



Ensuring Student Collaboration in Group Projects

Overview

Student collaboration is a “pillar” for inquiry-based learning (Laursen & Ramussen, 2019; Piercey & Miltzer, 2017). It is also an important aspect of project-based learning and assessment (Han et al., 2016). Literature suggest that student collaboration helps to orchestrate real-life situations, divide work loads among students, and consequently enhance the quality of student learning and attainment.

In alternative postsecondary mathematics courses like Quantitative Reasoning (QR), where students are expected to work to solve real-world mathematical problems, it is necessary to ensure that they work together (Lutsky, 2018). But, many QR instructors, who employ student projects in their teaching, indicate student collaboration as the major challenge. They also express their ignorance of coordination student collaboration.

This report presents the innovative ways that QR instructors in Ohio used to ensure students’ individual accountability as well as collaboration in group projects.

Methodology

- A multiple case study (IRB# 21-E-144).
- 8 QR instructors from 3 public universities and 5 public community colleges in Ohio.
- Each instructor taught at least one section of QR in Summer or Fall of 2021.
- Data collected through instructor interviews and analyses of course documents.

Findings

- All 8 instructors implemented student projects—5 implemented all or some group projects.
- Only the instructors employing group projects implemented student presentations.
- **Instructors employing group projects:**
 - 1–3 group projects, 20% average weights.
 - less structured compared to individual projects.
 - emphasized students’ constant communication.
 - stressed on building mutual trust.
- **The 5 instructors reported that group projects:**
 - help students deal real-world situations.
 - promote inclusive practices.
 - foster communication.
 - enhance students as each other’s learning resources
 - improve student engagement in learning.
- **Some key challenges:**
 - Individual preferences and past experiences.
 - Personality conflicts.
 - Student collaboration is complex in online setting.

- **Some measures to ensure collaboration:**
 - Reports prepared in online platform.
 - Individual report with instructor’s reserved rights to assess only one report per group.
 - Peer- and self-evaluation of how each member of the group contributed in the project.
 - Each student contributes to group presentation.
 - Audiences’ right to question any group member.

Conclusions

- Use of collaborative student projects is not uniform across the institutions in Ohio.
- Student communication is both premise for and consequences of successful collaboration.
- Successful collaboration extends resources for student learning (Mallon, 2013).
- Orchestrating collaboration is challenging—more so in online setting.

References

Laursen, S. L., & Rasmussen, C. (2019). I on the prize: Inquiry approaches in undergraduate mathematics. *International Journal of Research in Undergraduate Mathematics Education*, 5, 129–146.

Lutsky, N. (2008). Arguing with numbers: Teaching quantitative reasoning through argument and writing. *Calculation vs. context: Quantitative literacy and its implications for teacher education*, 59–74.

Mallon, M. N. (2013). Extending the learning process: Using the theory of connectivism to inspire student collaboration.

Piercey, V., & Miltzer, E. (2017). An inquiry-based quantitative reasoning course for Business Studies. *PRIMUS*, 27(7), 693–706.

Figure 1: *Effort Grade Form*

Your name: _____

Group number: _____

Type(s) of activity: Presentation Written report Other (specify): _____
(Circle)

List of possible effort grades. Give yourself and all of your group members an effort grade using the following scale:

- 4 = Did substantially *more* than their fair share of work.
- 3 = Did a *fair share* of work, more or less.
- 2 = Contributed somewhat, but not a fair share.
- 1 = Contributed virtually nothing to the group’s effort.
- 0 = Did not participate at all.