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Employing a Classroom Response System to Teach Law: A Case Study

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1. Introduction

The term clicker or Classroom Response System (CRS) describes technology which allows an educator to record, display and manipulate student responses. They provide options for multiple choice, yes/no, true/false, numerical and free text responses which can then be displayed in real time on the large screen of the lecture theatre or embedding in a virtual learning environment. Lowery and Barber et al provide in-depth overviews of the available interactive systems and their relative merits. [2] [3] Systems have now been developed to enable responses to be gained from students' mobile phones, therefore bypassing the need for the purchase and distribution of handsets.

Despite some important exceptions there is a paucity of studies focusing upon the use of clicker technology in legal education, with the majority of work being carried out in pure science-based disciplines. [4] [5] Educational uses of clickers have been outlined in a large scale meta-analysis [6] of research relating to their use, these include:

- The assessment of prior understanding
- The provision of formative feedback
- The provision of breaks in the presentation of a lecture
- The administration of summative assessments
- The promotion of peer learning
- The promotion of attendance

These specific uses of a CRS can be drawn into the wider debate on student engagement. Recent wide-scale research carried out for the HEA highlights the importance of engagement, not only in relation to student retention and success but also the nurturing of successful citizens. [7] Based upon this work, the HEA's Framework for Action on Engagement [8] outlines three levels of student engagement: individual student learning, structure and process, and identity. The use of a CRS, with its focus on active participation, can develop engagement at an individual level and also has the potential, with its ability to develop a sense of community learning to develop a stronger sense of identity and belonging. The concept of engagement can be contrasted with that of 'alienation', a response to which sees students developing ineffective, strategic learning strategies. [9] [10] The provision of effective, timely feedback has been highlighted by Price et al as intrinsically linked to student engagement. [11] CRSs provide a level of on-going feedback which can be harnessed to promote student ownership and reduce passivity. Furthermore, a number of CRS research studies describe increased student engagement with the material, based upon both a heightened focus on the material and an interest in the responses of others. [12]

The majority of CRS studies report positive student feedback and engagement in response to CRS use. [13] In relation to legal education, the pedagogy relating to CRSs use has not been fully developed and this paper intends to bridge this gap by analysing key practical issues related to CRS use with a specific focus on legal education. This paper builds upon previous work on the use and impact of CRS systems to provide a more practical examination of the use of this technology to teach law. [14] Steel and Hudson describe how the majority of research into the employment of educational technology tends to focus upon the processes of its use and how this links into the development of an overarching pedagogy. [15] Indeed, numerous studies into CRS use focus upon evaluating student experience and the teaching and learning

rationale for their employment. [16] This research continues to highlight that in relation to educational technology little attention is paid to practical considerations. [17] A fundamental aim of this study, therefore, is, through survey-based research and the presentation of a lecture series using a CRS, to present a case study through which to analyse law student attitudes to the use of this technology. These will be drawn together in order to inform the development of a short CRS best practice guide and examples of how to use the technology to teach law.

2. Methodology

In order to provide practical insights into the use of clicker technology to teach law the following activities were carried out:

2.1 Lectures presented using CRS technology

A series of six two-hour lectures were presented using CRS technology. These were part of the presentation of the School of Law's Public Law module and related to the proposed reforms to the UK's general election voting system, the role of the MP and the nature of the royal prerogative powers within the UK's unwritten constitution. The CRS used was provided by Promethean and each student was given a handset which was distributed at the beginning of the sessions and collected afterwards.

2.2 Paper-based survey

A paper-based survey was administered after the final session of the lecture series described below, to assess law student opinions in relation to the use of the CRS. This survey was designed using Likert stem and open answer questions following the methodology outlined earlier in this chapter in relation to the two online surveys. However, a specific decision was taken not to distribute this survey via email but on paper. Potaka highlights the importance of matching the survey method to the target group. [18]While an online survey has a number of crucial advantages, it was decided that due to the fact that the students were present in the lecture theatre and had time to complete the survey which could then be immediately collected, a higher level of participation would be gained from a paper-based survey.

The students were asked a range of questions which probed the issues which arose in the literature review relating to engagement, attendance, formative feedback and summative assessment. One of this study's wider aims is to evaluate the potential for technology which utilises students' mobile phones to transmit signals to be employed in a higher educational environment. Students were therefore asked questions which related to their opinions about the employment of such a system.

3. Key themes

A previous wide scale CRS study undertaken in MMU's law school addressed issues relating to the benefits of CRS use and student attitudes to the technology. A number of factors arose from this research in which there was a need for further exploratory work. These are:

- the potential for students to use mobile phones to transmit signals
- accessibility
- the potential to use a CRS to assess summatively

This case study focuses on these issues which will be analysed in greater detail in this section, while other, general, results will be presented in the form of an easily-accessible best practice guide.

3.1 Mobile Phone Usage

CRS technology is constantly evolving and software such as the Mobile Ongoing Course Assessment System (MOCA) exploits students' increased ownership of mobile phones to allow these to be used to transmit signals rather than requiring specially designed handsets. [19] Often the systems involve specially designed handsets which are either bought by the students [20] or distributed by the educator and collected

at the end of the session, as in the lectures presented in the current research. There is now the possibility, however, of employing software which allows the students to use mobile phones to transmit signals which can then be manipulated by the educator. [21] Research indicates that a high percentage of students own a mobile phone. [22] Taking advantage of this, therefore, would remove some of the practical and financial issues surrounding the provision of handsets. Cheung, in a higher education environment, evaluated the employment of a CRS based on students using mobile phones to submit Short Message Service (SMS) responses. [23] This system involved a network charge for each response sent which was addressed by providing a cash rebate to the students, these charges could, however, be overcome by establishing a freephone number. Other systems [24]avoid these cost-based issues by allowing the respondent to submit answers through a web browser or via downloaded applications which manipulate signals. While there are practical and financial benefits inherent in the use of such technology, they require a level of student co-operation and they also rely upon an assumed level of mobile phone ownership.

In relation to the lecture series described in this research, a notable difficulty was locating and transporting the required number of handsets. Newer CRS systems which allow the educator to manipulate responses transmitted by students' mobile phones would remove the need for the acquisition and distribution of these specially designed handsets. In the student survey 100% of the respondents indicated that they owned a mobile phone, however, out of these only 62% stated that they owned a phone which enabled them to download web-based applications. Furthermore, this 62% gave a rating of 2.8 to the stem: 'I would be willing to download an application which would allow me to use my mobile phone as a CRS', which highlights a level of reluctance to use personal web-based mobile technology in an academic environment. As outlined above, some mobile phone-based CRS systems receive traditional SMS signals which can have cost implications. However, costs can be avoided if the SMS signals are sent via a web-based applications or a free phone number is established. Given the complete penetration of mobile phone ownership in the respondents and the technical issues raised by educators, it would appear beneficial to exploit the potential of the new generation of CRS technology. However, further research needs to be undertaken to determine the nature of the new systems and their functionality in relation to the mobile phone technology owned by the students.

3.2 Accessibility

While the majority of CRS research highlights positive student responses to their use, key groups may experience specific difficulties related to the employment of the technology. [25] Feyen's work on disabled students and CRS systems in higher education found that while their participatory benefits may improve the educational experience for students with learning and psychological impairments, they do pose certain accessibility issues. [26] These can be addressed through making handsets available with Braille response pads or vibrating signal transmission, and, in the case of students with psychological impairments, very clearly explaining the rationale behind the use of a CRS system in order to minimise anxiety. In the responses to the student survey only two students highlighted any technical issues; these related to the time taken to set up the system and a handset's battery capability. No specific issues of accessibility were noted. However, before presenting the lecture series described in this research, the Personal Learning Plans of the students in the cohort were consulted to determine if any additional support were needed. Furthermore, the rationale behind the employment of the CRS and how it was going to be used was clearly explained at the beginning of each session to minimise potential student anxiety.

Given the anticipatory reasonable adjustment duties placed on higher educational institutions by the Special Educational Needs and Disability Act 2001 and the Equality Act 2010, any educator considering the implementation of a CRS would be required to anticipate and evaluate the needs of the cohort and take measures, such as the provision of accessible handsets, to address them. [27] Furthermore, as outlined in research in higher education such as Feyen's accessibility needs to be a key factor in both institutional choice of a CRS and the ongoing training and support provided to staff. [28]

3.3 Using a CRS to assess summatively

Kay and LeSage highlight the lack of research into the use of CRSs to assess summatively. [29] However, a small number of large-scale research projects have found a positive impact of their use on summative assessment performance. [30] Research which fully evaluates CRS use and its impact on assessment scores tends to be part of large scale projects in teaching environments in which use of a CRS system has

been embedded on an ongoing basis. While such research in legal education lies outside of the scale of this case study, questions were asked to determine student opinion in relation to the use of a CRS in his manner. Bernstein and Lederman outlined the results of research in higher education in which a percentage of the overall grade for a module was assessed using a CRS. They carried out the research a number of times and found that the higher the percentage of a module assessed through a CRS, the better the overall grades gained. [31] However, in the student survey in this case study a very negative 1.8 response was given to the stem: 'I would be comfortable if a small percentage of my mark for this course were assessed through CRS use in lecture'

Very few (7%) of the respondents to the student survey took the opportunity given to expand on this response. Of these 30% of the responses were positive, 60% negative and 10% neutral. One respondent stated: 'It will put too much pressure on lectures', which highlights an opinion that the lecture environment is not one in which assessments should be administered. Another respondent supported the need for further preparation in relation to assessment 'I would rather all of my mark came from work I'd prepared for with revision or coursework'. These opinions demonstrate that there may be a level of student reluctance in relation to summative assessments administered using a CRS. Strategies would need to be put into place to assuage the reluctance of law students in relation to using technology in this way. The students would need to have full confidence in the system used and would need the rationale for such an assessment strategy fully explained.

4. Findings Overview and Best Practice Guide

The full results of the surveys can be found in the appendix below. The following is an overview of the findings followed by practical recommendations based on both the survey results and observations undertaken during the lectures presented using a CRS.

Pedagogical implications of CRS use	
Finding	Best Practice Guide
The majority of students' positive opinions of CRS use relate to the technology's ability to increase engagement. Students state that they are more likely to attend lectures if they know that a CRS will be used.	It is recommended that due to the positive impact it has on student engagement and related benefits, a CRS should be strategically employed on a law degree in the presentation of at least one core module. If a CRS is to be used in a lecture series then this should be communicated to the students at the beginning of the course and included in the relevant course literature.
The majority of students respond positively to CRS use, however, there is a small group of students who will give negative feedback. Negative attitudes from students to CRS use relate to technical issues, a perceived opinion that they waste time and that they can distract from lecture content.	The employment of a CRS within a module presentation needs to be achieved in a strategic manner with a strong pedagogical rationale underpinning its use. All aspects of the technology should be fully tested before its use. CRS questions should only be employed when it is perceived that they will add value to the lecture presentation. Overuse of a CRS can lead to a perception that time is being wasted.
Use of a CRS can provide effective breaks in a lecture presentation which can increase students' engagement with the material.	The placement of CRS questions in a lecture presentation should be strategically chosen to provide breaks from the flow of the lecture at approximately 10-15 minute intervals.
Students believe that a CRS enables them to receive effective ongoing feedback as a lecture progresses.	CRS questions should be designed to test students' understanding of key concepts. The educator should then be prepared to revisit concepts if a low level of understanding is perceived.
Some students respond negatively to the suggestion that a CRS should be used to monitor attendance.	If a CRS is to be used to monitor attendance then there is a need to embed the CRS within a strategic teaching and learning framework which validates its use and demonstrates its wider benefits to the students. If a CRS is employed in this way then the rationale behind attendance

	monitoring and any associated sanction needs to be fully explained to the students.
CRSs have the potential to develop peer learning and foster a learning community.	CRS questions can be posed in a way which supports peer learning through, for example, asking the students to work in small groups and determine a joint answer to a question posed or through Likert-scale questions which assess the opinions of large groups.
It is possible to use a CRS to assess summatively; however, students may be reluctant to accept this as part of an assessment regime.	A CRS can be used to assess summatively, however, if this decision is taken then the rationale behind it needs to be fully explained to the students. Students may be more willing to engage with this within an assessment regime if only a small percentage of the marks available, for example 10-15%, are awarded for responses in lectures.
There are potential accessibility issues inherent in the use of a CRS.	The available CRS system should be examined in order to determine the alternative, accessible technology it supports. This should then be assessed in relation to any Personal Learning Plans of students in the cohort, before the lecture series commences. The rationale behind the use of the system should be fully and clearly explained in order to minimise potential student anxiety.
Employing a CRS can lead to less time being available to cover required material. The time taken to set up the CRS is reduced as both staff and students become more familiar with its use. The wider benefits of CRS use relating to engagement and formative feedback can outweigh the loss of time available to cover material.	The educator should arrive in the lecture theatre around ten minutes before the session begins. The computer system and software should be switched on and engaged as soon as possible. A guide to registering CRS handsets should be shown on a large screen as the students enter the lecture theatre, allowing them to register their handsets as early as possible. Questions should only be posed when it is deemed that they will add value to the specific material covered.

5. Examples of CRS use to teach law

As part of this case study, examples can be presented which demonstrate specific instances of how this technology can be used in legal education. A number of these are discussed below, drawing them back to the pedagogical framework relating to CRS use.

5.1 Agile Teaching

Interactive CRSs can be used to support a form of peer learning which has been termed ‘agile teaching’. [32] This involves a question being posed and the students being asked to respond without entering into any form of discussion with another. After the answers are collated a period of time, usually one to two minutes, is given to allow peer discussion on the subject. The students are then asked to answer the question again. A student who changes his or her answer can be called upon to explain why he or she did so and the lecturer can respond to the student’s explanation, highlighting key points. These processes support the understanding of others in the room.

In the public law lectures the following question was used in this way:

> Which of the following is TRUE?
>
> A. Justiciable means that there is a statute in this area.
> B. The list of justiciable and non-justiciable prerogatives can never change.
> C. The refusal of a passport is currently a justiciable prerogative.

A number of the respondents initially responded incorrectly to this question but then changed their choice after peer discussion. During the wider debate on the nature of justiciability in which the reasons for changing the responses were probed, a number of the students were able to explain, with reference to case law, why one response was correct and the others were not.

5.2. Taking 'Time for Telling'

Schwartz and Bransford found that students can be more receptive to an explanation if their initial beliefs in this area, based on prior conceptions, are incorrect and the truth is surprising. [33] This can be used as a topic area is introduced and gives the lecturer a 'hook' and strategies can be employed to exploit the students' enhanced interest.

In the public law session on parliamentary sovereignty the following question was posed before any information had been discussed on express and implied repeal:

If two statutes, one passed in 1918 and one in 1925, conflicted which of the following is **TRUE** in relation to a court case taking place in 2011?

A. The first statute of 1918 would be applied
B. The second statute of 1925 would be applied
C. The court in 2011 would have a choice which to apply
D. This situation would not arise as two statutes can never conflict

The students' initial responses to this question were then discussed in order to probe the rationale behind initial misconceptions in this area. The determination of a lack of understanding can spark the interest of the students and they can be more receptive to the subsequent discussion. Bruff stresses that this strategy works best if the initial question posed is likely to lead to incorrect responses from a large group of students. [34] This then motivates the students to pay close attention to subsequent discussions in order to address their initial misconceptions.

5.3. Generating group discussion

A CRS can enable a lecturer in a large group session to facilitate and structure discussion while avoiding the domination of a vocal majority. This focuses the students on the relevant material and leads them to draw a conclusion based on facts or their own ethical beliefs. Using a CRS to support this process not only develops conceptual skills but also, during discussion, promotes the development of a learning community.

Q1. Do you believe that it is acceptable to curtail debate if there is not enough time in the parliamentary schedule to discuss legislation fully?

A: YES
B: NO

Q2. In relation to the statement: '*Prisoners should be given the right to vote'* do you:

A: STRONGLY AGREE
B: AGREE
C: NEUTRAL
D: DISAGREE
E: STRONGLY DISAGREE

You may be called upon to support your answer

Q3. In your opinion, an MP's loyalty is primarily to:

A: His or her Party
B: His or her constituents
C: The country as a whole

D: His or her conscience
E: None of the above

The students will be able to see the percentage of responses for each option and certain students then be called upon to discuss why they came to this conclusion. These opinion-based questions can be used following the agile teaching method outlined above and students can be called to resubmit answers following a short discussion with a small group of peers. Any large group discussion needs to be managed flexibly, the students could be encouraged to put their hands up to question the statements of others and defend their own. Bruff recommends that if some students have difficulty hearing others then the lecturer should restate the student comment and, again, ask for responses. [35] If used in this way a CRS can facilitate a lively, interactive and ultimately engaging and effective learning environment.

6. Conclusion

Given the recent sweeping changes to higher education, law schools are increasingly required to revisit teaching and learning approaches in order to promote student satisfaction and success. [36] The vast majority of CRS studies report increased student engagement and an additional list of benefits related to the use of this technology such as increased attendance and assessment scores. As legal educators, we need to find strategies to respond to student needs in a flexible and focused manner. This technology should not be overlooked as merely the preserve of science-based subjects; the lessons learned from these areas can be extracted and successfully applied to the sphere of legal education. This case study has focused on a number of key issues and presents areas for further research, such as the rationale behind and impact of the use of a CRS to assess summatively on an undergraduate law course. A number of specific examples of the use of this technology to teach law have been outlined. These demonstrate how a CRS can be used to increase engagement in a core law module. Hopefully, alongside the best practice guide, they can be built upon to facilitate the wider uptake of this technology in legal education.

APPENDIX: STUDENT SURVEY RESULTS

I pay more attention in lectures because we use a CRS	4.1
It would be better if less time were spent in lectures using a CRS	1.3
Using a CRS helps me learn the material covered better	4
I enjoy using a CRS	4.3
I would like to use a CRS in future lectures	4
I would prefer it if the CRS handset were logged anonymously	4.5
Using a CRSs distracts me from the lecture's subject matter	1.6
Using a CRS is easy	4.7
Using a CRS helps me to assess my progress as the lecture progresses	4.1
The breaks provided by using a CRS help me to concentrate on the subject matter more effectively	4.3
I would be happy if my attendance at lecture were monitored through the use of a CRS	1.7
I am more motivated to attend lectures in which CRSs will be used	4.3
I would be comfortable if a small percentage of my mark for this course were assessed through CRS use in lectures	1.8

In what ways, if any, did the CRS help you learn?

Increased Engagement	52%
Increased Interaction	8%
Formative understanding of material	17%
Self-testing	7%
Community building	7%

Other	9%

Are there any ways that the CRS is used that you think it should not be used?

5.5% of respondents answered this question

To pose irrelevant questions	50%
To highlight individuals	25%
If they are overused	25%

What did you like about using the CRS?

Interaction	34%
Engagement	32%
Community Building	11%
Ease of use	6%
Understanding of material	6%
Break Up the session	6%
Other	5%

What did you not like about using the CRS?

8% of the respondents answered this question

Wasting time	42%
Distraction	24%
Technical	16%
Other	16%

Did you have any technical problems using the CRS?

YES	1.4%
NO	98.6%

If yes, please outline these...

Battery ran out of power	50%
Entering names to get it working	50%

I own a mobile phone

TRUE	100%
FALSE	0%

I own a mobile phone which allows me to download web-based applications

TRUE	38%
FALSE	62%

If you answered YES to the question above then please answer the following:

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

I would be willing to download an application which would allow me to use my mobile phone as part of a CRS	2.8

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