DEVELOPING INCLUSION IN MATHEMATICS - THE IMPACT OF THE PRINCIPAL

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Aim

**Overall study:** empirically investigate what inclusion in mathematics education can be and how it is possible to develop inclusive mathematics education, based on special educational needs in mathematics.

**This paper:** present how the impact of the principal affects the development of inclusion in mathematics.
Theoretical foundations

Two theoretical perspectives:


Communities of Practice

The practice “exists because people are engaged in actions whose meanings they negotiate with one another” (Wenger, 1998, p. 73)

The practice reside in a community of individuals with mutual engagement.

Members of a community of practice are practitioners who develop a shared repertoire, such as experiences, tools, artefacts, stories, concepts etc.

The joint enterprise keeps the community of practice together. It is a collective process of negotiation by the participants in a process of pursuing it.
Inclusion

Spatial, social and didactical inclusion (Asp-Onsjö, 2006).

Spatial inclusion basically refers to how much time a student is spending in the same room as his or her classmates.

The social dimension of inclusions concerns the way in which students are participating in the social, interactive play with the others.

Didactical inclusion refers to the ways in which student’s participation relates to a teacher’s teaching approach and the way in which the students engage with the teaching material, the explanations and the content that the teachers may supply for supporting the student’s learning.
Method

7 interviews and 4 discussions has been analysed in this paper and are the basis for results.

The interviews are with the principal (Conrad) and Amanda, Ellie, Anna and Barbara and has been collected during one year.

Amanda, Ellie and Anna are primary teachers working at Oakdale School. They teach mathematics, as well as other subjects, in lower primary school. Barbara is a 61-year old remedial teacher in mathematics primarily working with students in special educational needs in mathematics. Conrad is the principal of the school since one year.
Analysis

The analysis was made using coding of the data by labelling the empirical material.

This type of coding is the ground for creating new theoretical categories (Aspers, 2007). In the coding of the data, sub codes were identified. Using these sub codes a few major codes arose.

Several sub codes regarding the principal’s impact of inclusion in mathematics were found in the data. These were grouped into major codes and have been categorized into the five identified communities of mathematical practice at Oakdale School. The three aspects of inclusion have also been considered in the categorisation.
Results – Communities of Practice Oakdale Primary School

**Community of inclusive mathematics (CIM)** - The mutual engagement in this practice is the development of mathematics teaching for students in special education needs. Their shared repertoire is the talk about how to help the students understand mathematics, and their experiences of special education needs in mathematics.

**Community of mathematics classroom (CMC)** - The mutual engagement in these practices is the mathematics learning for all students, that you work according the curriculum. The shared repertoire is the talk about the mathematics teaching in the classroom, the curriculum and the use of different teaching materials in the classroom.

**Community of special education needs in mathematics (CSENM)** - The mutual engagement is the students in special education needs and their development of mathematical knowledge. The shared repertoire consists of the artefacts involved in the teaching, such as materials, games and tasks. It is also the individual education plans and their content.
Results – Communities of Practice Oakdale Primary School

Community of mathematics at Oakdale School (CMO) - The mutual engagement is the development of mathematics teaching at Oakdale School. The shared repertoire is the talk about the mathematics teaching overall, the curriculum and “pedagogical concerns” [in mathematics at the school] (Conrad).

Community of student health (CSH) - The shared repertoire is the “case management” (Conrad), a circle with four steps. It is a “pedagogical mapping rendering in an individual education plan, then an evaluation of the program, actions and follow-up.” (Conrad).

All five practices overlaps and influence each other, but there are differences of participants, mutual engagement and shared repertories in these practices that influence the development of inclusion in mathematics at Oakdale School.
## Results – The impact of the principal regarding inclusion in mathematics

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Conclusion

• The major codes of impact show that there are different factors in the different communities. These factors do not always agree with the teachers' views.
• In CIM, CSENM and SH courses is in focus, but in CIM it shows that it does not work well in all grades.
• Regarding the flexible solutions, the organisation is an obstacle especially regarding the spatial inclusion. Here the impact of the principal, on the level of teaching, is weak.
• There is a need to get didactical discussions and planning of the mathematics in CSENM and CMO. The time every third week does not seem to be enough. This indicates that the intentions with the reorganisation have not begun to show in the teaching of mathematics for SEM-students, or new obstacles have emerged in the new organisation.
• Does spatial inclusion in mathematics favour didactical inclusion and the other way around? In the case of Amanda – no, and in the case of Ellie – yes. This suggests that the competence is important to get the didactical inclusion.
Conclusion

• Courses and the schedule prevent adaption of the special education in mathematics according to current needs. Even if there has been a reorganisation the data suggest that there has been no noticeable impact on the development of inclusion in mathematics so far.

• There is a discrepancy between the formulation arena, where the decisions are made, and the realisation arena, where the decisions are executed. In this case the issue is inclusion in mathematics. The results indicate that the principal’s impact on inclusion in mathematics at the realisation arena is relatively weak.

• Looking into the three different aspects of inclusion in this investigation, it seems that the didactical inclusion is the most frequent. The spatial is often embedded in the didactical, referring to getting access to the mathematics thought in the classroom. The social inclusion is not apparent. In this case, looking at the impact of the principal, inclusion in mathematics has strong connections with didactical issues.
New questions arising

- Does the absence of social inclusion have any impact of the development of inclusion in mathematics at Oakdale School?

- Does the impact of the principal change over time regarding inclusion in mathematics?

- Will there be an enhancement of inclusion in mathematics eventually, when the utilisation of competences is optimal?
For your attention!