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DATA NOTE

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Data note for gender perspectives on a flipped classroom environment

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ABSTRACT
The present paper is a data note related to the paper "Gender perspectives on a flipped classroom environment". The paper drew on an in-depth analysis of the interview with a single female student called Sofia and attempted to analyze different gender related interactions between students in group work situations experienced by this student. The transcript from this interview was translated from Norwegian to English and is the basis for this data note.

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KEYWORDS
Gender; engineering students; flipped classroom; collaboration in groups; mathematics

SUBJECTS
Higher Education; Teaching & Learning - Education; Gender & Sexuality

Introduction

The interview was conducted by the first author of this paper on 16.12.2016 in connection with a research on activity theorical study of flipped classroom teaching and learning in tertiary education (Fredriksen & Hadjerrouit, 2019; Fredriksen and Rensaa, 2023). It was part of a series of in all 9 interviews of first year students at the bachelor education in computer engineering at UiT – The Arctic University of Tromsø, campus Bodø, Norway. This work became part of his doctoral work in mathematics education and was not originally designed to study gender related issues (Fredriksen, 2020). However, the second author, who was one of the supervisors of the first author at the time, became interested in this interview due to the discussions about gender perspectives that came up during the conversation with the student. Thus, the data was reused for another analysis based on Bjerrum Nielsen's framework with four different gender perspectives (Bjerrum Nielsen, 2003; Rensaa and Fredriksen, 2022).

Sofia, being the only female student interviewed, had successfully completed the mathematics course in which the flipped classroom teaching was conducted. Not only was she highly adept in her studies, but she also displayed excellent social skills, easily interacting with her male peers in class. Despite maintaining a strong presence in class with high attendance, Sofia admitted to occasionally neglecting the out-of-class videos for preparation, expressing a sense of guilt about it. She consistently strived to uphold a positive demeanor.

The interview occurred towards the end of the course, and Sofia stood out as the only remaining female student present. The other three female students had dropped out of regular teaching. Furthermore, Sofia was the only female student who completed the mathematics course, as the others did not return to class.

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Research method

The interviewed student belonged to a cohort enrolled in a compulsory 10 ECTS mathematics course, primarily focused on calculus with a small addition of linear algebra. Among the 25 students, four were females. The first author of the paper served as the instructor for this course. Adhering to the principles of Flipped Classroom (FC), the instructional approach was divided into an out-of-class segment, where students were required to prepare using videos and quizzes (Bergmann & Sams, 2012), and an in-class component. For the in-class sessions, students were expected to work in groups with specially tailored task meant to stimulate discussions and the use of language in the learning process. The formation of these groups was at times voluntary, while in other instances, the teacher made the selection.

The main aim of the study was to attain in-depth knowledge of students' impressions towards flipped classroom teaching and learning in an engineering education. The basic theoretical framework for the study was activity theory, especially focusing on dialectical contradictions emerging from the social construct of flipped classrooms (Engeström, 1987). The questions in the interview guide were designed to reveal such tensions.

The interview was conducted in a semi-structured manner (Bryman, 2008). As part of the research design, an interview protocol was created for the interviews so to keep a clear sense of agency towards the original research design. However, the informant and interviewer could elaborate freely over topics that naturally arose during the interview. This allowed for a conversation into gender related issues, which were not originally covered in the interview guide.

Limitations

A constraint of the study is the focus on analyzing the voice of only one student. Despite this limitation, the singular perspective serves as a valuable source of information that initiates a crucial discussion regarding the impact of gender on group work. This approach emphasizes the uniqueness of the case, aligning with the case study methodology (Yin, 2009). It is important to note that Sofia's arguments are not asserted to be universally applicable, but rather are presented as insights illustrating a specific context. This investigation contributes a piece to a larger puzzle, enhancing our comprehension of gender dynamics and participation within a flipped classroom setting.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

About the authors

Helge Fredriksen received his PhD in mathematics education at the University of Agder 2020 and holds a position as Associate Professor at The Arctic University of Norway, Department of Computer Science. Fredriksen has research interests in active learning strategies in science related subjects, in addition to various applications of machine learning in medicine and industry. He teaches machine learning subjects at the master level and supervises students in computer science subjects.

Ragnhild Johanne Rensaa received her PhD in mathematics from the Norwegian University of Science and Technology. She is professor of mathematics at the Arctic University of Norway, Department of Electrical Engineering at the Faculty of Engineering Science and Technology and holds a particular research interest in mathematics education. Her research areas are mathematics teaching and learning of engineering students but also mathematical content and gender perspectives in mathematics.

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Data availability statement

Location: The dataset can be found on the research data repository figshare™ on this link https://doi.org/10.6084/m9.figshare.24763251.v2.

Creator: Helge Fredriksen
Date: 07.12.2023
Format: Word (Docx)
Miscellaneous: Annotation is added in the text to highlight citations utilized in the paper.

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