

Critical aspects in mathematics teacher students' writing of lesson plans

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This paper describes the design and preliminary findings of an ongoing study, where teacher educators tried to gain insight into their own practice, including teacher students' learning, in order for improving it. Our research interest in this short communication is to identify critical aspects in relation to Mathematical knowledge for teaching (MKT), when teacher students develop lesson plans?

Background

The research question of this short communication is: What critical aspects can be identified in relation to Mathematical knowledge for teaching (MKT), when teacher students develop lesson plans? In order for identifying critical aspects, we have combined adopting the theoretical framework Mathematical Knowledge for Teaching (MKT) with variation theory, both addressed in brief here.

MKT by Ball, Thames and Phelps (2008) presents domains of mathematical knowing for teaching. The interest in MKT in teacher education concerns what mathematics preservice teachers learn, and relationships between the mathematics they learn, and the mathematics they teach. The domains of MKT cover knowledge connected to different contents: common, specialized, the horizon of further studies, in relation to students, in relation to teaching, and in relation to curriculum. In this paper, we have analysed critical aspects in relation to these domains.

In variation theory (Lo & Marton, 2012), we have mainly adopted the notion of critical aspects, while also adhering to the assumptions of the overall theory. One theoretical assumption is that learning is always the learning of something, and the ability to learn presupposes an experience of variation. Hence, the learner must discern variation in a dimension that corresponds to that aspect in spite of the background of invariance in other aspects of what is to be learned (i.e. the object of learning). Critical aspects can be defined as necessary features to be discerned for learning the object of learning.

Tentative findings

The data collected for this paper, consist of student teachers' lesson plans. The assignment for the students was to write a lesson plan for pupils in either pre-school class or grade 4. The analysis was guided by prior research trying to capture

the interrelatedness of the dimensions in MKT (Bommel, 2012), and by the notion of critical aspects. We have done repeated readings of the data, identifying dimensions of MKT and aspects that we interpret as essential for students, when developing their competence of writing lesson plans. The analysis of lesson plans revealed critical aspects in relation to three areas; curriculum, suitable exercises and assessment, described below.

Curriculum: Formulating goals that are explicit enough, in relation to content and pupil

All but one lesson plan showed that the student teachers managed to refer directly to goals in the national curriculum. However, they all did it in a generic way, where the content in relation to the pupils was vague. Moreover, the teacher students' foci were on the assignment and not on the constructive alignment between the goal and the lesson plan.

Suitable exercises: Developing detailed lesson plans which actually facilitate teaching

When analyzing the lesson plans it became clear that the organization was described in general, in terms of what the pupils were going to do, rather than explicitly spelling out how the student teachers wanted the children to grasp the mathematical content.

Assessment: Evaluation of pupils to be connected to the lesson goal

When it comes to assessment in a lesson plan it is essential to connect the assessment to the lesson goal. However, the students described the assessment in a general way. Moreover, there was not much alignment between aim, lesson and evaluation in order for them to discern the critical feature of assessment. The assessment would not reveal how the pupils handled the task, only the result.

References

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