7-2023

# Social troubleshooting workshops: upskilling students' soft and self-reflection skills

Sandra SCHULZ

Rita GARCIA

Christoph TREUDE
*Singapore Management University*, ctreude@smu.edu.sg

# Social Troubleshooting Workshops: Upskilling Students' Soft and Self-Reflection Skills

Sandra Schulz
Universität Hamburg
Hamburg, Germany
sandra.schulz@uni-hamburg.de

Rita Garcia
Victoria University of Wellington
Wellington, New Zealand
rita.garcia@vuw.ac.nz

Christoph Treude
The University of Melbourne
Melbourne, Australia
christoph.treude@unimelb.edu.au

## ABSTRACT

This poster focuses on workshops to support students' soft and self-reflection skills during collaborative learning. These workshops intend to help reduce anxiety during group work and to promote inclusive and equitable collaborative learning environments. Unfortunately, single-paced instructional approaches are typically applied in learning environments [3] and do not consider students' needs when learning nor provide soft-skills guidance that encourages equal participation. The workshops offer educator and student support for equitable group work through upskilling students' *soft skills*, such as leadership and communication, that promote better teamwork. By assisting students in developing and practising soft and self-reflection skills, they might have the opportunity to contribute to solving the activity, enabling them to participate equally. This poster includes an experimental study plan to integrate and evaluate the effects of these workshops.

## KEYWORDS

Collaborative Learning, Soft Skills, Self-Reflection, Workshops

## 1 INTRODUCTION

Educators use collaborative learning to reinforce concepts and encourage soft and self-reflection skills necessary for professional software development [6]. Collaboration helps students better understand concepts [1] and promotes interpersonal skill development. Unfortunately, students find collaboration challenging because of their limited experience [2], which can create anxiety and team inequities. Social barriers can hinder question-asking because students do not want to appear "ignorant" [4] in front of peers. Sometimes these inequalities are due to non-contributing group members or biases, making it difficult for students to contribute equally to the group work. Anxiety can emerge due to prior collaboration experiences or students' limited skills to confront issues. Furthermore, research on students' collaboration in computing uncovers

educators rarely support the development of students' skills needed for effective collaboration [7].

## 2 METHODOLOGY

This poster presents the design of social troubleshooting workshops planned for Software Engineering courses at the University of Melbourne in 2024. The workshops are for computing educators wanting to promote inclusive and equitable collaborative learning and help reduce their students' anxiety during group work. The poster describes concepts and activities in one-hour workshops designed for educators and students. Student workshops allow them the opportunity to practise soft and self-reflection skills under educator supervision while providing educators with workshops to create learning environments and activities that support these skills. Concepts presented in the workshops will come from empirical evidence supporting students' soft and self-reflection skills, such as conflict resolution and communication strategies [5]. We intend to evaluate these workshops to answer the following research question:

**RQ:** How do social troubleshooting workshops integrated into computing courses influence students' soft and self-reflection skills and affect their anxiety?

This poster describes the mixed methods research to measure the workshops' influences on the students. Through the poster, we are gathering feedback on the workshops and study design from the education community. We want to construct instruments that best evaluate the workshops to disseminate the results and share the instructional materials with the education community to promote inclusive and equitable collaborative learning.

## REFERENCES

[1] D. Boud, R. Cohen, and J. Sampson. 1999. Peer learning and assessment. *Assessment & Evaluation in Higher Education* 24, 4 (1999), 413–426.

[2] P. J. Denning. 1992. Educating the new engineer. *Commun. ACM* 35, 12 (1992), 83–97.

[3] R. A. Gable, J. M. Hendrickson, S. W. Tonelson, , and R. Van Acker. 2000. Changing disciplinary and instructional practices in the middle school to address IDEA. *The Clearing House* 73, 4 (2000), 205–208.

[4] A. Graesser, C. McMahen, and B. Johnson. 1994. Question asking and answering, M. A. Gernsbacher (Ed.). *Handbook of psycholinguistics*, 517–538.

[5] W. Groeneveld, J. Vennekens, and K. Aerts. 2019. Software engineering education beyond the technical: A systematic literature review. *Proceedings of the 47th SEFI - European Society for Engineering Education (SEFI) Conference*, 1067–1622.

[6] H. F. O'Neil, K. Allred, and E. L. Baker. 1992. Measurement of workforce readiness: Review of theoretical frameworks (CSE Tech. Rep. No. 343). In *Center for Research on Evaluation, Standards, and Student Testing (CRESST).* University of California, Los Angeles, CA.

[7] S. Schulz, S. Berndt, and A. Hawlitschek. 2022. Exploring students' and lecturers' views on collaboration and cooperation in computer science courses-a qualitative analysis. *Computer Science Education* (2022), 1–24.