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Video-Based E-Module for Mathematics in Nature and Students' Learning Experiences in a Flipped Classroom

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Abstract

Purpose - This study aimed to develop video-based e-module for Mathematics in Nature lessons and documented students' learning experiences in using the e-modules in a flipped classroom model.

Method - The participants of this study were 113 first year college students and 10 randomly selected students for an in-depth interview. The research instruments were document analysis guide and interview guide. Qualitative data analysis techniques employed were document analysis and thematic analysis.

Findings - The study revealed that there were lessons in the subject Mathematics in the Modern World that were relevant to the topic Mathematics in Nature. The developed video-based e-modules for the lessons on Mathematics in Nature have the following parts: title, learning objectives, overview, discussion, references, evaluation activity and answer key. Moreover, it has two distinct features namely the checkpoint and key to correction. Furthermore, the students, based on their learning experiences with the video-based e-modules, found it to be unique and interesting, has immediate feedback with rich examples, flexible and efficient, effective and easy to understand in learning the concepts of mathematics in nature.

Significance - Students appreciate the concepts of mathematics in nature when hybridized with videos as revealed by their learning experiences with the e-modules implemented in a flipped classroom set up. It stimulates their interest and makes learning effective, efficient, and flexible. Thus, the developed video-based e-module indeed served its purpose as a unique and student-friendly instructional material integrating technology which would facilitate 21st century students' learning at home through videos and maximise classroom time for more productive activities. This would also enrich their understanding of the concepts of Mathematics in Nature as reinforced by the developed video-based e-module with the use of technology.

Key words: Video-Based E-module, Flipped classroom, Students' Learning Experiences, Mathematics in Nature