

HOW WE TEACH TIME IN GRADE 3

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We have identified the measurement topic of “time” to be a problem in our Foundation Phase teaching. We teach it annually, yet our learners perform poorly in time related assessment tasks (in our school’s formal assessments and in our Annual National Assessments), compared to other mathematics topics. So this year we decided to work collaboratively across the four grade 3 classes to try something new. In this short paper we report on this mini lesson-study from the perspective of one of the teachers. We describe her planning (intended intervention) and then report on what happened (the enacted intervention) from the teacher’s perspective. We then share the teacher’s reflections on her lesson, before giving some observations from the mathematical discussions which resulted from this process of sharing and reflection amongst us colleagues.

INTRODUCTION

We have identified the measurement topic of “time” to be a problem in our Foundation Phase teaching. We teach it annually, yet our learners perform poorly in time related assessment tasks (in our school’s formal assessments and in our Annual National Assessments), compared to other mathematics topics. So this year we decided to work collaboratively across the four grade 3 classes to try something new. In this short paper we report on this mini lesson-study from the perspective of one of the teachers. We describe her planning (intended intervention) and then report on what happened in the lesson (the enacted intervention), taught by the first author (Helene Schoeman). We then share some of our teacher reflections on our interpretation of this lesson.

MOTIVATION

In South Africa the curriculum was reviewed and a version called CAPS (Curriculum and Policy Assessment Statement, 2011) was introduced. As part of this process Annual National Assessments were implemented in order to establish the success of the delivery of the curriculum. In the analysis of the mathematics assessment at our school (The Grove), one of the teachers, Helene, became aware that the learners were inexperienced in concepts and understanding of time. In reflecting on this and other practical aspects of measurement, Helene wondered how the concept of time could be introduced earlier in the year in a meaningful, contextual way that would translate to practical use.

At the Grove our learners use the practice of solving number problems through calculations on a number line quite routinely. Helene wondered what learners would make of a reinterpretation of the circle of the clock face to a linear representation.

She wondered if the linear representation would in any way resolve some of the confusion which presents itself with the analogue clock. She had noticed that children often have knowledge about concepts but find it a challenge to employ this when faced with 'reading' the time. She wondered how useful it would be for them if we gave the learners an opportunity to investigate hours and minutes on number lines.

THEORETICAL FRAMEWORK

The theoretical framework for this paper draws on two main concepts: variation theory and embodied learning.

Variation theory is a view on the nature of learning which has been developed in relation to learning and awareness in general (Marton and Booth, 1997). This theory of learning has given rise to an approach to research which charts the variations in lived experiences of learners and teacher. In this case we report deliberately on the lived experience of one of the grade 3 teachers (Helene), attending to the shifts in her approach which were evident from her planning (the intended lesson) to the actual lesson (the enacted lesson) and her reflections on this lesson. In so doing, we draw on Mason's (2002) notion of 'teacher noticing' to analyse what the teacher recorded relating to planning, what evidence she collected of the lesson, and how she reflected on its efficacy.

The second concept of embodied learning has been a key aspect informing the teaching approach in relation to the identified problem of reading time. We felt that children needed to experience time in a new way, and to use their own bodies to feel the movement of time. We wanted to attend particularly to the shift from circular motion (as seen on the clock face) to linear motion (which we work with a lot in using empty number lines for calculation). As this was at grade 3 level, we wanted to connect the work on empty number lines (straight lines) to repetitive circular motion required for the 24 hour clock.

How We Teach Time

In this section we present the intended lesson, the enacted lesson and follow this with the teacher's reflections on the lesson. We conclude the paper with our collegial observations of what this lesson revealed to us during the discussions which emerged from it.

The lesson was conducted in the first term with a class of 26 grade 3 learners in an affluent suburban school. The focus was on the shift from 12-hour time to 24-hour time on both analogue and digital formats. Learners were physically involved in the lesson as they became the 24 points of a clock while holding a rope and standing in a double circle. They then unwrapped the circle to become a straight number line from 0 to 24. They were able to pace out the twenty four hours of the day, and then illustrate this on number lines. Each learner was allocated an hour of the day to illustrate and this became a mural display in the corridor.

As four classes undertook this lesson simultaneously on the sport field, the continuity of time was brought into focus. Each class represented one day, and the four days could be joined end to end to form four days.

CONCLUSION

In this paper we describe the planned (intended lesson) undertaken by one of the grade 3 teachers (Helene, who is the first author). This is followed by a rich description of the teachers lived experience of the lesson which we present using a combination of photographs, learner produced work and teacher reflective notes which include her feelings about the lesson, and her recollection of learner talk.

In so doing we hope to provide an example of an “innovative” grade 3 mathematics lesson that was undertaken in this well-resourced primary school context. The value in the paper is two-fold. Firstly it presents an approach to teaching time which may be adapted for use in other classroom contexts. This approach is innovative in its attempt to support learners to embody the motion of time on an analogue clock, and to explicitly connect this to learners’ sense of linear motion (which they experience routinely as part of empty number line work in calculations). As such, this paper may be relevant to other Foundation Phase teachers.

Secondly the paper presents a rich description of the teacher’s planning, her account of her own teaching and her reflections on this process. It is of interest to us to consider what it is that the teacher considered worth marking, talking about with colleagues (in terms of her intentions, enacted lesson and her lived experience of this process), and ultimately formally recording in this paper. So we present this paper as an example of a practicing teacher engaging deeply with a reflective process on a single lesson, and report on what this process has revealed to her and her colleagues. We hope that the paper is useful to teachers in training (be this pre-service or further professional development) and to the teacher educators who support such processes of reflective practice.

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