# Tertiary mathematics students’ foregrounds

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*In this presentation, we bring the case of Chloe, a tertiary mathematics student, and her story about foregrounds, hopes and desires in mathematics. The presented study is part of a larger project[[1]](#footnote-1), researching motives for studying mathematics, as well as aspirations for the future, among minoritized tertiary mathematics students. We use the construct of foregrounds to describe tensions between personal aspirations and collectively established expectations. From the five participating students, we present the story of Chloe. The story accounts for complex relations and tensions between a personal desire to pursue an interest in mathematics, and the collective expectations on entering mathematics studies for future careers. Such stories about diverse foregrounds increase our awareness of motives for entering tertiary mathematics.*

## Introduction

Access to mathematics is argued to increase both individual and societal human capital (Salmi & D’Addio, 2021), and Berge & Danielsson (2022) show how participation in tertiary mathematics education increases participants’ cultural capital. However, STEM-attrition correlate with demographic backgrounds (Chen, 2013), pointing to socio-political challenges for equal access to tertiary mathematics.

The notion of foregrounds relate to social, political, cultural, and economic conditions for engaging in mathematics (Skovsmose et al., 2008). Foregrounds include the mathematical aspirations for the future, whereas backgrounds relate to the past experiences of mathematics (Alrø et al., 2008). Foregrounds are formed through personal interpretations of opportunities and obstacles, and at the same time, they are established collectively. Tensions between personal and collectively formed foregrounds informs research on the social and political dimensions of who can do mathematics. We ask: What are the tensions between personal and collective foregrounds for tertiary mathematics students?

## Methodology

Five tertiary mathematics students participated in focus-group discussions, based on dialogue as a research-approach (Alrø et al., 2008). Students were asked to bring a mathematics problem, as part of initiating a co-creation of foregrounds in dialogue between interviewer and interviewees. The analysis focused on tensions, as contradictions or obstacles, expressed by the interviewee. The tensions were used to construct stories for each participant. Here, we share the story of Chloe.

## Results and conclusions

Chloe knew from an early age that she wanted to pursue a bachelor’s degree in mathematics, and enjoyed to attend after-school lessons in mathematics already in eighth grade. She described mathematics as difficult and not for everyone, but still with the opportunity to find some branch of mathematics to enjoy. In her experience, mathematics is not a gendered subject. Chloe struggled with the first course of calculus, when she found the course to be difficult, too theoretical and with high pressure on students. Still, Chloe brings an intriguing theoretical mathematics problem to the interview: the notion of countable and uncountable infinity in set theory. Although Chloe meets the assumption is that pursuing mathematics implies that one wants to work as a teacher, she emphasises how this is not for her, rather, she enjoys to be intrigued and struggle in mathematics. In her story, tensions emerge between the personal enjoyment of doing mathematics, and the collective expectations about mathematics as a pathway to a career.

We find foregrounds to be a fruitful theoretical approach for understanding relations between backgrounds, the sense of belonging, the collective expectations and the personal desires. Chloe’s story challenges the perception that people enter mathematics for career reasons. Her personal foreground is to enjoy mathematics, and it is entangled with a background of enjoyment in mathematics from an early age, and a sense of being included among those who to do mathematics. Chloe’s story, together with other students’ foreground-stories, nuance our understanding of motives for entering tertiary mathematics.

## References

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1. This study is part of the IMMPACT-project (VR 2021-05235), led by professor Paola Valero. [↑](#footnote-ref-1)