

Uncertainty – a driving force for team creativity?

Martina Hartner-Tiefenthaler

TU Wien, Institute for Management Science, Labor Science and Organization

martina.hartner-tiefenthaler@tuwien.ac.at

Managing rapid and sometimes drastic changes is a major challenge in today's world. Dealing with uncertainty is a natural part of handling change because the future is often unpredictable due to the complexities we face (Saravathy et al., 2003). Uncertainty is also important in learning situations as it encourages critical reflection (Mackay & Tynon, 2013), which has been shown to boost team creativity (Shin, Kim & Lee, 2017). However, studies on uncertainty in collaborative group work have been limited, mainly focusing on engineering projects (Jordan & McDaniel, 2014). Drawing on this study from Jordan and McDaniel (2014), we identify two forms of uncertainty and define them as relational and epistemological. *Relational uncertainty* involves feeling unsure about social interactions, while *epistemological uncertainty* deals with doubts in the open-ended process of knowledge creation.

Our approach is open and exploratory, investigating students' experiences during a university course on knowledge creation, innovation, and philosophy of science in 2013 (Peschl et al., 2014). The course aimed to engage students in collaborative knowledge creation. It was offered jointly at two Austrian universities (TU Wien & University of Vienna) to attract students from different disciplines, which is known to promote creativity (Caniëls et al., 2014). The course had a project-based and open-ended design to encourage group work, interdisciplinary exchange, and collaboration. Furthermore, it offered flexibility and openness for students regarding their assignments and tasks. Instructors emphasized that they were not providing "correct" or "true" knowledge but encouraged students to autonomously develop their perspectives.

The analysis is based on students' diary entries, involving 30 doctoral students grouped into six teams. Data also included instructors' observations and students' ratings of the prototype, analyzed using a grounded theory approach (Charmaz, 2006). Our findings show that relational uncertainty is prominent at the start of the knowledge creation process. Overcoming it has a motivating effect, enabling deeper engagement in epistemological uncertainty, which positively impacts the outcome. We consider both forms of uncertainty as crucial in collaborative knowledge creation, acting as driving forces. Therefore, triggering uncertainty should be done

carefully, as the positive impact of epistemological uncertainty depends on managing relational uncertainty at the beginning of the process.

Note: The course was offered at TU Wien by Martina Hartner-Tiefenthaler and at the University of Vienna by Markus Peschl.

Further details of the study are described here:

Hartner-Tiefenthaler, M., Roetzer, K., Bottaro, G. & Peschl, M.F. (2018). When relational and epistemological uncertainty act as driving forces in collaborative knowledge creation processes among university students. *Thinking Skills and Creativity*, 28, 21–40. <https://doi.org/10.1016/j.tsc.2018.02.013>

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