Why Engage Students in Collaborative-Learning Groups?

Course instructors can structure their courses to provide opportunities for collaborative-learning groups in which students work with each other on assigned activities. Effective small-learning groups can comprise 3-4 members. Assigning group roles (e.g., task manager, reader, reflector, reporter, etc.) and rotating them among the group members during different activities (structured groups) is essential for ensuring equal participation and contribution of ideas by all group members. There is overwhelming evidence that structured small-learning groups or collaborative-learning groups have accrued benefits which include, but are not limited to:

- Increased participation and engagement with the content material;
- Improved student performance and persistence in courses and declared Program Majors for all students, including students from marginalized groups (e.g., women, first-generation college students, and students from ethnic minority groups);
- Decreased failure rates (DFWs);
- Decreased achievement gap between students from underrepresented minority (URMs) and non-URMs;
- Development of social interaction skills. Some studies have found that black students report increased ability to speak and share ideas in highly-structured learning environments compared to low-structured learning environments;
- Increased sense of belonging in the courses and programs especially for marginalized groups—literature indicates that students report more support from their peers in the collaborative groups than from professors;
- Development of higher-order thinking skills among students; and
- Promotes deep understanding and retention of the material—students can learn from each other, ask and discuss questions with peers.

Some Consulted References

- 1) Eddy, S. L., & Hogan, K. A. (2014). Getting under the hood: How and for whom does increasing course structure work?. *CBE—Life Sciences Education*, *13*(3), 453-468.
- 2) Parrott, H. M., & Cherry, E. (2011). Using structured reading groups to facilitate deep learning. *Teaching Sociology*, *39*(4), 354-370.
- 3) Laal, M., Naseri, A. S., Laal, M., & Khattami-Kermanshahi, Z. (2013). What do we achieve from learning in collaboration?. *Procedia-Social and Behavioral Sciences*, *93*, 1427-1432.
- Saqr, M., Fors, U., Tedre, M., & Nouri, J. (2018). How social network analysis can be used to monitor online collaborative learning and guide an informed intervention. *PLoS One*, 13(3), e0194777.
- 5) Malinina, I. A. (2016). Implementing web 2.0 tools for collaborative work of learners studying English. *The New Educational Review*, *1*(43), 104.
- 6) Theobald, E. J., Hill, M. J., Tran, E., Agrawal, S., Arroyo, E. N., Behling, S., ... & Grummer, J. A. (2020). Active learning narrows achievement gaps for underrepresented students in

undergraduate science, technology, engineering, and math. *Proceedings of the National Academy of Sciences*, *117*(12), 6476-6483.

- 7) Vincent-Ruz, P., Meyer, T., Roe, S. G., & Schunn, C. D. (2020). Short-Term and Long-Term Effects of POGIL in a Large-Enrollment General Chemistry Course. *Journal of Chemical Education*, *97*(5), 1228-1238.
- 8) Bailey, C. P., Minderhout, V., & Loertscher, J. (2012). Learning transferable skills in large lecture halls: Implementing a POGIL approach in biochemistry. *Biochemistry and Molecular Biology Education*, 40(1), 1-7.
- 9) Roller, M. C., & Zori, S. (2017). The impact of instituting process-oriented guided-inquiry learning (POGIL) in a fundamental nursing course. *Nurse Education Today*, *50*, 72-76.
- 10) Springer, L., Stanne, M. E., & Donovan, S. S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis. *Review of educational research*, 69(1), 21-51.

Compiled by:

Jacinta Mutambuki, Edward E. Bartlett Professor of Pedagogy in Chemistry, Assistant Professor, Department of Chemistry, Oklahoma State University

Email: Jacinta.mutambuki@okstate.edu

Web Page: https://mutambuki.okstate.edu/