2005

Personal Response Systems Workshop

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**Publication Details**

Abstract
Personal response systems (PRS) are known under several names. "Clickers"; "Audience Response Systems"; "Group Response Systems"; and "Classroom Performance Systems"; all of these are systems where the audience can respond to questions or give feedback to the presenter of a lecture or workshop whilst that presentation is taking place. This allows for immediate, and (if wished) anonymous feedback to the presenter and to the class.

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Disciplines
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The authors wish to thank Pearson Education Australia for their help in providing the technology for this workshop.
PERSONAL RESPONSE SYSTEMS – WHAT ARE THEY?

Personal response systems (PRS) are known under several names. “Clickers”; “Audience Response Systems”; “Group Response Systems”; and “Classroom Performance Systems”; all of these are systems where the audience can respond to questions or give feedback to the presenter of a lecture or workshop whilst that presentation is taking place.

This allows for immediate, and (if wished) anonymous feedback to the presenter and to the class.

Here are some versions of what the keypad looks like:

[Image taken from http://www.keepad.com/products.htm]

Let us demonstrate:

Let’s Play!

- What colour is Yaks milk?
  - A. Pink
  - B. White
  - C. Cream
  - D. Blue

Note the number on the back of your Keypad. Watch for your response on the screen. Select the answer that you think is true. Press the button that relates to that answer. If you change your mind, just select again until you’re satisfied with your answer.

Now, let’s see the results!
What are the advantages claimed for PRS?

Major depreciation methods include the following...


PRS have had many benefits claimed for them:

Duncan (2005, 2) claimed the following amongst the benefits for judicious use of PRS:

- Increase student retention of what you teach
- Test students' understanding
- Increase class attendance
- Use as an analytical tool for student backgrounds, attitudes and opinions

The PRS achieves these things by improving student attention and involvement in lectures (Duncan, 2005, 7) this is also known as "fighting the fade" in students attention. Burton (2005, 2-3) mentioned additional benefits for PRS found in trials with law and MBA students. In the economics study, the lecturer found that PRS helped her to increase active learning in her students by varying the lecture experience with PRS. The PRS also helped her to gauge her students' understanding and tailor the pace of lecture to that understanding. In the trial with MBA students, the lecturer noted that he used PRS to overcome students' phobia of "death by PowerPoint" and gain students' attention and enthusiasm.

Schackow et al. (2004, 502-503) tested a PRS on medical residents (postgraduate medical trainees) and found a significant, durable increase in factual retention of data transmitted in PRS enriched lectures compared to non-PRS enriched lectures.

Cutts and Kennedy (2005, 1-3) noted that many theories of learning and cognition held that for effective learning, a dialogue between teacher and learner was necessary and that PRS aided that dialogue. Cutts and Kennedy (2005, 6) found that (with the necessary, reasonably low investment in time and technology) PRS had the potential to enhance the learning experience by strengthening the dialogue between teacher and learner.
Cutts et al. (2004, 1-3) discussed a number of feedback and reflection models emphasising the importance of the sort of feedback that PRS promotes in student learning. Dufresne et al. (2000, 1) also emphasise the role that PRS could take in formative assessment tasks.

In summary, then, the benefits claimed for PRS are as follows:

Firstly, PRS promotes active learning rather than passive learning, which leads to better learning and retention.

Secondly, PRS facilitates different types of learning in lectures. As will be shown further on in this demonstration, collaborative learning, or small group learning, seems to be extremely helpful in both learning and retention.

The feedback gained by looking at what students understood well and what they didn’t understand can also be very helpful in understanding where your lectures are missing the mark in terms of student learning. See Appendix 1 for feedback on questions in a pilot study for FIN226 undertaken in August, 2005 at University of Wollongong.

Increased class attendance could also be related to PRS when more enjoyment and “extra credit” (or marks for attending and participating actively) were involved (Duncan, 2005, 27). However, this could also have a negative impact if those students who had previously stayed away from lectures now attended but brought dysfunctional attitudes with them. Duncan (2005, 28).

In acknowledgement that this is a PRS workshop, and in order to give participants a feeling for PRS, let us now turn again to your keypads.

Note the number on the back of your Keypad. Watch for your response on the screen.

Select the answer that you think is most correct.

Press the button that relates to that answer.

If you change your mind, just select again until you’re satisfied with your answer.
Please select your gender:

1. Female
2. Male

Please select your age group:

1. 10 – 19 years
2. 20 – 29 years
3. 30 – 39 years
4. 40 – 49 years
5. Older, or not saying

What year student are you?

1. First year
2. Second year
3. Third year
4. Fourth year
5. Other

Have you studied Accounting at Tertiary level before?

1. Yes
2. No
In which of the following would you most like to pursue a career?

1. Finance
2. Accounting
3. Academia
4. Banking
5. Other

51%  12%  30%  2%  4%

Please register now! If the categories do not apply to you (as many academics are in their ninth year of tertiary education or more) select “other”. No lie-detector tests will be taken on this one.

Thank you!

LET’S COLLECT SOME DATA! FIRST, FIVE INDIVIDUAL QUESTIONS

We thought that accounting questions would be too easy with this audience, so we decided to use some general trivia questions gleaned from the Big Trivia Quiz site (http://www2.hunterlink.net.au/~ddrge/trivia/quiz.html).

Question 1.
What is a capon?

- A. Fried bread in soup
- B. A castrated rooster
- C. An ornamental cape
- D. A former icon

Select the answer that you think is true. Press the button that relates to that answer. If you change your mind, just select again until you’re satisfied with your answer.

Now, let’s examine the responses!
Question 2-
Monocotyledon & dicotyledon are terms in
- A. Medicine.
- B. Botany
- C. Geology
- D. Psychology.

Select the answer that you think is true.
Press the button that relates to that answer.
If you change your mind, just select again until you’re satisfied with your answer.
Now, let’s examine the responses!

Question 3.
Roger Bannister broke the 4 minute mile barrier in
- A. 1954
- B. 1948
- C. 1952
- D. 1956

Select the answer that you think is true.
Press the button that relates to that answer.
If you change your mind, just select again until you’re satisfied with your answer.
Now, let’s examine the responses!

Question 4.
How many points are there on a Backgammon board?
- A. 20
- B. 22
- C. 24
- D. 26

Select the answer that you think is true.
Press the button that relates to that answer.
If you change your mind, just select again until you’re satisfied with your answer.
Now, let’s examine the responses!
Let's examine some of the responses so far

For example, age might be interesting.

Now let's look at career intentions.

Now for some interactive questions

Duncan (2005, 7) suggested that one of the best ways to enhance learning using PRS was to use it as a tool to turn lectures into peer discussion forums. Draper et al. (2002, 163) also mentioned the PRS as being perhaps most useful in the way that it prompts students to initiate peer discussions and to build a "community" in the lecture theatre. One disadvantage of this (which will be further discussed in relation to our pilot study) is that peer discussion is time consuming and can slow the pace of a lecture presentation. It is revealing to reflect on the question "what is the point of lectures?" at this point, however.

This time, you will have one minute to discuss your answer with one or two partners before locking in your answers. Please pay attention to how this is different to individual questions.

You don't have to agree with your partners, you don't have to win them over to your preferred answer. Exchange views.
Question 6.
Guglielmo Marconi pioneered the development of?

- A. Television
- B. Radio
- C. The Internet
- D. Satellites

Discuss your favoured answer with one or two partners for one minute.
Select the answer that you think is true.
Press the button that relates to that answer.
If you change your mind, just select again until you're satisfied with your answer.
Remember, your answers need to be locked in within 90 seconds in order to count this time!

Question 7.
Which fruit is the produce of a herb?

- A. Banana
- B. Orange
- C. Apple
- D. Pineapple

Discuss your favoured answer with one or two partners for one minute.
Select the answer that you think is true.
Press the button that relates to that answer.
If you change your mind, just select again until you're satisfied with your answer.
Remember, your answers need to be locked in within 90 seconds in order to count this time!

Question 8.
George Stephenson's Rocket was a (n)?

- A. Locomotive
- B. Airplane
- C. Bicycle
- D. Automobile

Discuss your favoured answer with one or two partners for one minute.
Select the answer that you think is true.
Press the button that relates to that answer.
If you change your mind, just select again until you're satisfied with your answer.
Remember, your answers need to be locked in within 90 seconds in order to count this time!
Question 9.
The cortex and medulla are parts of what organ?

- A. Stomach
- B. Heart
- C. Pancreas
- D. Kidney

Discuss your favoured answer with one or two partners for one minute. Select the answer that you think is true. Press the button that relates to that answer. If you change your mind, just select again until you're satisfied with your answer. Remember, your answers need to be locked in within 90 seconds in order to count this time!

Question 10.
The Bank of England was established in

- A. 1567
- B. 1598
- C. 1652
- D. 1694

Discuss your favoured answer with one or two partners for one minute. Select the answer that you think is true. Press the button that relates to that answer. If you change your mind, just select again until you're satisfied with your answer. Remember, your answers need to be locked in within 90 seconds in order to count this time!

WHAT CAN WE DO WITH THESE RESULTS?

- We could look at the results by student.
- By age, gender and year.
- Which areas do we need to emphasise better?
- What area are the audience very confident in?
WHAT DISADVANTAGES HAVE BEEN FOUND IN USING PRS?

A number of disadvantages have been raised with using PRS. Some of these are discussed below.

Burton (2005, 2) mentioned the harsh reality that in order to harness this technology resources are needed. Reasonably inexpensive are the hardware and software requirements – receptors and appropriate software. See appendix 2 for a quote based on the keepad system using new, radio frequency technology. The keypads themselves are quite expensive (see appendix 2) although it is to be noted that a rebate from publishers or the chance to rent or resell keypads might be available. With issues of expense, of course, come issues of access and equity. Older, infrared technology was less expensive, McCartney and Micet (2005, 16) addressed the issue of price to an extent. The new radio frequency technology is noted to be more reliable, faster and easier to use.

What might be more problematic is that there are set-up times for staff involved in learning the systems. Time is also a factor in the lecture presentation itself. Burton (2005, 3) noted findings that PRS did slow presentations. It should be noted, however, that this slowing was considered to be worthwhile given the educational advantages of PRS. Also, Burton noted time constraints if the staff involved with PRS were to hand out and collect keypads each lecture instead of granting a keypad to a student for the semester.

Duncan (2005, 21) noted that students may feel that the A.R.S. is there to “spy” on them if the purpose of the system is not properly explained. Students can also feel anxious about new technology, especially when marks are attached (Duncan, 2005, 23).

Duncan (2005, 23) also noted that PRS could cause students who have not previously attended lectures to attend (and sometimes disrupt). Also, PRS can cause talking, discussion, and the class may need re-settling after a question – especially if interactive learning (discussion in small groups) is used.
Simpson and Oliver (2005, 18) provide the following table of benefits and problems found using PRS:

<table>
<thead>
<tr>
<th>BENEFITS:</th>
<th>PROBLEMS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using handsets is fun and breaks up the lecture</td>
<td>Setting up and use of handsets takes up too much time in lectures</td>
</tr>
<tr>
<td>Makes lectures more interactive/interesting and involves the whole class</td>
<td>Can distract from the learning point entirely</td>
</tr>
<tr>
<td>I like the ability to contribute opinion to the lecture and it lets me see what others think about it too</td>
<td>Sometimes it is not clear what I am supposed to be voting for</td>
</tr>
<tr>
<td>The anonymity allows students to answer without embarrassing themselves</td>
<td>Main focus of lecture seems to be on handset use and not on course content</td>
</tr>
<tr>
<td>Gives me an idea of how I am doing in relation to rest of class</td>
<td>The questions sometimes seem to be for the benefit of the lecturer and future students and not us</td>
</tr>
<tr>
<td>Checks whether you are understanding it as well as you think you are</td>
<td>Annoying students who persist in pressing their buttons and cause problems for people trying to make an initial vote</td>
</tr>
<tr>
<td>Allows problem areas to be identified</td>
<td>Not completely anonymous in some situations</td>
</tr>
<tr>
<td>Lecturers can change what they do depending on what students are finding difficult</td>
<td>Some students could vote randomly and mislead the lecturer</td>
</tr>
<tr>
<td>Gives a measure of how well the lecturer is putting the ideas across</td>
<td>Sometimes the lecturer seems to be asking questions just for the sake of it</td>
</tr>
</tbody>
</table>

Simpson and Oliver (2005, 18) Table 1: Motivations for students’ perceptions about voting systems

Please take 7 minutes in groups of 2-3 people to discuss these issues whilst reflecting on your experience of PRS today. Would you be prepared to trial a PRS? Why/why not?
WHAT DID WE FIND IN OUR PILOT STUDY?

See pilot study Appendix 1 for results.

Our Pilot Study in Financial Institutions 2005

- The Good
  - Student response

- The Bad
  - Re-settling time
  - The "Malteesers" effect

- The Interesting
  - Would like to trial it throughout next semester

ISSUES TO BE ADDRESSED

Issues to be addressed

- The price of the system and who pays?
- Which system?
- Wait for the new technology in 2006?
- What sort of slides?
- Do we take attendance? If so, how?
- Should quiz questions carry marks?
- Ethical issues.

We would like to take this opportunity to thank participants in this workshop and to particularly thank Fiona Hammond and Wendy Armitage of Pearson Education Australia for their help with both the pilot study and with this workshop.
REFERENCES


**Question 1:** The existence of allows large multinational corporations to take advantage of unregulated markets to invest and raise short-term funds in many countries, and to protect themselves from foreign exchange exposure.

1. A: the World Bank  
2. B: a strong US dollar  
3. C: eurocurrency markets  
4. D: the International Monetary Fund  

**Totals**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0 0.00%</td>
</tr>
<tr>
<td>B</td>
<td>3 11.54%</td>
</tr>
<tr>
<td>C</td>
<td>23 88.46%</td>
</tr>
<tr>
<td>D</td>
<td>0 0.00%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>26 100.00%</td>
</tr>
</tbody>
</table>

**Question 2:** An important function of an underwriting bank for a euronote issuance facility (NIF) is to

1. A: provide the funding for the corporation  
2. B: approve the prospectus before distributing...  
3. C: dilute the corporation's equity  
4. D: buy the unsold notes and resell them to...

**Totals**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: provide the funding for the corporation</td>
<td>9 31.03%</td>
</tr>
<tr>
<td>B: approve the prospectus before distributing...</td>
<td>6 20.69%</td>
</tr>
<tr>
<td>C: dilute the corporation's equity</td>
<td>0 0.00%</td>
</tr>
<tr>
<td>D: buy the unsold notes and resell them to...</td>
<td>14 48.28%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>29 100.00%</td>
</tr>
</tbody>
</table>
4.) Question 3: A euro floating rate note differs from regular eurobonds in that

- A: they have longer maturity
- B: they differ substantially in default risk...
- C: they are not taxed
- D: they have coupons that are regularly reset

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A: they have longer maturity</td>
<td>7 25.00%</td>
</tr>
<tr>
<td>2. B: they differ substantially in default risk...</td>
<td>11 39.29%</td>
</tr>
<tr>
<td>3. C: they are not taxed</td>
<td>1 3.57%</td>
</tr>
<tr>
<td>4. D: they have coupons that are regularly reset</td>
<td>9 32.14%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>29 100.00%</strong></td>
</tr>
</tbody>
</table>

5.) Question 4: An American depository receipt is

- A: a security issued by a foreign company...
- B: a security issued by a foreign company...
- C: is a security issued by a US bank and...
- D: is a foreign share that has a multiple...

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A: a security issued by a foreign company...</td>
<td>3 10.00%</td>
</tr>
<tr>
<td>2. B: a security issued by a foreign company...</td>
<td>4 13.33%</td>
</tr>
<tr>
<td>3. C: is a security issued by a US bank and...</td>
<td>19 63.33%</td>
</tr>
<tr>
<td>4. D: is a foreign share that has a multiple...</td>
<td>4 13.33%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>30 100.00%</strong></td>
</tr>
</tbody>
</table>

6.) Question 5: After a debt security is issued and its performance does not meet the expectations of the S&P rating agency, the debt rating may be placed initially on:

- A: credit hold
- B: credit downgrade
- C: credit watch
- D: credit notice.

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A: credit hold</td>
<td>9 34.62%</td>
</tr>
<tr>
<td>2. B: credit downgrade</td>
<td>5 19.23%</td>
</tr>
<tr>
<td>3. C: credit watch</td>
<td>7 26.92%</td>
</tr>
<tr>
<td>4. D: credit notice.</td>
<td>5 19.23%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>26 100.00%</strong></td>
</tr>
</tbody>
</table>
7.) **Audience Response**

Systems: By using keypads in today's lecture, I got feedback on my understanding of class material.

<table>
<thead>
<tr>
<th>Response</th>
<th>Responses</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strongly Agree</td>
<td>9</td>
<td>32.14%</td>
</tr>
<tr>
<td>2. Agree</td>
<td>11</td>
<td>39.29%</td>
</tr>
<tr>
<td>3. Neither agree or disagree</td>
<td>3</td>
<td>10.71%</td>
</tr>
<tr>
<td>4. Disagree</td>
<td>3</td>
<td>10.71%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>28</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

8.) I felt more involved in today’s lecture because I used a “keypad”.

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strongly Agree</td>
<td>8</td>
<td>27.59%</td>
</tr>
<tr>
<td>2. Agree</td>
<td>14</td>
<td>48.28%</td>
</tr>
<tr>
<td>3. Neither agree or disagree</td>
<td>3</td>
<td>10.34%</td>
</tr>
<tr>
<td>4. Disagree</td>
<td>1</td>
<td>3.45%</td>
</tr>
<tr>
<td>5. Strongly Disagree</td>
<td>3</td>
<td>10.34%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>29</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

9.) I would be interested in using “keypads” in large lectures in future:

<table>
<thead>
<tr>
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<th>Responses</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strongly Agree</td>
<td>7</td>
<td>28.00%</td>
</tr>
<tr>
<td>2. Agree</td>
<td>9</td>
<td>36.00%</td>
</tr>
<tr>
<td>3. Neither agree or disagree</td>
<td>4</td>
<td>16.00%</td>
</tr>
<tr>
<td>4. Disagree</td>
<td>3</td>
<td>12.00%</td>
</tr>
<tr>
<td>5. Strongly Disagree</td>
<td>2</td>
<td>8.00%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>25</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>