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Speaking the curriculum: Learner voices and silences – challenges for mathematics and science education in the twenty first century

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Why learner voices?

In their aptly titled paper "Curriculum 2005 and outcomes-education: what do we know about the real outcomes", Harley and Wedekind (2003, 3-4) state with respect to one key design feature of the new South African curriculum, "Learner-centredness: The learners' experience of classroom practice is the dimension of C2005 most poorly served by research"; and identify as a gap in their review of research in this area that "learners in the learner-centred system have been displaced from the gaze of research". Ironically a focus on learner-centredness in the curriculum reforms has not generated a consonant body of work on learners. A significant silence in the literature is around learners' views and experiences of curriculum reforms, which has been confirmed also in mathematics and science education. Malcolm and Alant (2004) conclude, on the basis of an extensive literature survey of South African writing, that research on students is silent about what students take away from their learning, and what they can do, and urge science educators to move beyond research that tends to focus on and identify the plethora of curriculum implementation problems.

How is learner voice represented?

This is not to say that learners' voices are not represented in the literature but rather to raise questions about the quality of that representation. While much of the literature in mathematics and science education research is dominated by discourses of change, particularly on how and what learners need to learn to be productive in the twenty first century, the dominant indicator for representing the success or failure of these changes for learners, are performance scores of various kinds. Studies like the Third International Study of Mathematics and Science (TIMSS) dominate the imagination of the public and policy makers. In this respect learners' voices are made into quantitative scores – their voice is number. Poor performance is often unproblematically linked to poor learning with a broad range of explanations that seldom reflect what the learners really have to say or think. More recent connections drawn between performance, learning and language in the South African context (Kahn, 2004) open a minefield of questions that need to be engaged from within the worldview and experiences of learners.

No doubt science and mathematics education research is inundated with research on students' perceptions, attitudes, beliefs, and their understanding of a vast array of skills and concepts in mathematics, biology, physics and chemistry. However such voices are often restrained and constrained within the boundaries of the research question, seldom venturing beyond and asking about whether learners in fact value or consider important or relevant the very questions being posed. The research framing is tight with little opportunity for learners to really articulate their views and thoughts – the kinds of reflections they might make among their friends about their classroom or even the research experience. Research studies that indeed focus on the lived experiences of learners and offer a genuine space in which learners can reflect on their own life contexts, i.e. the cultural, social, political etc. forces that influence them as they learn science and mathematics are few and far between.

Although recent years have seen a shift in research to more classroom-based research and toward more qualitative narrative approaches, the question of what is a learner's authentic voice, how do researchers capture, represent and theorise it remains a challenge:

"They were supposed to be working on a trigonometry problem. Instead, these two boys looked at the paper and laughed, looked at me and laughed, looked at the others and laughed. They called me for help, but in reality they were curious to know about my intentions and motivations to be in their school. They wanted to know about my life, where I lived, where I have studied, why I was living outside Colombia. They could not understand why I was there in that 'poor' school, talking to poor people [...]"

My intention was to tell them that there were reasons to study and to be interested in the school and maybe in this mathematics. But they could not see it in their lives:

José: The only class I would like to pay attention to is English because I want to get out of this fucking country and go to the US.

Still I don't manage to say "Yes, good morning" (Vithal & Valero, 2001).

Not only is the question of what do learners really think and feel about the mathematics and science they learn in schools remain largely unanswered, any observer of learners in their everyday world would see a dissonance between their sanitised voice in research and how and what they actually speak.

Whose voice dominates?

In referring to learner voice we must also ask who are the learners being focused on. There is not only a prototype mathematics and science classroom (Skovsmose, 2004) that dominates curriculum reform, research and practice literature, but also a prototype learner, who is well behaved, and speaks obediently and "truthfully". We know virtually nothing about learners in contexts of deep poverty, learners in prisons, those trapped in contexts of conflict, violence and war, children who live on the streets of cities, child soldiers, child labourers who want to and continue to learn mathematics and science. The focus has been not only on learners in schools but also overwhelmingly on particular schools. Mathematics and science education research lacks substantial development in theory and practice that arises out of and accounts for learners and learning in large classes, in multi-grade classes, in rural settings or severely resources compromised settings – dominant context for a majority of learners.

Who is doing the silencing?

There are a broad range of players implicated in this silencing – from researchers to curriculum policy makers to textbook publishers. To break the silence and to speak the curriculum, analytical and empirical papers are invited from those who work in the field of mathematics and science education. In this issue we revisit the long-standing debate who's curriculum, for what and why? We hope to continue the conversation begun here to develop and address the myriad of aspects of learner voice as they are present and absent in our policies, theories, research and practice in mathematics and science education. We ask what are the implications and challenges for the "shifting boundaries and identities" of the learner of the twenty first century? What kind of mathematics and science curriculum is adequate for her, in terms of her interests, intentions, desires and beliefs? Where and how are these experiences to be articulated? How do learners reinvent themselves to either voice or silence their experiences? Indeed what is a transformative mathematics and science education from the perspective of a learner who must live and negotiate the challenges of both the local and globalised world?

References

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