

Which comes first, the chicken or the egg? Evaluating student preference for timing and type of engagement in a lecture-based classroom

Introduction

Traditional lectures are typically teacher-centered, with students passively listening and limited opportunities for interaction (Alaagib et al., 2019). This approach is often paired with triadic dialogue, also known as the IRE (Initiation-Response-Evaluation) or IRF (Initiation-Response-Feedback) sequence—Initiation (teacher asks a closed question), Response (student answers), and Evaluation/Feedback (teacher responds) (Lemke, 1990; Mehan, 1979; Sinclair & Coulthard, 1975). While this method can promote engagement and formative assessment after lectures (Nassaji & Wells, 2000), it often focuses narrowly on taught content, limiting deeper thinking and becoming predictable when overused. Research shows that prior knowledge plays a crucial role in learning and that students may struggle when new information contradicts what they already know (Kowalski & Taylor, 2009; Yeh et al., 2012; van Riesen et al., 2019). Therefore, assessing students' understanding before lectures can help tailor content to build on or correct their existing knowledge. In this study, we reversed the typical IRE sequence by prompting students with a question and peer discussion before the lecture. Unlike flipped classrooms, this approach requires no prior preparation, aiming to foster student ownership of learning and enhance classroom engagement and enjoyment.

Procedure & Assessment

This study (STUDY00011574) was approved by Michigan State University's Institutional Review Board. Undergraduate students in an Animal Biology and Management course participated in a lecture on cat reproduction delivered in two formats: traditional (after content delivery) and reversed (prior to content delivery). In the first half of class, new material was presented via PowerPoint, with iClicker questions—such as “Why might it be challenging to breed cats in December?”—used to assess understanding. In the second half, students were first asked, “What do you think are some impacts of rapid reproduction of free-roaming cats on the community?”, discussed in small groups, and then received the corresponding traditional presentation of the material through PowerPoint slides.

Students who attended the lecture were invited to complete a post-survey evaluating their preference and perception of the lecture styles. The survey included two questions: (1) Which presentation style did you prefer overall? and (2) Why did you prefer that presentation style? Please provide one or more reasons for your choice. Of the 127 students enrolled, 74 completed

the survey (58% response rate), though exact attendance that day is unknown. Most students preferred the traditional format (56%), followed by the reversed format (20%), while 24% had no preference (see Table 1).

Table 1. Number of students selected their preferred presentation styles (n=74)

Presentation styles	Number of students	% Percentage
Traditional: I prefer the first half of the class where material was presented first, and then I was asked questions	41	56%
Reversed: I prefer the second half of the class where I had a question to discuss and then I was provided with the material	15	20%
Mutually equivalent: I feel they are both equivalent methods of teaching	18	24%

Discussion

Most students who preferred traditional presentation styles mentioned that presenting the material first, followed by questions, helps them apply what they've previously learned. This approach allows them to assess their own understanding of the material and aided in memorization. For example, one student stated, "...I think I have an easier time using what I learned in the first half of class due to having to apply it immediately after. I think it helps make the information stick in my brain better." Likewise, traditional presentations were described as easier to follow, more familiar to the students, and helpful in enhancing confidence when discussing the material. As students explained: "It's easier when you understand some of the material first before sparking questions about the material", and "I prefer that [traditional order] teaching style because that's what I'm used to. I feel like most professors/teachers teach like that and it's easier for me."

However, students who preferred reversed presentations mentioned that this format encouraged more critical thinking, provided opportunities to engage with the class, and was more memorable. They commented: "It gives you time to think and discuss to see if you know the material. If not, then you can get educated on the correct answer." In further support, another student stated, "I preferred the second method because it allowed me to think about the question and pull from my background knowledge to see if I could formulate an answer. If my thinking was incorrect, I was then able to compare my thought process more accurately." While the reversed presentation was described as enjoyable, three students stated that they were unable to follow the material. They concluded, "The second half tended to mix me up and confuse me, I end up remembering what I thought first not what was given second," and "I do not effectively understand the material in reverse learning."

Yet, many students mentioned that both presentation styles are effective for learning depending on the material. One student explained, “Traditional is nice because you learn the material and then the questions asked are like a review. The reversed is good because it makes you think before you get the information and is engaging”, and “I like traditional presentations if there is one answer or a certain correct answer to a question. I prefer reversed if there are many ways to solve a problem with multiple interpretations of answers”. A few students also mentioned that using both presentation styles in the classroom could improve their learning. One stated: “I like being asked to think about stuff beforehand, but I feel like asking questions afterwards helps solidify and remind people of what they learned. Maybe a combo of both would be best, where you ask people what they already know, teach it, and then quiz them afterwards to make sure it sticks.”

Conclusion

While most students preferred the traditional presentation with questions after content delivery, several responded positively to the reversed order. Traditional presentations were valued for aiding recall and comprehension immediately after learning, while the reversed approach was seen as more engaging, memorable, and discussion driven. Based on student feedback, the pros of traditional presentations align with introducing new material, whereas the pros of the reversed method suit discussion-based topics or those prone to misunderstanding. Using both styles strategically, depending on the learning objectives, may enhance student learning. A potential drawback of the reversed method is that some students may feel pressure to respond or fear sharing incorrect ideas. This could be mitigated by using small-group discussions to build confidence before whole-class sharing.

Keywords:

lecture styles, Initiation-Response-Feedback sequence, engagement, student learning

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