Motivation and Focus in Collaborative Learning

SC 297C Learning Sciences Group Project

Chris Fellin[1], Aigerim Galyamova[1], Lorraine Hossain[2], Rachel Putnik[3]

Chem 227[1], Chem 110H[2], Chem 112[3]

What is Collaborative Learning?

Collaborative learning is a goal-oriented activity in which two or more individuals must engage and work together to reach a desired outcome. In comparison to traditional group work, collaborative learning puts emphasis on the idea engagement (1). The motivation of the individuals within the group is key for assessing the quality of the learning process (2). Collaborative learning practices are becoming increasingly popular, and there are many benefits associated with this type of practice. However, many challenges present themselves in collaborative learning.

Figure 1: Importance of Collaborative Learning

http://cooperativelearningconcept.blogspot.com/

The Four Basic Principles

Collaborative learning is based on the view that knowledge is a social construct and is based on four principles:

- The learner or student is the primary focus of instruction.
- Interaction and "doing" are of primary importance.
- Working in groups is an important mode of learning.
- Structured approaches to developing solutions to real-world problems should be incorporated into learning (4).

Benefits to Collaborative Learning

- **Academic** - Improved critical thinking, motivation, and deep learning. Promotion of student-faculty interactions. Higher Student achievement, increased productivity, and higher-level reasoning (3,4).

- **Social** - Positive environment and social support established in a classroom. Exposure to and an increase in understanding of diverse perspectives. Transfer of knowledge from student to student (3,4).

- **Psychological** - Improved self esteem of a student and an increase in independence and autonomy (3,7).
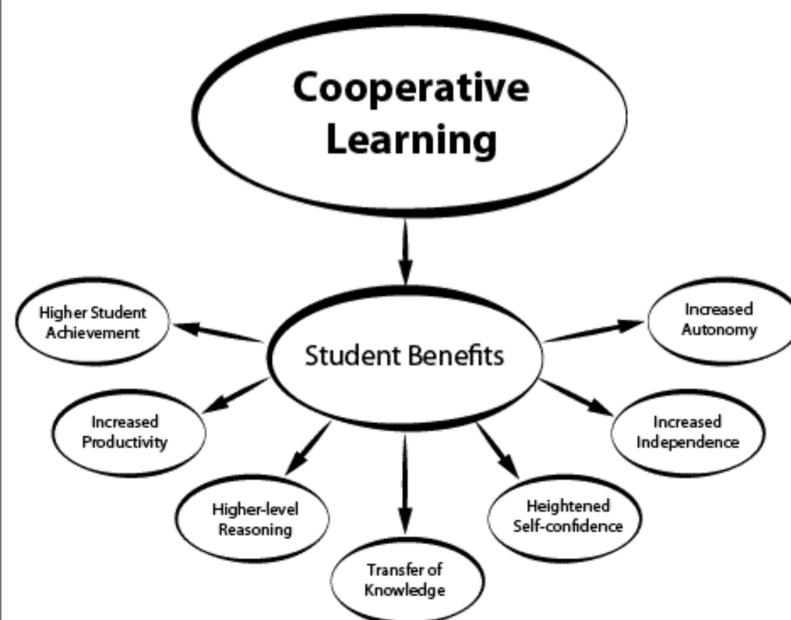
Figure 2: Concept Map: Students' Benefits from Collaborative Learning.

https://www.collegestar.org/modules/col/introduction

Challenges

- May result in uneven distribution of responsibilities
- May result in discrepancies for evaluating output
- May result in possible group conflict (5)

What can we do to encourage motivation?

- Set specific goals
- Create incentives for success
- Set an example as someone motivated and enthusiastic in this field

Collaborative Learning Techniques(4)

- **Stump your partner:** Students create a challenging question based on the lecture content and pose them to a nearby student.
- **Think-Pair-Share:** Teacher poses a difficult question, and students take a minute to think about the correct answer. After a few minutes the students turn to each other and share their responses. Their responses are shared with the class, and the right answer is given in a follow-up discussion with the teacher.
- **Catch-up:** Stop at a transition point in the lecture and allow the students to turn to one another to compare notes and ask any questions. After a few minutes the floor is opened up for questions.
- **Fishbowl Debate:** Students split into groups of three, each taking a different side/role. Two students argue the opposing viewpoints, and the third takes notes/ decides who wins the debate. After a couple minutes, groups are called upon to share their discussions.
- **Case Study:** Create 4-5 different problems and split the students into groups. Allow sufficient time to complete the problem and then call on each group to share their problem/solution.
- **Team-Based Learning:** Start a course unit by assigning a reading or lab assignment. Before class begins, test their knowledge with a short multiple choice quiz that is to be turned in. Then have the students get into groups and retake the quiz. Deliver a lecture that specifically addresses any misconceptions or gaps in understanding that the quizzes revealed.

Literature

- **Collaborative Learning Enhances Critical Thinking (6):** Two classes of 24 students ranging in age from 19 to 35 participated in a collaborative learning study designed to test the effectiveness of collaborative vs. individual learning. Two types of items, Drill-and-Practice and Critical-Thinking, were used to gauge the effective difference of the two teaching techniques.

Item Classification	Method of Teaching	Mean Score (out of 15)
Drill-and-Practice	Individual	11.89
	Collaborative	13.56
Critical-Thinking	Individual	8.63
	Collaborative	12.21

While the difference between individual and collaborative learning for Drill-and-Practice questions was not statistically significant, there was a statistically significant difference between the two styles of learning for Critical-Thinking questions. The collaborative process allowed for discussion and analysis of different ideas effectively. Students could draw upon the skills and experiences of each other to come to a logical conclusion.

- **Collaborative Learning Increases Self-Confidence (7):** Two sections in a psychology class, 80 undergraduate students total, were tested for the influence of collaborative learning on self-esteem. Section I used individual learning, while section II utilized collaborative learning. Surveys at the beginning and the end of semester were used to identify the effects of these studying methods.

Method of Teaching	Beginning of the semester, Mean Score	End of the semester, Mean Score
Individual (N=40)	31.52	27.35
Collaborative (N=40)	27.51	48.85

The results of this experiment suggest that, while in the beginning of the semester both sections showed similar self-esteem levels, by the end of semester the section in which collaborative learning was used achieved higher self-confidence. Moreover, students who practiced individual learning experienced a decrease in self-esteem levels.

References

1. Pluta, W. J.; Richards, B. F.; Mutnick, A. *Teaching and Learning in Medicine: An International Journal* **2013**, *25,* S9-S16.
2. Saab, N.; van Joolingen, W. R.; van Hout–Wolters, B.H.A.M. *Educational Studies* **2009**, *35,* 205-222.
3. Laal, M.; Ghodsi S.M.; *Procedia Soc. Behav. Sci.* **2012**, *31,* 486
4. "Potential C"Collaborative Learning: Group Work." CTE. Cornell University, n.d. Web. 02 Nov. 2014.
5. "Challenges with Cooperative Learning." *Potential Challenges*. Starting Point, 13 Dec. 2013. Web. 03 Nov. 2014.
6. Gokhale, Anuradha A. "Collaborative Learning Enhances Critical Thinking."*Journal of Technology Education*. Virginia Tech, 1995. Web. 03 Nov. 2014.
7. Sultan S.; Hussain I. *J. Educ. Res.* **2012,** 15, 35-43.

Acknowledgements