

How students remember their mathematics teachers

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How

STUDENTS*remember their***mathematics
teachers**

Recently I spent some time with a group of about forty preservice primary school teachers discussing their experiences of mathematics as students at school. In many cases they could remember aspects of their mathematics education in great detail, and they were particularly rich in their descriptions of some of their teachers. I followed up our discussions by asking them to draw a picture of their mathematics teacher. Some could recall particular teachers and drew them, whereas others drew a caricature that represented their memories of mathematics teachers in general. In this paper I will outline the memories these preservice primary teachers had of their mathematics teachers and some questions for those of us who teach the subject.



One person's drawing of her mathematics teacher.

Perceptions of mathematics teachers

As mentioned above, the most significant feature of our discussions was the prominent place teachers had in the student-teachers' recollections of their school experiences in mathematics. When asked about mathematics, they would often talk or write about their mathematics teachers, and regularly could describe in great detail their personal characteristics. Particularly in our discussions, and to some extent in their drawings, the participants' reminiscences were often expressed with a degree of emotion which ranged from delight and respect

to fear, shame and hatred. Primarily, the teachers they recalled were male secondary school teachers and, generally, the participants could pinpoint 'the teacher who put them off mathematics'. Perhaps the most extreme example is illustrated above.

Certainly not all the teachers they remembered were like the one shown above. However, the teachers they described really fell into three reasonably tidy categories, and to illustrate these, three fictional characters have been described below. The three teachers, Mr Wilson, Ms Bates and Mr Dayman, were synthesised from student-teachers' descriptions and where possible I have made use of their own words.

Mr Wilson

Mr Wilson is a middle-aged man who has been teaching mathematics in secondary schools for many years. He has a degree in mathematics and knows his subject well. His dress is conservative, he generally wears a tie, and he has a well-groomed beard. Apart from teaching mathematics, he also coaches the school's rowing team. Mr Wilson's classroom has the desks organised in single rows, his desk at the front on the left, and a substantial blackboard as its focus. On this blackboard he presents to his classes meticulously presented notes on the topic for each day, with two or three worked examples for students to follow. He covers this material in a quiet and methodical manner, then sets the students to work on exercises from their textbook. While they work on these exercises, he works his way around the room interacting with all the students, checking their understanding and asking the occasional question about their weekend netball game or trip to Sydney. When he talks with the students he bends down beside their desk and, from under his bushy eyebrows he looks them in the eye and listens intently to what they say. One student, Louise, says that he reminds her of her dad! Mr Wilson is well-liked and respected by his students who appreciate his patient, approachable manner, and they know he is interested in them personally as well as academically.

Ms Bates

Ms Bates has been teaching on and off for many years, although only in the last few years as a secondary school mathematics teacher. She has a primary teaching diploma which she completed 31 years ago. Behind her back, one student, Michelle, often comments that 'she is stuck in a fashion time-warp', although she does acknowledge that some of her clothes are in keeping with the current retro fashion. In her teaching, Ms Bates relies heavily on the textbook, getting students to copy the notes and examples from the start of a section, then work their way through the corresponding exercises. Students mark their own work from the back of the book. Her Head of Department can be confident that she will cover all of the curriculum during the year because she keeps to the set schedule whether the students understand the material or not. Classroom management is a constant battle for Ms Bates and she is constantly

annoyed by the silly behaviour of some of the boys. Generally she seems quite distant from the students and she rarely smiles in class. Students lack confidence in her ability to teach them, and they sense she is not very excited about mathematics or about them. Zane describes her as "Miss Martian" because to him she seems to come from another world!

Mr Dayman

Mr Dayman loves mathematics and he is a brilliant mathematician. Almost all of his students acknowledge that he is a very clever man, and yet few of them want to be in his class. Mathematics is easy for Mr Dayman, and he struggles to empathise with those who do not share his ability or passion. Of course there were those four boys in the Year 12 calculus class who got all his attention — they are his special group who are going for 90% this year. Many of Mr Dayman's students grow to hate mathematics despite his great love for the subject, as was expressed by Neville:

He [Mr Dayman] is amazingly intelligent when it came to maths. He knows every formula known to man. But can he teach? ... NO! He doesn't have a teaching bone in his body, nor does he have any patience for anyone who lacks understanding of maths. I had always enjoyed maths growing up, but during those years I lost all interest in it.

To control the class, Mr Dayman can put students in their place quickly with a belittling response or a sarcastic comment. Some of the girls particularly resent him for this, and Amy reckons that she did not speak to Mr Dayman for all of Terms 2 and 3 because she was too scared. By the end of their year with Mr Dayman, a couple of students excelled in their examinations and chose to continue with mathematics the following year. Two or three students scraped through, but chose not to do any further maths, and the rest failed miserably, hated mathematics, and went on to avoid mathematics at all costs.

Discussion

Do you recognise yourself in one of the characters? Or perhaps a more important question — do your students recognise you? Which teacher would you

think is the most common? Amongst the 40 odd student-teachers I worked with, by far the most common were teachers like Mr Dayman with around two-thirds of them describing a teacher of his style, and in their pictures several were depicted with horns and a pitch fork! What was evident also was the emotion with which they remembered their teachers, and at times a box of tissues needed to be handy.

I guess that most of us would be aware of people's general perceptions of mathematics, and certainly you do not need to look too far to find someone who will admit to hating mathematics. A number of researchers (e.g. Bobis & Cushworth, 1994; Schuck, 1997) have found that many people have a poor attitude to mathematics and there have even been books written about maths anxiety (e.g. Kogelman & Warren, 1978)! What part have we as mathematics teachers played in this situation? And could or should we do anything about it?

In research and study on the teaching of mathematics, a great deal of time and effort is spent looking at the ways people learn various aspects of mathematical content knowledge. However, through their mathematics education the preservice teachers I worked with seemed to have learned a great deal about mathematics and mathematicians, although little of it seems to relate to mathematical concepts, skills and ideas. Indeed, the emotional and affective things they have 'learned' through their experiences of school mathematics may render their mathematical knowledge inert as their attitudes have become debilitating.

The teachers presented above seemed to have displayed their beliefs and values about mathematics. Mathematics was perceived as an unchanging, fixed subject made up of abstract concepts and rules, where rigour and mathematical skills were valued. Indeed, the student-teachers developed beliefs, attitudes, values and feelings about mathematics based to a significant degree on their perceptions of their teachers, and these views appear to be consistent with the findings of other researchers and writers

(e.g. Ball, 1990; Kelly & Tomhave, 1985; Sullivan, 1987).

I suspect that the descriptions above may not be surprising to many, but they raise concerns about what action is needed to address the issue. A first step for me was to reflect upon the pictures and descriptions of these preservice teachers and consider what part I had played in developing these views as a secondary teacher of mathematics. It certainly was an eye-opening experience to actually ask them what they thought, and perhaps there are opportunities to do this with students before they leave school with unintended misconceptions about mathematics teachers and their mathematical learning.

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