SoTL
Snapshot

A synopsis of a scholarship of teaching and learning journal article

Flipping a Class with Learning Science Can Increase Students' Mindsets, Course Learning and Quantitative Thinking

What is this Research About?

In typical flipped classes, class time is used for what would traditionally be homework, and time out of class is used for what would traditionally be lecture material, essentially swapping the two components of a course (lecture and homework). Research tends to show that students perform better in flipped classrooms than traditional classrooms, but little is known about why flipped classrooms improve student learning. This study compares students' grades, changes in mindsets (I.e., beliefs that intelligence can change and is not fixed), and quantitative reasoning skills in a basic flipped course and a flipped course designed using the Practicing-Connections (PC) Hypothesis. The PC Hypothesis states that learning is achieved when students practice making connections between course concepts and contexts.

What did the Researchers Do?

The researchers tested the effectiveness of using the PC Hypothesis in the design of a flipped psychology statistics course. The researchers studied students in two sections of the same course, where one section followed a basic flipped format, and the other followed a PC flipped format. The students in both courses (basic flipped and PC flipped) completed the same course tests and mindset surveys (measuring their beliefs about intelligence and math ability). The students in the PC flipped course also completed quantitative reasoning tests. The researchers analyzed student achievement on tests, shifts in mindset for intelligence and math abilities, and development of quantitative reasoning skills.

What did the Researchers Find?

The researchers found that using the PC flipped course resulted in students performing significantly better on some of the course tests. The students in the PC flipped course also increased their growth mindset in intelligence and math ability compared to students in the basic flipped course. In the PC flipped course, students also demonstrated increased quantitative reasoning ability from the beginning to the end of the course. This research shows that not all flipped courses are equally effective and using a PC Hypothesis to design a flipped classroom results in greater student achievement, positive shifts in growth mindsets, and development of quantitative reasoning skills.

➔ How to Implement this Research in Your Classroom

Creating a Practicing-Connections (PC) flipped classroom involves more than simply switching the lecture and homework components of the course. In this study, the researchers found that students in a PC flipped classroom performed better on some course exams, increased their growth mindset, and improved their quantitative reasoning skills. The main goal of the PC Hypothesis is to guide students to make connections between course concepts and connect course concepts to various situations and contexts. To effectively accomplish this goal, instructors should include the following three learning opportunities in their flipped classroom:

1. Clearly connect course concepts.
2. Encourage students to make connections on their own by adding course concepts in sequence as opposed to in isolation.
3. Encourage students to practice making connections that increase in difficulty and vary in situation or context to promote improvement as opposed to automation.

➔ Citation

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➔ Keywords

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