



Students' Learning Benefits from Increased Choice Between Instructional Tools

What is this Research About?

Large lecture courses have hundreds of students with diverse learning preferences. Instructors can follow the three Universal Design for Learning (UDL) principles to help reduce barriers to learning for all students. The three UDL principles are: providing multiple means of representation, engagement, and action and expression. These UDL principles can be incorporated into large lecture courses by selecting multiple instructional tools that allow students the flexibility to choose how they access and engage with content and demonstrate their learning. In this study, the researchers incorporated four instructional tools in their large lecture course to create a UDL environment. The researchers assessed the effectiveness of the instructional tools on students' perceived and actual learning.

What did the Researchers Do?

The researchers incorporated PowerPoint (delivered in class and downloadable outside class), lecture notes (downloadable before class and included class outline, fill-in-the-blank exercises, and sample exam questions), clickers (used in-class only to poll/quizz students), and MindTap (accessible inside and outside class and included access to textbook, flashcards, dictionary, notebook, and homework assignments) into two large lecture classes, each with more than 600 students. An in-class survey at the end of the semester was used to assess the students' perceptions of their use of the instructional tools and their learning, along with the effectiveness of each instructional tool to help them learn. This data was compared to online analytics that show their actual use of the tools. The researchers also compared students' perceived and actual use of the instructional tools with students' exam scores to show their actual learning.

What did the Researchers Find?

Students perceived all four instructional tools as effective at helping them learn, with the instructor created content (lecture notes and PowerPoint) being rated the highest. Students' perceived use of the instructional tools that were accessible both inside and outside class (i.e., lecture notes, PowerPoint and MindTap) has a positive and significant impact on perceived learning. In contrast, clickers, which were only accessible in class did not positively impact students' perceived learning. Comparing the online analytics for MindTap and exam scores shows that MindTap has a positive and significant impact on actual learning. In fact, the researchers found that adding 3 MindTap experiences could result in a 1-point increase in exam scores. Actual use of clickers did not result in actual learning, confirming the perception data. Finally, survey results showed different patterns in usage between student groups, highlighting the need for multiple options as suggested by UDL principles. Women used a larger variety of tools and used them more frequently than men, and minority students were more likely to use Clickers than MindTap.

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A synopsis of a scholarship of teaching and learning journal article

➔ How to Implement this Research in Your Classroom

Universal Design for Learning (UDL) principles encourage instructors to incorporate multiple means of representation, engagement and action and expression into courses to provide students with increased options to accommodate their diverse learning preferences. Different student groups do not all prefer to learn using the same instructional tools. In this study, instructional tools that were created by the instructor and were accessible inside and outside of class were perceived by students as more effective for their learning. Consider using a number of instructional tools in your classroom, such as PowerPoints, lecture notes, MindTap and clickers.

➔ Citation

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➔ Keywords

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Snapshot Writer: Madison Wright