Having read all the articles in this issue a few days ago I am returning to them and find myself wondering what the ‘Dissatisfied Customer’ (a Year 10 student) will make of it. There are many descriptions of classroom activity; I wonder if any will satisfy her eloquent plea: “Do we need to know everything that we’re being taught?” Yet it’s too hard a test. If that question has arisen for you, the answer has to be no.

I was privileged last week to spend an hour in another teacher’s classroom and observe closely the work of two girls. One started the lesson turning to me and asking “Why will we ever need to know about graphs?” By the end she had made a conjecture about the gradient of $y = mx + c$ and was energetically testing it by drawing graphs of $y = 5x$ and $y = 5x+2$. I was reminded of an aphorism from the biologist Humberto Maturana, and this is perhaps a better answer to the dissatisfied customer (although not one that will bring much comfort I suspect): “Everything is interesting once you are interested in it”.

Taking these thoughts together leads to the conclusion that unless my students become engaged and involved in what I offer in a classroom then there is no point in any of us being there. So, what does anyone know about how humans become interested in things?

An obvious place to start might be in education research and there is something relevant in this issue. Paul Andrews and Judy Sayers’ fascinating comparisons of European mathematics teaching touch on current UK obsessions with the need to always state lesson objectives. “(We) conclude that this element of the strategy may be less well justified than its advocates would have us believe. If this is true, then other elements of the strategy’s advice may be of equally questionable provenance”. Hear, hear! I have been privileged enough to observe, either in person or on film, some extraordinary mathematics teachers working with children and adults over the last decade. While it was certainly always the case that students knew what they were doing, and became very energised and engaged by the purposes of the tasks, this was not achieved by stating learning objectives.

I imagine everyone would agree that the students in Vivian Gussin Paley’s ‘Kindergarten conversations’ and ‘Birthdays’ were interested; what stories can we tell about how this happened? In her descriptions I read patience and trust in each individual student’s own sense-making capacities. There was no irritable impatience on her part, no teacher-lust to get to some pre-determined end-point, but the wisdom to wait: “We cannot force-feed concept before there is trust in the premise” (Gussin Paley, 1981). And what a wonderful insight: “Light and heavy, cold and warm, minutes and hours, short distances or long – these measures are understood within the context of action. Children do not grasp their meaning through numbers.” (Gussin Paley, 1981).

The most exciting academic writings, for me, of the last few years have been philosophers, neuroscientists and psychologists seemingly converging on a view about the essential embodiment of mind. Perception is active not passive; our minds and ideas are inextricably bound to our bodies and our actions. We can only perceive and think about things we can act on (either physically or virtually). The kindergarten conversations lead me to tentatively conjecture that humans become interested in the act of coming to know about things.

Another story of a student clearly interested in what she is doing is in ‘Emily’s discovery’. Colin Foster grapples with how to respond, mindful of exactly Vivian Paley’s issue of not wanting to force-feed this student. He asks: “Is it the case that sometimes explaining why is simply out of reach for the present?” Explaining why may be of no interest, but it cannot be the case that working on ‘why?’ is ever out of reach for someone who has posed the question. That is not to say that finding what to offer will ever be easy. I haven’t really got there with Emily’s wonderful discovery but I think I’d invite her to work on how much over or under the original sum each transformed sum is (I might also try out on her the idea that she’d have an explanation of why her method works if she could show the two transformed sums come to double the sum she wants, add one). Colin Foster is tantalisingly silent on whatever he did that meant Emily became interested in exploring this piece of mathematics.

So the issue remains, what can I do, as teacher, so that students in my classroom choose to be interested? Perhaps by truly engaging in this question we will be taking a step towards satisfying Derek and Barbara Ball’s startling demand for an “uprising to dent the bureaucratic education system”; of Geoff Faux’s call (in his Reflections in MT198) for ATM to re-invent itself as a support structure by and for teachers.

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