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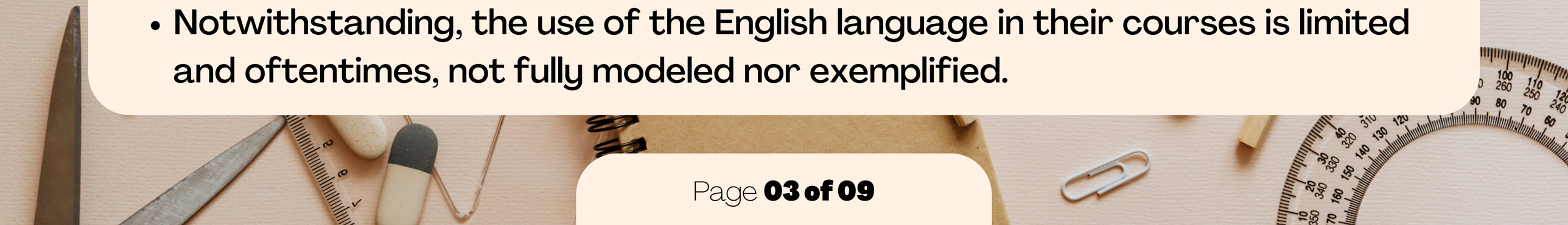
Incorporating the DLK Model with Critical Pedagogy in an ESL Science Communication Course for STEM Students

Overview

- Introduction
- Motivation
- Literary Framework
- Theoretical Foundation
- Implementation
- Final thoughts

Introduction

- The University of Puerto Rico, Mayagüez Campus (UPRM) is the highest ranking engineering school in the island and part of top 10% engineering schools in the United States (US News and World Report).
- Engineering Professors in UPRM are primordially hired based on criteria that covers their mastery of their respective disciplines, English proficiency, and research experiences.
- Notwithstanding, the use of the English language in their courses is limited and oftentimes, not fully modeled nor exemplified.



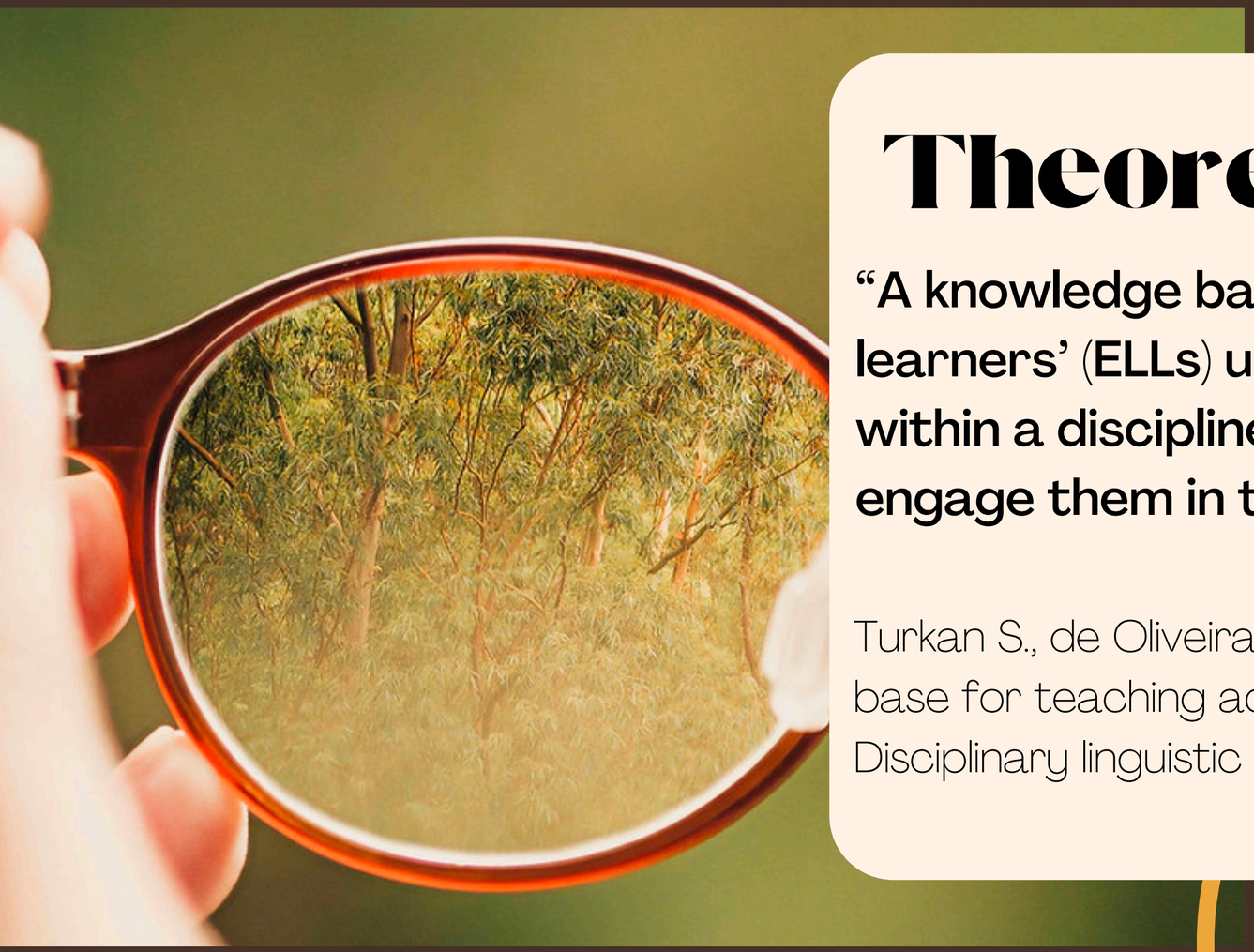
Motivation

Students

Undergraduate students in UPRM's STEM programs may not be sufficiently exposed to the English language in their disciplines.

Professors

The way in which STEM professors in UPRM teach their distinct disciplines in the English language, is unknown.



Theoretical Framework

“A knowledge base is needed to facilitate English language learners’ (ELLs) understanding of oral and written discourse within a discipline and their accurate use of language to engage them in the disciplinary discourse”

Turkan S., de Oliveira L., Lee O., Phelps G. (2014). Proposing a knowledge base for teaching academic content to English language learners: Disciplinary linguistic knowledge. *Teachers College Record*, 116(4).

The DLK Model

01 **Linguistic Features**

Unpacking the language demands of a discipline to make the content accessible to ELLs.

02 **Conveying Meaning**

Linguistic choices are made in each discipline at word, sentence, and discourse level.

03 **Modeling the Discourse**

As educators teach ELLs how to build connections to read, write, listen, speak, and think in the language of the discipline, they must also explicitly show how this is done.

Implementation

What could this look like in a Science Communication course, offered by UPRM's English Department?

DLK Model

Instructor's familiarity with distinct disciplines exposes students to linguistic features that characterize their discipline's discourse.

Turkan, et al. (2014)

ESP

English for Specific Purposes (ESP) prepares language learners to master communication skills in their fields, via group interdisciplinary projects.

Cheremissina et al. (2001)

Critical Pedagogy

Constant dialogue between instructor and students, in which both parts actively learn from each other. Students are inclined to surpass linguistic limits to produce a substantive project.

Herrera-Molina & Portilla-Quintero (2021)

Furthering the Conversation

Conclusions

- Although most STEM curriculums in UPRM are already tailored to further and improve students' problem-solving skills, the way in which students are encouraged to provide long-lasting solutions to relevant issues in the classroom, could be better refined via the lens of a more critical pedagogy.
- An exhaustive study on the UPRM STEM community is required to know the potential impact the DLK model could have in Engineering classrooms and how it can be implemented effectively.

Thank You!

I don't mind answering your questions and would appreciate your feedback.