

# Teacher and student perspectives on teacher actions in one-to-one tutoring

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## Introduction

The quality of communication in the classroom affects students' learning in mathematics. Several studies of classroom communication (e.g., Alrø & Skovsmose, 2004; Boaler & Brodie, 2004; Drageset, 2014) indicate that teachers' use of questions is important for students learning. Several frameworks exist for describing and categorising teachers' questions (e.g., Boaler & Brodie, 2004) and verbal actions more broadly (e.g., Drageset, 2014). Studying how teachers communicate with students in tutoring situations might provide insights into which learning opportunities are facilitated by the teachers. The aim of this poster is to investigate which teacher actions occur in one-to-one tutoring between a teacher and students and the participants' perspectives on the tutoring. Detailed insight into this critical and challenging part of teachers' work (Boaler & Brodie, 2004), combined with the participants' reflections on the specific tutoring situations, will hopefully give a deeper understanding of how teachers' one-to-one communication with students affects students' learning.

## Theoretical Framework

The framework "Redirecting, progressing, and focusing actions" describes teacher actions divided into three categories and was created with the aim of "describing how teachers use or do not use students' comments to work with the mathematical content" (Drageset, 2014, p. 281). When *redirecting*, the aim is to get the student to change their approach to a correct one or (for the teacher) a more desired approach by *putting aside* students' suggestions, *correcting* the student, or *advising a new strategy*. *Progressing* actions move the students' process forward through *closed progress details* and *open progress initiatives*, or by telling the student what to do through *demonstration* and *simplification*. Using the students' ideas, by requesting *student input* or *pointing out*, are categorised as *focusing actions*. An example of *demonstration* is "K is now 4", and *closed progress details* is "What is k?". The participants' reflections on the tutoring were taken into consideration to illuminate their motivation and experience of the teacher's actions. Di Martino and Zan's (2010) creation of "a multidimensional characterisation of a student's attitude towards mathematics" (Di Martino & Zan, 2010, p. 27) was used to better understand the participants' perspectives. The three dimensions are *emotional disposition* (positive/negative), *vision of mathematics* (relational/instrumental) and *perceived competence* (high/low).

## Methods

The data was collected in January and February 2023 at a high school in the eastern part of Norway. The students were in their last semester of high school and studied the subject "Mathematics for social studies". Out of the 15 students in the class, three volunteered to be video-recorded and interviewed. The experienced teacher had taught the subject several times before. The theme was integration, more

specifically, the fundamental theorem of calculus. The teaching style was traditional blackboard teaching accompanied by students working with textbook tasks (Alrø & Skovsmose, 2004). The three students sat by themselves in a video zone with microphones and two cameras. Every conversation between the student and the teacher was recorded and transcribed. The transcriptions were coded using Drageset's (2014) framework. A selection of, for this teacher, typical and untypical teacher comments were selected, printed on paper, and brought to an in-depth interview with the teacher and a focus group interview with the students. An additional individual interview with the participants was based on Di Martino and Zan's (2010) model and used to create teacher and student profiles.

## Preliminary findings

The findings from this study will be completed in May and presented in the poster. This will include excerpts of tutoring situations, teacher's- and students' reflections on the tutoring and their profiles. Among the preliminary findings in a tutoring situation were the teacher comment changes from *demonstration* to *closed progress details* (Drageset, 2014). The teacher changes from *telling* to *asking* a student: "Correct. Now  $k$  is ... What is  $k$  in your case now?". During the in-depth interview, the teacher explained that she experienced a change of mind because she wanted the student to think for himself. The same excerpt was presented to the students, and they were asked about the difference in being told the answer and asked a question. Two of the students with similar profiles, were positive to the teacher changing to a question. The last student wished the teacher would tell the answer, and his profile differs from the other two regarding the *emotional disposition* and *vision of mathematics* (Di Martino & Zan, 2010). The poster will present a more comprehensive analysis and discussion of similar findings and thus provide insight into the tutoring dynamics between a teacher and students with different perspectives towards mathematics.

## References

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