

Summary and Reflection on “Cooperative Learning Returns to College”

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“Cooperative Learning Returns to College” by Johnson *et al.* presents a strong case for cooperative learning along with some techniques for its implementation.

The paper begins by defining cooperative learning where “students can work together cooperatively to accomplish shared learning goals”. A defining characteristic of cooperative learning, as opposed to collaborative learning or competitive learning, is that of interdependence. Each student satisfies his learning goal if and only if all other group members satisfy theirs.

The authors then go on to identify the theoretical roots of cooperative learning, giving evidence that cooperative learning is beneficial theoretically from the standpoints of social interdependence theory, cognitive-developmental theory, and behavioral learning theory. The authors also developed controversy theory, which states that strong opposing points of view in a group, after being well argued, will result in a “thoughtful and refined conclusion”.

We then get to the section “The Internal Dynamics That Make Cooperation Work”, which was the most interesting to me. Here the authors list five guidelines for implementing a successful cooperative learning environment. I’ll reflect on each of these guidelines with respect to the physics tutorials:

Ensure that each student perceives that he or she is linked with others in such a way that the students cannot succeed unless the others do: This was not really the case in the physics tutorial. In fact, there were no explicit learning goals within the groups, especially in the short-term class period. Students are supposed to fill out the tutorial book, so we stuck them at tables and said “work together”. Many times they did,

often explaining to each other, but sometimes they would just sit at the table and each would work on his own.

Structure individual accountability so that the performance of each student is assessed: Introducing a grade for the tutorial books would be a bad idea, as the students would feel pressured for time, and thus they wouldn't take the time to explain things they understood to other students (an almost competitive learning symptom). I entertained the idea of having a monthly quiz where each group member's score is tied to each other's. That might also create a competitive and unrelaxed atmosphere, insinuating hostility toward the students who do not grasp the concepts as clearly.

Ensure that students promote one another's success face to face: I think the best way to accomplish the three goals stated so far would be to restructure the tutorial sessions. Instead of having each student fill out a fairly easy series of questions along with their classmates, perhaps the tutorials should work with one experiment with a result that is not so trivial (or one that the book doesn't just tell them after awhile). The trouble with that is that the recitations only last an hour, which is generally not enough for students to really *discover* something. I was surprised about how much encouragement was already going on in the tutorials, even with no external structure to facilitate it. Perhaps simply the low pressure environment and the common (ungraded) goal is enough to promote mutual encouragement.

Teach students the needed social skills and ensure that they are used appropriately: This was informally done by the learning assistants, but generally it was not done at all. The best we ever tried was "can you explain that to him?". It didn't seem to be an issue, however there was mostly no leadership within the groups—the tutorial book led, the students followed. Since group skills are important, this is another advocate for a different tutorial structure, where leadership and group decision-making are necessary.

Ensure that students take the time to engage in group processing: Another guideline which was omitted from the tutorial structure. However, this could be "hacked" in easily (I'll likely suggest this for next year). Have students every month or so reflect to each other about their roles in the group. Since face-to-face derogatory discourse makes people uncomfortable, the students would likely refrain from saying that (even if they felt it), while still personally reflecting on themselves and others. This could also help to achieve guideline #3.

In conclusion, the tutorials in which I worked had a lot of cooperative

learning guidelines implemented, but there are some areas that it would be worth experimenting with. Next year in my Calculus 1 learning assistantship, where the learning assistants (apparently) have more freedom in creating the sessions, we will think back upon these guidelines and see what sort of structure we can create to implement them.