

## Learning by Explaining: Mini-Presentation Generative Learning Strategy

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### Introduction

Since multiple stakeholders are involved in the design decision (Nelson & Statesman, 2012), design students are required to communicate their ideas to different types of audiences (Gaffney, 2011). To effectively improve student communication skills, it is crucial for design educators to enhance students' self-efficacy (Gaffney, 2014). Raja (2017) suggests that rigorous practice and rehearsal can reduce students' anxiety about their communication skills.

Design educators also need to teach design theories and principles to help students perform effective design. Without such knowledge, students would not be able to convince their future clients or team members about their design decisions.

Instructional activities that enhance in-depth cognitive processes are called generative learning strategies (Fiorella & Mayer, 2013). The act of tutoring a peer, for example, is a type of generative learning strategy. Learning-by-teaching has been proven to be effective by a number of studies (see Duran, 2017, for a review of these studies). The previous studies show that students who teach the content performed well on knowledge tests even after a certain period of time.

A learning-by-teaching strategy could be beneficial for design education since it helps students to learn design principles and theories as well as to rigorously practice and rehearse their communication skills, as suggested by Raja (2017).

### Mini-Presentation Generative Learning Strategy

With this context, I constructed a new generative learning strategy, the mini-presentation. The mini-presentation is a short presentation, ranging from 45 sec to 2 min, that requires students to critique existing work or justify their own projects using the theories covered in the lectures.

I constructed the mini-presentation strategy to ensure that every student has the opportunity to practice speaking about design. A problem with a traditional class discussion is that only a few students actively engage in it.

The mini-presentation requires students to refer to concepts taught in the lectures, as opposed to randomly discussing their opinions. Students need to justify their analysis and decisions about design with the aid of design theories and principles.

Without paying attention to the class lectures and reviewing the class content to prepare for the mini-presentations, students would struggle publicly to explain their thoughts. The pressure of the mini-presentation encourages students who tended not to prepare for the class sessions to begin to study.

Furthermore, the mini-presentation incorporates the benefits of learning-by-teaching since students need to:

- **Review** the design theories and principles that are taught in the class.
- **Prepare** examples of effective or ineffective use of the design theories and principle from existing work or their own projects.
- **Decide** ways to discuss how the examples effectively or ineffectively represent the design theories and principles.
- **Provide** the presentation to the class.

Through the preparation for the mini-presentations and giving the mini-presentations, students process the lecture content deeply for long-term retention.

An important distinction between a typical learning-by-teaching strategy and the mini-presentation is that the mini-presentation requires students to talk about how concepts are applied to specific design work as opposed to merely talking about the definitions of concepts. Roscoe (2014) reports that students tend to simply summarize information when they are asked to teach, and thus, the learning-by-teaching instruction only leads to the acquisition of factual knowledge as opposed to deeper, applied understanding.

Meanwhile, the mini-presentation requires students to find examples of an existing design that successfully or unsuccessfully applies design concepts, and explain why they believe that the concepts are present or absent in the design. When discussing their own design projects, students explain why and how they applied the concepts in their design. Such tasks enhance the deeper cognitive process rather than simply summarizing the lecture content.

## **Result of Intervention**

Many students commented that none of the other courses had this structure, but having a mini-presentation after each lecture was beneficial for them to understand and remember the concepts as well as to learn how to use the concepts. Some students particularly mentioned that the mini-presentations were less stressful but more beneficial than traditional exams and quizzes, where they would learn concepts just for the sake of remembering. Meanwhile, for the mini-presentations, they had felt that they were doing something that could actually enhance their career opportunities.

Many of them recognized the importance of communication skills for designers and commented that they genuinely enjoyed getting the opportunity to practice public speaking. Although some of them honestly stated that they had public speaking anxiety and the mini-presentation sessions were intimidating, as they repeated the mini-presentation sessions, they felt more comfortable about being in front of the class and speaking.

## **Conclusion**

The mini-presentation strategy enhanced students' perceived communication skills and learning of the lecture content. Besides, the mini-presentation was beneficial for me to reflect on my teaching. From the mini-presentations, I understood not only what concepts confused my students but also how they were confused. Thus, the mini-presentation strategy can benefit both students and teachers.

## **References**

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