Implementation Plan and Teaching Notes

**Context for Use**

**Instructor:** Akbar Reza

**Department/Institution:** Tropical Biology, Universitas Gadja Mada, Indonesia
**Audience Level:** Undergraduate

**Undergraduates:** Biology

**Instructional Setting:** Lecture

**Number of Students:** 15

**Dates of implementation:** March-April 2023 (~ 1.5 Month including Preparation/7 meetings)

**OCELOTS Module Title**: ‘Restoring tropical forests.’
**Link to Module on Gala**: <https://www.learngala.com/cases/restoring-tropical-forests>

**Link to Bahasa Indonesia translation**: <https://www.learngala.com/cases/7610de06-0310-4f1c-ad69-14bfc0c8204f>

**Learning Goals of Module:**

* Describe the ecological, social, and economic considerations of forest restoration
* Understand why we need to restore our forest (ecological services, social & economic benefits)
* Understand, apply knowledge, and evaluate:
	+ Why we use a different approach/method (natural forest regeneration, plantation-style tree planting, and applied nucleation)
	+ Why active restoration is essential
	+ Where applied nucleation is a suitable strategy

**Pedagogical techniques used**:

Flipped Classroom (Asynchronous module reading) followed by Class Discussion using a mind map, focus group discussion, and presentation (Synchronous)

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

No adaptations

**Supplemental materials created**

I complemented the module with supplemental materials to provide more context on forest restoration in Indonesia. Additional materials include:

1. *Standar restorasi hutan tropika basah* (tropical wet forest restoration standard) – the Ministry of Environment and Forestry of Indonesia [LINK](https://bsilhk.menlhk.go.id/standarlhk/wp-content/uploads/2022/10/2.-STANDAR-RESTORASI-HUTAN-TROPIKA-BASAH.pdf)

Objectives:

* Students understand the restoration technique developed by the government.
* Students understand the Socio-Economy-Culture mapping.
1. Minstry of Environment and Forestry Regulation on Social Forestry [LINK](https://peraturan.bpk.go.id/Home/Details/163479/permen-lhk-no-83-tahun-2016)

Objectives: Students understand the various type of social forestry (e.g. Village forests, community plantation forest, customary forests) in Indonesia and its pivotal role in protecting and restoring the degraded forest

1. Agroforestry approach to save flagship species and protect adjacent forest area

 Kopi Owa jawa - Petungkriyono Forest, Central Java, Indonesia [LINK 1](https://www.oneearth.org/from-loggers-to-forest-protectors-agroforestry-changed-this-community-in-indonesia/), [LINK 2](https://swaraowa.org/)

Objectives: Students understand the role of a community-based agroforestry approach to conserving the forest and people livelihood

**Assessments**

* **Assessment 1: Flipped Learning - Submit an answer (Individual Assignment)**

Students asynchronously read the module (April 5-11th, 2023), and before the class discussion, they submitted an answer for the module learning objectives (April 11th, 2023). The learning objectives were tailored according to the gala module, such as the ecological and social barriers to tropical forest recovery, the ecological and social outcomes of applied nucleation with other forest restoration strategies, why restoration strategies have to be tailored to local ecological and social conditions, the importance of replicating restoration studies or projects at multiple sites. The answers were evaluated using the **grading rubric on** April 18th, 2023.

* **Assessment 2: Mind Map (Class Assignment) -** April 19th, 2023

Mind Map Challenge – Students created a mind map regarding the importance of ecological (including methods diversification), social, and economic consideration on forest restoration. The Mind Map was evaluated using Collaboration Rubric.

* **Assessment 3: Group Assignment -** April 19th, 2023

Focus Group Discussion (4-5 students in each group) to critically identify, evaluate, and justify which degraded forest areas in Indonesia are suitable for applied nucleation forest strategy and which are not. The students identified specific active restoration methods/techniques that have already been applied or are planned to be applied in Indonesia.

* **Assessment 4: Group Presentation -** April 19th, 2023

Each group shared its discussion results, and the class concluded the activities based on the learning objectives. Students were also required to give feedback for activities or module improvements. The Assessment was evaluated using the grading rubric.

**Changes Made (If any)**

I change the sequence of implementation and assessment.

**IMPLEMENTATION (4 Meetings)**

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| --- | --- | --- | --- | --- | --- |
| **No** | **Activities** | **Pedagogy** | **Time (Approx)** | **Objectives** | **Assessment** |
| 1 | **Read the module and supplementary materials.** Students asynchronously read the module and supplementary materials for 1 week and answer the quiz. The quiz was tailored to the learning objectives of module | Flipped Learning  | 1 wk | Students understand the learning objectives of the module and how it is contextually relevant to Indonesia  | Assessment 1 – Quiz (Individual) |
| 2 | **Class Discussion** Discuss the module and supplementary materials. | Class Discussion | 2 hrs | * Evaluated the understanding of the student.
* Discussed the current restoration methods that have already been applied or are planned to be applied in Indonesia, including its advantages and disadvantages.
* Discussed socio-economic-cultural consideration in forest restoration in Indonesia.
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| 3 | **Group Discussion** Class divided into 4 groups that critically discussed regarding: 1. the importance of ecological aspects; 2. local perspectives; 3. Social forestry; and 4. Community-based program for forest protection and restoration in Indonesia | Group Discussion | 2 hrs | Critically evaluated and found consensus regarding how to use our understanding of ecological concepts, various restoration methods, and socio-economic-cultural considerations to ensure the sustainability of the forest and the longevity of forest restoration program in Indonesia  | Assessment 2 - Collaboration Rubric (Group) |
| 4 | **Mind Map** Create a mind map as the output of the class and group discussion.  | Mind Map | 1 wk | Critical synthesis of the ideas between ecology, economy, social, cultural aspects on forest restoration in Indonesia | Assessment 3 – Mind Map Rubric (Class) + Peer Assessment |
| 5 | **Exam (Mid Exam)** |  |  | Evaluating the ability to critically connecting the module objectives and its relevancy to Indonesia | Assessment 4 - Exam (Mid Exam) |

**Teaching Notes**

1. Overall, how did your implementation go?
	1. What went well and why? *I was really satisfied with the engagement of the student after experimenting with several pedagogical approach (e.g mind map, roundtable, and role play, flipped learning).*

* 1. What went wrong and why? *The results of the assessment 1 – quiz did not really satisfy me and after we discussed it in the class, the problem was that the quiz deadline coincided with another course assignment deadline. Next time, I will consider the other course deadline to ensure that they can focus on reading the material.*
1. What was the prep like?
	1. How much time went into prep? *1 month (including intro for ecological concept and several pedagogical exercise before implementing the plan)*
	2. Did you have to do any prep ahead of implementation? *Yes, at least to help students understand the objective of the module in general and the set of skills that I expected students to master after finishing the implementation.*

**PRE-IMPLEMENTATION OR PREPARATION (4 Meetings)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Activities** | **Pedagogy** | **Time Spent** | **Objectives** |
| 1 | **Introduction** to ecological concept related to the module (e.g. uncertainties, limiting factors, niche, species interaction, dispersal, regeneration, etc)  | Lecture and discussion | ~ 10 hrs | To give a basic understanding of ecological concepts and to help answer key ecological questions in the module |
| 2 | **Mind Map Exercise** & **Presentation** - Every group was required to choose 1 species using a flash card and try to visualize the idea of “the interactions that determine the distribution and abundance” and “how the human-dimension is important to be considered in ecological studies” using a mind map and class presentation (~10 min) | Group activities | ~ 2 hrs | * Using mind map to visually understand the relationship between ideas and argument.
* Familiarize with system thinking.
* Present the idea in the class to get feedback and questions
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| 3 | **Role play & Roundtable** * One mind map from previous activity will be selected for a study based on peer assessment.
* Every group of students assign to different roles (Researcher, Policy Maker, Economist, Anthropologist, Academia, Tech Investor, Local Ethnologist/Cultural practitioner) using a wheel spinner/roulette wheel to introduce simple gamification
* Find the common interest between role and construct the idea to ensure that the species and ecosystem are not only ecological sustainable, but also socioeconomically responsible
 | Group activitiesPeer Assessment | ~ 2 hrs | * Familiarize with role play & roundtable.
* Familiarize with systems and transdiciplinary thinking
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1. What feedback (positive or negative), if any, did you get from your students about this experience? *The majority said that the evidence-based study and the various pedagogy approaches was a fun way to understand the theoretical concepts. But for some of them, these activities were too intense as it constantly required them to think and communicate with other people*.
2. What do you wish you’d known before you ran the activity?

*I wish I knew how other people have implemented the module, including the adaptation, what pedagogy has been used, and supplementary materials used by other colleagues.*

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

 *Yes!*

1. What would you do differently if you were to implement this module again?

 *I will make a more rigid schedule of preparation and implementation.*

1. How does this activity fit in your overall course curriculum? *This activity fit incredibly to course curriculum because the module complements to the class theory. Moreover, instead of reading the journal, the active learning nature in Gala made the students more enjoy the experience and engage in evidence-based learning. Furthermore, the pedagogy approach also increased the student engagement during the class*
2. In what ways, if any, did you modify your teaching practice with this activity?

 *More engagement instead of classical one-way lecture and enrich the class with*

 *evidence-based situations that deal with uncertainty and complexity.*