Implementation Plan and Teaching Notes

Context for Use
Instructor: Raquel Cola
Department and Institution: Forest Sciences Department / Escola Superior de Agricultura “Luiz de Queiroz” – Universidade de São Paulo
Audience Level: Undergraduate
Undergraduates: Majors
Instructional Setting: Class
Number of Students: 20
Date of implementation: April 15th

OCELOTS Module Title: Functional trait-based restoration. Can hybrid restoration enhance invasion resistance and ecosystem services?

Link to Module on Gala: https://www.learngala.com/cases/functional-trait-based-restoration

Learning Goals of Module:

- Understand the conceptual basis for using functional trait theory in restoration
- Demonstrate the ability to interpret scientific figures
- Compare the outcomes of the four different teams, evaluate their ecological and economic tradeoffs, and make recommendations
- Explain the concept of hybrid ecosystems and the controversies related to their societal acceptance
- Evaluate whether functional trait-based restoration could be a viable strategy in other ecosystem types and other parts of the world
- Understand how functional traits can be a good guide for the species’ adaptation to climate change

Pedagogical techniques used: Inverted classroom and problem-based learning.

Adaptations made or parts used if the entire module was not used

- First, I intend to translate the entire module and content into Portuguese to implement it in the Brazilian classroom.
- The next step would be to induce the students to think about how functional traits can be developed in different restoration treatments using the problem-based learning technique.
- In the Key Concepts topic, it would be interesting to add the climate change context and relate that with the functional traits in tropical forests, e.g., how functional traits can be a good guide to know which group of species will be more adaptable to climate change.
- I would add the print version of the suggested papers in the ‘Before class’ topic for the students to write in and highlight the figures and graphs we want them to interpret.
- At the end of the class, create a hook for reflecting on the Brazilian role, with its tropical forests, in the context of adapting to climate change.

Supplemental materials created

- Word attachment title: Functional traits in different Brazilian tropical phytophysiognomies – papers carried out in Atlantic Forest, Brazilian savannas (Caatinga and Cerrado), and Amazon Forests as a case of study regarding functional traits. That’s important for the students to associate the class’s subject with their local ecosystems.

Assessments

- Questions to Ponder: Worksheet 1 and 2 presented in the module – 10 minutes each.
- Ask the students the “muddiest point” or most confusing part of a lesson or topic – 10 minutes.
Changes Made (If any)
• I needed to summarize the module, taking the main points and analogies, trying to bring them mainly to the local focus of the class (Brazilian tropical forests).
• Why were the changes needed? This change was necessary because I only had one 4 hour class available to develop.

Teaching Notes
1. Overall, how did your implementation go?
   a) What went well and why?
      Having quality content, wherein creators prioritize facilitation access to knowledge through analogies, was crucial in helping students truly grasp the concepts and processes involved. Therefore, students’ understanding of the proposed concepts was satisfactory.
   b) What went wrong and why?
      Due to the content’s lengthy nature and my limited available time, I had to identify and prioritize the main points for the class, summarizing the module’s content. This might have led to a lack of smooth transition between concepts or insufficient depth in certain points.

2. What was the prep like?
   a) How much time went into prep?
      16 hours (8 for quick content translation and 8 for content adapting to the class).
   b) Did you have to do any prep ahead of implementation?
      Yes, in order to summarize the content and address the main points.

3. What feedback (positive or negative), if any, did you get from your students about this experience?
   Analyzing the answers in Worksheets 1 and 2, it was possible to observe that the students could distinguish the concepts and functions of exotic and invasive species after class. Regarding the muddiest point, the most expressive aspect was the amount of content in one single class. The students agreed that a course with all the best topics broken down would be ideal.

4. What do you wish you’d known before you ran the activity?
   I would like to know how to summarize the content without losing the flow and fit between the subtopics.

5. Do you plan on continuing to use this module in your future courses?
   Yes.

6. What would you do differently if you were to implement this module again?
   I want it to be a course. I do not want to do only one class.

7. How does this activity fit in your overall course curriculum?
   I don’t teach any courses officially yet, but I believe that understanding the basic concepts and how functional traits influence the restoration of tropical ecosystems is essential for anyone who studies tropical ecology. Furthermore, implementing this module with the 4DEE and DEIJ strategies in mind is essential to achieving the proposed objectives.

8. In what ways, if any, did you modify your teaching practice with this activity?
   I needed to learn how to adapt content to a limited class time. I also realized that discussing pedagogical strategies with other professionals was crucial for improving my practice.

9. Is there anything else you would like to make note of?
   I was happy to participate in this group, mainly because it was focused on a specific topic (Tropical Ecology/Biology/System). Discussing pedagogical strategies applied to the main subject helps a lot in the construction of content and practices. The discussion and construction time (4 months, with meetings every two weeks) was sufficient to address all important topics.