

## Blended Learning in a Mathematics Classroom: A Focus in Khan Academy

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**Abstract :** This study explores the effects of instructional design using blended learning in the learning of radian measures among Engineering students. Blended learning is an education programme that combines online digital media with traditional classroom methods. It requires the physical presence of both lecturer and student in a mathematics computer laboratory. Blended learning provides element of class control over time, place, path or pace. The focus was on the use of Khan Academy to supplement traditional classroom interactions. Khan Academy is a non-profit educational organisation created by educator Salman Khan with a goal of creating an accessible place for students to learn through watching videos in a computer assisted computer. The researcher who is an also lecturer in mathematics support programme collected data through instructing students to watch Khan Academy videos on radian measures, and by supplying students with traditional classroom activities. Classroom activities entails radian measure activities extracted from the Internet. Students were given an opportunity to engage in class discussions, social interactions and collaborations. These activities necessitated students to write formative assessments tests. The purpose of formative assessments tests was to find out about the students' understanding of radian measures, including errors and misconceptions they displayed in their calculations. Identification of errors and misconceptions serve as pointers of students' weaknesses and strengths in their learning of radian measures. At the end of data collection, semi-structure interviews were administered to a purposefully sampled group to explore their perceptions and feedback regarding the use of blended learning approach in teaching and learning of radian measures. The study employed Algebraic Insight Framework to analyse data collected. Algebraic Insight Framework is a subset of symbol sense which allows a student to correctly enter expressions into a computer assisted systems efficiently. This study offers students opportunities to enter topics and subtopics on radian measures into a computer through the lens of Khan Academy. Khan academy demonstrates procedures followed to reach solutions of mathematical problems. The researcher performed the task of explaining mathematical concepts and facilitated the process of reinvention of rules and formulae in the learning of radian measures. Lastly, activities that reinforce students' understanding of radian were distributed. Results showed that this study enthused the students in their learning of radian measures. Learning through videos prompted the students to ask questions which brought about clarity and sense making to the classroom discussions. Data revealed that sense making through reinvention of rules and formulae assisted the students in enhancing their learning of radian measures. This study recommends the use of Khan Academy in blended learning to be introduced as a socialisation programme to all first year students. This will prepare students that are computer illiterate to become conversant with the use of Khan Academy as a powerful tool in the learning of mathematics. Khan Academy is a key technological tool that is pivotal for the development of students' autonomy in the learning of mathematics and that promotes collaboration with lecturers and peers.

**Keywords :** algebraic insight framework, blended learning, Khan Academy, radian measures

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