Reluctant to think for herself

Mellony Graven says pupils must find maths answers on their own before they can ask for intervention from their teachers.

Over the past three years I have been conducting research into student learning and teaching in South Africa, particularly grade three and grade four pupils in Grahamstown in the Eastern Cape. While there is an emerging field of international research, focusing on the importance of learning dispositions and mind-sets, and indeed “productive disposition” is one strand of Kilpatrick’s (2001) matrix of essential strands of mathematical proficiency, there has been little local research on this topic.

Apartheid legacy

South Africa’s apartheid legacy systemically undermined pupil independence and agency. Indeed Hendrik Verwoerd, regarded as one of the key architects of apartheid, even remarked in 1947 in a speech to the Bara Education: ‘Primary Education should prepare African pupils for manual labour (and thus to follow instructions) rather than to become creative thinkers. Much has been achieved in South Africa since the end of apartheid in terms of access to education, but our quality of education — and particularly of mathematics education — is still ‘in crisis’ as indicated across international, regional and national assessments.一项对南非东部省26所学校的研究表明，低收入背景的学生在数学方面成绩不佳，这可能是由于过去的研究没有考虑到这些参与者的实际情况。更重要的是，我希望它能从反思中得出结论，即我们作为教师应该在课堂上采用不同形式的挑战来提高学生的数学能力。”

Learning dispositions

Addressing this wide range of factors is of course key, however I argue that student learning dispositions in particular (and the mechanisms by which they are promoted and perpetuated) needs further research. In 2012 I co-authored a research with I.2.98 Eastern Cape pupils (of whom the vast majority were from previously disadvantaged backgrounds) in the form of an orally administered written test to assess pupil learning dispositions. Despite clear limitations to the instrument in terms of low levels of literacy noted in student responses, some clear trends emerged that confirmed our own experience of working with high and (obviously) proficient and finance Chair, Rhodes University.

Mellony Graven, South African Numeracy Chair.

Anecdote

Below I share an interaction between myself and a pupil I call Nandi. The interaction took place in a grade four after-school club that I ran with seven pupils from three schools in Grahamstown in 2012. I share this anecdote to illustrate how the challenge teachers face when pupils are reluctant to persevere with a problem is not necessarily easy to avoid simply telling them what to do. As a teacher I kept on saying to myself that I had already read two pages of the book and tried to decipher what the problem was asking for. I later found out that Nandi was actually trying to find the value of the other shapes. So how are you going to figure out the club and triangle? (Taken from Graven & Heyd Metzuyanim, 2014)

What is said

1. Mellony 20:28
   So how are you going to figure out the club and triangle?
   Nandi: Nandi shows Mellony her answer of three for the triangle and Mellony engages her in why it doesn’t work because the column will then give a total of 16 not 26.
3. Nandi 21:42
   I don’t understand.
4. Nandi 21:44
   It isn’t that you don’t understand you need to keep trying.
5. Nandi 22:18
   Teacher, teacher – I don’t understand!
   No, it is not that you don’t understand it is that you have to think. You do understand, because you found the circle. But, it’s not so easy to find the club, and the triangle, you have to think. You have to problem-solve. So stop thinking you don’t understand and think.
7. Nandi 22:32
   Shoo
8. Nandi 22:33
   You have to problem-solve. So stop thinking you don’t understand and think.
   Mellony: Mellony works with other pupils individually. Nandi sitting looking at her problem-solving sheet and doing some counting with her fingers against her cheek.
10. Nandi 23:36
    Teacher, teacher, teacher, teacher.
11. Mellony 23:50
    Shh. Ahhhh! Very good!!! Now who told me they didn’t understand? And all she had to do was think.

What is done/Remarks

1. Nandi walks to a desk away from the group to work on it.
2. Mumbles as she walks away from Mellony.
3. A lot of children are wanting Mellony’s attention.
4. In a complaining, emphatic tone. Stands in front of Mellony and looks confused.

Mellony Graven

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Maths clubs are a fun way to learn. Photo: Supplied

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