Using assistive technology to enhance learning

Aims of the project

- How did students with learning differences use assistive technology (AT) to access learning?
- How can tutors be supported to develop their knowledge regarding AT?
- How can the use of AT be developed further?

Dimensions of the study

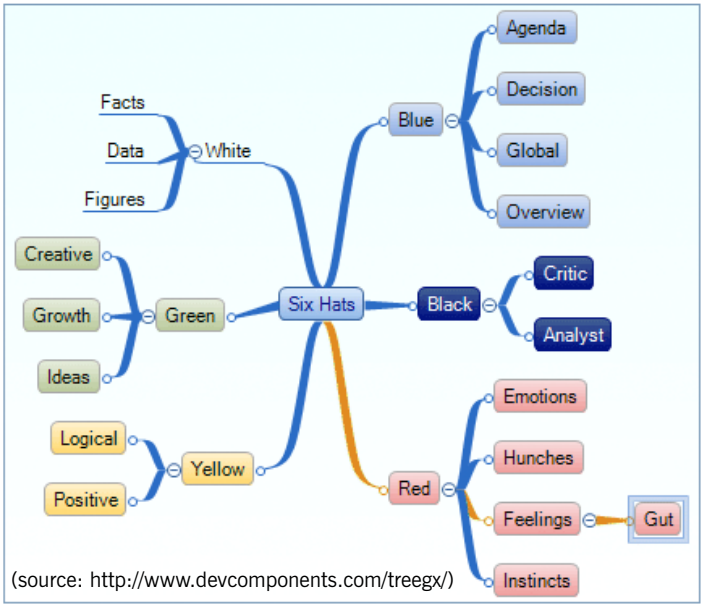
- The project took place over a six-month period and involved learners and tutors at City of Bristol College.
- Participants were on a variety of courses from level one through to level six. Participants had a range of support needs due to impairments that included visual impairments, dyslexia, dyspraxia, health conditions including epilepsy and mental health issues.

Summary of main findings

- There was often uncertainty about the term 'assistive technology' but despite this uncertainty this research highlighted examples of technology being used effectively to support disabled learners.
- Some learners had developed their own ways of using AT and had become 'experts' in using a range of free software programmes. This knowledge and expertise provided a useful learning opportunity for tutors to learn from the students.
- Once tutors had gained experience of working with a disabled learner who had used a particular piece of equipment or software they felt confident about using it in new situations.

Background and context

AT can provide a range of solutions to assist learning. With the **Reading Pen**, users can scan and hear words spoken aloud and obtain definitions. It is portable which means that students can use it wherever they are. **Text-to-Speech** enables students to listen to written work. Using an auditory means of accessing the written word enables students with dyslexia to access learning. **Speech recognition software** can assist learners to dictate rather than write or type words. This can assist learners who have problems using their hands or just prefer this means of producing written material. **Scanning and reading tools** assist learners by scanning material from books and converting it to voice output. Specific gadgets are available for use in alternative learning environments. For example, talking scales enable learners with a visual impairment the opportunity to work independently in the kitchen.



(source: http://www.devcomponents.com/treegx/)

Learners with a wide range of support needs studying at City of Bristol College use AT. For example, students with dyslexia use mind maps to gather their thoughts for assignments rather than writing out information using sentences.

In common with other educational establishments, City of Bristol College is keen to promote an inclusive and accessible learning environment for all learners. City of Bristol College has a large disability support service that provides assistance for disabled learners. The service co-ordinators meet with students and identify a package of support that might include AT. The co-ordinators then work with tutors, Learning and Resource Centre staff and the IT department to implement a range of solutions. A range of learners make use of this service including learners with a visual impairment, dyslexia, mental health support needs, and physical impairments.

This research was undertaken in order to assist tutors who expressed a desire to improve their understanding and knowledge about how they could use AT. Tutors expressed concerns that they were unsure about what AT was and how they might use it

within the classroom to support disabled learners. Tutors were also concerned about finding the time to take on extra training so that they could develop their skills and knowledge in this area. This project sought to assist tutors by highlighting examples of how AT was used and making recommendations about how they could develop their knowledge of AT.

Developing an inclusive learning environment

Support service co-ordinators met with tutors to offer packages that might help disabled learners and to provide support for tutors. 'Inspirations', for example, is often recommended for learners with dyslexia who use it to plan their work and organise their thoughts using diagrams and symbols. This package assists learners to create a visual map, which allows them to organise their thoughts and plan effectively to complete assignments. Inspiration is available from the Learning Resource Centre (LRC) at the College and learners can teach themselves how to use it using the tutorial package. Whilst Inspirations was developed for learners with dyslexia, it is also used by non-disabled learners who prefer to work visually, using mind mapping software.

Before conducting this research, anecdotal evidence highlighted some of the issues faced by tutors wishing to use AT. For example, tutors described their experiences of assisting disabled students to use a specific software package alongside delivering the curriculum. They reported that it was time-consuming to liaise with the IT department to arrange installation of the software on a laptop. The software needed to be tested to ensure that it was compatible with other programmes. Other tutors reported that they would like to use software such as Inspiration but did not have the time to learn how to use it. These anecdotes highlighted potential problems that needed further investigation. In order to use AT effectively, a solution needed to be identified that could be used simply and effectively by tutors.

The findings

The findings illustrated the range of solutions provided by using AT. From talking scales to more complex software packages, many students had been able to access the curriculum more independently using AT.

Tutor-learner collaboration

Tutors and learners reported feeling uncertain about using AT but when they used a specific item they were able to use it effectively. Feedback consistently revealed that both tutors and learners liked to have short demonstrations of equipment or software that they could then put into practice. Both tutors and learners reported learning from each other in this way. Training sessions were not always helpful as participants reported that they forgot what they had learnt. Feedback suggested that through using AT frequently, learners quickly became knowledgeable about the software and equipment they used, and tutors used this expertise to develop their own knowledge. As one tutor commented,

Students are often much clearer about the possibilities of technology than staff and are very willing to problem solve to push the boundaries of how IT is used in the classroom.

Tutors in turn can facilitate this process by applying students' knowledge of using AT and considering how it can work more effectively in their classroom.

Supporting learning

This research found that AT worked well when it was used to solve a specific problem. An example that illustrates this theme is the use of Inspiration software. Tutors who had seen how it could be used, quickly and easily developed their skills in this area. This enabled them to use Inspiration as a visual tool for all the learners in their class rather than only with learners with dyslexia.

Supportive interactions between the tutor and the student enabled AT to be used successfully. Successful examples of using AT usually involved the tutor and the student sharing a problem and identifying a solution using AT. Once the problem had been identified it was followed by a period of trial and error before a workable solution became evident.

The trial and error approach is illustrated in the following example. A student with dyslexia could not take notes accurately. She discussed this with the tutor who offered to provide handouts in advance. The student appreciated this but also asked if they could record the session using a digital voice recorder that could be converted to an audio format. The tutors were initially reluctant to have their lectures recorded but as they became more confident they developed this option as a resource for all students and placed audio recordings on the virtual learning environment. As one tutor explained:

Maureen asked if she could record my sessions. I wasn't sure, it was a bit embarrassing to be honest… but I let her and she gave me a copy of the session. It was fine really. Apart from listening to my own voice it was useful. I lent it to Hal [non-disabled student] who had missed that week. He was really pleased and he said he had put it on his MP3 player so he could listen to it on the bus. I think they've shared it round so I'll have to get over being shy and focus on what I'm saying.

Another example was provided by a support worker who described how Ben, a visually impaired student, recommended NVDA - Non-Visual Desktop Access - which is a free 'open source' version of Jaws – a screen reader. Ben's recommendation was extremely helpful as he was able to explain how this software could be useful and he had also tried and tested the software.

How can the use of AT be developed further?

Analysis of the data confirmed that there is anxiety about using AT as tutors are unsure what is included. As one tutor commented, *"I don't know what I don't know."* AT was considered to be a specialist approach requiring expert knowledge whereas in reality there was evidence that AT could be used simply and effectively. It is important to consider AT as specific pieces of equipment or software rather than as some abstract resource. This enables AT to be viewed as a tool that can be used to facilitate learning.

A major theme that emerged from the data was that tutors had learnt about AT from students. Working with learners in this way allowed tutors to see the equipment or software working in practice. This method of learning might be helpful in other situations. Tutors were able to pick up hints and tips whilst teaching the student. This avoided the need to attend training sessions and also allowed tutors to develop their knowledge as and when time permitted. Colleges can facilitate how AT is used by working more closely with learners who have experience of how AT works within a learning environment. Learners can provide simple demonstrations and suggest to tutors how best to facilitate learning. For example, providing electronic copies of handouts allows learners to use software that can read it back to them.

Colleges who want to support the use of AT should listen to what individual students need rather than purchase standard equipment. For example, some students will require a light weight portable laptop rather than the usual stock item.

Research methods

A methodology was used that could gain descriptive information about the experience of students. Interviews, focus groups and questionnaires were used to gain firsthand accounts of how AT was used to support learning.

186 questionnaires were distributed to all students receiving support from disability support. 26 questionnaires were returned. Three HE students, three level 3 students (including FD Media), ten level 2 students (including GCSE and BTEC students) and seven level 1 students (including Foundation Level Certificate in Health and Social Care) as well as three students who did not specify which course they were on, returned questionnaires.

Interviews were conducted with eight of the students who had completed the questionnaires and were willing to provide further information about their experiences.

Teaching and support staff also participated by taking part in small focus groups that explored their understanding and use of AT.

Analysing the data allowed emergent themes to be identified and possible solutions put forward that might be of interest to others. Using data from a variety of sources had the advantage of triangulating the findings to enable cross-comparison and improve their validity.

Conclusions

- AT can assist learners by using their learning strengths e.g. visually, using mind maps rather than words
- Learners who use AT often have knowledge that can be usefully shared with tutors
- AT can be applied in a variety of situations to create a more inclusive learning environment.

Suggestions for further reading

Galvin, J.C. & Scherer, M.J. (1996) *Evaluating, selecting, and using appropriate AT* Gaithersburg, Md.: Aspen Publishers, 1996.

Mind Mapping Software:

http://www.brainhe.com/students/types/assistivetechnologybecky.html

http://www.dyslexic.com/index.asp?url=IND

Other AT that is publically available:

Freemind

http://freemind.sourceforge.net/wiki/index.php/Main_Page

This is a free piece of software that is very similar to Inspirations.

NVDA

http://www.nvda-project.org/

This is very similar to Jaws but free.

Author and contact details

Julie Osborn

Manager for Disability and Mental Health Support Services

Study Support

HP0. 14 South Bristol Skills Academy

City of Bristol College

PO Box 2887

Bristol BS2 2BB

Tel: 0117 312 5491

Email: Julie.Osborn@cityofbristol.ac.uk

Web:

http://uplace.org.uk:8080/dspace/search?query=julie+osborn

This summary was commissioned by the National Teacher Research Panel in 2010, and supported by the Learning and Skills Improvement Service (LSIS).

To find out more about the Panel and view a range of practitioner research summaries please visit: www.ntrp.org.uk