



HOW TO START USING TECHNOLOGY IN YOUR TEACHING

Top tips on how to get started from
Dr James Pickering (University of Leeds)

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Dr James Pickering is a Lecturer in Anatomy (School of Medicine) at the University of Leeds. He was named “Most Innovative Teacher of the Year” at the Times Higher Education Awards, an award sponsored by The Higher Education Academy.

James was awarded this title in recognition of

“ how his imagination and passion could transform a course and inspire his students ”

in particular through his use of technology.

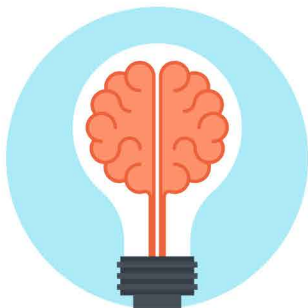
We asked James to share his top tips for getting started in using technology in teaching to engage students and improve learning outcomes. The walkthrough below outlines the different steps you will need to take and also what you will need to consider at each stage, with James using his personal experiences to illustrate both the opportunities and potential pitfalls.

Figuring out where to start

Look over your entire teaching portfolio and reflect critically on what you deliver. Thinking about the questions below should help you to identify which aspect of your teaching could be enhanced through technology:

- What aspects of the curriculum are becoming stale?
- What areas do the students really struggle with?
- What areas do you feel you teach particularly well / badly?
- What areas do your students seem to particularly enjoy / dislike?
- How do the students perform in these areas?

If the students seem to enjoy a particular aspect, and they perform well in this area, then maybe keep this as is. However, if students are bored, or it is an area that is essential for their learning but they find it difficult and perform poorly, then maybe this area could be your focus.



For example, recently, I reviewed an area of anatomy that I deliver to year one medical students. This was a particularly complicated area and I can actually recall my own experience of learning this area as an undergraduate student. I came to believe that taking my own consolidation and revision techniques as a learner and using this as a method of delivery in my teaching would potentially help the students to understand this topic more effectively.

To use technology, or not to use technology...

Now that you have identified an area of your curriculum to focus on, you will be keen to figure out how best you can start using technology to support your teaching. Before this, though, you need to ask yourself: Is introducing technology definitely the best answer in your context?



Look around and see what other people that are teaching your subject do that works well: is there anything you could replicate or modify? There are many ways in which a topic or area can be delivered without using technology (for example through case studies, group work, flipped lectures or an external contributor).

My inspiration came from my own learning style and preferences: for me technology allows different aspects of the curriculum to be delivered in formats that students might find easier to engage with. For example, I was an early advocate of recording my lectures as podcasts and making these available to students outside of the lecture theatre for their own personal use.

I am a strong believer in the lecture as a powerful teaching method – if delivered effectively – and technology allows this teaching to be accessed wherever and whenever it suits the individual learner (Bickerdike et al., 2014; Pickering 2014; Pickering 2014). Moreover, it allows the learner to more fully engage and focus on the content during the lecture itself, without feeling the need to transcribe every spoken word, as they know they can easily access it later.

Keep it simple to begin with

If you do decide to use technology in your teaching, keep it simple to begin with. The podcasting project I set-up just required a dictaphone to record the audio from the lecture. The .mp3 files were then uploaded to the Virtual Learning Environment (VLE) and made easily accessible for the students.

Using technology to enhance your teaching does not have to be complicated. The first step is to make sure that you are fully competent and comfortable with the technology: before you announce to the students that you are going to do something, make sure it will be possible! For example, check that there is adequate storage capacity in your VLE area to host the files.

If you will be using new software, try and get unlimited access so you can get to grips with it really well. If your university does not have access to the licence try and obtain a free trial of the software to see if it is suitable. You can also search online for screencast tutorials of how to use the software. A screencast is a video screen capture, sometimes with audio narration. For example Lynda.com has a wide range of video tutorials talking you through how to use various types of software.



I found this approach useful when I started to develop my own eBook using iBooks Author app. As this was a new skill for me, once I had downloaded the application, I then used several online tutorials to learn how to upload the wide range of media that I wanted the eBook to contain. This saved me a lot of time in the long run and my students are now using an interactive eBook as part of their learning (Pickering 2015).

Ask, network and learn

Ask your colleagues for advice and input. Have they tried the particular technology before? Did they find it straightforward to use? How did it work for them? What was successful and unsuccessful? Did the students find it beneficial? How do they know? Also, ask colleagues not familiar with the technology, but knowledgeable about the area, to see how they would react if this was going to be used on them. Join your institutions technology group if they have one – if not set one up!

Look online for examples of success stories. Use social media to ask around about using the software and for open examples that can show what is possible. Following the Twitter discussions that take place through #edtech is a good way to keep up to date with the latest news and innovations. Approach the manufacturer of the particular software or technology as they might be able to share case studies of examples of it in use, for example some host write-ups as a blog on their website. I did this for a project I delivered on screencasting using Camtasia that was then hosted on their blog as case study.

Perhaps most importantly, network with your students. Get to know what they want and how many of them are keen to use technology more in their learning. Ask them at the beginning of your module via a survey or by a simple show of hands:

- How many of them have certain devices (smart phones, tablets)?
- What content would they like to have available for remote access?
- Are they happy with how things are or should things be done for specific areas or topics within the course?

You might want to ask a few of them to stay behind and try to ascertain their honest opinions. Look at this data critically, many students may like the idea of accessing resources using their device or having more technology integrated, but is it really beneficial for their learning? This will need to be carefully evaluated.

Reading around the subject

Has anything been published on using this particular technology in your field or other discipline areas which is rooted in good educational practice? Doing this search can open up a wide range of possibilities that show how the enhancement can lead to impact on the student experience and learning outcomes. It also allows you to make sure that the technology meets the pedagogic need that you have identified in critically reflecting on your curriculum and delivery methods.

There are some core books that I would recommend taking a look at when getting started with using technology in your teaching:

- *Multi-Media Learning (Mayer, 2009)*
- *The Cambridge Handbook of Multimedia Learning (Mayer, 2014)*

These are both very easy reads and provide great insight into the educational theories that can be applied to technology enhanced learning. For a more theoretical insight (but a harder read), try:

- *Cognitive Load Theory (Plas et al., 2010)*

Throughout your searches, look for research that clearly demonstrates and evidences the benefits of adding this enhancement into your teaching, beyond student engagement. Students will often enjoy using a piece of technology or having a lecture delivered in a different way, but is it actually making a positive difference to their learning? Using technology has to be for the educational benefit of the student.

Plan, plan and plan!

Make a detailed plan as to how you are going to introduce this technology into your teaching. What would be the best time to introduce this and, therefore, when do you need to start planning? Do you need to get permission to introduce this initiative into your teaching?

You might want to talk it through with the module lead, programme manager or director of student learning (or equivalent).



Be realistic about what you can achieve within your timeframe. With usage statistics it can be very easy to retrieve a lot of data that takes considerable time to analyse and evaluate.

If you can trial the intervention on a small group of volunteers first, this would allow you to get an idea of its impact. You might consider recruiting a small group of volunteers from the previous cohort who have had the teaching before and trial it with them: they will have experienced both styles and provide some essential feedback, which will allow you to make an informed decision as to whether implement it with your new cohort or pull back and try a different angle.

Ethical clearance

It is important to remember that if you are going to evaluate your intervention to measure the impact, you need to make sure you have ethical approval from your institution.



It might take some time to go through the various stages of approval, so make sure you do this far enough in advance, with thought given to the points in this checklist:

- Provide all students with a statement detailing what you are doing and why and what their level of involvement will be.
- It should be made clear that students are able to opt out at any point – taking part in the evaluation should be on a voluntary basis.
- How will you make the data you are going to retrieve anonymous? How long you will keep it for? How you will store it?
- What will the requirements be on the students? Will this intervention impinge on their ability to learn?
- Make sure the intervention is equitable for the whole group with no students being disadvantaged.

I would suggest you get some support with this – you could ask more senior colleagues for support and look at other ethical submissions to make sure all areas are covered.

Prepare for release

If you get the green light to go ahead then you will need to get prepared:

- Make sure the technology will work in your teaching space and set time aside to practice – go to the room and rehearse using the technology.
- What happens if it goes wrong during your teaching? Do you know how to restart and start over and is there time to do this?
- Is IT support available that is competent in this particular technology to help you on the day?
- Do you have a Plan B that means the teaching session can continue if things do go horribly wrong? This can be as simple as making sure you have spare batteries for your dictaphone!

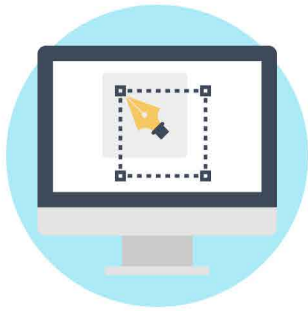
Students are generally understanding and appreciative of any effort to improve the learning experience, but ultimately they will want to get something from the session, so make sure that the show can go on!

I have always highlighted with my students when something has been added to the module, to let them know that this is a new intervention. Usually this will go alongside the existing teaching as an additional resource and this should be made clear to the students at the beginning of the module.

The key is to make sure the students are clear about the learning objectives and that the range of resources provided are to help them breach these.

Accessibility

Depending on what technology you decide to use, it is important that all students have the appropriate level of access. If your intervention requires them to bring their own device, then make sure there are sufficient additional devices available for those who do not have the required equipment.



If it is software you are using, make sure that sufficient campus computers have it installed or that it is embedded in the Virtual Learning Environment.

A lot of time can be spent during the delivery trying to resolve these types of problems. If this is during the teaching session then some students can get frustrated with it either not working or you spending time getting other people's machines to work.

This all needs to be done in advance: it is really important to ensure all students have access to the resources.

Using data to evaluate the intervention

Introducing new technology into your teaching can be very rewarding if you have good uptake and engagement from the student group. Although this indicates some degree of success in itself, you should endeavour to try and evaluate the use thoroughly. Once you have made sure you have the ethics in place to question the user group, devise a questionnaire that examines the use and impact of the intervention. Here are some ideas for what you might want to cover and investigate:

- **Look for numbers:** How many students engaged? How many students enjoyed using the resource?
- Did they feel they benefited from using the technology compared to similar lessons that did not have this resource integrated?
- Are there any significant trends in use of the resource across different demographic variables (e.g. gender, age, nationality) that might be important to analyse further and address?
- Was there a constant level of usage throughout or were there peak times when the usage was heavy? From my experience, there tends to be an initial increase in activity at the beginning that then drops to a steady level before picking up again prior to the examination period. Be aware of other demands on the students that might impact on their engagement with this teaching and influence your data.

These factors can be addressed using both Likert style questions (which create quantitative data) and also freeform boxes for participants to express their thoughts (leading to thematic analysis of qualitative data). All data can be analysed and summarised to identify key positive and negative aspects. If possible do a comparative analysis with a control group who did not use the resource during the intervention.

Digging into the data even further

If the intervention was linked to an assessment then you can also look for themes that try to address any influence on assessment outcomes. This can be very difficult across year groups or modules, but it can provide an idea of impact. Moreover, try to dig down into the data: look at students who may have performed poorly in previous assessments, without access to such resources, and see how their performance changes – linking this to their own independent usage can be difficult but is extremely valuable. I looked at this recently with the use of an eBook to support students and found some interesting results that suggest students who perform poorly benefit from this style of resource (Pickering 2015).

An alternative would be to look at specific questions within the assessment in comparison to questions that have been taught in the traditional method. Once this data has been obtained, look for themes and apply any suitable statistical analysis. It might be a good idea to get someone involved prior to the release of the questionnaire or data retrieval method to make sure you are asking the right questions for what you want to find out.

Alongside a quantitative approach to evaluation, focus groups and talk aloud sessions can also be useful to obtain information on individual usage. Again, make sure your questions are reviewed so you are asking everything you would like to know. It is a good idea to get someone else to lead the focus groups as the learners might have a positive bias if you are asking them questions about the intervention.

Data from these sessions allows you to dig down into why and how the individual students are using the resource that may be lost in the quantitative data. By using students from across the cohort you can ascertain the groups of students that are using the resource and try to match this to improvements in performance. Moreover, you can assess how they were using the resource and whether this was directly beneficial to their understanding.

Disseminate

Once you have completed your study and analysed the impact of the resources you should write the project up for dissemination. This can take many forms – many institutions will have repositories that welcome case studies on innovative practice or local education conferences where you can share your experiences and network with colleagues.

You should also try and disseminate this at a higher national or international level by submitting abstracts to conferences that are either subject specific or more generic. Many learned societies have specific education sections as part of their regular conference schedule. This is a great place to share your innovative work with colleagues from a wider field. What is more you will also be able to see what other educators are doing and how you can take your work further. This is especially important if you are considering having a deeper role in pedagogical research.

If you believe your project is robust you should consider submitting the work for publication. There are numerous educational journals that accept manuscripts on technology based interventions and many subject specific journals also have sections on teaching and education. It is really important to spread the good work you have done to as wide a field as possible.

I strongly believe that the dissemination aspect is really important. Firstly, it is vital that the wider community knows the work that is being performed so it can be built on and your practice shared to other educators. Secondly, it is good for your own personal recognition as someone who is prepared to try new and innovative approaches to teaching and this will give confidence to others to try new things, ultimately supporting the students with their education.

Sources

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