ABSTRACT

Technical and Vocational Education and Training (TVET) College engineering students experience many challenges in the deep learning of calculus and the definite integrals in particular. This research identified the types of errors and misconceptions TVET engineering students showed on the definite integral and its applications. The study further explored how Information Communication Technologies (ICT) tools could help diminish these errors and misconceptions. The study is underpinned by constructivism learning theory and hints bridging theories such as Actions-Process-object and System (APOS) theory, Concept image and concept definitions, Kilpatrick `s five strands of mathematical proficiency, Mathematics content knowledge, etc. Data collection was done in four stages which consisted of First-Test Task, interviews, correction session coupled with feedback, class discussions and re-teaching of topic using ICT tools and Follow up-Test Task. The tasks consisted of carefully selected questions aiming at probing and soliciting error types and misconceptions of students in this section of Calculus. An intervention strategy used to re-teach the topic through the use of ICT tools was implemented. A follow-up test task was written. This was done to determine the extent this intervention helped to diminish observed errors and misconceptions. The results of the ICT intervention showed a great improvement as less errors and misconceptions were committed. It is therefore recommend that ICTs be used in the teaching and learning of calculus in TVET Colleges and further research be conducted on the TVET N4 mathematics background knowledge of calculus before learning definite integral.