

Gender Issues in Collaborative Learning

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*On offre dans cet article des suggestions
en vue de créer des groupes collaboratifs*

*efficaces ainsi que
des implications
spécifiques pour
l'apprentissage
d'une la collabora-
tion non sexiste.*

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As an adolescent, I enjoyed both my science courses as well as laboratory experiments. To continue my inquiry into scientific world, during my undergraduate program, I completed a Bachelor of Science then chose to do my Master's in Education, where again I majored in biological sciences. My early interest in science programs shows a positive attitude towards science, despite the fact that I am a female, and from India. This could be partially due to the fact that although my elementary school was coeducational, my secondary school years were spent in a single-sex school, an environment in which I felt safe.

After my marriage, I lived for two years in Seychelles and another eight years in Jamaica. In these countries, I taught high school sciences (physics, chemistry, botany, and zoology). During my teaching career, I noticed that female students became marginalized in their choice of science subjects. Their numbers dropped drastically and their attitudes towards science changed dramatically. My experiences led me to probe into trends of adolescent girl's attitudes towards science in other countries.

A similar trend has been observed in the United States during the past two decades (AAUW). There has been a documented lack of participation of American girls in science programs

in general, as well as a subsequent deficit of females entering science professions (AAUW; Benbow and Minor; Weinburgh). As I experienced and as the literature confirmed, girls are particularly vulnerable. Somehow the previous strengths that girls possess seem to vanish into thin air.

This situation is further compounded by the fact that the contributions and experiences of girls and women are still largely ignored in both curricula and in standardized tests. As girls grow up, they tend to lose confidence in their academic abilities, and settle for less from life. Career aspirations are consequently lowered (AAUW). Girls often expect to fail at tasks that are unfamiliar, difficult, or perceived to require high ability. When they fail, girls tend to internalize their failures, by attributing that failure to a lack of ability. Lowered self-esteem leads to taking fewer risks in math and science courses. Taking math and science courses does not in and itself lead to science career choices. However, without participation in both introductory and advanced courses, a career in science and math is no longer an option.

Feminist writers like Belenky, Clinchy, Goldberger, and Tarule highlight the need for building patterns of connection and collaboration into learning environments in order to facilitate girls' development. Collaborative learning that engages students in the construction of shared tasks, helps to advance understanding, as well as the learning of disciplinary knowledge. To support girls in being competent in their academic endeavors is to provide them the opportunity to increase their self-esteem and academic competence, by creating an environment which is welcoming and supportive.

In North America, collaborative learning has gained acceptance in elementary, as well as secondary class-

rooms, as an instructional design for increasing learning benefits, and developing complex problem-solving skills. Collaborative learning is a term which applies to a family of instructional techniques, all involving groups ranging from two to six students, working together to learn academic content and skills, with little or no direct leader supervision. These groups are heterogeneous by ability, and when ever possible, by ethnicity and gender. Most involve students in four-member mixed ability groups. However, some methods use dyads (two-member groups), and varied group sizes. Collaborative learning approaches vary widely in their structure, but all depend on students actively helping each other to learn. In this article, the term collaborative learning will be utilized to refer to any of the above group learning approaches.

Collaborative, as opposed to individual efforts, have been shown to affect higher achievement on complex problem-solving tasks. Collaborative learning has also been found to have a positive impact on many variables other than achievement. Some examples include: prosocial behaviour, positive attitudes towards class and school, inter-racial acceptance, increased self-esteem and a way to manage academic heterogeneity in classrooms, with a wide range of achievement in basic skills. Research on collaborative learning has assumed that if any method is successful in a controlled three-day workshop, it works equally well for girls and boys. But in real life situations, this is not necessarily the case. Therefore, this article will explore gender implications of collaborative learning.

The successful functioning of each group depends on the individual members of that group. The perceived status of each member plays a significant role in member interac-

tion. Cohen *et al.* address the perception of individual differences as they translate into social rankings and power within the group. That is, more status equals more power.

Status is derived by either specific characteristics (ability, knowledge, or skill), or diffuse characteristics (gender, race, ethnicity, and socioeconomic status). If the status effect is present in the groupings, the effect of collaborative learning becomes null.

In terms of gender as a diffuse-status characteristic, collaborative situations promote a process of acceptance that results in equal status for male and female group members. Furthermore, the single-gender collaborative groups have been shown to work to the advantage of many female students.

Collaborative learning strategies can enhance girls' learning outcomes, more so among the groups that are single-gender, than among mixed-gender groups. In single-gender groups with unfamiliar tasks the effect of status can be greatly diminished. Group members are more likely to share and cooperate in order to achieve the goal interdependently. On the contrary, if the task is familiar, and the group is mixed-gender, then the collaborative learning strategies can work to the advantage of both genders. Hence in high schools, girls should be grouped into single-gender groups to learn unfamiliar tasks in math and science. After learning these unfamiliar tasks, they can then be assigned to mix-gender groups. This strategy enhances development of personal authority and self-confidence among girls in science and math.

General guidelines for successful groups

In designing cooperative learning tasks, facilitators must remain aware of consequences of structuring poorly functioning groups. Without careful attention while creating groups the negative effects can quickly outweigh any prospects of positive outcomes. The effects of group work depend on how the group is organized, what the tasks are, who participates, and how the group is held accountable. Facilitators must consider the purpose of designing group work and address potential problems of process if group work is to be successful. Therefore, the following considerations can facilitate positive structuring of collaborative learning groups.

- Design cooperative projects so that all students can interact and contribute equally. Avoid traditional worksheets, and "right answer" tasks as they often will be completed by one person who can do the job "better" and more efficiently than the group.

- Use new curricular materials that involve collaborative practices/projects in which students share creative ideas, build on one another's knowledge, and draw on diverse skills. Projects might include: writing workshops, oral histories, guided nature walks, ecology projects, discussions of political issues, plays, science experiments, nutritional seminars, multicultural cuisine, group poems or stories, collaborative biographies, manipulation-based math explorations, future problem solving teams, and foreign language talk shows, cultural fashion shows, among others.

- Encourage successful group functioning by including five conditions: positive interdependence (group members are dependent on one another to achieve the group's goal), face-to-face interaction (students

must engage in more active, face-to-face interactions both teaching and learning from one another), individual accountability (students must complete their share of work and grasp what the group has done), social skills (trust one another, communicate accurately, accept and support one another, and resolve conflicts constructively), and group processing (students must value learning goals, and have mutual respect for their teammates). Teach students how successful groups work and how to apply this information to their own groups. Give lots of practice at it. Be sure to allow plenty of time for the acquisition and development of skills and tenets of collaborative learning.

- Set authentic group goals that are important to group members. Student interest and autonomy (the ability to work as an independent group member) are motivating factors and essential to the success of collaborative learning.

- Group students in flexible ways. If students are grouped heterogeneously at all times, the only one providing assistance will probably be the high-achieving student.

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Specific implications for gender-fair collaborative learning

Since girls tend to value their relationships as much as their other accomplishments, particular attention should be paid to the following in creating a welcoming environment.

- Collaborative learning strategies should be incorporated into math

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and science instructional designs.

- Single-gender groups should be utilized to teach unfamiliar material.

- Mixed-gender groups can be utilized in exploring familiar material.

- Individual differences should be taken into consideration when making group assignments. Tasks should be given accordingly.

- Roles and responsibilities should be clearly defined and rotated among the group members. Usually students carry out their roles in the presence of the teacher very well. But initial checks by the teacher should be done primarily to ensure that the assigned roles extend beyond facilitator's supervision. If careful monitoring is not done, boys tend to take over.

- Necessary skills should be taught for members to interact and to be interdependent within the group. One may give a group a task, but unless there is some reason for the group to interact, members may well tackle tasks as individual work. This is especially the case if each individual is required to submit worksheets or reports. If the facilitator divides the labour so that each person in the group does a different part of the task, the group has only to draw these pieces together in sequential fashion as a final product. The consequence of either of these patterns is that there is comparatively little interaction; people do not gain the benefits of using one another as resources, nor is there any basis for expecting the prosocial outcomes of collaboration (Cohen).

- Participants should be trained to be accountable, both individually and within their groups. Individual accountability exists when each member of the group has clear tasks to

accomplish, and/or clearly defined roles to fulfill.

- Commitment to gender equality in all aspects of school is imperative. Girls must be educated and encouraged to understand that mathematics and sciences are important and relevant to their lives. The experiences, strengths, and needs of girls from every race and social class must be considered in order to provide excellence and equity for all students.

- Status effects can be modified by using tasks that require multiple abilities so that all participants may contribute, or by asking lower status participants to share something that they have already done in another related area (for example, a paper or a presentation on any topic), and present it to the group members. This is to enhance self-confidence among the lower status participants as well as to reduce the status effects within the group. Facilitators can also be alert for good ideas from lower status group members, and bring them to the group's attention. Implementing the above collaborative learning strategies into existing educational settings can facilitate positive and successful participation for girls not only in math and science subjects, but in other disciplines as well.

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