

# **Secondary-Tertiary Transition: Students' Approaches towards Learning University-level Mathematics with the Support of Online Learning, Lecture Capture and Collaborative Classrooms**

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## **ABSTRACT**

**Purpose** - This study examines students' approaches towards learning university-level mathematics and how a technology-enhanced environment is received by the students transitioning from secondary to tertiary level mathematics.

**Method** - The study was conducted in a private university in Malaysia, which provides an interactive virtual learning environment through lecture capture and Moodle e-learning, as well as mathematics tutorials in collaborative classrooms. Two sessions of focus group discussions were conducted with selected first-semester students from the Foundation in Engineering studies who were enrolled in the compulsory mathematics module. This study focused on students' narratives to gain an in-depth understanding of their experiences and the challenges they faced during the transition. The audio-recorded sessions were transcribed verbatim. Basic thematic analysis was employed to identify students' approaches towards learning mathematics in a technology-rich university environment.

**Findings** - The responses from the discussions were clustered into 4 categories: (i) lecture style predominantly affects learning, (ii) students explore self-directed learning, (iii) collaborative learning among students are not apparent, and (iv) students' perception of mathematics remain unchanged. The factors that influence students' learning approaches were examined. Students' learning background and their dispositional knowledge have been manifested in their interests for online learning.

**Significance** - The findings showed that the current generation of students are independently seeking online resources and enacting self-directed learning in mathematics education. The three stages in the "rite of passage" – a theoretical model – are noticeable in the students' learning approaches during their transition to university-level mathematics. As universities are shifting towards blended learning, this study emphasises the need for lecturers to improve on the best classroom pedagogies to ease students' transition to tertiary level mathematics. The current way of learning and teaching mathematics in universities during secondary-tertiary transition also needs repackaging, besides promoting personalisation and collaboration in learning.

**Keywords:** Collaborative, Lecture, Mathematics, Online learning, Secondary-tertiary transition, University