

# Discourse analysis as a theory and tool investigating inclusion in mathematics

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In this paper initial thoughts of research methodology and theory in an upcoming Ph. D. project is presented. This project is an extension of a previous licentiate project regarding inclusion in mathematics from a teacher perspective (Roos, 2015). In this project inclusion in mathematics *from a student perspective* is in focus. Inclusion has to do with society valuing diversity. Hence, using the word inclusion can be interpreted as a way of fighting inequalities in the society. One way to look upon inclusion is to see it as a social construct the way Hacking (1999) describes social constructs, both as a process and a product. Social constructs are made of actions of individuals (Hacking, 1999). Accordingly, one might argue that inclusion in mathematics is created by individuals involved in a process. When trying to frame and describe this process it becomes a product. At school both teachers and students are involved in the teaching and learning of mathematics. It is in this context the process of inclusion in mathematics is developed by individuals involved. Since the students are an important part in the process, this upcoming research project aims at grasping a student perspective.

The tentative methodology and theory in this upcoming project is Discourse Analysis (DA). DA is about studying the language in use and looks at language above or beyond the sentence (Trappes-Lomax, 2006), hence the meaning of language in interaction. By using DA, functions of the language can explain differences and similarities in discourses. Since inclusion can be seen as a social construct (see above), a definition of this concept can naturally be made from a social perspective, such as DA. To be able to capture the student perspective of inclusion in mathematics one has to grasp how the students perceive themselves included in the mathematics taught in different situations. This can be made by identifying the ways the student talk about, act and produce items in school mathematics. Hence, DA can be a helpful tool to analyse how students talk about, act and produce items in mathematics. This could be made with different approaches, since the field of DA has many paths. Some scholars use it only as an analytical tool, others use it as a theory and others use it as both. Hence, there are many possibilities and approaches. Common of all these approaches is the focus on language and text, what we actually can see, hear and read. These approaches could be divided into different fields: *Rules and principles, context*

*and culture, functions and structures* and *power and politics* (Trappes-Lomax, 2006). This multi-faceted division indicates a diverse use of DA. Although, Ryve (2011) has a critique against this diverse use of DA in the field of mathematics education, claiming that there is a need of conceptual clarity in the definition of DA in mathematics education, and studies need to build upon one another (Ryve, 2011). DA can look and be used differently and this depends on the aim and research question of the research. Consequently, it would be hard to build on another scholar using DA if the nature of the research question is different. Also, since DA can be used both as an analytical tool, a theory or both, it is hard to use DA as a unified concept. However, because of this, it is essential to clarify the perspective and use of DA.

The tentative research question in this upcoming project is “what can inclusion in mathematics be from a student perspective?” Thus, it is about investigating the context and culture of the teaching and learning of mathematics from a student perspective. This might say something about how the students perceive themselves included in the mathematics. Hence, an approach within the field Trappes-Lomax (2006) call *context and culture* ought to be suitable, since it refers to approaches with focus on situational and cultural differences through language (Trappes-Lomax, 2006). I have chosen to use DA according to Gee (2005, 2011). From his perspective DA covers all forms of interaction, both spoken and written and he provides a toolkit to analyse this interaction. In this research the toolkit will be used as a methodological tool. Gee (2005) also provides theoretical notions, such as big and small discourses. In this research this will be the theoretical perspective. This perspective is consistent with the social perspective on inclusion in mathematics. Hence, DA is used both as a theory and a tool.

## References

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