Chapter 5

Cooperative Learning: The Foundation for Active Learning

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Additional information is available at the end of the chapter

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Abstract

The role of instructors is evolving from the presenter of information to the designer of active learning processes, environments, and experiences that maximize student engagement. The more active a lesson, the more students tend to engage intellectually and emotionally in the learning activities. Cooperative learning is the foundation on which many of the active learning procedures are based. Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning. Most of the active learning procedures, such as problem-based learning, team-learning, collaborative learning, and PALS, require that students work cooperatively in small groups to achieve joint learning goals. Cooperative learning is based on two theories: Structure-Process-Outcome theory and Social Interdependence theory. Four types of cooperative learning have been derived: formal cooperative learning, informal cooperative learning, cooperative base groups, and constructive controversy. There is considerable research confirming the effectiveness of cooperative learning. To be cooperative, however, five basic elements must be structured into the situation: positive interdependence, individual accountability, promotive interaction, social skills, and group processing.

Keywords: active learning, cooperative learning, collaborative learning, student engagement, student involvement

1. Introduction

The role of instructor is evolving from the presenter of information to the designer of learning experiences that maximize student active engagement [1]. The influences behind this change include (a) the growing awareness that learning experiences should be active in ways that maximize student engagement and (b) the evidence that careful design of instructional

experiences makes students' acquisition of knowledge and competencies more efficient, effective, and appealing. One of the most useful methods of ensuring that students are actively engaged in learning experiences is cooperative learning. In addition, it is the foundation on which many of the active learning and student engagement procedures are built. First, we will explain the relationship between cooperative learning and active learning and student engagement. Second, we will explain the nature of cooperative learning.

1.1. Active learning and student engagement

The first requirement for designing a learning experience is to ensure students are active rather than passive. Passive to active is a continuum, as no learning experience is entirely passive (even sleep has active components) or entirely active. The question is the degree to which a learning experience is structured to make students passive or active. Near the passive end of the continuum, learning is typically listening to the instructor or individually reading information with or without taking notes and highlighting key passages. Characteristics of passive learning are that the student is silent, isolated (working separately from others), and under the direction of others. Near the active end of the continuum, learning occurs when students construct, discover, and transform their own knowledge. Active learning requires students to engage meaningfully cognitively and emotionally with other students, the task assigned, and the materials or resources used to complete the task. Characteristics of active learning are that students are talking with others (i.e., engaged in dialogs), interacting with others (i.e., member of a pair, triad, or group of four), generating new ideas and cognitive structures (discovering their own insights and meaning from the learning activities), and determining their own direction (i.e., coordinating with groupmates as to the direction and speed of the work). Active learning typically requires students working in pairs or small group to conceptualize, analyze, synthesize, and evaluate during discussions the information, procedures, strategies, and conceptual frameworks being learned.

Active learning subsumes students engaging intellectually and emotionally in the learning activities. The continuum of student engagement (both intellectually and emotionally) has disengagement at one end and engagement at the other. Student *disengagement* is defined as off-task behaviors, negative emotions, and the absence of focus, interest, effort, curiosity, persistence, the use of cognitive strategies, and other indicators of learning. Student *engagement* is students' exerting effort to complete the learning task, reflecting interest in completing the task successfully, focus on the task, curiosity about the task and its content, persistence, and the use of cognitive strategies. Engagement may be differentiated into three types: behavioral engagement (attending class, doing homework), cognitive engagement (effort to understand information and master complex skills), and emotional engagement (positive reactions to classmates, academic task and materials, teachers, and so forth).

Well-designed lessons require students to be active and engaged. These two aspects of lessons overlap, so that often if you get one, you get the other. The easiest way to ensure that students are active and engaged in learning may be to use cooperative learning. In addition, many of the forms of active learning being implemented in schools and universities are based on the foundation of cooperative learning. Some of the most common are discussed below. This is by no means an exhaustive list.

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1.2. Problem-based learning

Problem-based learning may be defined as assigning students to small groups and giving the groups a problem to understand and solve, with the goal of having students learn relevant information and procedures [2–4]. While students work in small groups the instructor facilitates and guides their work. Problem-based learning requires students to work in small groups to ensure that the relevant information and procedures are discovered and mastered by all members of the group, thus making cooperative learning the foundation on which problem-based learning is built. When this connection between cooperative learning and problem-based learning is explicit, it is known as Cooperative Problem-Based Learning or Problem-Based Cooperative Learning.

1.3. Team-based learning

In *team-based learning* instructors assign students with diverse skill sets and backgrounds to permanent groups of five to seven members to enhance the quality of student learning [5]. Students are individually accountable for homework assignments and for contributing to team efforts in class. Significant credit is given for inclass team activities and application exercises aimed at increasing both academic learning and team development. The activities are structured to give students frequent and timely feedback on their efforts. Since students work in teams to increase their own and teammates' learning, team-based learning is in effect another form of cooperative learning.

1.4. Collaborative learning

In the 1970s, Sir James Britton and others in England [6] created an active learning procedure known as Collaborative Learning based on the theorizing of Vygotsky [7]. Britton believed that a student's learning is derived from the community of learners made up of other students. Britton was opposed to providing specific definitions of the teacher's and students' roles, which he considered to be *training* (the application of explanations, instructions, or recipes for action). Instead, he recommended placing students in groups and letting them generate their own culture, community, and procedures for learning, which he considered to be *natural learning* (learning by making intuitive responses to whatever one's efforts produce). Britton believed the source of learning is dialogs and interactions with other students (and sometimes the teacher resulting from the positive interdependence among students' learning goals. The heart of collaborative learning, therefore, is the cooperative foundation of students working together to maximize their own and each other's learning.

1.5. Peer-assisted learning

Peer-assisted learning (PALS) involves classmates of equal status actively helping each other to acquire knowledge and skills [8]. It subsumes *Reciprocal Peer Tutoring*, which places same-age students into pairs of comparable ability and gives them the responsibility is to keep each other engaged academically [9]. Peer-assisted learning is based on cooperation, as assistance and encouragement tends not to take place in competitive interaction.

1.6. Conclusion

Almost all forms of active learning assume that students will work cooperatively in small groups. Cooperative learning is, therefore, the foundation on which most active learning strategies are built.

2. Cooperative learning

Most methods of active learning require the use of cooperative learning as an essential part of their method. Cooperative learning is the foundation on which most active learning methods are built. *Cooperation* is working together to accomplish shared goals [10, 11]. When cooperating, individuals work to achieve outcomes that benefit themselves and all other group members. *Cooperative learning* exists when small groups of students work to enhance their own and their groupmates' learning [1]. It is often compared to *competitive learning* (students working to accomplish academic goals that only one or a few participants can attain) and *individualistic learning* (each student working by him- or herself to complete assignments). Student efforts are evaluated on a criteria-referenced basis in cooperative and individualistic learning, while in competitive learning students are evaluated on a norm-referenced basis. Any learning task in any subject area with any curriculum may be structured cooperatively, but there are limitations on when and where competitive and individualistic learning may be used appropriately.

Cooperative learning is largely based on two theories: Structure-Process-Outcome theory and Social Interdependence theory.

2.1. Structure-process-outcome theory

Watson and Johnson [12] theorized that the way a situation is structured determines the process individuals engage in to complete the task, which determines the outcomes of the situation. The processes of interaction, in other words, determine outcomes, not the structure of the situation directly. This theory focuses instructors on structuring learning goals to create desired processes of interaction among students and between the students and the instructor. Once the desired processes of interaction occur, outcomes will tend to automatically result [10, 13].

2.2. Social interdependence theory

A second theory underlying cooperative learning is social interdependence theory [10]. In the early 1900s Kurt Koffka, proposed that groups were dynamic wholes in which the interdependence among members could vary. In the 1930s Kurt Lewin stated that the interdependence among members created by common goals is the essence of a group. The goal interdependence unites members into a "dynamic whole," so that changes in the state of a member or subgroup modify the state of other members or subgroups. In addition, motivation to accomplish the common goals results from an intrinsic state of tension within each group member. For interdependence to exist, there must be more than one person or entity involved, and the persons

or entities must have dynamic impact on each other. In the late 1940s, Morton Deutsch, one of Lewin's graduate students, extended Lewin's reasoning about interdependence and formulated a theory of cooperation and competition [14, 15]. The authors of this chapter, David (who was a doctoral student of Deutsch) and Roger Johnson, extended and expanded Deutsch's theory [10, 13, 16–19]. It should be noted that the authors of this chapter (David and Roger Johnson) coined the term social interdependence theory to describe their expanded version of the theory of cooperative, competitive, and individualistic efforts. Deutsch believed that social interdependence theory included more than cooperative, competitive, and individualistic processes, so he reserved the term for a future yet undefined theory.

In his theory of cooperation and competition, Deutsch posits that cooperation is created by *positive goal interdependence*, which exists when group members perceive that they can reach their goals if and only if the other group members also reach their goals [14, 15]. Competition is created by *negative goal interdependence*, which exists when group members perceive that they can obtain their goals if and only if the other group members fail to obtain their goals. Individualistic efforts are creative by *no goal interdependence*, which exists when individuals perceive that reaching their goal is independent from other individuals attaining their goals.

Positive goal interdependence tends to result in promotive interaction, negative goal interdependence tends to result in oppositional interaction, and no goal interdependence results in an absence of interaction. The relationship between the cooperation and competition and the interaction pattern each elicits tends to be bidirectional. Each may cause the other.

3. Types of cooperative learning

Four types of cooperative learning have been derived from cooperation and competition theory [1]. Formal cooperative learning may be implemented to teach specific content, informal cooperative learning may be implemented to ensure active cognitive processing of information during direct teaching, cooperative base groups may be implemented to provide long-term support and assistance, and constructive controversy may be implemented to create academic, intellectual conflicts to enhance achievement and creative problem solving.

3.1. Formal cooperative learning

Ref. [1] define *formal cooperative learning* as students working together, for one class period to several weeks, to achieve mutual learning goals and complete jointly specific tasks and assignments. Instructors can structure any course requirement or assignment in any curriculum or subject area for any age student cooperatively. To structure formal cooperative learning the instructor:

1. Makes a series of decisions about how to structure the learning groups (what size groups, how students are assigned to groups, what roles to assign, how to arrange materials, and how to arrange the room). The instructor also specifies the objectives for the lesson (one academic and one social skills).

2. Teaches the academic content students are expected to master and apply. The instructor then explains the (a) academic task to be completed, (b) the criteria used to determine the degree of students' success, (c) positive interdependence, (d) individual accountability, and (e) expected student behaviors.
3. Monitors the functioning of the learning groups and intervenes to (a) teach needed social skills and (b) provide needed academic assistance.
4. Uses the preset criteria for excellent to evaluate student performance. The instructor then ensures that groups process how effectively members worked together.

3.2. Informal cooperative learning

Ref. [1] define *informal cooperative learning* as students working together to achieve a joint learning goal in temporary, ad-hoc groups that last from a few minutes to one class period. During direct teaching, such as a lecture, demonstration, or video, the teacher structures informal cooperative learning groups. Students engage in three-to-five minute focused discussions before and after the direct teaching and three-to-five minute turn-to-your-partner discussions interspersed throughout the direct teaching. Informal cooperative learning can create a mood conducive to learning, focus student attention on the material to be learned, set expectations as to what will be covered in a class session, ensure that students cognitively process the material being taught, and provide closure to an instructional session. During direct teaching the instructor needs to ensure that students do the intellectual work of explaining what they are learning, conceptually organizing the material, summarizing it, and integrating it into existing conceptual frameworks.

3.3. Cooperative base groups

Cooperative base groups are long-term, heterogeneous cooperative learning groups with stable membership in which students provide one another with support, encouragement, and assistance to make academic progress by attending class, completing assignments, learning assigned material) [1]. The use of base groups tends to improve attendance, personalizes the work required and the school experience, and improves the quality and quantity of learning. Base groups have permanent membership and provide the long-term caring peer relationships necessary to help students developed in healthy ways cognitively and socially as well as influence members to exert effort in striving to achieve. Base groups formally meet to provide help and assistance to each other, verify that each member is completing assignments and progressing satisfactory through the academic program, and discuss the academic progress of each member. It is especially important to have base groups in large classes or schools and when the subject matter is complex and difficult.

3.4. Constructive controversy

Johnson and Johnson [20] define *constructive controversy* as one person's ideas, information, conclusions, theories, and opinions being incompatible with those of another, and the two seek to reach an agreement that reflects their best reasoned judgment. Constructive controversy

involves the discussion of the advantages and disadvantages of proposed actions aimed at synthesizing novel and creative solutions. It also involves dissent and argumentation [20]. *Dissent* may be defined as differing in opinion or conclusion, especially from the majority. *Argumentation* is a social process in which two or more individuals engage in a dialog where arguments are constructed, presented, and critiqued. The theory underlying constructive controversy states that the way conflict is structured within situations determines how individuals interact with each other, which in turn determines the quality of the outcomes [12, 19]. Intellectual conflict maybe structured along a continuum, with concurrence seeking at one end and constructive controversy at the other. The process of concurrence seeking involves avoiding open disagreement to conform to the majority opinion and reach a public consensus. The process of controversy involves utilizing the conflict among positions to achieve a synthesis or a creative integration of the various positions. The outcomes generated by the process of controversy tend to include higher quality decision making and achievement, greater creativity, higher cognitive and moral reasoning, greater motivation to improve understanding, more positive relationships and social support, and more democratic values. The conditions mediating the effects of the controversy process include a cooperative context, heterogeneity among members, skilled disagreement, and rational argument.

When used in combination, cooperative formal, informal, base groups, and constructive controversy provide an overall structure for school learning.

4. Outcomes of cooperative learning

Cooperative efforts result in numerous outcomes that may be subsumed into three broad categories: effort to achieve, positive interpersonal relationships, and psychological adjustment. The social interdependence research has considerable generalizability as (a) research participants have varied as to economic class, age, gender, and culture, (b) research tasks and measures of the dependent variables have varied widely, and (c) many different researchers with markedly different orientations working in different settings and in different decades have conducted the studies. We now have over 1200 studies on cooperative, competitive, and individualistic efforts from which we can derive effect sizes. This is far more evidence than exists for most other aspects of human interaction.

Cooperating to achieve a common goal results in higher achievement and greater productivity compared to competitive or individualistic efforts [10, 13, 19]. There is so much research that confirms this finding that it stands as one of the strongest principles of social and organizational psychology. Cooperation also resulted in more frequent generation of new ideas and solutions (i.e., *process gain*), more higher-level reasoning, and greater transfer of what is learned (i.e., *group to individual transfer*) than competitive or individualistic efforts. The superiority of cooperative efforts (as compared to competitive and individualistic efforts) increased as the task became more conceptual, the more higher-level reasoning and critical thinking was required, the more desired was problem solving, the more creativity was desired, the more long-term retention was required, and the greater the need for application of what was learned.

More positive and committed relationships develop in cooperative than in competitive or individualistic situations [10, 13, 19]. This is true when individuals are homogeneous. It is also true when individuals differ in ethnic membership, intellectual ability, handicapping conditions, culture, social class, and gender. Cooperative learning tends to be essential for classes with diverse students from different ethnic groups and handicapping conditions [10]. The more positive relationships that result from cooperative learning tends to reduce absenteeism and turnover, increase member commitment to academic goals, increase feelings of personal responsibility to the group and school, increase willingness to take on difficult tasks, increase motivation to achieve and persistence in working toward goal achievement, increase morale, increase readiness to endure pain and frustration on behalf of the group, increase readiness to defend the group against external criticism or attack, increase readiness to listen to and be influenced by classmates, increase commitment to each other's academic success, and increases academic productivity. Cooperating on a task, compared to competing or working individualistically, also results in more task-oriented and personal social support.

Working cooperatively with peers, and valuing cooperation, results in greater psychological health and higher self-esteem than does competing with peers or working independently [10, 13]. Personal ego-strength, self-confidence, independence, and autonomy are all promoted by being involved in cooperative efforts with caring people, who are committed to each other's success and well-being. When individuals work together to complete assignments, through their interaction they master needed social skills and competencies, promote each other's success (gaining self-worth), and form both academic and personal relationships (creating the basis for healthy social development).

When schools are dominated by cooperative efforts, students' psychological adjustment and health tend to increase. The more students cooperate with each other, the higher tends to be their self-esteem, productivity, acceptance and support of classmates, and autonomy and independence. Working cooperatively with peers is not a luxury. It is an absolute necessity for students' healthy development and ability to function independently.

5. Basic elements of cooperative learning lessons

Five basic elements for designing cooperative learning lessons have been derived from Social Interdependence theory and Structure-Process-Outcome theory and the research on social interdependence. The five basic elements that are required in any cooperative learning lesson are: positive interdependence, individual accountability, promotive interaction, social skills, and group processing.

Positive interdependence is the heart of cooperative efforts. Students must perceive that (a) they are linked with groupmates in a way so that they cannot succeed unless their groupmates do (and vice versa) and (b) groupmates' work benefits them and their work benefits their groupmates [10]. Positive interdependence among students must be structured into the lesson for it to be cooperative. While every lesson must contain positive goal interdependence, positive interdependence may also be structured through mutual rewards, distributed resources, complementary roles, a mutual identity, and other methods of structuring positive interdependence.

Each group member is individually accountable to contribute his or her fair share of the group's work. Individual accountability exists when the performance of each individual student is assessed and the results are given back as feedback to the group and the individual [10]. Individual accountability includes completing one's share of the work and facilitating the work of other group members. A purpose of cooperative learning is to make each group member a stronger individual. There is considerable group-to-individual transfer. Students learn together so that they can subsequently perform higher as individuals. Individual accountability may be structured by (a) observing students as they work together and documenting the contributions of each member, (b) having each student explain what they have learned to a classmate, or (c) giving an individual test to each student.

Students promote each other's success by helping, assisting, praising, encouraging, and supporting each other's efforts to learn [10]. Doing so results in such cognitive processes as discussing the nature of the concepts being learned, orally explaining to others how to solve problems, teaching one's knowledge to classmates, challenging each other's reasoning and conclusions, and connecting present with past learning. Promotive interaction also includes interpersonal processes such as supporting and encouraging efforts to learn, jointly celebrating the group's success, and modeling appropriate use of social skills.

Contributing to the success of a cooperative effort requires interpersonal and small group skills. In cooperative learning groups, students are expected to use social skills appropriately [10]. Leadership, trust-building, communication, decision-making, and conflict-management skills have to be taught just as purposefully and precisely as academic skills. How to teach students social skills is the focus of Johnson [21] and Johnson and Johnson [20].

Finally, students need to engage in group processing. Group processing may be defined as the examination of the effectiveness of the process members use to maximize their own and each other's learning, so that ways to improve the process may be identified [10]. Group members need to (a) describe what member actions are helpful and unhelpful in ensuring that all group members (a) achieve and maintain effective working relationships, (b) decide what behaviors to continue or change and (c) celebrate group members' hard work and success [22].

These five basic elements are the educator's best resource. They enable instructors to (a) structure for cooperative learning any lesson in any subject area with any set of curriculum materials, (b) fine-tune and adapt cooperative learning to their specific students, needs, and circumstances, and (c) intervene in malfunctioning groups to improve their effectiveness. These five essential elements allow instructors to structure any lesson for student activeness and engagement. It is only when these five aspects are carefully structured in a lesson that the lesson becomes truly cooperative and students become active and engaged.

6. Return to active learning

Characteristics of active learning are that students engage in dialogs, interact with classmates in small groups, generate new ideas and cognitive structures within the groups, and coordinate with groupmates as to the direction and speed of the work. Active learning

typically requires a learning partner or a small group in which the information being learned is analyzed, synthesizes, evaluated during discussions. In a discussion, students construct new cognitive structures or access their existing ones to subsume the new information and experiences.

It is clear from the research that having students compete with each other will result in students opposing each other's learning, thereby reducing their motivation and achievement. It is also clear that having students work alone without interacting with classmates will have students being indifferent to each other's learning, also reducing their motivation and learning. What does increase motivation and achievement is cooperative learning. In cooperative learning lessons, students are assigned to small groups (usually two, three, or four members) and given an assignment to complete (such as solving a problem or mastering a set of procedures). Working cooperatively with classmates to solve a problem is far more effective than competing with classmates or working by oneself to solve the problem. It is the cooperative structure that promotes students to engage cognitively and emotionally with other students, the task assigned, and the materials or resources used to complete the task. Doing so allows students to construct, discover, and transform their own knowledge.

Students are engaged in a learning task when they exert effort to complete the task successfully, focus on the task, are curious about the task and its content, persist in completing the task, and use higher-level cognitive strategies in completing the task. Students engaged in cooperative learning activities tend to engage in more on-task behavior (and therefore are more engaged, behaviorally, cognitively, and emotionally) than do students participating in competitive or individualistic learning activities [10].

Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning. Cooperative learning is based on two theories: Structure-Process-Outcome theory and Social Interdependence theory. There are four types of cooperative learning: formal cooperative learning, informal cooperative learning, cooperative base groups, and constructive controversy. To be cooperative, five basic elements need to be structured into the learning situation: positive interdependence, individual accountability, promotive interaction, social skills, and group processing. Cooperative learning, compared with competitive or individualistic learning, tends to result in students exerting more effort to learn, building more positive relationships with classmates, and improving their psychological health.

Cooperative learning is one of the foremost active learning procedures. It is also the foundation on which many of the active learning procedures are based.

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References

[1] Johnson DW, Johnson RT, Holubec EJ. Cooperation in the Classroom. 9th ed. Edina, MN: Interaction Book Company; 2013

[2] Allen D, Duch B. Thinking toward Solutions: Problem-Based Activities for General Biology. Fort Worth, Tex: Saunders; 1998

[3] Barrows HS, Tamblyn RM. Problem-Based Learning. New York: Springer; 1980

[4] Smith K, Sheppard S, Johnson DW, Johnson R. Pedagogies of engagement: Classroom-based practices. Journal of Engineering Education. 2005;**94**:1-15

[5] Michaelsen LK, Watson WE, Cragin JP, Fink LD. Team-based learning: A potential solution to the problems of large classes. Exchange: The Organizational Behavior Teaching Journal. 1982;**7**(4):18-33

[6] Britton J. Research currents: Second thoughts on learning. In: Brubacher M, Payne R, Richett K, editors. Perspectives on Small Group Learning: Theory and Practice. Oakville, Ontario: Rubicon; 1990. pp. 3-11

[7] Vygotsky L. Mind and Society. Cambridge, MA: Harvard University Press; 1978

[8] Topping K, Ehly S, editors. Peer-Assisted Learning. Mahwah, NJ: Lawrence Erlbaum; 1998

[9] Fantuzzo J, Ginsburg-Block M. Reciprocal peer tutoring: Developing and testing effective peer collaborations for elementary school students. In: Topping K, Ehly S, editors. Peer-Assisted Learning. Mahway, NJ: Lawrence Erlbaum; 1998. pp. 121-145

[10] Johnson DW, Johnson RT. Cooperation and Competition: Theory and Research. Edina, MN: Interaction Book Company; 1989

[11] Johnson DW, Johnson RT. Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning. 5th ed. Boston: Allyn & Bacon; 1999

[12] Watson G, Johnson DW. Social Psychology: Issues and Insights. 2nd ed. Philadelphia: Lippincott; 1972

[13] Johnson DW, Johnson RT. New developments in social interdependence theory. Genetic, Social, and General Psychology Monographs. 2005;**131**(4)

[14] Deutsch M. A theory of cooperation and competition. Human Relations. 1949;**2**:129-152

[15] Deutsch M. Cooperation and trust: Some theoretical notes. In: Jones MR, editor. Nebraska Symposium on Motivation. Lincoln, NE, University of Nebraska Press; 1962. pp. 275-319

[16] Johnson DW. Social Psychology of Education. New York: Holt, Rinehart, & Winston; 1970

[17] Johnson DW. Social interdependence: The interrelationships among theory, research, and practice. American Psychologist. 2003;**58**(11):931-945

[18] Johnson DW, Johnson R. Social interdependence in the classroom: Cooperation, competition, and individualization. Special issue, Journal of Research and Development in Education. 1978;**12**(1, Fall)

[19] Johnson DW, Johnson RT. An educational psychology success story: Social interdependence theory and cooperative learning. Educational Researcher. 2009;**38**(5):365-379

[20] Johnson DW, Johnson F. Joining Together: Group Theory and Group Skills. 11th ed. Boston: Allyn & Bacon; 2013

[21] Johnson DW. Reaching Out: Interpersonal Effectiveness and Self-actualization. 11th ed. Boston: Allyn & Bacon; 2014

[22] Johnson DW, Johnson RT, Smith K. Cooperative learning: Improving university instruction by basing practice on validated theory. In: Davidson N, Major C, Michaelsen L, editors. Small-Group Learning in Higher Education: Cooperative, Collaborative, Problem-Based and Team-Based Learning. Journal on Excellence in College Teaching. 2014;**25**(3&4):85-118