Student group approach to teaching using Tuckman model of group development

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WEBER, MARK D., AND THOMAS A. KARMAN. Student group approach to teaching using Tuckman model of group development. Am. J. Physiol. 261 (Adv. Physiol. Educ. 6): S12-S16, 1991.—If health care professionals are to be effective members of an interdisciplinary team of diagnostic specialists, it is critical that their university education equip them for that role. Using Tuckman’s four stages of “forming,” “storming,” “norming,” and “performing,” university faculty are shown how a group of undergraduate science students can be developed into an organism intent on identifying solutions to problems posed to them (e.g., technical, medical ethical). The use of the group approach enhances maturity, competence, self-esteem, and motivation of the students and enables the instructor to delegate appropriate responsibilities to the students. In addition to a sense of achievement, students also reported greater appreciation of the ideas, values, and abilities of their group colleagues.

small group; science education; problem solving

HEALTH CARE PROFESSIONALS at all levels are increasingly called on to function not as reactive technicians but as proactive diagnosticians, doing so often as members of a team of specialists seeking to unravel some particularly knotty problem. Even though we are aware that professionals do not operate very effectively in splendid isolation, frequently students in allied health science programs are treated as isolated learners in competition with their associates. This ignores the fact that the classroom of today can be an excellent laboratory that closely resembles the reality of problem solving in patient care settings and that the instructor can become a catalyst leading the development of student groups that utilize individual talents to analyze problems and reach professional decisions. Instruction of this nature can be provided by capitalizing on existing models of group development and can add a significant dimension to the undergraduate experience. This report focuses on teaching concepts in undergraduate science classes in general and in human anatomy and physiology classes in particular through the formation and use of student groups and through the Tuckman model.

TUCKMAN MODEL

Tuckman described a developmental sequence of four stages for group development. The progressive model included “forming,” “storming,” “norming,” and “performing.” Throughout the sequential development of the group, there are recurrent themes that focus on task and relationships.

The timing of the progress through each of the sequential stages depends on the type, composition, and leadership of the group. The growth, development, and maturity of the group are related directly to its ability to resolve conflicts and to remove barriers that inhibit progress. Consideration must be given to those factors that exert the greatest influence and that guide task-affective processes in a positive direction by encouraging quality member interaction to emerge naturally.

Having established realistic expectations for specific group behavior, the leadership coordinates various methods of intervention that encourage and facilitate the progression of the group through the developmental stages.

After initial formation, group members are introduced to the task and continue through a progressive awareness and development of team identity. The formation of task-oriented behavior becomes defined through the activities delineated by goal-derived objectives. Group members test one another and the leadership in an effort to orient themselves in the group setting and to define the unknown parameters of the interpersonal relationships.

Storming involves affective behavioral responses to the requirements of the task and to interpersonal conflicts. This second stage is often characterized by challenges to authority, by confrontation from the leadership, and by isolation of the individual from group activities. Through the adept use of group interventions, the leadership encourages the resolution of conflicts and the development of redundant conditions that spur growth and development of the group in a positive direction.

The third stage, norming, contains the basic theme of cooperation obtained through the communication of ideas, opinions, and information. Shared values, evidence in collaborative efforts by group members, promote synergistic outcomes, and unity develops from the cooperative work ethos. Trust, harmony, and the acceptance of identities and roles encourage cohesion, participative decision making, and egalitarian leadership.

Performing, the fourth stage, is characterized by the interrelatedness of roles, problem solving, and goal-oriented activities. Collaboration for achievement of task becomes evident through member interdependence of relationships and contributions of resources.
SITUATIONAL LEADERSHIP

Hersey and Blanchard’s (6) theory of situational leadership both complements and coincides with Tuckman’s group development model. Kormanski (7) integrated the two models in the article “A Situational Leadership Approach to Groups Using the Tuckman Model of Group Development” and noted that application of the situational leadership model involves defining the group’s task, determining the group’s level of maturity for the specific task (readiness), and selecting and applying appropriate performance interventions that take into consideration both task and relationship behavior. The group’s ability to perform a task, or “task maturity,” depends on the members’ knowledge and interaction skills, whereas the group’s willingness of “psychological maturity” depends on the members’ acceptance of responsibility and intrinsic motivation. The levels of both task and psychological maturity are also directly related to the specific task assigned. Effective leadership then must incorporate varying amounts of task and relationship behavior into the plan of action, depending on the needs of the group. The situational leadership model presented by Hersey and Blanchard (6) identifies four styles of leadership with varying amounts of task and relationship behavior designed to complement the various levels of maturity (task and psychological) within the group.

The initial form of situational leadership is highly directive (high task, low relationship behavior) and is displayed primarily when members of the group are either unwilling or unable to perform the task at hand, which is indicative of a low task maturity. Hersey and Blanchard (6) labeled this style of leadership as “telling.” Kormanski (7) stated that “relationship behavior is low because, according to behavior-modification principles, one does not reward people for being unable or unwilling to perform a task.” Motivation should stem primarily from aspiration for a positive leader relationship or from a yearning for reward, thus incentive motivation. The leader maintains communication channels for clarification and further group development.

The telling style of leadership corresponds to the “forming” stage of group development. A group in the forming stage displays low task maturity and is oriented toward setting and establishing patterns of interaction with other members (1, 3). Group members subconsciously display behavior patterns reflective of subtle insecurities and vacillating confidence. Therefore a leader who utilizes a highly directive style implements the most effective method of dispelling member dependency and acquainting them with the task and objectives.

The second style of leadership in a developmental sequence is “selling.” The leader offers both high task-relevant behavior and high relationship-relevant behavior. These behavior patterns match the group’s apparent willingness to attempt the task and yet recognize that the group is inexperienced. The leader encourages or “sells” the group members on taking more responsibility and on assuming “ownership” of the task.

The storming stage of group development, earlier described as containing varying degrees of conflict, withdrawal, and affective behavior, requires the leadership to respond to the counter-dependent behavior of the group (3). Beyond the displayed frustration (13), control and manipulation (12), and testing (11), the group members’ thirst for increased social interaction and acceptance from others (8). This desire, reflected in intrinsic motivation, is evident in the willingness to share in task responsibility despite being inexperienced.

Through the adept use of group interventions, the leadership encourages the resolution of conflicts and the development of redundant conditions that stimulate growth and development of the group in a positive direction. Interventions used by the leadership should reflect both high task (directive) and high relationship (consideration, explanation, and clarification) behaviors (6).

As the group increases in task maturity, responsibility should be increased to prevent resentment and dissen- sion. The selling style will require more involvement and time from the leadership due to its very nature of relationship investment. The developmental aspect of both storming and selling promotes the group’s task and interrelationship maturity, as well as encouraging the group to attempt successive stages.

When the group is unwilling to accept total responsibility, usually due to a lack of self-confidence, the leadership must display some highly supportive relationship behavior. At the same time, directive task-related behavior should be reduced to encourage the group to accept and share in the responsibilities of the task. The “participating” leadership style promotes two-way or several-way communication and shared decision making.

As a result of the increased interaction and participation, closer unity, greater trust, higher morale, and increased harmony are achieved. Through the increased integration (5) and involvement (10) of the group members, and through the leadership’s use of interventions, redundant conditions encourage the structuring of group norms (4) and satisfy the need for recognition and self-worth (8). High relationship-oriented behavior of the leader orchestrates the development of cohesion while promoting the self-expression and collaboration from the group members. The goal of cooperation becomes more real and evident, and the group becomes transformed into a functional unit, allowing for acceptance of greater responsibility, for increased decision making, and for the active participation of each member in directing the future of the group. Thus the leader can begin to offer less supportive behavior.

As the group continues to mature, growing in competence, self-esteem, and motivation, the leader offers low directive-task behavior and low relationship or socio-emotional support. The “delegating” leadership style, known for the increased group autonomy, allows the group to establish challenging goals and to utilize pride as the motivating factor (7). The noninterfering leader keeps a low profile while maintaining communication channels for consultation on task relevant matters and periodic reinforcement for achievement of goals.

The performing stage of group development is characterized by high task and high relationship behavior by the group members. The individuals are intrinsically
motivated to apply high levels of knowledge, effort, task, and social skills to ensure goal attainment (2, 5).

IN THE CLASSROOM

Teaching styles are remarkably similar to leadership styles. The Hersey and Blanchard (6) model for sequential development of situational leadership can easily be applied to the classroom instructor. The integration of the Tuckman group development model is equally applicable to the classroom. The following discussion about classroom instruction offers a description of some of the similarities and congruencies of the Tuckman model of group development and situational leadership.

The initial reservation displayed by so many students who are inexperienced and unwilling stems from their physiological and psychological needs (8). The high task-directive behavior of the instructor provides the security and nurturance desired during the orientation phase.

In a particular anatomy and physiology class, information was disseminated primarily through lectures with some discussion. McKeachie (9) noted that when measures of knowledge are used, lectures prove to be as efficient as other methods, and this is especially true in science classes.

As the academic year progressed, so did the maturation process for the group of students within this particular lecture section. The students’ needs for identity, belonging to a group, and social interaction served as sufficient motivation for interaction and the willingness to ask questions and offer comments. The instructor encouraged discussion, offered clarification, and asked questions (high relationship behavior). Positive feedback served to reinforce participation. Gradually, the increased level of maturity and experience in the class provided the instructor with an opportunity to implement activities that encouraged greater student participation.

A class typically is composed of a variety of small groups, and insight into small-group behavior and group-processing skills can increase program effectiveness by eliminating obstacles caused by the environment and by the competitive interaction of classroom group members (7). With the students being both experienced and equipped with the scientific knowledge for discussion and willing to interact and collaborate, the instructor designed a task in which all the students in the class were provided with the opportunity to become involved in upper-level cognitive thinking, decision making, and problem solving. The task design and instructional objectives centered on improved intrinsic motivation, attitude changes, increased retention of information at the end of the course, transference and application of knowledge to new situations, and development of problem-solving skills and critical thinking.

For this class activity, students were separated into small groups (usually of 3 or 4 students, depending on the combination of particular abilities possessed by the members). The groups work best if there is a good mix of ability and social skill, and assignments to groups were made on the admittedly imperfect perceptions of the faculty member regarding who might be a good facilitator or communicator, knowledgeable about anatomy and physiology, a pragmatic problem solver, or an innovative dreamer to name some of the possible roles. However, no group member was assigned to a specific role, and, as might be expected, some members assumed different roles at different times.

The small member groups were asked to take on the role of a team of surgeons at a public hospital. All of the teams were given the same problem, which was related to the most recent lecture material. In this case, the problem was related to the skeletal system.

**Problem.** A healthy 60-year-old female has had current fractures of the femur 6 in. below the lesser trochanter. She has no history of any chronic illnesses and appears to be in good physical condition. Conventional methods of reducing the fracture and solving this problem proved useless. Suggest at least four different strategies or treatment plans, listing the steps, that your team would implement to solve this problem.

The teams were given 3 days to research, illustrate, and discuss the problem among themselves. The written assignment was to be handed in for grading. Included in the directions was the request that each member participate in the research and discussion. The “surgeons” were encouraged not to ignore or discount any suggestions made by other members of the team but rather to search for a way to make suggestions economically feasible and physically possible.

The low task behavior was designed to increase the expression of opinions and to increase open communication. The instructor’s high relationship behavior while interacting with each group contributed to the development of cohesion. As the group members became more confident and willing to assume responsibility for directing the discussion and for designing the strategies, the instructor offered less supportive behavior. The group developed norms for interacting and for processing information.

Suggested treatment plans invariably focused on some specific aspect of cytological involvement of callus formation and/or tissue repair. These included the employment of electrical gradients (needed to create an alkaline environment for stimulation and induction of osteoblasts, promoting specific enzyme activity), transplantation of embryonic or bone bank tissue, tubular implants consisting of a combination of flexible metals and nutritional supplements (e.g., vitamin C for collagen synthesis and B vitamins), local injection of steroid and protein derivative growth hormones (especially oriented toward inducing differentiation of osteogenic cells to osteoblasts), and porous metal implants coated with a gelatinous membrane of synthetic fibers and hydroxyapatite. Some treatment plans called for variations of traditional approaches or some combination of those listed above.

Having developed the strategies or treatment plans, the groups were given a second assignment. This time, they were asked to rank 10 patients with the same set of medical symptoms in order of priority for treatment. The age, career, position, general health, sex, and background were specified for each of the 10 patients. The patients...
varied from one another on all accounts except for the symptoms. The groups were informed that there were funds to provide for three treatment plans, and they were instructed to select three patients for treatment and to give the rationale for their selections.

On the basis of the feedback during the debriefing, the second half of the assignment was significantly more challenging than the first. The students, desperate searching for differentiating patient information not originally given, constructed additional backgrounds on their treatment plan "recipients." The fabricated factors invariably focused on factors that would not display any previous bias toward a particular patient. These included aspects regarding treatment facilities, experience and history of other medical personnel involved, and peculiarities of a specific treatment plan that would be a better match for one patient over another.

This assignment involved little task or relationship behavior from the teacher. Because the groups' high levels of competence, self-motivation, and self-direction needed little socioemotional support and consultative behavior, a delegating leadership style was used by the teacher. The self-managing groups asked for little direction and needed even less supervision for accomplishment of the task. It is believed that the students' self-actualization needs were enhanced by the type of assignment.

The members of each team worked very well together and became quite comfortable with the team structure. When the assignment was completed, each of the teams was eager to attack a new problem. The news regarding a return to the traditional lecture/discussion format and a consequent disassembling of the teams generated comments that reflected disappointment. The general feeling was represented by comments such as, "What? Why do we have to go back to lectures?"

The adjourning stage was clearly characterized by the group members' experience and unwillingness to be self-directed and by a lack of motivation, which was especially characteristic of the apprehension felt during separation and termination of task. The groups' regressive movement encouraged the instructor to provide high relationship and low task behavior and thus return to a participating leadership style.

After the groups completed the assignments, a class discussion provided an opportunity for explaining the selections and for exchanging ideas. The discussion developed into a statement of medical ethics, values, and belief systems.

At the conclusion of the discussion, time was devoted to enable the students to explore their perceptions of the values and benefits of the group formation and tasks. This allowed the students to examine their role and function in their respective teams, their thoughts and feelings during the formation of the team, and the development of a consensus treatment program and in selecting recipients. In particular it allowed time for introspection, values clarification, and reflection on the difficulty of articulating their rationale or justification for a particular suggestion. Typical of the class, one student commented, "I never realized how difficult it would be to put my true feelings into words and try to convince others about the importance of our value statements which will be imposed on the treatment program for candidates and their families." Similar comments typified the students' learning group processing skills and calling for a consensus rather than allowing the dominant personality to make a unilateral decision for the group. "We found it hard to get a consensus and treatment program. That is, one we could all agree on. We all had good things to say, and no one was able to have it totally one way."

The students reflected on an improved self-esteem and a sense of accomplishment. One of the more soft-spoken students said, "I was used to the teacher leading the class discussions. I would only speak when I had a question. I wasn't comfortable being so involved." Another said, "In the beginning, I really didn't think my opinion counted, but as I was encouraged to contribute I found my input was just as important as the other team members." As reflected in the preceding statements, the students found it important, first, to be accepted as a member, to participate in forming a consensus treatment program, and to select certain recipients and, second, to claim ownership of a decision that was not singularly theirs.

Such a discussion was equally beneficial to the instructor, who was able to evaluate more accurately the success of the class activity and those behavioral and instructional objectives that were not delineated before the inception of the assignment. The students' comments reflected a sense of appreciation gained for one another's ideas, values, and abilities and for the increased confidence of working together as a cohesive unit. "The team discussions gave me a new sense of appreciation for others' opinions and made me think more in depth about why I believe the things I do." "In the beginning, I worked with the others in my team more because it was assigned. By the time the team finished the assignment, I got to know and appreciate some people I might not otherwise be drawn to. I made some new friends."

In addition, there were several comments regarding their intrinsic motivation and the values clarification that developed from this teaching technique. Common sense to one individual, predicated on idiosyncratic tendencies, called for justification, not rationalization, of another's suggestions. Most notable were comments regarding the appreciation of collaboration rather than the inherent feeling of competition found in the traditional classroom. "Normally we have to learn the material and get limited application. It really helped to have the team discussions to spark my thoughts. I was more interested in the assignment." "I began to look for application on other topics I heard about in the local news, and I would ask my team what they thought about them." Comments such as these reflect the observable development of social and group processing skills.

CLOSING THOUGHTS

The insight into group behavior, group processing, and leadership provided by Tuckman (14) and Hersey and Blanchard (6) assists instructors in understanding one of the avenues available for improving their effectiveness. Matching the appropriate leadership style with each
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stage of group development provides for increased productivity, satisfaction of group members' needs, quality of interaction, and in some cases pedagogical effectiveness. In particular, the most notable benefits from activities such as this that display increased learner participation, as indicated from the students' comments, are found in both the affective (improved intrinsic motivation, development of communication and group processing skills) and cognitive (increased retention, understanding, problem solving, and critical thinking) domains.

On the basis of the positive feedback regarding exercises that called for the development of collaborative diagnostic skills, educators implementing such techniques to augment current pedagogical practices equip the learner with the abilities necessary to function more effectively and proactively as health care professionals.


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REFERENCES


