

## [P10] A good big 'un ...: adaptive technology and scientific software

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The University of Wolverhampton attracts an increasing constituency of additional needs students as a consequence of Government and University initiatives (e.g. Flexible Access Project, Widening Participation etc.) as well as transfer from linked institutions.

The School of Applied Sciences has an extensive portfolio of specialist software and teaching packages<sup>1</sup> and this, coupled to an increased emphasis on the use of ICT in producing assignments; laboratory practical and field reports, essays, projects etc. could be seen to be increasing the difficulties encountered by some of our students whose needs were not met by our standard IT provision.

The use of screen magnification software is now well established (Neuman, 2002; RNIB, 2003) and we describe our use of the facilities implemented in Matrox multiple output graphics cards to improve access to ITC for our visually impaired and other students whose needs may be met by increased magnification.

Our current 'student specification'<sup>2</sup> machine has been upgraded with a dual output graphics<sup>3</sup> card to enable the use of monitors

in varying configurations and hardware magnification settings. The use of twin 21-inch monitors provides additional output options for the range of software used in the School and is particularly useful in those specialist scientific, graphics and spreadsheet/statistics packages where voice recognition/control software may be inappropriate or not available.

### EXAMPLES OF CONFIGURATIONS USED

#### Clone/variable magnification mode

The first monitor is set to low magnification circa x1- x2, enabling the user to 'search' the document and locate features of interest (paragraphs, graphics etc.). The chosen area can then be selected using the mouse pointer and the selected feature then appears, filling the second screen to a magnification determined by the extent of the area chosen, but varying between x1 to around x10. Options are available to set the system to control the boundaries of the magnified area using the cursor or 'follow the mouse'.

#### Single monitor cycling through Pixel TOUCH magnifications

Predetermined magnifications are available on the first (or only) monitor via the so called 'PixelTOUCH' facility where key strokes allow cycling through x1, x2 and x4 magnifications; at the latter magnifications, the 'follow the mouse' system allows the user to navigate around the screen and concentrate on any desired detail.

<sup>1</sup> SAS Intranet, WOLF [Wolverhampton On Line Learning Framework. University VLE], GIS, Remote Sensing and various statistics packages as well as specialist teaching packages such as 'Sheffield Biosciences Software' and 'Biochemical Simulation'.

<sup>2</sup> Pentium 4:2.4 GHz, 512mb RAM, 40Gb HDD,

<sup>3</sup> Matrox Millennium 440, 550 or 750 models

Our initial experience at Wolverhampton is based on a limited range of student needs, examples of which are given below.

### **Student A (visual impairment)**

Found the principal advantages were provided by the magnification options within the system (particularly when used with the 21-inch monitors), which facilitated working with Word and Excel as well as making Internet use easier.

### **Student B (dyslexia)**

Found the magnification options useful when working with Word and when viewing / reviewing the lectures and other support materials made available on WOLF.

### **Student C (dyslexia and dyspraxia)**

Initially enthusiastic but did not make enough use of the facility to provide any valid feedback

### **RNC TRIAL**

The system is also being tested as an additional tool for teaching visually impaired students at the Royal National College for the Blind at Hereford. The optimal set up was found to have the primary monitor positioned on the right behind the mouse and the secondary monitor on the left behind the keyboard. This allows the user to access the Pixel-Touch 2x or 4x magnification facility on the secondary screen alone, or use the DualZoom feature so that they can have a magnified screen in front of them whilst the teacher can see the whole screen on the monitor on the left.

### **SUMMARY**

Whilst not claiming this system is a panacea it appears to have benefits for particular students in specific situations or when using specialist software.

A principal advantage over other commercially available screen magnifiers is the price; £50-£60 (plus a second monitor if needed) instead of £500+ for the market leaders.

Users benefit from the screen not 'jumping around' when menus etc. are opened, whilst the teacher can see the 'whole picture' without having to alter the learners view.

It is of course possible to use the Matrox monitor card with a single monitor in PixelTOUCH mode to provide similar facilities for use at home etc.

Matrox dual output cards can provide an invaluable and economic teaching aid as well as increasing access to ITC and helping to meet the additional needs of a disparate group of learners.

### **REFERENCES**

- Neuman, Z.**,(2002) Visual impairments and technology. In Phipps, L., Sutherland, A and Seale, J (eds) *Access All Areas: disability, technology and learning*. JISC Techdis Service and Association for Learning Technology.
- RNIB** (2003) *Factsheet: Low Vision; Technology in Learning and Employment*. Royal National Institute of the Blind