Pearson

SPECIAL INTEREST ARTICLE

Engaging Distracted Students in the Classroom

Do you struggle with students who are more focused on their tablets than what's happening in the classroom? Do you see students with a death grip on their phones trying to sneak glances as you lecture? Do you feel like you are competing with a digital device for a student's attention?

If you feel like students are spending time on their phone during class, you may be correct. A 2015 survey conducted by Bernard R. McCoy, University of Nebraska-Lincoln, focused on learning more about Millennial Generation students' behaviors and perceptions regarding their classroom uses of digital devices for non-class purposes.[1] The survey of 18 to 22-year-old college students included 675 respondents in 26 states. Respondents reported that they spent an average of 20.9 percent of class time using a digital device for non-class purposes. When asked what the biggest advantages were to using a digital device in class for non-class purposes, the top answers were to stay connected and to fight boredom (table 1).

Stay connected	63.05%
Fight boredom	62.90%
Entertainment	46.76%
Related classwork	46.46%
In case of emergency	37.10%

Table 1. Response rate to the question, "What are the three biggest advantages for using a digital device in class for non-class purposes?"

These same students indicated they don't pay attention and they miss instruction as the top disadvantages to using digital devices (table 2).

Don't pay attention	89.06%
Miss instruction	80.51%
Distract others	38.53%
Get called out by instructor	29.99%
Lose points	26.69%

Table 2. Response rate to the question, "What are the three biggest disadvantages of using a digital device in class for non-class purposes?"

Based on the survey responses, instructors are right to be concerned that students aren't paying attention. A quick Google search identifies many articles on distracted students in the classroom, leaving instructors grappling with the question of:

Why is this important?

A 2014 study by Dr. Chris Bjornsen at Longwood University took data and survey responses from 4,735 students and concluded, "as cell phone use in class goes up, test scores go down. Just as higher cell phone use predicts lower test scores, lower cell phone use also predicts higher scores."[2] A one-point difference in average number of times a student uses a cell phone during class was associated with an average decrease of six-tenths of a point, out of a score of 100, on the next test. "I suspect that the average cell phone use during a typical college class is four to five times, which is enough to predict a change in a student's GPA. Some students probably underreported their cell phone use, but that just makes the results even stronger," says Bjornsen.[3]

What can instructors do?

James M. Lang, director of the Center for Teaching Excellence at Assumption College says, "we have probably moved past the point at which we can expect to achieve a completely distraction-free classroom. If we want to keep our students focused on learning, we have to invite them into the process of helping themselves, and we have to continue to reflect upon how the classroom experience can inspire students to pursue meaningful goals in the face of our many tempting distractions."[4] Active learning is one solution to the problem of distracted students. According to the Teacher, Learning, and Professional Development Center at Texas Tech, "Active learning is an effective strategy for increasing student participation because it gives students the opportunity to reflect, analyze, synthesize, and communicate the material they learn during class."[5] If they are busy doing class activities, it makes it harder for students to use their devices for non-class-related purposes.

Studies also show evidence that utilizing active learning strategies may lead to increased student success. A 2014 meta-analysis of 225 studies reported on exam scores or failure rates when comparing student performance in undergraduate STEM courses under traditional lecturing versus active learning. The authors concluded that the studies, "document that active learning leads to increases in examination performance that would raise average grades by a half a letter, and that failure rates under traditional lecturing increase by 55 percent over the rates observed under active learning."[6]

How can an instructor implement active learning in class?

Deciding to integrate active learning can bring forth the question, "*How do I get started?".* The Center for Teaching at Vanderbilt University recommends to, "start small, start early, and start with activities that pose low risk for both instructors and students."[7] Planning is important, and you will want to spend time thinking about your course issues and goals and what you want your students to learn. Planning Your Technology Implementation is a helpful resource at this stage. While active learning can take place with or without technology, an article from the Academic Learning Transformation Lab at Virginia Commonwealth University states that, "the unique characteristics of digital technologies can enhance— intensify, increase, amplify—active learning."[8]

How are instructors using Pearson technology to integrate active learning?

Pearson suggests that technology, such as Mastering™ and Learning Catalytics™, can help facilitate active learning in a course. For example, use Mastering to:

- Assign pre-lecture homework to ensure students come to class prepared to participate.
- Provide Mastering problems and resources during class time for group problem-solving.

Use Learning Catalytics to:

- Have students answer questions on any digital device, even open-ended questions, designed to test knowledge and develop critical thinking skills.
- Automatically group students for discussion, team-based activities, and peer-to-peer learning.

Finally, instructors can review analytics before and during class using the reporting tools in both Mastering and Learning Catalytics and address issues or misconceptions as they arise or prepare additional resources for class.

"This is the first time I've taken a class where the easy parts (reading, viewing lecture) are done at home and the hard parts (learning and understanding) are done in class. It gave me time to interact with my instructor, which definitely benefited me."

—Student, Microbiology, Shoreline Community College

Following are some examples of how instructors facilitated changes in their own courses with either Mastering or Learning Catalytics. You will find a brief summary of each educator's study, with links to the full study online. In addition, a list of resources designed to help effectively plan and implement technology is provided at the conclusion of the article.

Bill Richards, North Idaho College, wanted to involve students in the learning process during class and use technology to motivate students to learn. He used Mastering Geology and Learning Catalytics to redesign his course to a flipped classroom with active learning. Richards believes this change increased student engagement and provided just-in-time feedback to help him identify gaps in understanding that he could address during class. His course data showed a strong correlation between Learning Catalytics scores and exam averages (figure 1), and he continued to use Learning Catalytics in both his Human Geography and Geology courses. Read the full study online.*

Correlation of Learning Catalytics to exam average

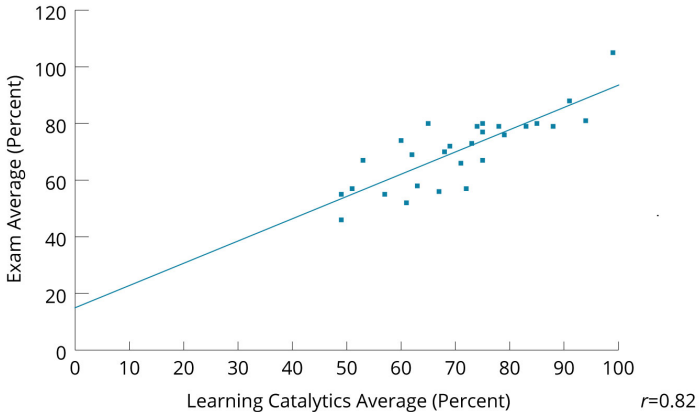


Figure 1. Correlation of Learning Catalytics to Exam Average at North Idaho College, Spring 2015 (*n*=28)

Statics instructor **Calvin Stewart, University of Texas at El Paso**, found that students encounter certain bottleneck courses where failure rates are high and a low number of students succeed in obtaining the expected learning outcomes. He began teaching Statics as a traditional, face-to-face lecture with paper-and-pencil homework. He then adopted Mastering Engineering, assigning homework that required students to prepare prior to class so he could integrate active learning. He moved to a fully flipped class supported by Mastering homework his third semester teaching. His course results showed that the semesters with Mastering and in-class activities had higher success rates than the traditional semester with paper-and-pencil homework (figure 2). Read the full study online.*

Student success rates (ABC)

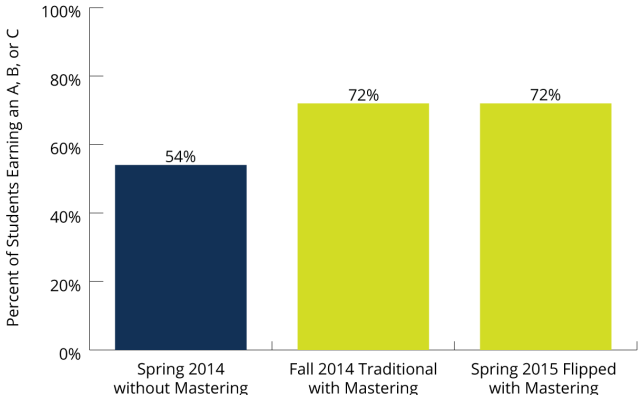


Figure 2. Success Rates at University of Texas at El Paso, Spring 2014 (*n*=109); Fall 2014 (*n*=105); Spring 2015 (*n*=133)

Curtis Coffman, Vincennes University, felt his General Biology students did not come to class prepared, which impacted how class time was spent. He dedicated four years to redesigning his course, moving to a flipped classroom with active learning. In Fall 2013, as one of the last steps in his redesign, he added Mastering Biology to facilitate learning of basic concepts outside of class. His results show that during the semester he implemented Mastering homework, students earned more As and Bs and had higher average final exam scores (figure 3) than prior semesters. Read the full study online.*

Mean exam score with and without Mastering Biology

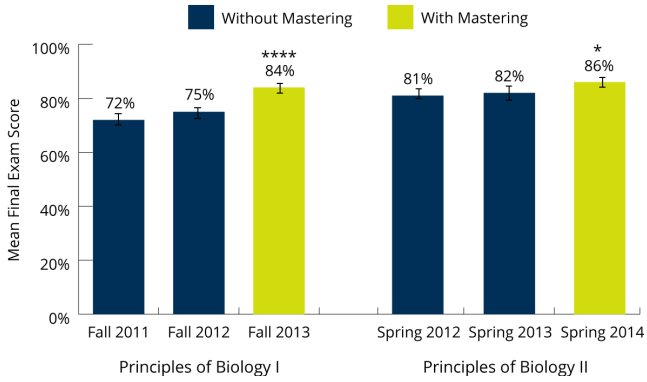


Figure 3. Mean Final Exam Scores with and without Mastering at Vincennes University, Fall 2011 (*n*=50); Fall 2012 (*n*=43); Fall 2013 (*n*=52); Spring 2012 (*n*=35); Spring 2013 (*n*=33); Spring 2014 (*n*=41) Error Bars = Standard Error, Significance *p<0.05, ****p<.0001

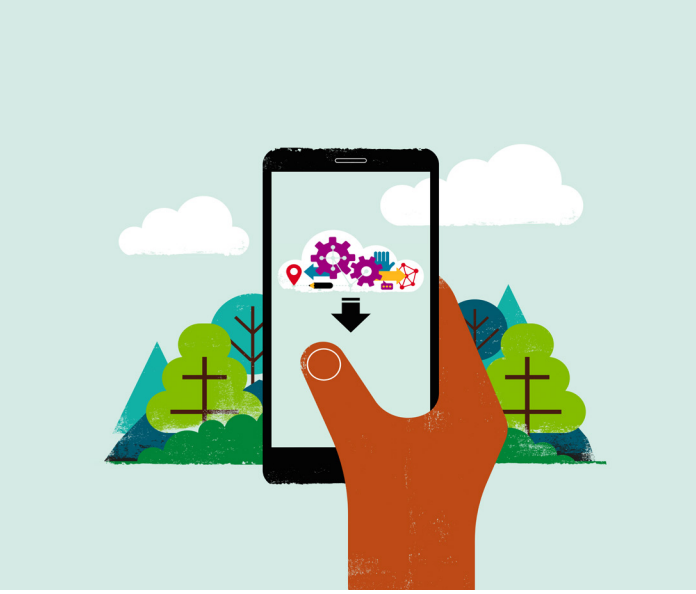
Judy Penn, Shoreline Community College, thought it was important to understand the student experience after she flipped her Microbiology course. Her goal with the redesign was to increase student participation in class and ensure that students came to class prepared, while integrating more active learning and reducing the

amount of time she lectured on basic concepts. On end-of-semester surveys, her students gave positive feedback on their experience:

> *"The flipped class has helped me to not only learn the information, I retain it."*

> *"This is the first time I've taken a class where the easy parts (reading, viewing lecture) are done at home and the hard parts (learning and understanding) are done in class. It gave me time to interact with my instructor, which definitely benefited me."*

Penn said that when she entered the classroom after the redesign, students were often talking about the topic for the day. She heard things like, "Did you understand…?" or "I think the hardest part was…" She feels they were more engaged, working outside class, and more prepared for class, which resulted in higher levels of learning and better success rates. Read the full study online.*



Conclusion

With the increased availability of mobile technology, the issue of distracted students in class is one that likely will not go away. The question for instructors is how to address it. Data from recent surveys and studies, along with the studies reported here, indicate that keeping students engaged in the classroom is one effective method, which not only can help minimize distraction, but can improve learning outcomes as well, benefiting everyone. Pearson-recommended best practices, educator studies, and training materials can help instructors effectively implement Pearson technology with active learning to help accomplish course goals and improve results.

Resources

2016 Science & Engineering White Paper

2015 Science & Engineering White Paper

Training resources

Planning your technology implementation

Results Library

Impact evaluation reports

Citations

1. McCoy, Bernard R. Digital Distractions in the Classroom Phase II: Student Classroom Use of Digital Devices for Non-Class Related Purposes. Retrieved from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1091&context=journalismfacpub

2. Longwood University. College students' test scores suffer with cell phone use in class, Longwood researcher finds. Retrieved from http://www.longwood.edu/news/2015/college-students-test-scores-suffer/

3. Ibid.

4. Lang, James M. The Distracted Classroom: Transparency, Autonomy, and Pedagogy. Retrieved from http://www.chronicle.com/article/The-Distracted-Classroom-/240797?cid=RCPACKAGE

5. Lloyd-Strovas, Jenny. Tips for Teaching Large Classes. Retrieved from http://www.depts.ttu.edu/tlpdc/Resources/Teaching_resources/TLPDC_teaching_resources/TipsForTeachingLargeClasses.pdf

6. Freeman, Scott, et al. Active Learning Increases Student Performance in Science, Engineering, and Mathematics. Retrieved from www.pnas.org/cgi/doi/10.1073/pnas.1319030111

7. Brame, C., (2016). Active learning. Vanderbilt University Center for Teaching. Retrieved from https://cft.vanderbilt.edu/active-learning/

8. Virginia Commonwealth University. Technology Enhanced Active Learning. Retrieved from http://altlab.vcu.edu/who-we-are/technology-enhanced-active-learning/

Note: The studies cited are examples of successful implementations of Mastering or Learning Catalytics. Many other variable can impact student learning which are difficult to measure, such as motivation and study skills.

***Reading a print copy of this article?** Access it online at https://www.pearsoned.com/wp-content/uploads/ActiveLearning2017.pdf

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