
Why Chalk Talks in Mathematics Education

A Student Viewpoint Contributed by: Paul W. Wakeley

There is still one thing that distinguishes a lecture theatre designed by mathematicians from one designed by just about anyone else; a chalkboard. It is a rather peculiar preserve of university mathematics that the vast majority of teaching and learning is still done via so called 'chalk and talk' lectures - which appears to be a rather out-dated system. Directors of Teaching are under constant pressure from outside our Higher Education institutions to be seen to be modern and up to date, with high-tech facilities and 'all singing, all dancing learning experiences', whilst from inside the planners question why mathematics requires such large quantities of lecture time and space compared to, say arts or humanities.

Before coming to university I was fortunate enough to be taught my mathematics at GCSE and A level, in small classes via lessons from a chalkboard, which were then reinforced via marked examples; perhaps this was due to the fact that my mathematics teachers were all part of an older generation of scholars, or maybe the reason is that this system works. Perhaps unlike any other era, my generation has grown up very much in parallel with modern technology and computing. Personal computers have been alongside me almost every step of the way from day one of my school career, and as such my peers and I are generally reasonably happy to embrace modern technologies. Therefore my lack of enthusiasm for new teaching methods does not come from a phobia of computing, but belief in traditional methods.

The methods of teaching and learning in mathematics are quite different from those in many other disciplines. One of my lecturers once wrote in the introductory notes to his course that '*The only way to learn maths is to do maths*'. It is this rather than any formulae or trick that has stuck with me throughout my university career. If the best way to learn mathematics is to do mathematics then surely this has to start at the beginning of the learning process. Mathematics is much more than factual recall and opinionated writing, mathematics is something different; it is a way of thinking, a skill, an art in the true sense of the word.

Consider the difference between a handout which is purely placed on a projector and read out 'upon substitution of equation (4) into (7) we get', or a lecturer, a living breathing mathematician, explaining the

problem, using the piece of chalk as an extension of their mind, to bring the solution to life. To see mathematics, sometime complex mathematics, being done live in front of you will often bring insight to the mass of symbols which appear on a printed page. The lecturer somehow provides a light through the printed algebra, to the deeper method and to the understanding which underpins mathematical thinking.

The best lectures are ones in which you feel engaged, part of the mathematics; it has always been an aim of mine to try to make my notes in parallel to the those on the board, to emphasize my understanding, but second only to this is that I'm working with the lecturer. I strongly support the use of chalk and talk lectures, so far we have only mentioned chalk, but let us consider the other part of the equation, the talk. As a living example a mathematician stands and puts part of their mind onto the chalkboard, at least part of the remaining brain is devoted to speech; it is sometimes more important what the lecturer says, and how it is said rather than what is written down that provides the deeper understanding.

Throughout my time at university, I have explored mathematics through a variety of different means; through group workshops, computer based assessment, chalk and talk lectures, as well as many more. All have their merits and their proper place in any future scheme of teaching and learning, but it is clear to me, that regardless of exterior pressures, mathematics is still best taught by someone working at a chalkboard, ready for battle - armed with a sharp mind and a stick of chalk.