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RESEARCH EVIDENCE SUPPORTING THE IWB TECHNIQUES PRESENTED IN THIS UNIT

Introduction

This research project investigated 210 Key Stage 3 students' perceptions of a range of interactive electronic whiteboard (IWB) techniques used in Geography. The most common IWB techniques were both justified and evaluated in order to determine which best engage and involve students, which they most enjoy, respond to and perceive as useful. The population studied consists of all Lincoln Minster School (LMS) Years 7, 8 and 9 students (excepting absences) - surveyed in May 2008. 16% of the total had special educational needs in the form of autistic tendencies, dyslexia, dyspraxia or dysgraphia. Discriminant analysis of the resulting data proved both the validity and reliability of the questionnaire, and that the population honesty as a whole can be trusted.

Research findings

Legitimacy through survey size is a key element of this research project. At the outset, therefore, it is appropriate to note that discriminant analysis demonstrated that each year group (7, 8 and 9) responded much the same, albeit with a slight tendency towards Year 9. In this data set, there is not enough difference to suggest that a Year 7 student would respond differently to a Year 8 or a Year 9. This is crucial as it demonstrates both the validity and reliability of the questionnaire.

The survey population was divided virtually equally between the genders - with 49.5% female and 50.5% male. Furthermore, 16% of the total had special educational needs in the form of autistic tendencies, dyslexia, dyspraxia or dysgraphia. Discriminant analysis, in short, proves that the population honesty as a whole can be trusted.

Background colours

A majority of students (54%) stated dark blue or cloudy sky as their preferred background colour - an encouraging confirmation of much established advice, albeit not revealing unambiguous trends amongst those SEN conditions above. Personal preference (and subsequent recommendations to others) as to the use of a cloudy sky background have come from many years trying alternatives with SEN students across Years 7 – 13, and responding to which they stated as most appropriate. Adopting the well proven adage that 'SEN practice is best practice for all' the cloudy sky background has been a consistent choice for many years. SEN students demonstrated no consistency of response whatsoever, suggesting that continuing with general advice as to the use of darker shades

of blue backgrounds should be qualified. In other words, individual teachers should continue to be encouraged to ask students within lessons which background colours are preferred - not least given the subtle changes of lighting conditions and reflections affecting the IWB, depending on the room used.

Building up diagrams during an explanation

A particularly useful geographical technique (albeit not exclusive to the discipline) is one in which the teacher builds up a diagram during an explanation. Given the value of two- and three-dimensional imagery in both illustrating and explaining geographical features (such as physical landforms) the potential of this technique is considerable. With 70% of students finding this practice helping 'quite a lot' or 'a great deal' its value is confirmed beyond doubt.

Copying notes from the IWB

Five questions examined student perceptions as to the value of copying notes from an IWB. Long-established advice in training colleagues has been to emphasize the use of sans-serif fonts - such as Arial and Comic-Sans - displayed large enough to be interpreted comfortably from all parts of the room. Furthermore, careful thought has to be given to the volume of text shown at any one time. 53% of students recorded that copying long notes was 'quite' or 'very easy', involving 'rarely' making mistakes, if any at all. Furthermore, an overwhelming 87% of students recorded similarly positive responses, when questioned on copying short (such as summarizing) notes. This represents a very clear statement as to the value of this practice.

Using 'lottery-style' scratch cards to blank out key word options

Additional questions developed the theme above by examining student perceptions regarding copying and completing notes with 'lottery-style' scratch cards blanking out key word options. Again, overwhelmingly positive responses were recorded - with 65% of students finding it 'quite' or 'very useful' and 69% finding it 'quite' or 'very helpful'. Furthermore, the correlation between the responses proved to be significant. This all represents encouraging confirmation of the value of this particularly useful technique, especially when adapted to allow differentiation of task (examined later).

Having paper copies of IWB notes

A question asking how helpful it was, following teaching of a topic, to have a paper copy of the IWB notes and options (when copying and completing notes) recorded a majority of students (52%) finding this to be 'quite' or 'very helpful'. Classroom experience

identifies very clear value in appropriately designed paper copies of such exercises when catering for both lower-ability students and those with visual impairments.

Differentiation

Two questions examined student perceptions as to the helpfulness and fairness of differentiation. This potentially thorny issue can raise very real problems in class, with markedly contrasting student reactions to peers receiving alternative instructions, tasks, or home-work exercises. As a result, the questionnaire prefaced the questions with the following justification: *'Sometimes, after a topic has been taught, you are given a slightly different version of whiteboard notes, instructions, or an exercise. This is because the teacher is trying to help you as an individual rather than assuming that everyone in the class is the same'.* A majority (53%) of students found this to be 'quite' or 'very helpful', although, notably, 26% recorded 'I don't know'. Similarly, 55% of students found this to be 'fair' or 'very fair', with 28% recording 'I don't know'. Furthermore, the correlation between helpfulness and fairness proved to be highly significant. In short, whilst not so overwhelmingly positive as some of the earlier results, such responses do suggest real value in differentiating - important to appreciate given the time-consuming nature of preparing such materials, and the logistical problems of discrete classroom dissemination amongst the students.

Use of the reveal tool (IWB blind)

One question examined the use of the reveal tool (IWB blind) to expose text in sections. 40% of students found this to be 'useful because it helps me to keep up' with a further 15% finding it 'useful because it helps me to check my copying'. Given only 12% recording 'I don't know' the value of this practice is clearly evident.

Completing diagrams, definitions, sentences and explanations using labels, incomplete phrases and 'drag-and-drop'

Much of the analysis above refers to techniques involving manipulation of words on the IWB. Such manipulation clearly relates to the effects on visual and kinaesthetic student learning (such as through revision of key concepts incorporated into every lesson) promoted by such manipulation. 64% of students reported that the teacher moving phrases and words to label diagrams, and complete sentences such as definitions, helped understanding 'quite a lot' or 'a great deal' - and 62% when operating the IWB themselves. However, 34% found other pupils manipulating the words to be of no help 'at all' or helping only 'a bit' - with a further 24% recording 'I don't know'.

Using hotspots (hyperlinks)

Two questions examined student perceptions as to the use of hidden 'hyperlink' or 'hotspot' links to pictures, websites and video clips. Given the visual impact of such techniques, teachers value hyperlinks markedly - not least given the pace and immediacy they introduce to a lesson. Predominantly positive responses prevailed (with 58% of students finding the teacher using these links helping understanding 'quite a lot' or 'a great deal more' and 47% when operating the IWB themselves.) However, 33% found other students using these links to only help understanding 'a little bit' or to be of no help 'at all'. Once again, the trend towards valuing teacher and individual operation of IWBs was evident, with a relative intolerance of peers.

PowerPoint **presentations on an IWB**

Three questions clearly demonstrated the value in students presenting their *PowerPoint* projects on an IWB - although teachers should always beware of overdoing such projects given the capacity for many students to rely too much on the efforts of others, particularly in their preparation. 43% of students felt 'comfortable' about presenting in a group, with a further 27% 'really enjoying presenting projects' and being 'disappointed if not asked'. Presenting as an individual demonstrated marginally less conviction, and the understandable insecurities of 11 – 14 year olds. For example, 31% recorded feeling 'comfortable' about presenting, with a further 16% 'really enjoying presenting' and, again, being 'disappointed if not asked'. However, 29% of students felt 'slightly uncomfortable' with, importantly, a further 16% 'very uncomfortable' and preferring 'not to be asked'. The results of watching others presenting contrasts markedly with the 'relative intolerance of peers' commented upon earlier - with 45% 'interested' and 'pay[ing] attention' and a further 31% 'very interested' and 'enjoy[ing] watching others'. Furthermore, only 21% reported to express 'little interest and can lose attention'.

Conclusions

Statistically significant, overwhelmingly positive results dominated throughout, with student knowledge, understanding and enjoyment perceived to be promoted by IWB techniques such as building up images and tables, completing notes and diagrams (both with and without 'scratch card' and 'drag-and-drop' options), using hyperlinks to pictures, websites and video clips, and presenting *PowerPoint* projects. Highly significant, and again positive student perceptions were recorded regarding the helpfulness and fairness of differentiation, suggesting real value in teachers differentiating instructions, tasks and resources within mixed-ability groups. Finally, a number of questions investigating student perceptions of teacher, individual and peer operation of the IWB revealed trends towards valuing teacher and individual operation, but a relative intolerance of peers. This latter finding supports current investment in Promethean's latest ACTIV Expression hand-sets for use in every classroom.

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