

# Engaging students through electronic voting – clickers and mobile phone systems



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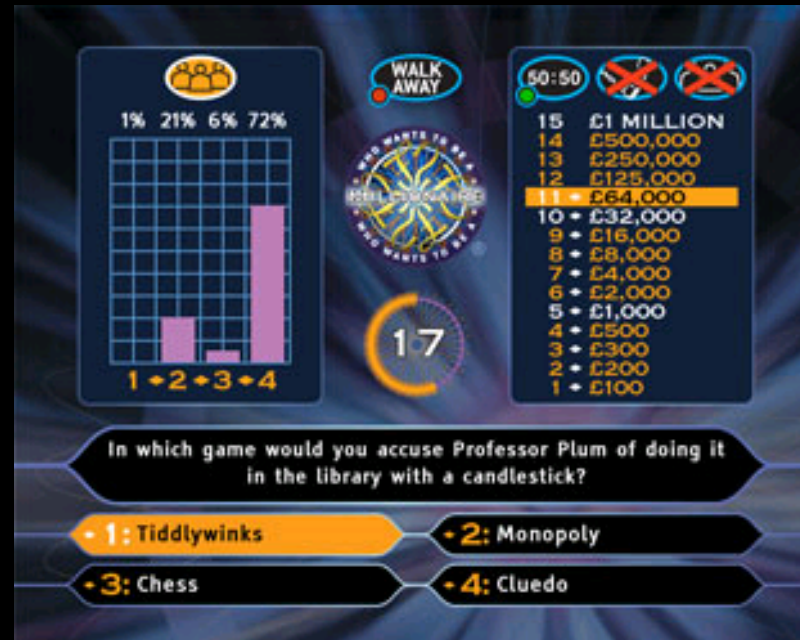
# EVS (PRS)(ARS)

## Aims of session:

- To explain EVS and identify some of the main systems
- To look at past research into how it has been used in teaching and to assess its benefits
- To assess whether it can help in teaching/learning law

## What is EVS (PRS) (ARS) ?

The audience respond to polls (usually multi choice questions) during lectures /classes using an electronic voting device



## Background to using EVS in teaching

- Sprang from recognition of interactive teaching pedagogy
- Mainly from research in the USA
- The teaching pedagogy that EVS supports has been researched for over 20 years (not necessarily using EVS)
- Based on student discussion/ interaction within the class room, including in lectures

**Catherine H. Crouch and Eric Mazur, “Peer Instruction: Ten Years of Experience and Results,”**  
[American Journal of Physics 69, 970 \(2001\).](#)

**Department of Physics, Harvard University – research from 10 years of teaching with algebra and physics classes taught with ‘Peer Instruction’. This involves the following:**

- **Students are presented with questions**
- **They formulate individual answers and report their answers to the instructor**
- **Students then discuss their answers with those around them**
- **At the end of the discussion students are polled for their answers which may have changed based on the discussion**

## **The authors' conclusions:**

- **Peer Instruction (PI) increased student mastery of both conceptual reasoning and problem solving**
- **Students were more motivated**
- **Reactions to PI were generally positive**

**However....**

**There were always some students resistant to being taught in a non-traditional manner**

**As a result of research like this many educational establishments started experimenting with technology designed to support this pedagogy**

**EVS (PRS) can be used in this process**

## **Main Systems**

**There are various voting systems on the market, for example, those that use **clickers**....**



Turning Point



ShowMode



ATS Conference Services



Interwrite PRS



## How it works.....

- **Tutors download (usually) free software from the provider**
- **This enables polls to be devised and inserted into PowerPoint presentations**
- **Multi choice polls but 'free polls' are sometimes an option**
- **Students vote using a hand held voting device ('clicker')**
- **The 'clicker' is a wireless keypad handset**
- **Each 'clicker' communicates wirelessly via a USB receiver which is connected to the computer**
- **Results instantly generated & displayed in graphs on screen**
- **Tutors can provide secondary questions**
- **Tutors can use leader boards etc if they wish**
- **Tutors can view stats over a course of time**



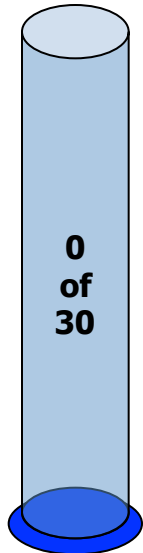
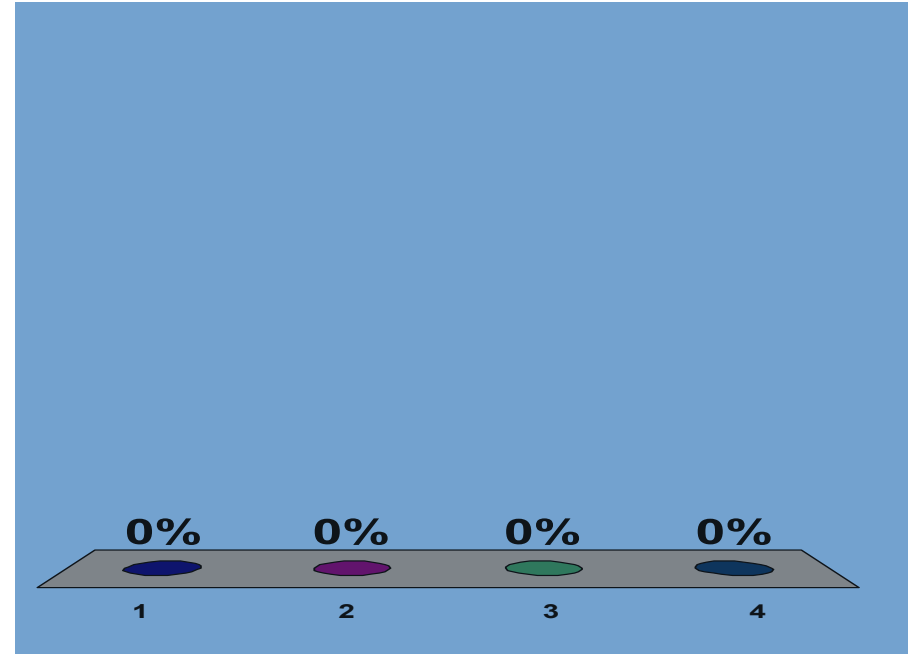
Here is an example of a 'clicker' result graph (using TurningPoint)

....



D said to V that if V did not start to clear the ice from his path he would get a snowball in the neck there and then. Did V apprehend an immediate battery?

1. Yes because he anticipated some harm/pain
2. Yes because there were words and gestures as required
3. Yes because D imposed a condition for it not to occur
4. No because D's words negated an assault



A different system is the use of **mobile phones / laptops** as voting devices



- Polls are also created within the free software
- Students can vote by text, smartphone, website, twitter

**'Poll Everywhere'** (uses mobile phones)



Some clicker providers have the technology to allow students to use their phones etc (**ResponseWare**). Sian Lindsay at City University has been researching this technology

## Research into the effectiveness of using EVS

Most research in the UK has been conducted by Stephen Draper and colleagues at the University of Glasgow

Draper,S.W., Cargill,J., & Cutts,Q. (2002) "Electronically enhanced classroom interaction" *Australian journal of educational technology* vol.18 no.1 pp.13-23

Stephen has been using EVS in the UK for about 10 years (psychology)

He has researched the pedagogical benefits of using EVS which are summarised to be the following:

## Assessment

Formative and as a practice for summative

Here multi-choice questions test content knowledge

Advantages of using EVS here:

- "Marking" is fully automatic
- Students know immediately if they gave the right or wrong answer
- Students know how their performance compares to the group as a whole
- Tutors see immediately how well the class measures up on that question
- Tutors can give tailored explanations focussing on wrong answers

## Increase discussion in class/lectures

**EVS supports the Peer Instruction method researched by *Crouch & Mazur***

**Of particular use in large lectures where there is a lack of interaction and passivity imposed on the audience**

**Large numbers can prevent learners asking sufficient questions because of embarrassment / lack of time**

**EVS allows all to answer rather than just the 'usual students'**

**Tutors can tailor rest of session in response**

## Is this better than the alternatives?

- **Show of hands- is not private / not a secret ballot**
- **White boards etc only allow near neighbours to see a student's selection**
- **EVS also provides faster and more accurate counting of the results: most presenters will only estimate shows of hands to about the nearest 20%, ( see the 'Apprentice' )**





## Formative course feedback from students

Is usually a questionnaire at the end of the course, so after the 'horse has bolted'

EVS anonymous polls during the year can assess student feedback & changes can be made that positively affect that cohort of students

## Peer assessment

It can be used by students to assess each other (e.g. students can vote on a list of criteria re: student class presentations)

## Community mutual awareness building

Especially during induction

## Sessions requiring human responses

Also for research

## Relations with tutor

Also makes students feel the teacher is taking special trouble over the teaching

## Student Engagement ( variation/ breaks/ attendance)

Not specifically mentioned in this research

## Other research in the UK....

J.T. & Boyle & [Nicol, D.J.](#) (2003) "Using classroom communication systems to support interaction and discussion in large class settings" *Association for Learning Technology Journal* vol.11 no.3 pp. 43-57 [Strathclyde]

- **Students (engineering) are generally, although not universally, enthusiastic about this approach**
- **Even over long periods (e.g. regular use throughout a year)**
- **When asked if they regarded EVS as an advantage or not, classes typically show a spread of opinion such as 70% for it, 20% indifferent, 10% definitely opposed to it**

**See Higher Education Academy engineering subject centre:**

**<http://www.engsc.ac.uk/events/using-electronic-voting-systems-to-support-student-learning-in-engineering>**

There is a group within the UK dedicated to exploring the use and effectiveness of in class technology, including EVS (**ESTICT**)

<http://estict.ning.com>



Many are using the technology but mainly within engineering, maths, science and ICT

To my knowledge no one else at **ETSTICT** from law

**I am aware that there are those using this technology in HE....but I wanted to do my own study on the impact of EVS on learning/teaching **law****

**Quick practical demonstration and then discussion of my main research results**

**As more likely to be using **clickers**, the demonstration is with the mobile phone method**

**Polleverywhere.com** ( based in USA)



**Cost to students – depends on their text package – they are texting a UK number**



**Students can also vote via web / Smartphone and Twitter**

**It is possible to track individual responses ( either by mobile phone or by assigning a code/ number to each phone number)**

**<http://www.polleverywhere.com/>**

Delegates then voted using their phones - the following are screen shots of the questions with the results tables that were generated at the time ( the first screen shot about Jupiter was just to get delegates used to the voting) ....-

### How many moons does the planet Jupiter have?



Text a **KEYWORD** to **+447624806527**



Tweet **@poll** and a **KEYWORD**



Submit a **KEYWORD** to **http://poll4.com**

63      **JUP63**

6      **JUP6**

16      **JUP16**

26      **JUP26**

Total Results: **10**





# How many moons does the planet Jupiter have?



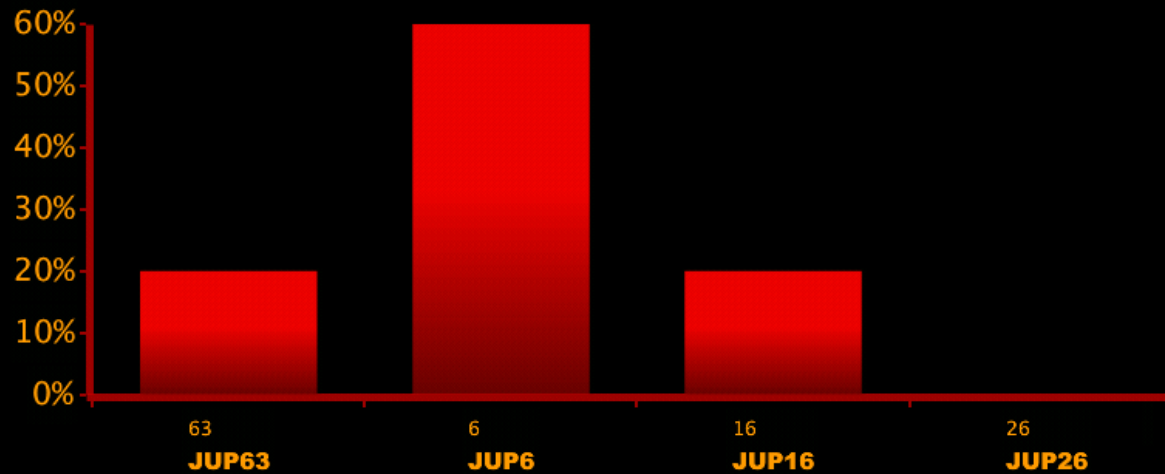
Text a **KEYWORD** to **+447624806527**



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# Can a crime be committed where D fails to act?



Text a **KEYWORD** to **+447624806527**



Tweet **@poll** and a **KEYWORD**



Submit a **KEYWORD** to **http://poll4.com**

Yes, if it is a crime that can be committed by failing to act and there is a duty of care owed by D to V

**LAW32**

Yes, if a statutory crime and there is a duty of care owed by D to V

**LAW33**

Yes, if there is a duty of care owed by D to V

**LAW34**

No, a positive act is required, as held in Fagan v MPC

**LAW35**

Total Results: 52

# Can a crime be committed where D fails to act?



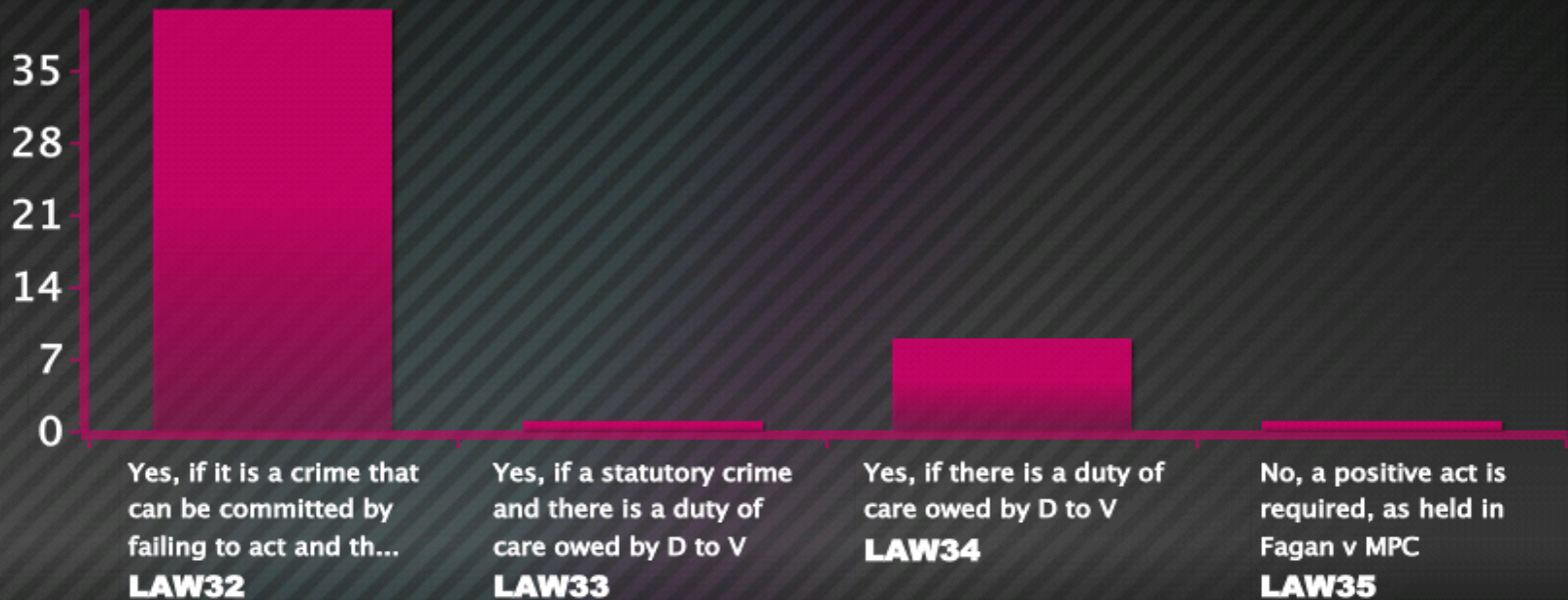
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Tweet **@poll** and a **KEYWORD**



Submit a **KEYWORD** to **http://poll4.com**





Total Results: 52


This was an example of a free text where students can text their answers

in....


**Are there any topics in the Law of Evidence that you feel you are struggling with?**


 Text **EVJP** and your message to **+447624806527**

 Tweet **@poll EVJP** and your message

 Submit **EVJP** and your message to **<http://poll4.com>**

**"bad character- can we go over the gateways please?"**

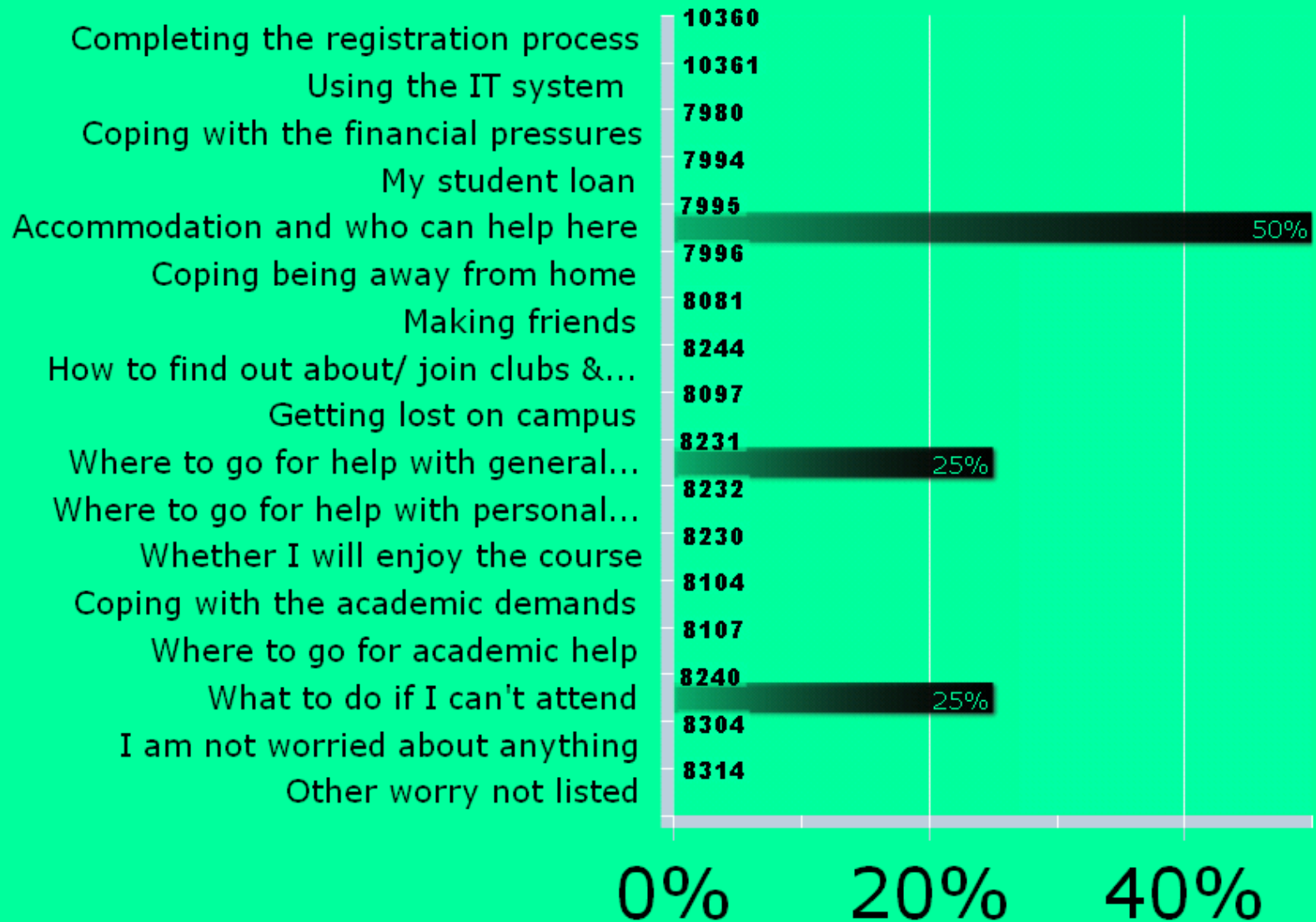
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7 days ago





# Which of the following are you most worried about regarding starting university

To vote: Text a **CODE** to **+447624806527**



**The system costs about £40 per month for up to 250 students – ‘roll on and off’ as and when you like**

**Two people can use the system for that price (but can cheat with generic email address)**

**It is free for classes up to 30 (seminars)**

**The company provide packages for HE**

## My Research

**I used the system for 5 weeks in 2 hour Criminal Law lectures  
(130 students )**

**Multi choice Qs**

**3 per week before /after break/end**

**15 minutes per week**

## Research results

- **79 responses**
- **100% bring phone to University**
- **67% - unlimited tariff**



## On cost of voting

67% - 'excellent or good' ( including 47% of those on limited tariffs)

Another 28% of the total said reasonable. Only 2 students said unreasonable

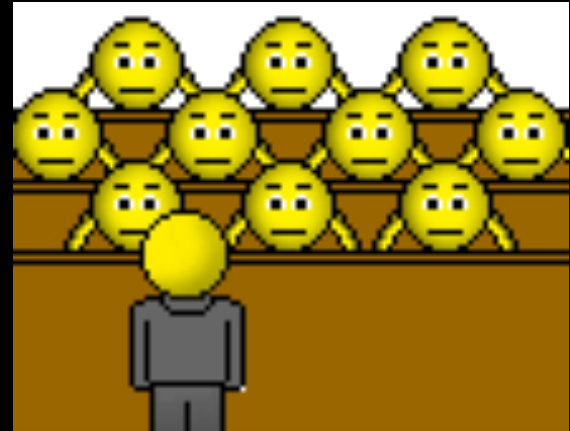
## Time taken up in the lecture

- 73 responses

- 87% - 'just right'

- 9% - too much ( 1x disruptive,1 x wanted more time spent on the lecture, 4x said was a waste of time)

- 4% - not enough dedicated to EVS and asked for more questions



## Benefits/ non benefit to lecture experience?

This was an open question- there were 93 separate comments

- **23 (25%) - it tested their understanding**
- **18 (20%) - it provided a break in the lecture and therefore variety**
- **16 (17%) - it made the lectures more interactive**
- **10 - it made the lectures interesting and / or fun**
- **10 - it allowed revision of the main points & provided clarity**
- **4 said that it helped maintain their attention**

**3 negative comments .....**

**2 - it took up too much time**

**1 - it was disruptive**

**Benefit/non benefit to understanding the subject/topic?**

**Open question - 53 responses (many put general comments like 'see comments above' or 'there are lots of benefits')**

- **23 (43%) - it showed them points they had understood and misunderstood**
- **9 - it made them think more deeply about the issues**
- **4 - it prevented embarrassment**
- **3 - it maintained attention**

- Should we continue to use EVS in Criminal Law / use it in other subjects/ in seminars
- 72 responses
- Yes - Criminal law – 97%
- Yes - Other subjects (lectures) – 91%
- Yes - Seminars – 55%
- **17% who did not participate gave the following reasons:**
  - Voted with a friend and their phone
  - 13 students could not get a signal (Orange)
  - Battery was low/out
  - 4 students said cost( not on text packages etc)

**I asked similar questions re: the clicker system which I also used for 5 weeks – very comparable results**

**At the end of the 10 week period students were asked about their overall view of EVS**

<b>44%</b>	<b>Positive at first and became more positive</b>
<b>42%</b>	<b>Positive at first and remained same level</b>
<b>1%</b>	<b>Positive at first but became less positive</b>
<b>13%</b>	<b>Not positive at first but became positive</b>
<b>0%</b>	<b>Not positive at any stage</b>



## Clickers or phones?

- 94% clickers
- 6% phones
- Reasons .....
- Nearly all said because clicker quicker and easier to vote –  
With phones some said focusing more on getting phone  
number correct **but did not use keywords or store number**

# My preference? - phones

- Cheaper than clickers
- Easy to set up a poll and download into PP
- It does not disrupt lectures (in 5 weeks there were no interruptions with phones going off) and less hassle/time
- Prefer live moving graphs
- Some of the clickers did not register
- Students are unlikely to forget their phones
- More fiddly saving data with clickers
- Remote voting
- All staff can use in seminars up to 30
- User friendly
- E-mail support

## **Conclusion:**

**EVS probably aids understanding , but questions that can be asked are limited re: law when compared with maths, science etc**

**At the very least it engages students in lectures and provides variety and a more interesting lecture experience**





**Thanks for listening- Please ask questions!**

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