



# Teaching Toolkit

## Clickers 1: Introduction

Author: Paul Surgenor

Email: [paul.surgenor@ucd.ie](mailto:paul.surgenor@ucd.ie)

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## Clickers – An Overview

### What?



Clickers, also referred to as Student, Audience, or Personal Response Systems (SRS/ARS/PRS), are small handheld units the size of a mobile phone that students can use to respond to questions posed by the lecturer. Questions are usually multiple choice in format and students respond by selecting the appropriate option on their clicker. The participation rate and the breakdown of student responses are instantly available in a graph via PowerPoint.

### Why?

In classes with large numbers students tend to be passive rather than active learners, resulting in learning exemplified by a basic grasp of key facts than a deeper understand of concepts and how they fit together. Clickers have been used to improve student interaction, engagement, and attention (Draper & Brown, 2004; Hinde & Hunt, 2006), increase attendance (Bullock et al., 2002), stimulate peer and class discussion (Pelton & Pelton, 2006), provide feedback for both students and instructors (Caldwell, 2007), and improve learning performance (El-Rady, 2006). They provide opportunities to introduce key concepts in an interesting and interactive way, effectively apply principles of active and student-centred learning, as well as maintaining interest and attention in large lecture theatres.

### How?

To use clickers effectively the curriculum is re-designed around the key themes of the lecture which are introduced through questions or discussion points. Students are asked to consider important themes or topics by applying their knowledge to questions or scenarios before they are formally introduced. The discussion around these threshold concepts focuses attention on key themes and encourages students to think about the topics and their linkages while in the lecture theatre. This reinforces learning during class time and ensures a greater level of attentiveness and participation.

## Clickers in Literature

A meta-analysis of 38 research papers (Robin & LeSage, 2009) found that in 36, students and/or teachers had positive perceptions of clicker technology, and that most students reported that the technology was easy to learn and use (Hinde & Hunt, 2006; Sharma, Khachan, Chan, & O'Byrne, 2005; Siau, Sheng, & Nah, 2006). Clickers are effective because passive information delivery fails to engage all students (Hoag, Lillie, & Hoppe, 2005) and attention levels, particularly in larger classes, tend to lapse after about 15 minutes (Hoag, Lillie, & Hoppe, 2005). Using an interactive method such as clickers is more effective at engaging and maintaining interest and encouraging active learning than routine didactic lectures (Homme et al., 2004).

Reviews, however, are mixed on whether or not clickers improve grades. Much of the research on clickers in the classroom has focused less on learning outcomes and more on self-reports of how helpful the students found the remote controls or how much they enjoyed using them (Beekes, 2006; Draper & Brown, 2004). Simon and Stahl (2005) conducted a study that compared the short-term knowledge retention of three groups of people who had attended a workshop (in clicker & non-clicker groups). The group that used the clickers did score slightly, but not statistically significantly so. Similar results were reported by Challman, and Brueckner (2006).

Caldwell (2007) however suggests that active engagement increases achievement for some students. The number of students earning A's in a mathematics course increased by almost 5 % when clickers were used and decreased the number of students failing. After using clickers students' grades averaged 8 % higher than the previous year when clickers were not used (Ribbens, 2007).

Clickers are less effective when used without the accompanying changes in approaches to teaching. Draper (1998) noted that technology is only worth using in the classroom when it addresses a specific instructional deficit, and should not be used solely in the hope of addressing high attrition rates by making lecture classes less passive and impersonal (Burnstein and Lederman, 2001).