101 Reasons for Using Cooperative Learning in Biology Teaching

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Over the last few decades, there have been numerous studies supporting or repudiating cooperative learning as an effective means of instructing high school and college students. The promoters of cooperative learning champion such studies as McKeachie (1988), Slavin (1987), and Johnson and Johnson and Smith (1991) that state when small teams work together to solve challenges in a student-centered fashion, they not only understand the information better but they retain it for a much longer period of time than they do with teacher-centered instruction. The opponents of cooperative learning point to studies by Collins (1970), Langer & Beneventi (1978) and Hill (1982) that indicate that cooperative learning is too time-consuming, too diffuse in responsibility, and too informal to bring about high level learning of complicated material older students need to know. Since both positions were supported by what seemed to me to be good evidence, I decided to review as much cooperative learning information as I could before drawing any conclusions about using it in my teaching of biology. This resulted in months of reading monographs, texts, journals, abstracts and reprints on the topic.

The reading, however, was interesting and before long I had perused more than 300 articles concerning teaching science using cooperative learning. Some of the writings were stuffy, statistically based research reports, while others were easily understood anecdotal descriptions from science teachers and professors about how cooperative learning worked in their classes. One observation I made was that only 8% of the articles reported negative experiences using cooperative learning (i.e. the informality was a disruptive force in the classroom). The majority of the reports mentioned how active the team members were during the cooperative task. The group work increased student enthusiasm for science and generated more interest in understanding the views of colleagues. Several studies mentioned that most science teachers tend to focus on the presentation of fixed bodies of information, embrace competition, and do not engage students in the learning activity.

The supportive articles indicate that cooperative learning overcomes these criticisms by creating enrichment opportunities in comfortable, nonthreatening settings. As I read the studies, I jotted down the positive reasons cited for using cooperative learning in biology teaching. The list grew quickly and by the time I completed my survey, several hundred outcomes supportive of cooperative learning were listed on my notepad. A review of the items revealed that some of the statements could be combined and, in the end, 11 nonoverlapping categories emerged. These included enhancement of:

1. Science thinking
2. Attitudes
3. Instruction
4. Evaluation
5. Values
6. The learning environment
7. Practical skills
8. Social skills.

Cooperative learning also was shown to:

9. Up-grade the student’s reading and writing skills
10. Model real life
11. Support learning in women as well as men.

Could teaching with cooperative learning really improve all these things? I decided to explore the method further by trying it in my biology classes. During the first year, some of the cooperative learning activities I designed did not work as well as others. However, overall I was pleased with most of what I had tried. My classes seemed to be learning as much biology as in previous years and my students were enjoying the class more than ever before. The following year I eliminated the activities that did not work with the previous classes and added new cooperative learning exercises to those that had gone well. By the end of the course, my students were eager and interested in biology and sorry to see the class come to an end. After the third year I was even more confident I had made the right decision to use cooperative learning in my teaching. Most of my students seemed not only to know more biology,