Case Study: The use of in-class polling to increase student understanding and engagement

This case study describes the rationale and development of my use of in-class polling over a number of years, across different programmes and in different teaching situations. The primary purpose was to encourage students to actively participate in the class, rather than simply being passive learners.

In order to engage learners and gauge understanding, it is often useful to ask questions in a classroom setting.

However, students may feel self-conscious about asking questions, or may not want to answer incorrectly and so do not participate. Utilising electronic response systems, using mobile devices, allows students to interact in this setting anonymously, allowing them to track their understanding in real-time, and the lecturer to provide focused and useful direction and support.

Over the last several years, I have been an active proponent in the use of personal response software in as many different classroom settings as possible, including lectures, small group tutorials and even (where appropriate) practical classes. This included the use of various specific (licenced and free) polling software platforms, either using specific hand-held response devices or the users own mobile devices (phones, laptops, tablets). Questions were integrated in different ways – some at the start of sessions to check understanding and knowledge, some part-way through to re-energise the class and check understanding, some at the end to solidify the content. I also used these in revision and end-of-topic tutorials, in order to help students recognise any areas they needed to focus their learning in/on, and to allow me to provide directed corrective instruction.

During the course of the pandemic, as teaching moved online, I ensured that engagement was kept as high as possible - difficult when so many of us were faced with the rows and rows of black screens with only a name.

While some students would type in the chat, I found that many more of them would engage with anonymous questions, whether through Zoom polls, Padlet, or other platforms. This once again helped to engage and interest the class as a whole, and provided a much-needed method of gauging understanding when no body language or facial expressions, on which we are dependent in the classroom, could be seen.

Now that teaching is back on campus, I have returned to the use of polling to break up sessions, and provide interactive elements to my teaching. Unfortunately, this is currently somewhat limited due to the loss of previous institutional licences for polling software platforms.

Due to this, I have recently been exploring the limited but free options available, and have used them successfully in tutorials, lectures and workshops across multiple programmes and levels of study.

Students are active participants in this activity – indeed, without them it would not work at all! Students need to engage and participate with the methodology, and to feel comfortable and unthreatened when doing so.

This method has immediately demonstrable benefits for students – they can test their knowledge and engage in a useful activity which often has an element of competition, whilst being "safe" due to anonymity. The move from passive to active learners also helps them to engage with content and to explore their own understanding at a time point when they are forming their understanding and can therefore alter and improve from the starting points, rather than backtracking or in-filling at a later timepoint, for example during exam revision.

Successes: The most useful point, I think, is "little and often"! Sections of teaching and instruction, interspersed with 3-5 questions, seems to have the most beneficial effect for engagement and interactivity.

Further demonstration of the efficacy of the technique, from a learning and teaching perspective, can be carried out by asking the same questions at two points. This could be at the start and again at the end of a session, or after the session and at the start of the next, to check understanding and retention.

I have found that a useful method is to teach the material, check understanding (often lower than would be expected from student responses to "Does everyone understand this?"!), and then check again at the end of the session, in order to focus students on areas that they perhaps need to study in more depth in their own time.

I also find it useful to start a class, perhaps with questions based on the previous session, in order to focus them on the task in hand – particularly in early morning classes...

The success within a classroom is easy to gauge, simply by seeing how many students are logged in, and answering any given question.

Perhaps the best gauge of success is student feedback. The use of polling and personal response invariably has a positive impact, leading to increased quantitative scores for module in end-of-year questions, and specific positive qualitative comments relating to methods of learning and increased understanding and engagement. This is also demonstrated in positive feedback and influence on others practice through sharing of effective practice, peer review of teaching and teaching observations.

Challenges: When using approaches such as these, designed to benefit not just individuals but the entire class, it is vital to ensure parity and equality of access for all, wherever possible.

With the use of mobile devices – do all of the students have appropriate/necessary equipment? Digital poverty is an issue, and it cannot be assumed that all students have the ability or the hardware to utilise these electronic methods of engagement. Likewise, if someone is "tuning in" to an online lecture on a device such as a phone, it may be difficult to move between multiple programmes or screens in order to access questions.

There are also challenges when utilising approaches such as this in a classroom environment. One of these is "crowd control" – the fun element to the questions (whilst having a serious purpose) and the entertainment of a "quiz" (as well as the competitive element if using a platform such as Mentimeter) may well lead to struggles to regain control over behaviour, once teaching resumes in the class.

Another issue, if using timed questions – does everyone read at the same speed? Of course not – and this may disadvantage learners who perhaps read more slowly, or have difficulties such as dyslexia, or for whom English is not their first language.

Wider use: There is huge potential for the use of polling software in the many and varied classroom environments of the university, as has been

demonstrated by numerous members of staff using different software in different ways.

The basic concept of increasing student engagement and so enhancing the student experience, as well as making the learning experience more effective, is a strong driving force for the wider use of this technology. By allowing students to interact and engage in a "safe" manner, it increases confidence, and whilst digital poverty does need to be taken into account, generally speaking the mobile devices are commonplace enough that it makes this an accessible and inclusive method of classroom interaction for the vast majority of students.

However, the lack of any single institutional platform leads to a reluctance to use expensive tools, driving staff to use the free, often very limited, versions of multiple different software platforms, or not using them at all. This leads to inconsistencies in teaching, when software availability changes from one year to the next. This is in addition to inconsistencies in practice – students (and staff) needing to be familiar with multiple platforms within a single taught programme, or even within a module, depending on the whim of the lecturer concerned.

In order for this to be utilised as widely as possible across the institution, it is important to have a consistent method of use (ie a single main platform), effective staff and student support (and training), and time - both outside the lectures for staff to prepare questions, and within lectures to ask them (and provide corrective instruction if necessary).

Over the years I have shared my practice with many colleagues, encouraging and supporting peers who choose to utilise similar methods in their own teaching practice.

I have shared my experiences at a School, Faculty, Institutional and external level in various different forums, showing both the positive aspects and highlighting points to consider when choosing to use this method in teaching.

The use of this technique, however, is still not as widespread as it could be, given its effectiveness and flexibility, and this is an area which could easily be expanded to include and involve more staff and more practitioners across many more disciplines and programmes.

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