

**Developing and piloting an interactive physics experiment using the E-learning environment for secondary schools in Tanzania**

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Students in secondary schools in Tanzania have been facing difficulties in conducting laboratory experiments, due to acute shortage of laboratory facilities and poor teaching methodologies. Students perceive science subjects as not attractive, very difficult, boring and irrelevant to understand the world around them. The introduction of computers in schools and internet connectivity has given a room for the development of interactive experiment. Animations and simulations have been used in creation of e-experiment similar to the laboratory physical experiment. An interactive physics experiment namely pendulum experiment was selected to be developed, due to its simplicity in performing the experiment and easy to be done by local apparatus. The experiment was then, piloted in four secondary schools, with 257 students to test if the rest of the experiments can be performed in a similar way. Qualitative approach in data collection was applied where by questionnaires, focus group discussions and interviews were used, and in the development process Software Development Life Cycle was used. The observation showed that students (66%) found the interactive experiment easier to perform, enjoyable than the physical laboratory experiment. The two methods resulted into two different values of  $g$  with  $0.6 \text{ N/m}^2$  for physically experiment and  $0.1 \text{ N/m}^2$  for e-experiment from the expected value ( $9.8 \text{ N/m}^2$ ). These findings suggest that interactive experiments can be used as an alternative to physical experiments.