Why use Exploration Lab 2? The pedagogical argument

Exploration Lab 2 is unique at Exeter - no other teaching space provides anything like it. In fact it’s not just unique at Exeter, there are few examples of its type anywhere in the UK, even the world. Like many rare things, it is also a very valuable resource, but its very rarity is also a source of problems. As Kollar, Pilz and Fischer (2014) observe, one of the problems with new technologies is that they can be so new that no one knows how to use them effectively in education.

This document is intended to qualify the type of teaching & learning which Exploration Lab 2, and its surface tables, is best suited.

Group /peer working

The prime reason to use Exploration Lab 2 from a teaching & learning perspective is to take advantage of collaborative and peer approaches to learning, working in small groups on specific tasks. The way the Exploration Lab is structured, with 10 tables designed to seat up to 6 students, is ideally suited to this form of learning. Traditional lecture or presentation modes are not well-suited to the room, and it is recommended that these types of activities are kept to a minimum.

Race (2007) argues that group learning, learning with and from others, is “the most instinctive and natural of all the learning contexts that we experience”. Research has shown that provided groups are well-constructed, with a clear focus on the value of what they are undertaking and a clear rationale, then they should develop a greater understanding of what they are being taught and show greater retention of the material (Boud, Cohen & Sampson, 1999; Millis & Cottell, 1998).

So the use of group working should in itself help learners to develop their thinking together, and the overall layout of the room is ideal for this type of teaching & learning, but what about the surface tables themselves? What role do they play in this scenario?
Learning with large scale multi touch technologies

Large multi-touch tables are not common technologies, so little research has been done with them. What research does exist suggests that they are ideal for facilitating group interaction and peer work (e.g. Joy et al, 2013), and that they may support collaborative interaction more effectively than paper based equivalents (Higgins et al, 2012). The bulk of the research in this area, however, has been done with Interactive Whiteboards.

Interactive Whiteboards, or IWBs as they are sometimes known, have many similarities to the surface tables. They are both large-scale and support multi-touch interactions. IWBs differ in that they are fixed vertically so as to suit teaching as well as learning, whereas the surface tables are more suited for experiential, hands-on, learning activities by students.

Smith et al (2005) carried out a critical review of the literature on IWB use, and concluded that although they have their issues, their potential lies in “opportunities ... for collective meaning making through both dialogic interaction with one another, and physical interaction with the board.” Hennesey (2011) focused on creative uses of IWBs, and concluded that one of their main benefits lies in the ability to create digital artefacts that reflected the thinking of students. She summarised two key affordances of the technology:

1. Different ideas can more easily be juxtaposed, foregrounded, explored, connected, compared, and contrasted, rendering strengths and weaknesses more salient; and
2. Learners can jointly construct and interact with digital artefacts on the board.

It is easy to see how these two affordances might be applied to the surface tables, as a creative place for sharing and contrasting ideas. So the best way to use the Exploration Lab and its surface tables is in small group work, in experiential ways, where students use the tables collaboratively and creatively to represent and explore their thinking. But what does that mean in practice? What type of specific learning activity might the tables afford?

Using technology to extend and augment

One way to think about what digital technology might provide is the opportunity to extend learning by bringing into the learning process digital artefacts at the time and place when they are most valuable. In any learning dialogue, ideas are exchanged that need clarification and exploration, and different viewpoints might need to be further supported and verified in order for the dialogue to develop. Bringing digital technologies into these dialogues in the way that the surface tables offer means that this process of clarification and exploration can happen during the dialogic process. The multitude of digital places that can be visited using the surface tables help to
extend the ‘dialogic space’ (Wegerif, 2007) between individuals.

The notion of extend is one of bringing artefacts into learning in ways which would be impossible otherwise, using the digital technologies’ ability to ‘bend’ time and space. Instead of having to go to the library for that textbook, it can appear instantly on the tables. Instead of having to find a printed copy of an image or figure, it can be displayed immediately and in the context of the dialogue.

Another way of thinking about extend is in extending what is possible from a personal perspective. Using a technology to store some piece of thinking is a good example of extend in practice. Instead of remembering a key piece of information, it might be stored in a digital notebook, meaning that the learner has then extended their capacity for remembering by using the digital place to store that information. Personal limitations have been extended by technology - effectively the digital notebook has become a form of distributed cognition (Hutchins, 1996) under the individual’s control.

An alternative way of thinking about what digital technology might provide is the opportunity to augment the learner’s experience. Extend is all about doing something more quickly or on a larger scale; it is a quantitative change in activity that may have a spin-off benefit for learning. The notion of augment is slightly different: it indicates a qualitative change in learning, where something is done in a different way entirely. It is much rarer than extend, and requires careful thought to spot it in practice.

An example of augment might be the use of Prezi to contrast artefacts spatially as well as visually. Prezi’s unique concept is to use a ‘zoomable’ canvas, a canvas that exists not only in the two dimensions of a sheet of paper, but also in a third dimension. Dragging the mouse around moves the canvas across the standard two dimensions, but moving the scroll wheel of a mouse moves into the third dimension, and allows objects to be contrasted in new ways which would be impossible without the technology.

Practical steps

So Exploration Lab 2 is best suited to small group work, where students actively engage with each other on specific creative tasks, with the surface tables acting to extend and augment the ‘dialogic space’ they create, through the creation, discussion and sharing of digital artefacts. The question then is what practical steps might be taken to make this happen?

Use scaffolding approaches to help get students started

Technologies such as Padlet can be a useful tool to get started. Padlet is an empty canvas that allows individuals to create text, image or other digital artefacts freely. Rather than using a blank canvas it is suggested that a graphic structure or picture is used as a prompt or context to help frame discussions. This can be easily added as a ‘wallpaper’ for your Padlet canvas.
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A Padlet wall, with a plus and minus background applied to frame thinking about the pro and cons of a specific scenario

PowerPoint being used as a scaffold to explore multiple concepts
Use presentation tools in creative modes

Presentation tools like PowerPoint and Prezi are good partners for the surface tables, but the secret to their effectiveness lies in not presenting something with them, but creating something with them. They are ideally suited to being used collaboratively to create digital artefacts summarising discussions around the table, comparing and contrasting ideas, and framing difference. Prezi in particular supports real time sharing, so students from different surface tables can work simultaneously within the same creative space.

Using LCD Screens to highlight convergence/divergence

Another unusual aspect of the Exploration Lab is the LCD screens that are attached around the walls of the room, and which are primarily used to duplicate the image shown on the surface tables themselves. These can be used to extend the space for reflection by allowing learners in the room to see work by others, either during or after an active session, convergent and divergent thinking can be viewed, discussed and analysed.

Other potential technologies

There are many other technologies that you might find useful on the surface tables, many of which are already installed and ready to use. To browse a selection of potential collaborative technologies, we suggest using the University's Tech Trump web app. The tech trumps are digital playing cards in the top trump style which summarise the affordances of a wide range of digital technologies in the context of six dimensions of teaching & learning.
Getting more support

The Exploration Lab is centrally bookable through the room bookings system, as with any teaching & learning space, and is jointly supported by Learning Spaces, Exeter IT and Education Quality & Enhancement.

If you would like further information or are interested in demonstrations of the tables in use, please contact SID using the website or via sid@exeter.ac.uk or speak to your College Learning Technologist.

References


Document details

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Version: 1.2