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CONGRESS THEME

Embracing Innovative Responses To Challenges In Mathematics Instruction

COVER SHEET

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Strand	3. Innovative responses to the effects on mathematics education of emerging and existing issues: curriculum issues such as assessment, diversity (ability, gender, socio-economic), and continuing education; and social issues such as HIV and AIDS, democratization, conflict and post conflict and political instability. [short paper]
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Linking mathematics and everyday reality: How real can we go as mathematics educators and researchers?

This paper will report on progress with implementation of the idea of a school-tuckshop innovation in the context of a broader international research project¹ that has the following central question: *How can curriculum change in mathematics and science education be implemented in a way that is most relevant for Africa, particularly focusing on situations of poverty and on promoting gender equity?*

The project has the following three interlinked aims:

1. To investigate current teaching practices in a sample of mathematics and science classrooms in the broader context of curriculum change in South Africa, with particular emphasis on poor communities. On the basis of this investigation, the aim is to work with teachers to conceptualise and initiate appropriate interventions.
2. To design and carry out a participatory action research program informed by the needs of teachers and involving their school communities.
3. To gather information to understand and assess progress towards quality education in mathematics and science in situations of poverty and disadvantage.

In the implementation of the broader research project in South Africa, a case study (with a participatory action research approach (Kemmis & McTaggart, 2005)) will be carried out in which a group of teachers and their learners in a joint partnership with researchers will investigate what happens to students' learning when their school mathematical work is linked to activities and processes in their school tuckshop.

Why the tuckshop idea? It is a common experience for schools to have tuckshops as part of their school formal structures. In the school in which the broader study is being implemented in a low-income township of South Africa, we have observed that a tuckshop exists, but it is not functional. We have also observed that during break time, people from the community around the school bring food items to sell to learners at the school. We can see here that there is a crucial link between this school and its community that can be utilized for learning about mathematics and other school learning areas. In this research we will be attempting to formalize

¹ The Education Policy Unit and Marang Centre at Wits University are involved in an International project called "Implementing Curriculum Change in Low-Income Countries" funded by DfID, with partners from Higher Education Institutions in Rwanda and Pakistan. The authors of this paper are researchers in this project in South Africa.

(together with teachers and learners) this important and survival related link between the school and the community by reviving the tuckshop that already exists in the school. We intend to document the processes that will be involved in the setting up of this tuckshop, in particular, the thinking and decision-making processes that take place among grade 10 learners and their teachers in the school. We anticipate that a lot of this thinking and decision-making will involve the use of mathematics (and other learning areas). Together with the teachers we intend to bring that mathematics to the fore, to understand the nature of this mathematics and forms of mathematical knowledge (its relevance and power), and to find ways of making that mathematics an entry point for making grade 10 mathematics learning linked to everyday reality.

We anticipate that the fact that the tuckshop is not functional presents a real problem and concern for the school and their learners, and that understanding this problem and investigating possible solutions will be important for the school, particularly in the context of the opportunities that this problem presents for learning about mathematics, science and other community knowledge. South Africa is now implementing a new curriculum which makes it clear that learning mathematics needs to be linked to the reality of learners, and that learners need to have “a critical awareness of how mathematical relationships are used” in various contexts. Accordingly, there are demands for mathematics education to make visible in students “an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation” (DoE, 2002, p. 1). However, we need to know more about what it means to implement ideas such as these in typical classrooms in township schools. This project aims to engage with these ideas at the classroom level in such a way that it addresses the demands of the new curriculum and links mathematics teaching and learning to school realities and community-related influences and needs for mathematics education.

References

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