



# How to Use iClicker and Tech Tools to Build Connections With Students and Keep Your Sanity

**Solina Lindahl**

Senior Lecturer for Economics, California Polytechnic State University

# Introduction

Educators are exhausted. This is no secret, as a groundswell of stories have emerged since the beginning of the pandemic in which teachers employ “quiet quitting” to retain their sanity and establish a work-life balance. What might escape our notice, however, is that our exhaustion is mirrored by our students. While teachers have been busy adapting to a “new normal” of synchronous and asynchronous learning, our students are navigating new lives in a world that is not built to support their academic, social, and emotional needs. There is a desperate need from both sides of the classroom for effective intervention.

This crucial moment is an opportunity. We have the chance to throw out old classroom designs and educational tools that no longer serve our evolving world. In doing so, we will make room for emerging technologies that will help teachers to establish more active, engaging learning practices. The ideal strategy is low cost, but yields high benefits, and offers sufficient flexibility to educators. The tools that we employ should be able to accommodate rising class sizes, increased student diversity, and other rapidly changing factors in modern education.

Today’s educators are accustomed to engaging with learning through reading and lectures; this may not be the norm for the average student in 2022. What worked for an educator in the past may not work for a student today. This is especially true in general education courses, where students may be less intrinsically motivated or interested in the topic. The difference between how educators and students learn matters and requires that we employ learning sciences to bridge the disconnect.



## What Needs to Change?

The default model of higher education is passive. Educators tend to focus first on lectures and envision students as empty buckets to be filled with knowledge via direct instruction. The pandemic reinforced this form of teaching, as a switch to teleconferencing meant an increased focus on synchronous learning. However, the most recent studies on student engagement and achievement indicate that active learning is much more effective than passive. This is because active learning relies on peer engagement, accountability, and participation. The necessary pivot from passive to active learning is significant and could mark a major shift in student success in all fields.

An effective example of the impact that active learning can have in higher education comes from a study conducted with an undergraduate physics class. In the study, students were divided into two groups; one was taught via a lecture by a highly acclaimed senior instructor, and the other via peer instruction (polling, small groups, interactive sessions) by a graduate student. Despite the effectiveness of the senior professor's lectures, the graduate student group outperformed the lecture-based class. This indicates that lectures are not as essential as we thought and that students are more likely to succeed when learning actively.

While all learners and educators can benefit from a pivot to active learning, there is no one-size-fits-all model. In fact, the nature of active learning necessitates that the instructor tailors their class to fit the individuals it serves (including the instructor). In adjusting your instruction to include active learning, consider which model best suits your personality and the learning styles of your students. Even a gradual shift toward active learning will increase student engagement and bolster student success.





# Revisiting Age-Old Systems

Over hundreds of years, our societies have made massive gains in almost every field. Travel, for example, has been completely revolutionized since the days of horse-and-buggy carriages. Today, we fly across continents and embark on high-speed rail travel without batting an eye. The ways in which we teach the next generation, however, have stayed remarkably constant for generations. The most significant change is the presence of screens and technology in the classroom. Nevertheless, the age-old standard of a lecturing professor standing in front of a sea of students persists.

Educators need to realign our educational methodologies with consideration to our societal and technological advancements. While distance learning and Zoom may have turned back the clock on the shift toward active learning, there has also been a boom in the educational tools available to support this realignment.



# Why Use Tech Tools for Active Learning?

Employing technology like iClicker in the classroom can help to bridge instructor-student divides and make students feel more comfortable answering high-stakes questions. For example, instructors can use polling data to better understand their students personally or to gauge the array of opinions and beliefs in a class. From a student's perspective, they might feel more comfortable answering provocative or divisive questions via anonymous polling. Polling also provides a space for greater inclusion, as students who often feel they do not have a voice will feel more confident sharing their responses. Finally, polling can allow students to practice presentation and debate skills in a controlled, monitored environment.

These tools can provide instructors with immediate feedback in increasingly large classes. Instructors can use polling as an instant check-for-understanding in order to gauge students learning and decide to either push or pull back instruction. To do so, instructors should keep their questions simple and deliberate and lean on backward design when applying the polling data. Before polling, instructors should first identify the desired results of the poll and the acceptable evidence (or, appropriate assessment). Then, they can plan the learning experience and instruction based on this information.



# Benefits of EdTech in the Classroom

Typically, when tools like iClicker are introduced in a classroom, student engagement increases. This shift will not happen naturally, but rather, as a result of instructors implementing the formative assessment tools that education technologies offer. In contrast to summative assessments, which serve as a final marking of student understanding, formative assessments are designed for teaching, to help instructors understand their students, and vice versa.

Polling technology is therefore **ideal for formative assessment**, as it provides instant feedback to both parties and allows instructors to adapt their instruction to the data. Because polling tools allow all students to contribute equally, often in an anonymous setting, these tools democratize the classroom and allow all demographics to have a voice.

iClicker polling can also help instructors **facilitate peer learning**. Not only does team-based learning increase engagement by shifting the focus to active learning, but it also provides opportunities for students to learn from one another.



To keep online and asynchronous courses engaging, instructors can use iClicker to **hide easter eggs** — unexpected bits of information to keep students on the lookout. These “easter eggs” can be related to the course material or simply be fun references to keep students entertained. Some examples of “easter eggs” are fun facts about their instructor, relevant inside jokes from class, cultural references, etc. When students’ interest is constantly being peeked, they are more likely to be engaged in the remainder of the material presented.

Polling with iClicker can also **support interleaving** — presenting material to students in various modalities to improve their performance. Studies suggest that students who are assessed on a concept three times, in varying formats, demonstrate significantly higher performance on summative assessments than those who see the concept presented in one, unvarying format. If a student is exposed to the concept through polling, team-based learning, and an engaging asynchronous format, they are very likely to retain the concept.





# Connection is Essential

While educational technologies can increase engagement, successful active learning starts with connection. A strong connection between instructors and students is essential in introductory courses. Because these courses are usually filled with first-year students who are often merely “fulfilling a requirement,” engagement and motivation are more likely to be low than in higher-level courses. The stresses that come with being a first-year student are often reduced when a strong connection is established with their teachers and peers.

The stressors that first-year students face are complex and compounding; if not addressed, they could block their learning and prevent them from engaging with the content. The way to get around this roadblock is by establishing a strong connection from the beginning. Often, the anxiety of not knowing a teacher’s expectations and fear of approaching them can hold a student back from success (this is most common in lecture-style classes). Furthermore, a lack of connection to other students can leave a first-year student feeling alienated and alone in their experience. Taking the time and effort at the beginning of a course to build a strong connection and encourage peer-to-peer connections can set students on the path to success for their entire academic career.





## Model Growth Mindset

Beyond creating connections, educators can also model a growth mindset by sharing moments of frustration or failure with their students. A Stanford event titled, “I Screwed Up” encourages people across all disciplines, including professors and students, to share their moments of “screwing up” to help normalize failure and the important role that it plays in one’s journey. These stories can be compelling for those first-year students who have experienced nothing but success their entire lives and suddenly find themselves in a uniquely challenging environment. If these students are exposed to a growth mindset early enough, they can build their confidence and understand the place that failure and resilience will play in their academic careers.

Finally, in modeling a growth mindset and creating these connections with students, it is important to remember that students should not lean too much on their instructor. Rather, they should reflect upon their own learning styles, create their own form of resilience and navigate challenges in a way that is authentic to themselves. The ultimate goal of building connections and modeling appropriate mindsets is to allow students to find their own independent learning strategies.



# iClicker Has Many Benefits

The benefits of incorporating polling tools, such as iClicker, in the classroom are myriad and multi-faceted.

## Polling tools, such as iClicker, will...

- Increase inclusive student **engagement**
  - Difficult discussions can be energized by implementing polling.
- Implement **peer effect** and works well with **team-based learning**
  - In this model, educators should first pose a provocative question and allow time for discussion, followed by a team quiz on the material. The team quiz then leads to individual quizzes.
    - Implementing team-based learning first leads to higher individual performances.
    - Each of these quizzes also serves as a formative assessment for the instructor.
- Supports **active learning** in any modality (asynchronous or synchronous)
- Accommodate the various learning needs of the instructor or students; iClicker is **flexible** and compatible with any delivery and requires no set-up
- Reinforce a **growth mindset** by allowing low-stakes practice for high-stakes questions; students feel more comfortable failing when using applications such as iClicker.
- **Fosters community** in a fragmented world; when students come together to debate a topic or tackle a problem together, they become more bonded in the process.
- **Energize** the learning process and connect students with professors



# Formative and Diagnostic Assessments with Polling Software

Any time that an instructor uses student feedback to guide their teaching, that feedback is considered a **formative assessment**. Polling software such as iClicker can drastically simplify both the implementation of and reflection on daily formative assessments. One such way that an instructor can benefit from the immediate data provided by iClicker polls is by administering a diagnostic assessment at the start of a course or the beginning of a new unit. This will help professors to assess prior or existing knowledge and identify any gaps that might need to be filled before moving forward. In this same way, instructors can implement iClicker polls as formative assessments throughout an active learning session.

Because polling tools are so versatile and flexible, there are endless possibilities for the types of questions to be asked. However, it is important to ask “the right questions” to get the most useful feedback.

## A few examples of the types of questions educators can ask using iClicker:

- Direct recall: implementing the “remembering” level of Bloom’s Taxonomy
- Conceptual understanding: defining new concepts
- Application: using new skills to execute a task
- Critical thinking: for example, what is the most important takeaway from today’s class?
- Student perspectives or moral/ethical questions: are you morally obligated to report cheating if you witness it?
- Confidence level: iClicker can be used as a formative assessment of student’s confidence level after receiving new material





## Conclusion

As instructors move away from the lecture model and begin to incorporate more active learning in their classrooms, it is important to remember that each classroom should be uniquely built for its students and teachers. As the educator, you are the chef of your classroom. You choose how to put each of these pieces together in a way that makes the most sense to you. This includes: how much of your story you choose to share, the questions you ask, and the methods you choose to engage your students. The most successful active learning classrooms are built on authenticity and connection; it is up to the teacher to establish this strong foundation.





**Solina Lindahl** has been teaching Principles of Economics, Comparative Economic Systems and Poverty & Discrimination at California Polytechnic University since 1995 in large and small classes. She is happiest experimenting with new technologies and promising pedagogy. She has worked with the Chancellor's Office of the CSU as the Economics Lead Faculty for the Course Redesign with Technology Program and with her campus's CTLT (co-leading learning communities for instructors of large classes). She has found active learning to be a successful and stimulating strategy and is always looking for probing questions and good ideas for video tutorials.

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