Completing More iClicker Activities Leads to Improved Academic Performance

- Study instructors implemented iClicker in a variety of ways—weekly, bi-weekly, across the semester, and targeted weeks within a semester.
- Course performance increased as students completed more iClicker activities.
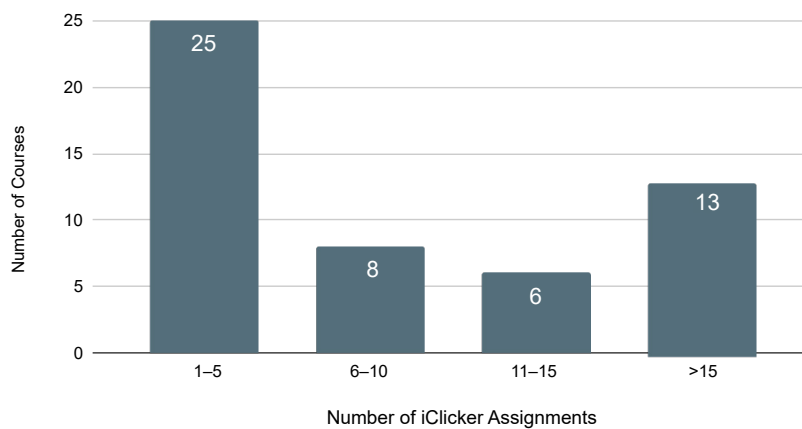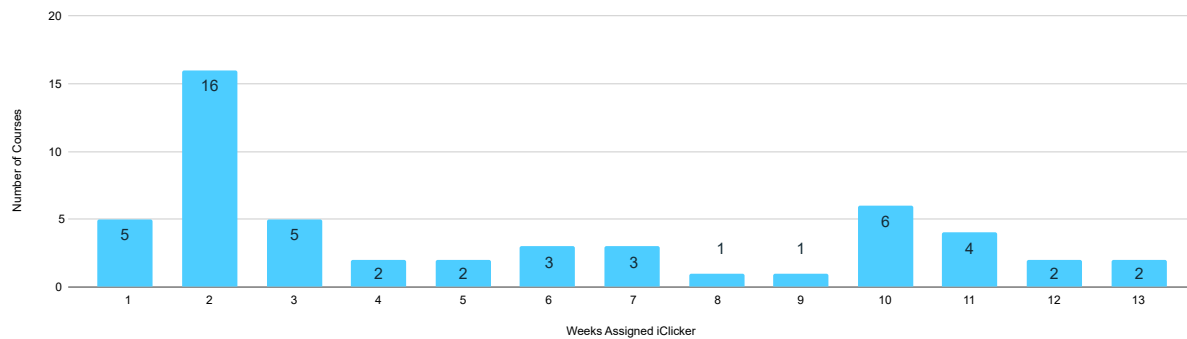
Background

Engaging students in active learning, whereby they take an active role in the learning process rather than passively participating, has been shown to benefit students' academic success. Active learning occurs when students reflect on their own thinking, assess their comprehension, and gain new knowledge through participation. Previous research has shown that active learning significantly increases students' sense of belonging, motivation, and reduces achievement gaps for students from underrepresented groups. Methods for implementing active learning include class discussion, group work, and problem-solving/ inquiry-based activities.
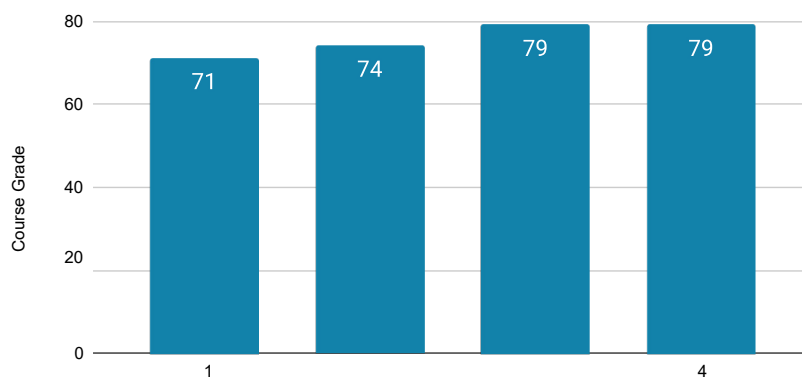
iClicker is one established tool for promoting active learning and participation. iClicker is an audience response system that is simple, reliable, and easy to use. It helps facilitate class interaction (i.e. asking opinions, taking live quizzes soliciting feedback— all things that are associated with better engagement and student performance.

Results

In order to examine iClicker's impact on students' learning, Macmillan Learning funded a series of research studies spanning six semesters from fall 2019 through spring 2022. From these studies, 52 instructors used iClicker in their courses which included 2,318 students across 6 disciplines (Biochemistry, Biology, Calculus, Chemistry, Economics, and Psychology). Variation in the implementation of iClicker was found across instructor participants—weekly, bi-weekly, across the semester, and targeted weeks within a semester. The following graphs display implementation patterns.

Number of Courses vs. Weeks Assigned iClicker

Number of Courses vs. Number of iClicker Assignments

We also examined how completion of iClicker activities related to student course performance. iClicker completion was grouped by students' completion of the median number of iClicker activities assigned in their course in order to control for implementation/subject differences. The median was used as an indicator of what was typical or expected within a particular course. Results revealed that as students completed more iClicker activities, particularly those who completed at or above the median, had higher course grades. This relationship was statistically significant even after controlling for student background variables including high school GPA and SAT/ACT scores. The graph below displays this finding.

Course Grade vs. iClicker Completion Category

Note. The iClicker completion categories were defined as follows:

1 Less than 50% of the course median completed,
2 – 50%-99% of the course median completed,
3 – 100% of the course median completed,
4 – Greater than the median.

Sources
Deslauriers et al., (2019), Freeman et al., (2014), Markant et al., (2016), Michael (2006), Nguyen et al., (2021), Theobald et al., (2020)