

FE.10 Using ICT to improve Plumbing students' experiences

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I teach plumbing to a range of 16-19 and mature students at Bishop Auckland College. Since Test Bed began, we have received a variety of ICT resources, some of which have been especially useful in both improving students' knowledge about plumbing, and also in developing their ICT skills and confidence.

Background

Hardware

We initially received a range of hardware – a Smart Board interactive whiteboard, a tablet PC which operates as a remote control, a video camera and a bank of Laptops that groups can use. We received one digital camera and that has proved invaluable for gathering evidence for assessment purposes. (If repeating the acquisition of hardware, I would order a large number of cheap digital cameras to be lent out to students so they could record their progress on placement for portfolio evidence.)

Software

Software has been variable in its usefulness to students. At one extreme, some allegedly specialist software seems to have been created by copying plumbing information inappropriately from a book and inaccuracies occur – by trying to compile an electronic plumbing encyclopaedia, there are a lot of mistakes. On the other hand there is some excellent software, including an excellent package called Visio which enables detailed pipework diagrams to be constructed. With the incomplete system illustrated on the board, students can use a pen on the tablet which is circulating the students to identify where appropriate pipes should be connected, and their freehand drawings can then be immediately visible on the Smartboard. The programme then confirms their attempt as appropriate. Similarly, Powerpoint diagrams can also be prepared and constructed in stages, with students using the touchscreen to draw in feeds from one link to another, but this is less sophisticated and more time-consuming to prepare than the dedicated software.

The combination of hardware and software contrast with the earlier acetate overlays that I used in the past. The presentation software allows for fluidity in the teacher's presentation, professional image in handouts etc, so the students can take a pride in their work. Preparing materials for the Smartboard also leads to comprehensive delivery and enables me to ensure that all the points are covered. To some extent I can use my Powerpoint content as a supplementary informal lesson plan.

Not only is there a higher standard of presentation, but the interactive capabilities of the Smartboard and tablet involves the learners much more.

Age differences in students' response to the ICT

Both the 16-25 year old students (including the Modern Apprentices) and the mature students who attend are receptive to the new technology, but the younger students seem keener to use it. Older students appreciate the potential of ICT but are less prone to actually pick up laptops. However when given exercises that enable them to gain plumbing-related information, they come to realise why plumbers might need to access technology. The new sense of relevance seems to spark their interest and confidence.

For those who aren't experienced in, or familiar with, the new technology, we try and adopt a pragmatic approach, only recommending that students use it insofar as the technology can help in practice. For example, if someone needs to get an assignment finished in a hurry, this

is not the time to learn how to use a laptop – leave such learning until there is a value in using it but not additional pressure.

Student feedback

Students' feedback demonstrates their appreciation of the technology

a) Helping comprehension of the theory

The technology helps students understand the concepts by illustrating them in an attractive visual way. Students appreciate such clear representation, comments including: "Clear diagram and in colour"; "Easier to recognise different things"; "Colour is effective, especially when doing pipe diagrams"

b) Removing barriers to student note-taking

The Smartboard technology changes the traditional note-taking approach of "theory" lessons. It changes the teacher's and students' roles, even at the simplest levels – "the lecturer does not stand in front of the board", and it removes the necessity and requirement for note-taking, but still allows learners to make their own annotations to handouts from the Smartboard and feel secure that they have recorded a personal interpretation of the theory. It is thus useful for learners to have the notes to act as a guide at the beginning of the lesson.

Students feel greater security "getting a print-out means we have the correct information", and there is a change from students "chasing the lesson": "we don't need to copy the diagram out" and the confusion of the former practice of trying to make notes and diagrams has been removed – the days "when we are drawing the teacher is talking and I am lost" . Overall, there seems relief that the Smartboard gives students more control in theory sessions: "The smart board is easier to keep up with and people don't feel they have to rush to keep up with it"

c) Better presentation

Overall standards have improved as evidenced by improved retention and achievement. This has partly been achieved through a combination of better presentation, better delivery and better presentation of portfolios, especially with students using the digital camera. There seems to be a sense of pride in taking photographs – you hear students say, "I've got the camera, I've got the job done."

d) Improved opportunities for participation

We videoed the students presenting on Health and Safety and one student was a bit shy, he just sat down with the Tablet and delivered his Powerpoint without standing at the front of the class. They all enjoyed making a PowerPoint in pairs, even in a subject that's usually considered quite mundane

Students with Special Needs

We have seen a marked improvement of how the ICT has helped a student with dyslexia. This student who had been unsuccessful, troublesome and easily distracted at school, improved his course work by using a laptop to type coursework evidence. This improved his work from almost illegible into a very high standard. His pride in his work was noticeable. It was now obvious that he did understand subject matter when the barriers to presentation of his work were removed. As the course drew to a close the student revealed he had been stated as Dyslexic but had been embarrassed about admitting it. He had now completed level 2 and had completed first. When he did the ongoing verbal tests he completed more

quickly than anyone else. It became apparent that he thoroughly understood the subject matter but hadn't been able to present it in an acceptable format.

Developing ICT Skills and Confidence

The most important message from my experience would be to encourage colleagues to play and explore with the technology and see what it will do for you.

Secondly, I quickly learned never to apologise in advance for things that might go wrong. In my experience if hitches do occur, students will generally join in and help you if things go wrong. It can improve the classroom atmosphere as they realise that you're trying to improve their experiences.

Finally, you don't need to go high-tech all the time – creativity with low-level applications such as Word can create very useful classroom exercises.