Personal Response Systems

Duncan Folley, Steve Wilkinson and Simon Thomson

Introduction

This report investigates the use of hand-held remote response systems similar to those used on *Who wants to be a millionaire?*, known in higher education as Personal Response Systems (PRS), and their effectiveness from both the students' and their teachers' point of view.

Background and rationale

As discussed by Middendorf & Kalish (1996), MacManaway (1970) and Gibbs et al (1987) there is much research that discusses students' attention spans and the importance of designing lectures that move away from traditional, didactic teaching methods to shorter segments that allow the students to assimilate knowledge and restart their 'attention span clock'. This is being embraced in the world of podcasting, where there are good examples of learning objects that rarely exceed 10–15 minutes of play time. For example, iTunes has 65 podcasts from JISC, most within the 10-minute time frame. If we accept this, then any learning technology that empowers students and brings all the benefits as described above should be embraced, though with care so that it is not overused.

Studies by MacManaway (1970) and later Gibbs et al (1987) claim that the average attention span of a student is approximately 20 minutes. Middendorf & Kalish (1996) discuss the problems of student attention spans and argue that academics need to develop what they term 'change-up', meaning a simple break within a lecture for students to talk to their peers, interact with information, do a problem-solving exercise etc. They conclude: "a large body of literature tells us that when the goal is to foster higher level cognitive or affective learning, teaching methods which encourage student activity and involvement are preferable to more passive methods".

Beekes (2006) discusses the benefits of PRS and suggests that they are "very effective for breaking up the sessions and maintaining student interest" (p. 27). Along with the benefits claimed for 'restarting' the students' attention span 'clock', Barrett et al (2005) claim the PRS can enhance students' academic communication as well as helping teachers' assessment of individual student comprehension.

Hoffman and Goodwin (2006) state that the benefits of the PRS range from ensuring interaction and increasing participation to just good fun. Graham et al (2007) conclude in their paper on PRS: "In general, students perceived strategies that provided formative feedback and empowered them to evaluate their own performance as more helpful than strategies oriented towards grading and compelling participation".

Uhari et al (2003) discuss the use of their voting systems and claim: "As teachers we found voting an exciting and useful tool for activating students during lectures, and this survey shows that the students were similarly excited about it."

Cultural differences also need to be factored into any assessment, learning and teaching strategy. According to Volet & Rendshaw (1995):

"Developing such insight is particularly useful in understanding how international students adapt to the specific academic requirements of the host country in comparison to their local counterparts."

Beekes (2006) discusses the benefits that a PRS can bring when teaching students whose cultural backgrounds may mean they are less likely to participate in classroom discussions.

Accompanying all these benefits there is a word of caution. Technology alone will not improve anything within a classroom environment unless due thought is given to its use. Robertson (2000) offered 12 tips for using a PRS, which were used as guides for developing our case studies.

Following this background research the authors decided to investigate the benefits that such a blended learning intervention could bring. This was achieved through two case studies, one with a set of students and another with the Innovation North academics.

The PRS used within this study was supplied by Qwizdom. The software that comes with the kit is a plug-in for Microsoft PowerPoint and allows for simple but effective slides to be developed extremely quickly.

Case study 1

The PRS was used in a guest lecture in Poland at the Polish-Japanese Institute of Technology, where the students are extremely motivated high achievers and are strictly required to attend all classes. After a 40-minute PowerPoint presentation in which approximately one-third of slides required student interaction, the students were surveyed to find out how they found the PRS. The questions were framed either in simple Yes/No format or used the Likert-type scale where 1 = strongly disagree and 5 = strongly agree.

Question 1

Have you used/seen used a similar system to Qwizdom? Yes, No
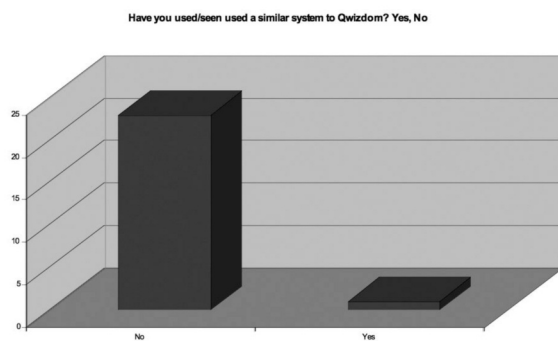
Only one student had seen a similar system and therefore the students could be said to have few preconceived opinions. However, the novelty factor may have affected their opinions.

Question 2

Using the hand set has increased my enjoyment of lectures. Rating Scale: Where 1 = Strongly disagree and 5 = strongly agree
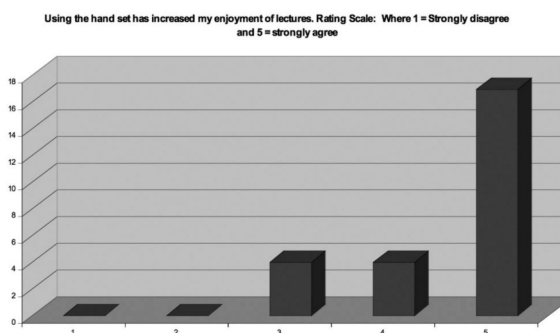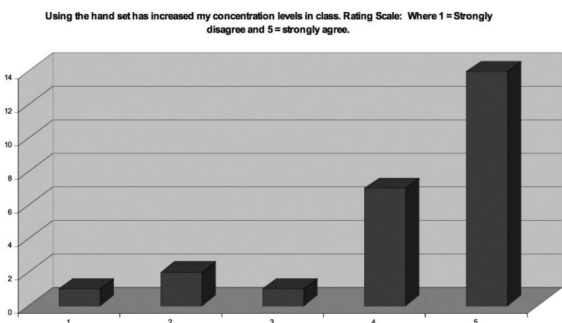
Clearly students believe the system benefits their enjoyment of their lectures, which it is hoped will result in an increase in deeper learning. (Students were asked to answer this question in relation to the PRS and not to the lecturer.)

Question 3

Using the hand set would encourage me to attend more lectures. Rating Scale: Where 1 = Strongly disagree and 5 = strongly agree
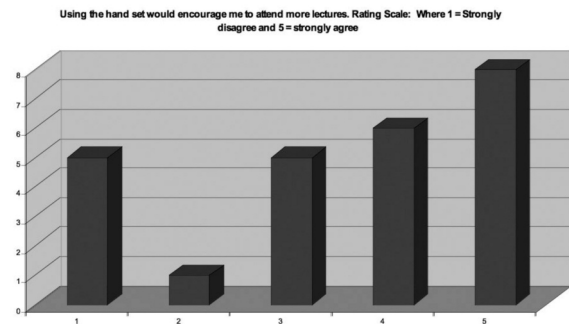
Although the answers are not conclusive, this question is a little irrelevant to this group as attendance at lectures is compulsory, otherwise the students may not be allowed to sit their exams.

Question 4

Using the hand set has increased my concentration levels in class. Rating Scale: Where 1 = Strongly disagree and 5 = strongly agree.

Although this was a highly motivated group, answers show that the system did increase concentration levels. One or two students said after the class how much fun the lecture was, but more importantly that they had concentrated all the way through it.

Case Study 2

The PRS was demonstrated to 25 academic staff at Leeds Met, through a PowerPoint presentation showing examples of the different types of question formats and a demonstration of the spreadsheet data that such a system can generate. The staff were then surveyed on their opinions.

Question 1
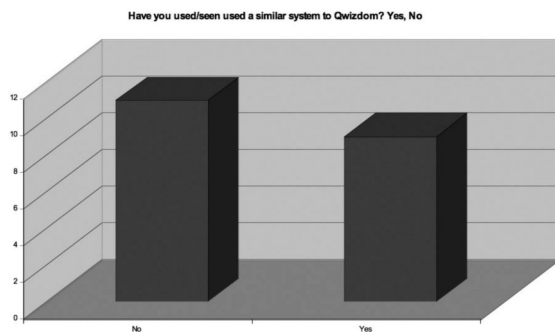
Not surprisingly, some of the staff had seen or used a similar system as they are based in the Faculty of Innovation North which prides itself in innovation.
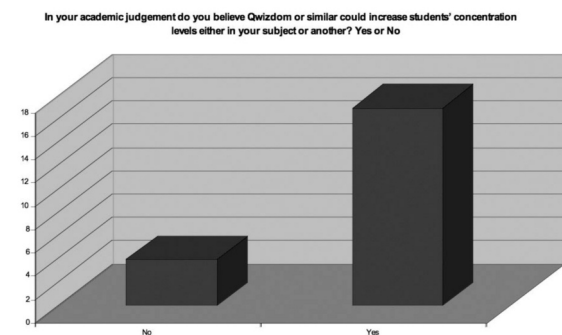
Question 2
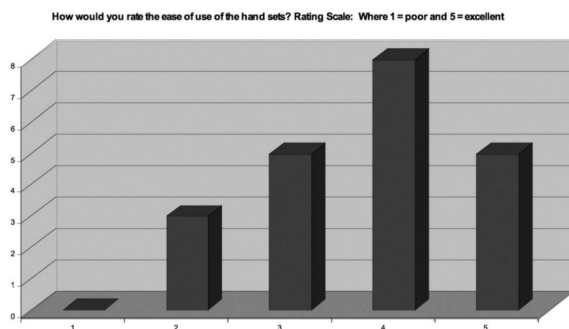
It was quite surprising that some staff rated ease of use as 3 or less, especially as staff within this Faculty are generally extremely IT-literate. The graph suggests a problem with the interface which seemed self-explanatory to the authors. We would expect a second opportunity to produce a marked improvement in the score.

Question 3
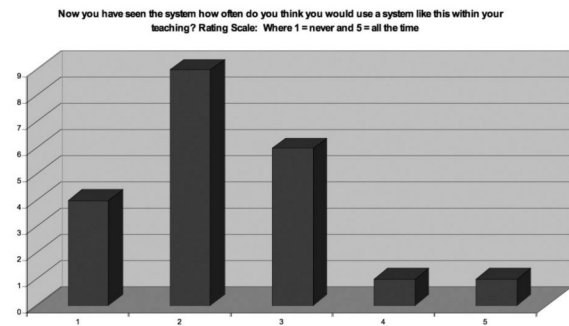
The subjects being offered by this group of staff are quite practical in nature and allow for informal discussion, but the style of lecturing is more demonstration-based and therefore staff may need more convincing of the pedagogical advantages that such a system may offer. They may also see the initial hurdle of preparing the slides and designing the Multiple Choice Questions (MCQ) as an issue.
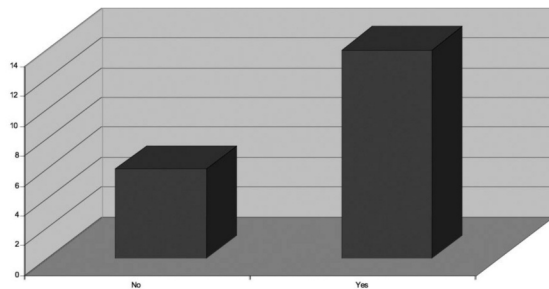
Question 4

Clearly staff believe the concentration levels of their students would benefit from such a system but this does not seem to tally with their responses to Question 3, which show they are more reluctant to use the system themselves.

Question 5

Do you believe this system or similar could encourage some students who would not normally engage in classroom discussion to participate more? Yes or No

Again, staff can see the benefits of such a system for student engagement as it may allow those students who may be considered 'at risk' to be more pro-active.

Question 6

How useful do you believe the spreadsheet data that Qwizdom generates would be to you when planning your next class with the same student group? Rating Scale: Where 1 = poor and 5 = extremely useful.
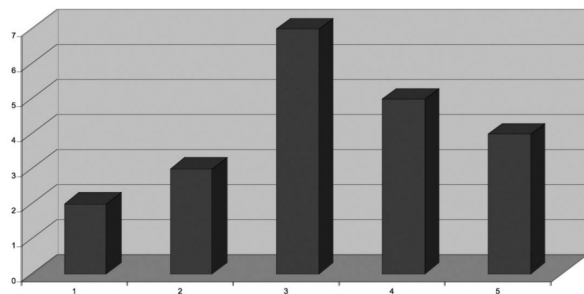
The plan for the weekly class delivery in the Faculty is designed far in advance, and although this system may help staff rethink their teaching for the following session, a major overhaul would be impractical. However, the authors believe that if staff appreciate the benefits of the spreadsheet data, they may be better able to adapt their weekly classes to suit the needs of their students.
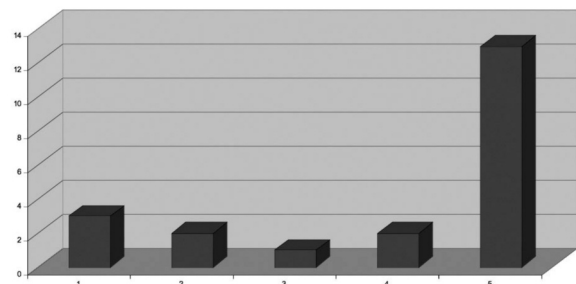
Question 7

Do you believe an interactive hand held system like Qwizdom is appropriate to Higher Educational teaching? Yes or No
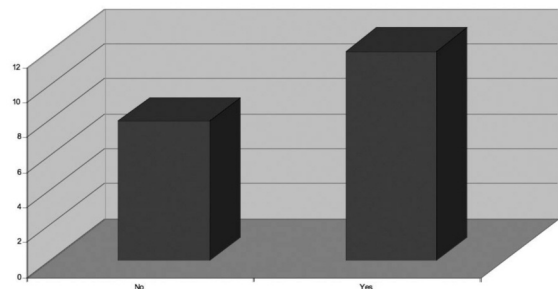
A somewhat disappointingly high number do not see the benefits, even though similar systems have been in used in HE for a number of years and evidence shows there can be considerable benefits to the students' experience. How often have we asked a group of students if they understood a given concept? Also desktop video-conferencing software like Elluminate or Wimba, which are being used more in online courses, have embraced such interactive features.

Question 8

How much an issue is the logistics of handing out and receiving back the hand sets. (does it put you off using them). Rating Scale: Where 1 = not an issue and 5 = a major issue to me.

Clearly there is an issue with the overall logistics of handing out and collecting the handsets, therefore a robust and secure method must be found before such a system could be implemented.

Question 9
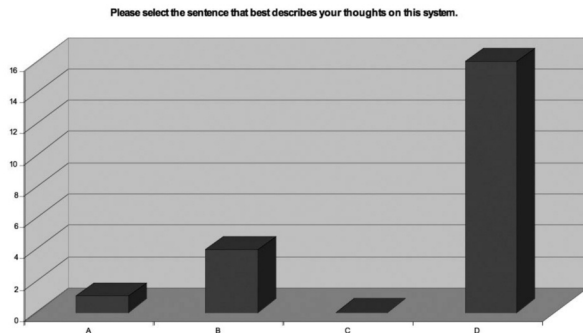
Please select the sentence that best describes your thoughts on this system:

(a) Although I can see the benefits of this system it does not suit my teaching style

(b) I cannot see any benefits of this system for myself, other academics or the students

(c) I can see the pedagogical benefits of this system and I look forward to using it

(d) I can see that this system would be useful for certain situations and I may wish to use it in the future.

Following discussions with staff after the survey, I believe that staff may use the system in one-off lectures at the beginning of their module to gauge their students' understanding of their subject, and that this would provide valuable information on how to pace their teaching plan for the module.

Conclusion

The PRS clearly has many benefits and the students surveyed believe that its introduction into their studies would be a positive approach. The next stage of our research will look at a more long-term analysis of the use of PRS and how best to design MCQs to gain the maximum benefits such a technology can bring.

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Innovation North