Grouping of Students: A Conceptual Analysis Part 1[*]
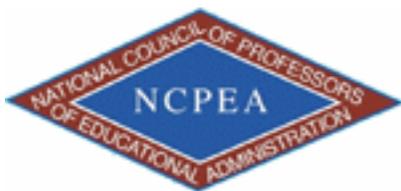
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Abstract

Three major topics related to grouping students (i.e., group-learning paradigms, learning group configuration, and student leadership in academic work groups) were reviewed. Given the confusion arising from the interchangeable use of terms associated with group learning, a detailed comparison of cooperative and collaborative group-learning paradigms was presented. Definitions, common attributes, and practices that vary among the approaches were examined. Grouping strategies (e.g., group size, gender, race) and personality profiles (i.e., Myers-Briggs Type Indicator®, Emergenetics®, and the STEPTM Program) influencing group-learning composition were then investigated to determine best practices and research deficiencies. Next, student leadership in small academic work groups was organized under three subtopics: situational demands, leadership styles, and leader attributes. Each area was analyzed in view of the extant literature. Implications of this conceptual analysis are provided. This publication aligns with the Interstate School Leaders Licensure Consortium (ISSLC) Standard 3: "An education leader promotes the success of every student by ensuring management of the organization, operation, and resources for a safe, efficient, and effective learning environment."

NOTE: This module has been peer-reviewed, accepted, and sanctioned by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration. In addition to publication in the Connexions Content Commons, this module is published in the **International Journal of Educational Leadership Preparation,** [1] Volume 4, Number 1, (January - March 2009).

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1 Introduction

Within this review of the extant literature, three major topics are analyzed: 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 , 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 STEPTM Program.

In the final focus of this article, 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 individual leadership qualities are believed to be less important when considered in isolation of the nature of the task . 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 , leader attributes are considered.

2 Group Learning Paradigms

2.1 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 . Regardless, commonalities are present between the two approaches. Slavin 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 . 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 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 . 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 .

Numerous researchers 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 . Johnson, Johnson, and Holubec defined 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 that they will sink or swim together .

Slavin 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 structuring requires that students combine their resources to achieve their 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 researchers have indicated that it provides the framework for promotive interaction . 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 . 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 . 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 accountability 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 . 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 approaches are actually complimentary .

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 . Without these skills, cooperative groups cannot function effectively; they are key to group productivity . Researchers have provided further support that the mixture of positive interdependence, a contingency for academic achievement on performance and a reward contingency for using social skills promote high achievement .

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 . By engaging in group processing, it is expected that 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 . Self-evaluation data gathered by Mueller and Fleming endorsed the expected advantage of group learning, with 42% of the study's participants reporting learning about group cooperation. What is more, research evidence exists that group processing has a sizable and positive effect on student achievement as well . Support for group processing includes allocating specific and ample time along with communicating clear expectations for student involvement and anticipated outcomes.

2.2 Collaborative Learning

Many elements of cooperative learning apply to collaborative learning as well . In fact, Bruffee deemed 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 . 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 . 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 . 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 .

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 . 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 , identified several principles on which collaborative learning is based. Foremost, greater understanding emerges when students work together rather than independently . Working together to stimulate deeper understanding includes both oral and written interaction . 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 . 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 .

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, Marx, Soloway, & Krajcik, 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.

2.3 Role of the 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 . 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, Farivar, & Mastergeorge, 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 . 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 . 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.

3 Learning Group Configuration

Learning groups can be organized in many different ways. 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" . "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" . Consequently, effective group learning requires mechanisms to identify the appropriateness of group members.

3.1 Group Size

Fuchs et al. 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;) presence in effective learning groups. However, few researchers 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" . This lack of clear empirical evidence fails to provide a sufficient research basis, making it extremely difficult 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 (Wilkinson & Fung, 2002). In their study examining the effects of workgroup structure and size on student productivity during group learning, Fuchs et al. identified several main effects favoring dyadic over small group composition. Dyads rated statistically 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 . 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 . The results of a meta-analysis of research on the effects of within-class grouping on student achievement by Lou, Abrami, and Spence further support these findings. Therefore, matching workgroup size with the intended learning outcomes is recommended.

3.2 Gender

Research in which the effect of group composition on the basis of student ethnicity and gender has been investigated is limited . In a study of middle school learning groups, Webb 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 reported similar results. R. T. Johnson, Johnson, Scott, and Ramolae also investigated student grouping with regard to gender. They found students who worked in homogeneous gender groups experienced lower levels of cognitive conflict than those students who worked 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.

3.3 Race and Ethnicity

Researchers have documented the positive effects of interethnic cooperation, the equal-status interaction between students of different ethnicity, on intergroup relations . In particular, participating in racially and ethnically diverse learning groups facilitates learning and increases student achievement . 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.

Conversely, Cohen suggested that group work promoted 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" . 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 a lack of direct information is present.

3.4 Ability-Level Grouping

Whether student-learning groups should be homogeneous or heterogeneous with regard to ability level, has been the topic of much debate. Researchers have suggested that high-ability level students be grouped

homogeneously so cognitive conflict and resolution can occur . Fuchs, in other research studies reported that 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 et al. commented as follows:

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 and Panitz and Panitz supported these findings and recommend the heterogeneous grouping of students with a moderate range of abilities. Nastasi and Clements also suggested the homogenous grouping of middle-ability students but warn against the homogenous grouping of high- or low-ability students. Brush's research strengthened 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 also advised 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" . In a study of mechanisms of change in a cognitive structure, Kuhn found a large difference in cognitive level between collaborating peers was less conducive to cognitive growth than a small difference. This finding supports the supposition for group learning to be beneficial, learning groups should be reasonably homogeneous with regard to members' cognitive abilities . The results of Lou et al.'s meta-analysis both replicated and extended these findings with homogeneous ability grouping appearing more effective than heterogeneous ability grouping in the studies examined. Nevertheless, Nastasi and Clements insisted that some diversity in ability levels was required to ensure the range of perspectives and knowledge needed to facilitate high levels of communication.

3.5 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 . In spite of this importance, research evaluating selection and placement strategies to enhance process and performance in learning groups is scarce, especially for variables such as personality.

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 suggested that certain aspects of normal human behavior, such as the way people prefer to receive information, organize information, and reach conclusions, are predictable and classifiable . As a result, the MBTI® is intended to be an inventory of basic style preferences rather than measure of traits (I.B. Myers, McCauley, Quenk, & Hammer, 1998) and it does not measure a person's competencies, and right or wrong preferences are not present.

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 . 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 . According to Jung's theory, as cited in Culp and Smith:

...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 or from where a person gets energy . Extroverts (E) receive their energy from interacting with other people and things, whereas 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 . 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 . 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 researchers investigating this assumption have suggested diversity of psychological types result in successful group performance. In a study by Blaylock , project groups with complementary preferences in Thinking-Feeling (TF) and Sensing-Intuition (SN) outperformed groups in which all group members had the same preferences. Similarly, in a case evaluation of two software development teams by Bradley and Hebert , 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 percentage of judging types on the more successful team ensured the project was completed in a timely manner. Dilworth and Richter also acknowledged in their case study research group performance was facilitated by diversity in personality types. Neuman, Wagner, and Christiansen 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 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 Monanhan suggest job performance is improved when group members possess characteristics similar to other individuals in the group. More importantly, Varvel et al. did not find any particular combination of personality-type preferences to have a direct effect on group 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® has not related with 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 , the matching of student personality types to various forms of instruction and subject matter , and student career counseling.

With more than 2 million people completing the MBTI® each year, it is one of the most widely used psychological instruments . 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 . 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 insufficient evidence exists 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 the Mental Measurements Yearbook would recommend the test without more rigorous research . In spite of this occurrence, 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.

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 . 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, researchers found that Thinking and Behavioral Attributes were independent of each other, meaning the Emergenetics® Profile successfully identified traits that did not overlap.

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. These actions sometimes cause 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 . 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.

The four Thinking Attributes are tempered by the three Behavioral Attributes: Expressiveness, Assertiveness, and Flexibility. These attributes are what people perceive in other people . 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 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 influence, Emergenetics® suggests the best decisions are made with input from different Profiles . This process 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.

3.6 Part 2 (continued)
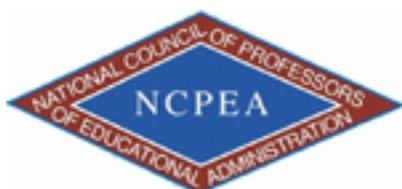
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[2]"Grouping of Students: A Conceptual Analysis Part II" <http://cnx.org/content/m19566/latest/>

Grouping of Students: A Conceptual Analysis Part II[*]

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Commons, this module is published in the **International Journal of Educational Leadership
Preparation,** [1] Volume 4, Number 1, (January - March 2009).

1 Student Leadership in Academic Work Groups

Research pertaining to individual leadership qualities has been regarded as less important when considered
in isolation of the nature of the task . Nevertheless, research literature regarding informal student leadership
within academic work groups is still limited .

1.1 Situational Factors

In particular, literature identifying situational factors associated with informal student leadership is lim-
ited. In response, Yamaguchi 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 mas-
tery 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

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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 the person 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 researchers have supported these findings, asserting that making understanding the goal of group work is a key element of emergent leadership and group success.

1.2 Leadership Style

Participative leaders. Leadership style is the manner and approach of directing and mobilizing people and/or their ideas . 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 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. Mueller and Fleming 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 .

Chen and Lawson 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 the results of Myers and Slavin and Mueller and Fleming .

The effectiveness of participative leadership is also supported by French, Waas, Stright, and Baker 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 . 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 . Also, it requires a willingness and an ability to do so . Myers and Slavin and Browning support the idea of shared leadership, explaining success with unstructured tasks requires input and collaboration

from every member of the group. Yamaguchi 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.

1.3 Leader Attributes

Personality. The lack of literature on personality and small group decision–making prompted Thatcher and De la Cour 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 person'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 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, whereas passive leaders often maintained their position by assuming the majority of tasks within the group.

Gnagey , 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 2005, 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 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 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. 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 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 study support research showing high self-monitors to emerge as leaders of small groups. However, Kolb stated that 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 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 . 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. Rubin et al. also substantiated 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 .

Various leadership characteristics. Duemer et al. 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 ex-

hibited 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. . 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 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 . 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 study on student cooperative learning, females emerged as group leaders in all six groups, necessitating further research.

2 Conclusions

The terms cooperative and collaborative learning are often used interchangeably in the classroom and in the research literature. Though correct that many elements of cooperative learning apply to collaborative learning , collaborative learning is a much more student-centered approach . In collaborative learning students assimilate ideas and create knowledge . Activities used in collaborative learning employ rich contexts that require students to practice and develop higher order reasoning and problem-solving skills . Alternatively, cooperative learning calls for students working together to apply a series of steps leading toward predetermined objectives .

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 . 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 .

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. Whereas optimal group size has yet to be determined , researchers have suggested the importance of matching group size with intended outcomes . Specifically, small groups provide active discussion and debate, whereas larger groups offer a wider range of perspectives and background knowledge . Researchers have also indicated that heterogeneous equal gender group composition encourages cognitive conflict and raises performance . Researchers dealing with race and ethnicity have presented conflicting results; however, the majority of research reviewed suggests positive effects of interethnic cooperation . Ability-level grouping research also presents inconsistent results. Even so, some diversity in groups is suggested in most research .

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 and heterogeneous grouping by psychological types resulted in successful group performance in various research, while others found no particular combination of personality-type prefer-

ences to have a direct effect on group performance . Also of interest, independent reviews of the MBTI®
raised concerns regarding the test's reliability and validity , 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 . 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 .
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 aca-
demic 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 under-
standing over aptitude, effective and cooperative task completion results . 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 .

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 persons seeking the involvement
of others tended to be seen as possessing leadership qualities . Additionally, influential group members were
able to produce effective requests and explanations in peer-directed groups .

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 . Findings also
established a strong positive relationship between perceived intellectual competence and leadership emergence
. 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 . Gender
did not emerge in the literature as being conclusively related to student leadership ; however, in one study
females did emerge as leader in all groups . 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 . Unfortunately, the literature identifying
situational factors associated with emergent student leadership is sparse, indicating the need for further
research.

3 References

Click here to access the Reference Section for Parts 1 and 2[2]

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[2]http://cnx.org/content/m19566/latest/grouping_References.pdf

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