

INTERACT INTEGRATE IMPACT

Proceedings of the 20th Annual Conference
of the Australasian Society for Computers in
Learning in Tertiary Education (ASCILITE)

Adelaide, Australia
7–10 December 2003

Editors

Geoffrey Crisp, Di Thiele, Ingrid Scholten, Sandra Barker, Judi Baron

Citations of works should have the following format:

Author, A. & Writer B. (2003). Paper title: What it's called. In G.Crisp, D.Thiele, I.Scholten, S.Barker and J.Baron (Eds), *Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education*. Adelaide, 7-10 December 2003.

ISBN CDROM 0-9751702-1-X WEB 0-9751702-2-8



Published by ASCILITE www.ascilite.org.au

‘LEARNING BY REMOTE CONTROL’: EXPLORING THE USE OF AN AUDIENCE RESPONSE SYSTEM AS A VEHICLE FOR CONTENT DELIVERY

Jeremy B. Williams

Brisbane Graduate School of Business
Queensland University of Technology, AUSTRALIA
jeremy@jeremybwilliams.net

Abstract

Audience response systems (also referred to as group response systems or personal response systems) have long been a feature of game-shows, televised pre-election debates, and corporate training workshops and conferences. More recently, these systems have found their way into the classrooms of tertiary educational institutions, primarily in the United States and in the United Kingdom. While their relative novelty precludes any detailed longitudinal study into their pedagogical effectiveness just yet, several studies have been published that endorse the more extensive adoption of this technology by universities and colleges. The conclusions of this exploratory study into the use of an audience response system at a graduate business school in Australia lend broad support to the findings of the existing body of research. Specifically, evidence is presented suggesting that, in a given context, the technology may be used in such a way that lectures (as they have been traditionally defined) may be discarded in favour of class meetings that are more interactive, and where students are motivated to engage more energetically with the course content. Importantly, the results of this study imply that, with enhanced opportunity for quality group discussion, there is a greater prospect of critical thought and deeper learning.

Keywords

Audience response system, lectures, deep learning, interaction, group discussion

Introduction

The use of audience response systems (ARS) for the purpose of gathering immediate feedback is perhaps more readily associated with game shows, pre-election night debates on television, or corporate conferences and training workshops rather than tertiary educational institutions. The fact remains, however, that the use of such systems by universities and colleges has become increasingly common in recent years, particularly in the US (EduCue 2003) and the UK (Draper 2003).

The perceived educational benefits of ARS have been well documented (e.g. Elliott 2003; Draper et al. 2001; Jones et al. 2001; Burnstein & Lederman 2001; and Read et al. 2000), and while relative novelty precludes any detailed longitudinal study as to the pedagogical effectiveness of ARS at this stage, the body of literature on the subject is likely to expand as the quality and quantity of these systems changes over time. Indeed, there has been quite a dramatic increase in the number of systems in the marketplace in the last few years (as a Google search on “audience response systems” will reveal). This paper, however, attempts no qualitative evaluation of the relative merits of competing systems, but reports on the experience using the product Personal Response System (PRS) in conjunction with TurningPoint; software that introduces an interactive element to Microsoft’s PowerPoint. The objective, very simply, is to determine whether student learning is enhanced using this approach compared to that experienced with the more traditional PowerPoint-delivered lecture.

The section that follows briefly describes the context of this exploratory study, and how the hardware and software were utilised. The next section then provides an overview of the quantitative and qualitative data gathered from an online questionnaire. The final section provides an analysis of this data, which strongly suggests that while the use of an ARS in the context described is well worth persevering with, it may not be appropriate in every case.

The context

In 1999, the Brisbane Graduate School of Business (BGSB) at Queensland University of Technology (QUT) introduced an innovative new MBA course offering prospective students greater flexibility and choice, and improved services such as study guides and online learning and teaching (OLT) sites for each course unit. This initiative has proved to be a major success, student numbers trebling at the same time as course fees have more than doubled and entry standards have been lifted.

Interestingly, the significant enhancement in the quality of the MBA notwithstanding, there has been no discernible reduction in the number of student 'suggestions for improvement'! In short, as new features have become available and assimilated, students have simply altered their expectations as to what constitutes 'normal service'. A case in point relates to what the students consider to be appropriate use of class time; a growing body of evidence from student evaluations in 2001 and 2002 (formal and informal) suggesting that PowerPoint lectures have become a little passé.

When PowerPoint arrived on the scene in the mid-1990s, it added a whole new dimension to university teaching. By the end of the decade, however, its popularity seemed to have waned to the point where, faced with a torrent of multi-coloured, animated slides, students began to describe the experience as being akin to "death by PowerPoint". Sadly, as McCabe & Lucas (2003) have observed, while this pun is 'frequently repeated' it is 'routinely ignored' simply because PowerPoint is so convenient. 'A lecturer can deliver a rigid set-piece, provide smart handouts, make the presentation available on-line and then walk away feeling that a good job has been done.' The net result, according to McCabe & Lucas (2003) is 'little different from, or worse than, copying from a blackboard!'

The typical 3-hour class meeting at the BGSB consists of some case-study work and small group exercises, usually preceded by some didactic delivery of content for the purposes of revision and clarification of conceptual understanding (the content having been made available in advance in study guides and via course unit OLT sites). Increasingly sensitive to the "death by PowerPoint" jibe, the BGSB decided to trial the use of PRS handsets with TurningPoint in an attempt to inject some 'life' into these didactic sessions. Issuing each student with a 'remote control' device as they entered the classroom, a series of multiple-choice type questions were posed on screen, the software allowing the person composing the questions to set a time limit for the answering of each question, and a choice bar and pie charts to graph the students' transmitted responses via their key pads. The result is that what looks like a PowerPoint presentation is something quite different. The students interact with the content on screen instead of staring at it passively, they interact with each other as they discuss the various alternatives, and they interact with the lecturer in the 'debrief' following each question.

The results

Table 1 presents the results of an online questionnaire open (over a 4-week period during June and July of 2003) to all students who had been enrolled in the two economics course units (GSN414 and GSN451) involved in the trial during the previous teaching period. There were 43 respondents, a response rate of around 42%. (Note that percentages may not add to 100 due to rounding.)

Overall, there would appear to be strong support for the use of an ARS. Some 74% of students either agreed or strongly agreed that the use of an ARS was preferable to PowerPoint lectures as a transmission mechanism for content, 9% disagreeing (see Q1). Meanwhile, the vast majority agreed or strongly agreed

that they experienced deeper learning as a consequence of the discussion that followed questions (91%, see Q2), that they were more likely to participate because of the anonymity of ARS (70%, see Q3), and that it facilitated critical thinking (90%, see Q4). On the question of the transferability of ARS across disciplines (see Q5), student opinion was more divided, with only 51% confirming that they thought ARS could be used more widely within the MBA program.

Statement	SA	A	N	D	SD	NA
Q1: The use of the PRS in class was preferable to going through the lecture slides (available, in advance, on the OLT site).	37	37	16	9	0	0
Q2: The quality of discussion which followed each PRS question deepened my learning in GSN414/GSN451.	26	65	2	5	2	0
Q3: I was more likely to respond/participate/engage with the content because of the anonymity of using PRS.	26	44	12	12	7	0
Q4: Participation in group discussion using PRS identified /highlighted there was more than one way of thinking about/approaching a topic.	28	60	5	2	0	5
Q5: I would you like to see PRS used more widely in the MBA program as a learning tool.	16	35	42	0	2	5
KEY: SA = Strongly agree; A = Agree; N = Neither agree nor disagree; D = Disagree; SD = Strongly disagree; NA = No answer						

Table 1: Students' views on the use of ARS (%), (n = 43)

Students were provided with the option of adding comments to elaborate on their responses to each question. Key themes to emerge were the importance of moving away from overly didactic teaching and the preoccupation with 'getting through the content'; the depth of learning that ensues when there is opportunity to actively engage with and discuss content; and the predisposition of individual instructors towards relatively unstructured classes in order to reap the benefits of a tool like PRS. The following remarks were indicative of such sentiments:

Most instructors who use slides rarely provide any insight outside of what is in the text. A lecture that merely goes over the text rarely provides any depth of learning. ... Because the instructor is not constrained by a 'must get through these slides' approach, more time is available to discuss [the] relevance of certain highlighted issues [Serial no. 1285]. ... Using the system made the student more engaged in the process - it's too easy to switch off when the lecturer is going through slides, especially if you have done the reading beforehand [Serial no. 1222].

It is more interactive as material is reviewed in teams. ... It encouraged risk taking. ... The questions did not prompt recall of material but higher levels of thinking [Serial no. 104]. ... I liked the PRS approach because we received immediate feedback. For example, I usually think I understand the concepts I read about or hear in class. Most times I do but sometimes I don't! The PRS quizzes helped me identify my weak areas [Serial no. 1247].

The PRS was an interesting stimulus for discussion and added value/reinforced what had already been read in the slides and the text [Serial no. 159] ... the questions covered the main concepts and the discussion provided multiple opinions of it [Serial no. 676]. It was interesting to see the answers/thoughts of other students [Serial no. 563]. ... Responding to questions via the PRS offers an opportunity to apply the information - far more of an active learning process than passive review of slides. ... Discussing the application of the material is, in my view, the critical point in the 'learning' cycle. ... I am in favour of anything which enlivens the delivery of information and assists in the conversion of that information into 'knowledge' by the student [Serial no. 595].

I think the quality of the discussion also had something to do with the lecturer's ability to deal with a relatively free format discussion. Not all lecturers are capable of dealing with a class in this manner [Serial no. 515]. ... PRS is certainly a good learning tool in class. It also means the lecturer must think about the questions he/she wants to ask in class time and also how the discussion should be directed [Serial no. 1316].

Summary and conclusions

The analysis of both quantitative and qualitative data collected in this study shows students to be strongly in favour of the use of ARS, and that, increasingly, students see little point in going over pre-read materials in a largely passive manner. This appears to be so in the graduate context, at least, it may be different in the case of undergraduates where pre-reading may not necessarily be assumed. This positive perception of ARS aside, it would be prudent to proceed with caution at least until a detailed longitudinal study of its use has been conducted. While there was no data collected (formal or informal) to suggest that student approval was a product of the novel approach or the gimmickry associated with the use of remote controls, one cannot discount the possibility that, after a 'honeymoon period', the popularity of the system will wane in the same way students tired of PowerPoint presentations. Then there is the largely non-committal response of the students to Question 5. Analysis of the qualitative data collected in relation to this question indicated that students were not confident the system would be as successful in less discursive and numerically based subjects, or in any course unit coordinated by a lecturer with limited ability in the use of information technology. These concerns were sufficiently prevalent to warrant further investigation.

References

- Burnstein, R.A. & Lederman, L.M. (2001). Using wireless keypads in lecture classes. *The Physics Teacher*, 39, January, 8-11.
- Draper, S. (2003). UK handset users and sites. [Online]. Available: <http://www.psy.gla.ac.uk/~steve/ilig/people.html> [30th July 2003].
- Draper, S., Cargill, J. & Cutts, Q. (2001). Electronically enhanced classroom interaction. In G. Kennedy, M. Keppell, C. McNaught & T. Petrovic (Eds.), *Meeting at the Crossroads*. Proceedings of the 18th Annual Conference of the Australian Society for Computers in Learning in Tertiary Education. (pp. 161-167). Melbourne: Biomedical Multimedia Unit, The University of Melbourne.
- EduCue. (2003). Partial list of PRS users. [Online]. Available: <http://www.educue.com/users.htm> [30th July 2003].
- Elliot, C. (2003). Using a personal response system in teaching economics. *International Review of Economics Education*, 1. [Online]. Available: <http://www.economics.ltsn.ac.uk/iree/i1/elliott.htm> [30th July 2003].
- Jones, C., Connolly, M., Gear, A. & Read, M. (2001). Group interactive learning with group process support technology. *British Journal of Educational Technology*, 32(5), 571-586.
- McCabe, M. & Lucas, I. (2003). Teaching with CAA in an interactive classroom: Death by PowerPoint - life by Discourse. *Seventh International Computer Assisted Assessment Conference*. [Online]. Available: <http://www.lboro.ac.uk/service/ltd/flicaa/conf2003/pdfs/mccabe2.pdf> [30th July 2003].
- Read, M., Hunt, A. & Knight, S. (2000). Use of information technology in exam revision. In H. Cooper & S. Clowes (Eds.), *Fourth International Computer Assisted Assessment Conference*. (pp. 211-221). Loughborough: Loughborough University.

Acknowledgments

This work has been supported through a QUT Faculty of Business Teaching and Learning Grant. The author also gratefully acknowledges the input and advice of Jillian Rowe, TALSS, QUT, and the students of BGSB. Any errors or inaccuracies that remain are those of the author alone.

Copyright © 2003 Jeremy B Williams.

The author(s) assign to ASCILITE and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The author(s) also grant a non-exclusive licence to ASCILITE to publish this document in full on the World Wide Web (prime sites and mirrors) and in printed form within the ASCILITE 2003 conference proceedings. Any other usage is prohibited without the express permission of the author(s).