Student preferences comparing three teaching methods

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Course: FW/MC 481 – Global Issues in Fisheries and Wildlife
Date: Spring 2012, Mondays and Wednesdays
Location: Case Hall, Room 335B

Introduction
Passive learning methods are any teaching techniques where students passively listen to a lecture to learn information. Active learning methods are any teaching techniques other than where students passively listen to a lecture. Educational research shows that incorporating experiential learning activities improves assessment, higher order thinking, and long-term information retention (Van Eynde and Spencer 1988; Miller and Groccia 1997; Hamer 2000; McCarthy and Anderson 2000; Blundson, Reed et al. 2003; McConnell, Steer et al. 2003; Pugsley and Clayron 2003; Ives and Obenchain 2006; Kuh, Kinzie et al. 2006). This study sought to examine if students prefer learning via active learning or passive learning techniques.

Objective
Determine student preference comparing three teaching methods:
- **Traditional Lecture**: Students passively listen to an instructor present information.
- **Jig-Saw**: Students discuss primary literature in small groups, switch groups to describe discussion to other folks, come back together as a large group to discuss concepts.
- **Problem-based learning**: Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of a problem.

Methods
This study was conducted in the 2012 spring semester of FW/MC 481, Global Issues in Fisheries and Wildlife. This Michigan State University course was open to upper-level undergraduate students and graduate students and ten students enrolled. I presented course material on the same topic, fisheries and climate change, using three different teaching methods, traditional lecture, jig-saw, and problem-based learning. After each class meeting, students completed a voluntary, anonymous survey to ascertain student satisfaction and information retention (IRB: i040801).

For the traditional lecture, I presented a powerpoint presentation on scientific evidence in support of anthropogenic climate change. For the jig-saw lecture, I assigned students one of three primary literature readings. For the first part of class, they discussed the article with their group, for the next part of class, they switched groups and discussed the article with students who read a different article. Then, for the last part of class, we had a full group discussion. For the problem-based learning lecture, we walked through one case-study as a full group. Then, I broke the students up into two groups based on two additional case-studies. We concluded the class by discussing comonalities across the case-studies.
Results

Student preferences among the three teaching methods were mixed. Figure 1 shows a likert scale comparison (1 to 6, dislike to like) of the three teaching methods for each student.

![Student Preference of Teaching Methods](image)

**Figure 1.** Likert scale comparison (1 = dislike; 6 = enjoy) of three teaching methods (traditional lecture, problem-based learning, and jig-saw) for the ten students taking FW/MC 481, Global Issues in Fisheries and Wildlife (Spring 2012).

Overall, jig-saw was the most preferred teaching method (average likert score = 4.75) with problem-based learning second preferred (average likert score = 4.56) and traditional lecture least preferred (average likert score = 4.3). Averages can be deceiving though, because some students did prefer traditional lecture to the active learning approaches. Below are comments from students explaining their selection rationale:

**Traditional lecture**
- “I liked the traditional lecture mainly for its questions and answer portions.”
- “The lecture style provided the most information, but it may not have stuck as well as the other methods.”

**Problem-based learning**
- “I learn best from problem-based learning because working in groups helps me to determine issues and how those issues impact humans.”
- “I liked problem-based learning the best for the good discussion it created.”
- “Problem-based learning is the most practical because it is similar to how one solves problems in the real world.”
- “Problem-based learning gives the student a chance to think and interact with colleagues to generate new ideas.”

**Jig-saw**
- “I learn best from jig-saw because everyone is encouraged to participate so there is a lot of input and lots of interaction.”
• “I learn best from jig-saw because of the expert source and hashing out ideas with peers.”
• Jig-saw is the best method because it promoted the participation of almost everyone in class. Also, it promoted analysis and knowledge application in real cases in a flexible way for each student.”
• “Jig-saw generated a lot of information while still being participatory.”

Conclusions
Though no statistical comparisons could be drawn with such a small sample size, this small-scale study was very useful for me as a new instructor. The students gave great feedback on my teaching methods which will help me improve my teaching abilities. This project was useful in comparing teaching methods and will be helpful for me in designing course material. I have learned, thanks in large part due to the feedback from the students, that these teaching methods all have strengths and weakness, making them appropriate for some material and not so well-suited for other material.

Next steps
This project served as the foundation for a more extensive educational research project comparing learning environment between students on campus to those taking the same course in an experiential study abroad program. In that project, I compare cognition level achieved in parallel assessments between lecture-based students and experiential study-abroad students using Bloom’s Taxonomy (1956). Preliminary results indicate that experiential study abroad learning environments can promote higher order thinking.

Literature Cited