grammar, spelling, punctuation which may distract from project.</td>
<td>Technical function is good. Navigation is clear thru most of project. Spelling, grammar, punctuation errors are very minor, with little distraction.</td>
<td>Technically sound. Navigation is clear and intuitive. No errors in spelling, grammar, punctuation.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Project content &amp; information is in question. Does not inform; does not stay focused on topic. Content is not presented clearly.</td>
<td>Project provided information, yet has problems staying focused on topic. Ideas/information not fully developed.</td>
<td>Project is focused and informative; Ideas and information are somewhat developed.</td>
<td>Project is focused and very informative; Fully informs audience and ideas/information are very clearly presented.</td>
</tr>
</tbody>
</table>

159
<table>
<thead>
<tr>
<th><strong>Creativity and Design</strong></th>
<th>Use of elements detracts from presentation. Screen design, graphics, backgrounds, transitions distract audience. Special effects are not used or do not enhance project. No evidence of new ideas or originality.</th>
<th>Minimal use of design elements. Lots of text, little use of other elements such as graphics or pictures. Transitions, special effects, etc. do not reinforce or enhance ideas presented. Inventiveness and originality are low.</th>
<th>Good use of graphics and/or other design elements. Evidence of originality and creativity enhance the content presented.</th>
<th>Excellent sense of creativity and design. Graphic elements enhance and support the presentation of content. Transitions and special effects aid in delivery of the presentation.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documentation</strong></td>
<td>Copyright Law is not considered, includes violations. Sources are not cited.</td>
<td>Copyright adherence is questionable. Sources are cited for some, but not all.</td>
<td>Copyright statements and permissions are included. Most sources are properly cited;</td>
<td>Copyright statements and permissions are included and all requirements addressed. All sources are well documented.</td>
</tr>
<tr>
<td><strong>Oral Presentation Skills</strong></td>
<td>Great difficulty communicating. Voice projection &amp; eye contact need improvement. Mispronunciations, pauses or confusion distract from project.</td>
<td>Some difficulty communicating. Voice projection &amp; eye contact needed improvement at times.</td>
<td>Fairly fluid delivery. Voice projection and eye contact is good; Introduced self and project.</td>
<td>Well-rehearsed. Voice, eye contact and pacing hold interest and attention of audience; introduced self and project.</td>
</tr>
<tr>
<td><strong>Teamwork</strong></td>
<td>One team member carried the team</td>
<td>Team involvement fairly low</td>
<td>Project created reflected high level of team involvement.</td>
<td>Team worked well together to produce exceptional results.</td>
</tr>
</tbody>
</table>

Total Points _____
<table>
<thead>
<tr>
<th>Video Public Service Announcement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>Does your presentation stay focused on an informative topic? Does it inform the audience about the topic? Are ideas/information presented clearly?</td>
</tr>
<tr>
<td><strong>Production Quality</strong></td>
</tr>
<tr>
<td>Flow</td>
</tr>
<tr>
<td>Video Continuity</td>
</tr>
<tr>
<td>Editing (Video, Audio),</td>
</tr>
<tr>
<td>Lighting, Camera Techniques (Pan,</td>
</tr>
<tr>
<td>zoom, close-ups, etc.)</td>
</tr>
<tr>
<td><strong>Creativity and Design</strong></td>
</tr>
<tr>
<td>Backgrounds</td>
</tr>
<tr>
<td>Mechanics</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Documentation</td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
</tr>
<tr>
<td>Teamwork</td>
</tr>
</tbody>
</table>

Total Points _____
APPENDIX G: OBSERVATION PROTOCOL

Guiding Dimensions:
- Space: the physical place or places
- Actor: the people involved
- Activity: a set of related acts people do
- Object: the physical things that are present
- Act: single actions that people do
- Event: a set of related activities that people carry out
- Time: the sequencing that takes place over time
- Goal: the things people are trying to accomplish
- Feeling: the emotions felt and expressed

Sample questions relating to dimensions:
- How do activities vary at different times?
- What are all the ways activities involve actors?
- How are actors involved in events?
- What are all the ways goals evoke feelings?
- What are the ways that feelings affect activities?

Guiding Questions:
1. How do students interact in learning groups?
   a. Quality of explanation
      - Giving Help – level of elaboration
      - Receiving Help
   b. Quality of discussion
      - Off-task behavior
      - Passive behavior
      - Negotiation
      - Argumentation
   c. Level of participation
2. How are conflicts resolved within learning groups?
   a. Cognitive conflict – concerns the task conceptualization or solution
   b. Social conflict – not related to the problem, name calling, criticism
3. Is there a shared vision within the group?
4. How are goals accomplished?
   a. Students work together
   b. Division of labor
   c. Problem solving in parallel
   d. Free riding
5. How are group decisions made?
   a. Participatory or shared leadership - Leader adaptive to group members or situation
6. How are different personalities dealt with within learning groups?
   a. Directing
   b. Delegating
7. What are the relationships among group members?
APPENDIX H: STUDENT JOURNAL GUIDELINES

Each day after class, please take a few minutes to write down your personal thoughts and feelings concerning experiences in your group. The instructor and researcher will be the only ones to read these reflections, so please be candid and truthful. No one will be penalized for expressing their thoughts and feelings.

Focus on the following topics to help guide you in your journaling:
- Problems encountered with other group members and how the problems were resolved
- Positive experiences that occurred during group work
- Leadership within the group

Journals are to be submitted once a week on Friday through the class BlackBoard’s digital dropbox.
APPENDIX I: STUDENT INTERVIEW QUESTIONS

1. Tell me about yourself (name, age, classification) and anything else that you would like for me to know about you?
2. Tell me about your relationship with the other students in your group. Are there any specific interactions, positive or negative, that stand out for you?
3. How did the relationships with students in your group influence the quality of your group project? Give examples.
4. How did the group learning environment affect your learning?
5. What was the most important thing you learned from another group member?
6. How did you promote and support other students’ learning while working in the group? Give examples.
7. What were your responsibilities towards completion of the project?
8. What were the responsibilities of other group members?
9. Did anyone particular member of the group take on a leadership role in the group? Explain.
10. Think back on your interaction in the group. What was the most successful interaction that you witnessed?
11. What suggestions can you offer to improve the group project in the future?
12. Is there anything else that you would like to tell me about working in your assigned group?

These questions may be supplemented by others arising from group observations or student interviews.
APPENDIX J: SAMPLE EMERGENETICS® PROFILE

Emergenetics®

KIMBERLY LAPPRAIRIE - NOVEMBER 4, 2005

Analytical = 24%
• Clear thinker
• Logical problem solver
• Enjoys math
• Rational
• Learns by mental analysis

Conceptual = 5%
• Imaginative
• Intuitive about ideas
• Visionary
• Enjoys the Unusual
• Learns by experimenting

Structural = 62%
• Practical thinker
• Likes guidelines
• Cautious of new ideas
• Predictable
• Learns by doing

Social = 9%
• Intuitive about people
• Socially aware
• Sympathetic
• Empathic
• Learns from others

HOW YOU THINK: PERCENTAGES

HOW YOU COMPARE TO THE GENERAL POPULATION: FEMALES

Geil Browning, Ph.D. / Wendell Williams, Ph.D.
Harold@TheBrowningGroup.com
225-767-7520

166
**APPENDIX K: COMPLETED PROJECT GRADING RUBRICS**

Group 1 – WEteam®

### TEACHER RUBRIC

**Video Public Service Announcement**

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Quality</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Points**: 20  
**Letter Grade**: B

### INVESTIGATOR RUBRIC

**Video Public Service Announcement**

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Quality</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Points**: 23  
**Letter Grade**: B
## TEACHER RUBRIC
Multimedia Public Service Announcement

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure &amp; Organization</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td></td>
<td></td>
<td><strong>22</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Letter Grade</strong></td>
<td></td>
<td></td>
<td><strong>B</strong></td>
<td></td>
</tr>
</tbody>
</table>

## INVESTIGATOR RUBRIC
Multimedia Public Service Announcement

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure &amp; Organization</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td></td>
<td></td>
<td><strong>19</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Letter Grade</strong></td>
<td></td>
<td></td>
<td><strong>B</strong></td>
<td></td>
</tr>
</tbody>
</table>
Group 3 – Conceptual Learning Group

<table>
<thead>
<tr>
<th>TEACHER RUBRIC</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Public Service Announcement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginning</td>
<td>Developing</td>
<td>Accomplished</td>
<td>Distinguished</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>--------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Content</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Quality</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Points</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter Grade</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| INVESTIGATOR RUBRIC              |               |               |               |               |
| Video Public Service Announcement |             |               |               |               |</p>
<table>
<thead>
<tr>
<th>Beginning</th>
<th>Developing</th>
<th>Accomplished</th>
<th>Distinguished</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Quality</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Points</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter Grade</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## TEACHER RUBRIC

**Video Public Service Announcement**

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Production Quality</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Creativity &amp; Design</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mechanics</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Documentation</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral Presentation Skills</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Teamwork</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Letter Grade</strong></td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## INVESTIGATOR RUBRIC

**Video Public Service Announcement**

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Production Quality</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Creativity &amp; Design</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mechanics</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Documentation</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral Presentation Skills</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Teamwork</strong></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Letter Grade</strong></td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Group 5 – Social/Conceptual Learning Group

### TEACHER RUBRIC
Multimedia Public Service Announcement

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure &amp; Organization</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Points: 18  
Letter Grade: B

### INVESTIGATOR RUBRIC
Multimedia Public Service Announcement

<table>
<thead>
<tr>
<th></th>
<th>Beginning 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Distinguished 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure &amp; Organization</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Points: 12  
Letter Grade: C
### TEACHER RUBRIC
Multimedia Public Service Announcement

<table>
<thead>
<tr>
<th></th>
<th>Beginning</th>
<th>Developing</th>
<th>Accomplished</th>
<th>Distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure &amp; Organization</td>
<td>1</td>
<td>2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mechanics</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Total Points: 22
Letter Grade: B

### INVESTIGATOR RUBRIC
Multimedia Public Service Announcement

<table>
<thead>
<tr>
<th></th>
<th>Beginning</th>
<th>Developing</th>
<th>Accomplished</th>
<th>Distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure &amp; Organization</td>
<td>1</td>
<td>2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mechanics</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Creativity &amp; Design</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oral Presentation Skills</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Total Points: 15
Letter Grade: C
February 1, 2007

Kimberly LaPrairie
18422 Doc Olena Dr.
Baton Rouge, LA 70817

To whom it may concern:

I am the author of *Emergenetics: Tap Into the New Science of Success* (hereinafter "Book"), and I hereby grant Kimberly LaPrairie permission to reprint from the Book the Inter-Attribute Correlations, Test/Re-test Statistical Correlations, and Coefficient Alphas Tables in her Doctoral Dissertation entitled "Insights into Using Emergenetics® STEP as a Selection and Placement Strategy to Enhance Process and Performance in High School Learning Groups." This permission applies only to Ms. LaPrairie's Doctoral Dissertation and any further reprints outside the scope of her Doctoral Dissertation will require additional written permission.

Sincerely,

Gail Browning, Ph.D.
Founder/CEO
Emergenetics International
VITA

Kimberly Nichols LaPrairie was born and raised in Texarkana, Texas. She graduated from Redwater High School in 1994. Kimberly graduated cum laude from Henderson State University in 1997 with a Bachelor of Business degree in accounting, and the University of Louisiana at Lafayette in 2002 with a master’s degree in curriculum and instruction. Prior to entering the doctoral program in educational technology at Louisiana State University, she taught eighth grade English and Louisiana history at St. Anthony of Padua Catholic School for one year and high school mathematics in Evangeline Parish for three years. Most recently, Kimberly has worked as an instructor of educational technology at Louisiana State University and designed graduate level course work for a major online university. She currently resides in Baton Rouge with her husband and son.