At an ATM conference a few years ago, I offered an ad hoc session entitled something like “values in mathematics education”. I offered this session because I had been thinking about how, when teaching mathematics, I feel that I am my complete self. I have been aware of this for a long time. I have never believed it when people say that teaching is like acting, nor found it helpful. For professional actors, the effort put into a couple of hours on the stage is their full-time job, why should teachers put on an act for longer than this? The exhilaration and exhaustion of teaching comes from its use of all that we are: our emotional, social, intellectual, physical, political, moral and ethical selves are used up relentlessly so that on Friday nights we see a diminished shadow of ourselves that needs effortful restoration before Monday. When I taught in school again after retirement from academia, I found this still to be true, even for a few hours teaching a week.

I recall, early in my teaching career, showing my frustration openly when a particular student was not working effortfully and this having a negative effect on the whole class. I had to learn that what I saw as a plea to him to do his best was seen by him and others to be a criticism and rejection that merely added to his existing problems. This emotional miscommunication ignited what was already, for him, an inflammable atmosphere. I had to learn to be the grown up and ‘hold’ the emotional space to keep it safe. This helped my own development as a person as well as improving my teaching and the classroom atmosphere.

It was in a school staffroom that I heard, for the first time, a child referred to as “a waste of space” and this appearing to be acceptable language among colleagues. Later, as a head of department, I found myself having to edit school reports in which a teacher honed his sarcasm and wit on finding ways to be rude about students to their parents, “getting X to do any work is like stirring cold porridge” was one of these comments. Experiencing these extremes of voiced negativity about students confirmed my own efforts to think and act differently. Yet the mathematics classroom is a place in which learners can be wrong more often and more cumulatively than in most other places in their lives. They can be wrong publicly, they can be wrong privately. They can struggle and struggle to be right, and still get things wrong. They can get things right and not know why they are right, so that getting things right and wrong seems to be random. The emotional work of teaching is hard to get right and I have got it wrong many times.

I learnt that it is important to be able to live one’s deepest values in the mathematics classroom, in that place that is the heart of the work. When I read about values in school there is much talk about what happens in corridors, in assemblies, in extracurricular activities, drama lessons, and approaches to bullying, and in all kinds of other places and activities but little in mathematics classrooms. When I read about mathematics teaching I find values crop up when people are thinking about gender, ethnicity, social and environmental applications of mathematics, and in other contextualisations of mathematics and the milieu of the classroom. Some of the literature about value-based education seems to suggest that values can be imposed through organisational features of schools. Instead, I have yearned for descriptions of teaching where every utterance can be value driven, where movement around the classroom can be value driven, where facial expressions can be value driven, where care for students and care for mathematics are strongly aligned.

In the notes I made during the session, I find illuminating ideas and questions, which I have thought about since and tried to use in my professional life. I am sorry that I cannot say who initiated these in the session, as at the time I was not thinking of anything other than my own development, but now perceive these to be useful touchstones, images and questions beyond myself:

- Is the classroom an expanding community in which the core values and practices include reaching out to and including others in the community?
- Are the classroom rules agreed? Just? Fair? Supportive of good mathematics?
Opening out Kath’s Cross

Paul Stephenson offers an alternative version of a problem introduced in MT254.

To celebrate the life of the much-loved Kath Cross we have started the practice each conference of tackling a little set of problems. Last spring, one concerned a quadrilateral the lengths of whose sides taken in order, \(a, b, c, d\) were given and we were asked to show that the diagonals were perpendicular. The lengths were not any old lengths of course and the team honoured below found that, among other relations, \(a^2 + c^2 = b^2 + d^2\). So, well done on part (a), Tandi, Julian and Jayne (Manipulating Kath’s Cross: One problem, different approaches, MT254), but there’s a part (b), courtesy of the American Mathematics Olympiad. In the literature, you will find the result proved by circle inversion but the fact that it is an Olympiad problem suggests it should succumb to “different (high school) approaches”:

(When I find one, I’ll let you know!)

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