

How to use Clickers to improve teaching

A guide for lecturers.

This document shows how to use clickers in your classroom.

What is a clicker?

A clicker is a simple battery powered device that lets students respond to questions by pressing a button.

Clickers are a great way of increasing student interaction in large classes. In the simplest case, each student is issued a remote control like the one on the right (nicknamed a clicker).

The lecturer shows a multiple choice type question on a Powerpoint slide. The students record their answers by pressing one button to indicate their choice. Any number of students can use the clickers simultaneously. The result is a bar chart showing how many students selected each option.

This system is very simple, but used correctly it can increase interactivity, assess what has been learned, gauge how students react to teaching and guide you in altering the content of lectures dynamically. It is a simple and effective way to increase student satisfaction.

For basic instructions on how clickers work go to <http://www.interwritelearning.com/support/tutorials/cricket.html>

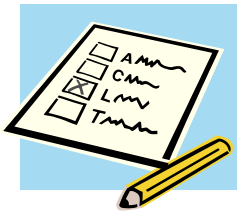


How to use clickers to improve teaching

This section describes how clickers can be used to achieve specific goals in your teaching.

Are you getting it?

The simplest way of using clickers is to use them to ask for feedback from the students to check what they have learned. After introducing some topic and talking about it the lecturer can set up a simple question such as ‘who gets it?’ and ‘who would like to go over it again?’. The clickers will give instant feedback on whether the students understand the topic or not and whether you need to spend more time on it, or move on.



How am I doing?

With clickers the lecturer can get feedback on teaching immediately.

Instead of waiting until the end of the course for an evaluation, the students can give real time feedback on whether the pace is too fast or too slow, too detailed or too superficial, whether the examples are relevant, etc. This means that teaching can be assessed in time to make a difference, and gives students a feeling of

empowerment.



Get discussions going in large classes

The most valuable use of clickers is to get discussions going. It can be difficult to get students to talk to each other in large classes (>300) and report back because of the difficulty of getting feedback. With clickers a good technique is to put the students into groups and ask them to discuss something. Then get the group to use one clicker to vote on what they think is the right outcome. Each group can then see how they compare with all the other groups. The lecturer can then discuss the issue, get the groups to discuss it again, then vote again and note any differences. Another method is to get the individual to indicate their individual answer to a multiple choice question, and then discuss it in their group. The individual students are then invited to answer the question again and asked if they have changed their answer after considering the group input.

Assess what has been learned today



With clickers it is easy to set up diagnostic questions to assess comprehension of material just covered. You would create in advance a number of questions that would let you know if the class had actually taken in what you were teaching. Typically two or three questions would be enough. Just ask the students to answer a multiple choice type question with their clickers. Then decide whether you need to do some remedial coverage or what areas you need to address next time you meet them.

Find out whether the class has done the preparation

You can use the clickers to find out if the class has done the preparation you expect. If you set readings or other personal homework you can use the clickers for a series of multiple choice questions at the beginning of the class to assess what the students have retained from last week, or whether they have done the readings. This does not assess the individuals, but will give you feedback on what proportion of the class is actually doing the



work you expect, and will give feedback to each student by seeing how their answers compare to the others, and will let each know if they are not doing enough compared with the rest of the class.



Increase interactivity

No matter how good you think you are, students need to have a change of activity every ten minutes or so. Using the clickers is a great way to structure your class so that students can switch between listening, talking and doing.

Create a learning activity

Getting a wrong answer to a question is an opportunity to set up a learning activity for the students. If a significant proportion of the class give a wrong answer, put the students in to groups and get them to discuss why the wrong answer is wrong, and what might have led some students to think it was correct. Then ask a similar question until all the class get it right.



Practice and Revision



Using multiple choice questions mid-term is a good way to quickly assess which parts of the curriculum need going over. You can also use the clicker responses in the week before the exam to determine where the students are struggling and focus your teaching on that. It also gives student immediate feedback on areas where they are weakest and helps them to plan their revision strategy.

Getting to know your class.

Clickers can be used as a fun introduction to the first lecture. Questions can be used as an icebreaker to demonstrate the diversity in the class, find out where people come from, how many are doing the major, and other demographics without putting any individual on the spot.

In post graduate classes it is often not known what the make up of the student body will be until they arrive in the classroom. Using interactive clickers is a good way of letting everyone know what everyone's background is.



Create dynamic classes.

Often it is possible to give the students a choice as to which topics they want to cover. In large classes it is possible to allow the students to vote for the topic they want to cover, or what they most want help with. This encourages the students to take ownership of their own learning.

Peer assessment.

Clickers are an excellent way to enable peer assessment. Suppose you have a class with individuals or small groups doing presentations and the rest of the class watching. Instead of letting them watch passively, clickers can be used to get the whole class involved in peer assessment. Each student can vote on how good the presentation was overall, or on individual aspects such as visuals, stage presence, interactivity etc. This will engage the students more because they will not only watch the presentations but have to monitor aspects as it progresses. Even more interactivity can be



gained by putting the watchers in groups beforehand, having a short discussion of the presentation in the groups and then getting one vote that represents the group opinion. By discussing the presentations students learn more about what makes for good or bad presentations, about what other people like and don't like, and how to improve their own.

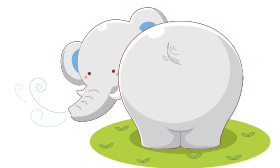
Small classes



Many students regard quizzes in small classes like torture. There is nowhere to hide and everyone can see what they don't know. The anonymity of clickers solves this problem. For example after explaining a concept in class you would usually ask if the class had any questions. Most students will not respond at this stage and the next feedback only comes at examination time. Instead of asking if they understand, use the Clickers to give them a revision quiz.

Sensitive topics

Clickers are good for gathering views on sensitive topics, where the student might not want their answer to be known by the rest of the class. Lecturers are often not aware of just how sensitive some students feel about revealing personal information or personal beliefs.



Challenge your class.



The commonest mistake with clickers is to ask questions that are too easy. Design a session where the question is searching and the possible answers are all equally plausible. Student often learn more from what they get wrong. Get individuals to justify their answers and get the rest of the class to signal whether they agree or disagree. This can get wide ranging discussions going in any size of class.

Good clicker questions generate more questions and deeper understanding of the topic, and lead to better learning outcomes.

Myths and Misconceptions about Clickers

How is it better than just a show of hands?

The main advantage of clickers is that all responses are anonymous. This might not seem all that important from the point of view of lecturers, but one of the main impediments to learning for some students is a phobia about speaking out in class. Clickers allow everyone to communicate with the lecturer without feeling socially anxious. In every class there are students who will not even put up their hand in case they draw attention to themselves. There are also issues of not wanting to look stupid by asking a question, and not wanting to be seen to be going against social mores or class norms. Clickers avoid all these issues.

Aren't multiple choice questions reflective of poor teaching?

Not necessarily. Badly designed MCQs are bad, but MCQs can be designed for many purposes. They can be designed to test simple recall, for opinions, for true or false, or for questions that require the student to analyse complex situations and justify one of several likely outcomes. Multiple choice questions are as good as the intention behind them.

Isn't it just a fad. Students will get tired of them.

Clickers have been around in various forms for twenty years. Using clickers engages students because the questions enable a discussion and a feedback that all students like.

Clickers take up too much class time

You should allow at 5-8 minutes per Clicker response during the class for discussion. You will sacrifice some coverage of material, but you will gain in getting better understanding and better student retention. The clicker display has a countdown feature that you can set, and this limits the time they can spend on discussion, if you want to.

Clickers take up too much preparation time

Clickers give you a new way to structure your class, so you will need to spend some time planning how and where to use them. However, lecturers find that they increase retention and attention, so in the long run teaching is easier and you have less preparation of teaching materials to do. So, overall they save time.

One question is as good as another as long as the students feel engaged.

Actually this is not true. Clickers can be used badly, ask superficial questions and encourage surface learning. Used correctly, clickers encourage discussion and analysis and that leads to deep, permanent learning.

Do I need to have all the questions set up in advance?

No. Most lecturers do set up all their questions in advance, but you can create questions in the classroom while the class is running if something comes up that you want to check immediately. It is fairly easy to do, but you will need to be familiar with the software options in advance.

Some questions need no preparation. A generic 'Do you agree Yes/No' set up can be used over and over for different questions.

Is it difficult to learn to use Clickers?

It is not. If you are using Power point as your presentation tool it will only take one session of about 20 minutes total to learn how to set up and operate Clickers for your class. UTDC conducts regular training sessions or just ask a colleague who is using them already to show you.

How many questions should I use?

A general rule of the thumb is not to use more than 6 questions. Anything between 4-6 is fine. It is important to spread the questions though the lecture rather than have them all in one place. Use the clickers primarily to test understanding. Limiting the questions and using them only to assess planned objectives also minimises the perception of using Clickers too often.

Will the students accept Clickers?

It is likely that most of your students have already used Clickers in other courses. Many schools in Victoria use Clickers routinely and get very positive feedback from students. Students find them easy to use and like the anonymity they offer.

Can I use clickers to run in-class tests?

No. The clickers being used in Vic do not record the ID of the student, so you cannot use them for individual assessment.

How do I set up Clickers in my class room?

You don't. Let IT Services know that you are interested in using clickers and they will set it all up for you.

Does it work in every teaching room?

No. All main lecture rooms are already set up. Any room that has a projector fitted can be configured to use clickers.

Is it just for Windows?

No. They work on every type of computer.

What happens if the batteries run out?

There are spare batteries and spare clickers in every class room.

Examples of good teaching in Vic

Prof. Laurence Becker is conducting her lecture on insurance law and there are over 150 students attending the lecture. She explains that she uses power point presentations to present the exact wording of each statute that they would be covering that day. Next she provides the class with an example scenario where they would be required to apply a particular statute. Prof. Becker divides the class in to groups and encourages each group to discuss the possible answer to a question related to the scenario. There are five possible answers and the students are advised to pick a correct answer and also discuss why the other answers are incorrect. She allows 10 minutes for the group discussion. The students begin their discussion within the group by referring to their statute books and sharing their ideas with the group. At the end of the group discussion Prof. Becker prompts each group to use their clicker. The correct answer is then displayed and she leads them through feedback session. After explaining the correct answer she encourages the groups who picked the incorrect answers to explain why they thought it was the correct answer and the class engages in a discussion as each plausible option is considered. At the end of the interactive session Prof. Becker continues the second part of her lecture.

Josh who was a student at the class explains to us, “that was real fun. I like it when we discuss how theory can be applied in real situations. When I talk about it with the group I can understand it better. That also helps me to understand why some answers are not correct. It also sets the correct mood in the class, makes it quite informal and more interesting.”

Prof. Becker tells us “preparation for the lecture plays a key part in using clickers effectively. I spend a lot of time thinking about the plausible answers and also figuring out what mistakes they can make and include some of those incorrect answers as well. It is law and some of the content is quite complex, lengthy and very boring to read. I found these problems in a real life scenario are very useful to explain to students would happened if you applying the statute. Because some of the statutes are very complex and until you actually start to apply them you are not really learning in a way. I found that clickers were very useful in to do this because I am able to see the responses of the class immediately.”