



Supporting Teachers in Technology Integration in Kenyan Secondary Schools



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Introduction

- Teaching is a complex practice that requires teachers to draw upon their content knowledge, pedagogical approaches and strategies, and knowledge about learners in order to support learning. Integrating technology into the teaching and learning practice of a classroom is a strategy that many teachers are drawing upon.
- When integrated effectively, technology can support student learning and lead to deeper conceptual understanding and procedural fluency (Bransford, Brown, & Cocking, 2000). However, there are factors that serve as barriers to teachers integrating ICT into their classroom practice and some may seem difficult to overcome, especially in developing countries (Ogwu & Ogwu, 2010).
- It is important for teacher educators and other educational policymakers to understand what factors assist in effective ICT integration and what factors may inhibit this integration.

Research Aim and Methods

- In this study, we are using a case study approach to examine how eight secondary mathematics and science teachers moved from no experience in technology use to integrating technology into the teaching and learning practice of their classroom, and to examine what factors assist and what factors inhibit this integration.
- We are analyzing these teachers' classroom practices in light of research literature in this area, while being open to other factors and patterns emerging within the context in which we are investigating.
- We collected data through questionnaires, classroom observations, and debriefing sessions after observations.

Participants

- The research study participants are teachers at two national high schools in Kenya, one boys' school and one girls' school.
- The participants were involved in a HP Catalyst Initiative project and were each given a HP tablet and participated in several professional development workshops on exploring ways to integrate technology into their classroom practice.

Findings

- All eight teachers began as novice users of technology in March 2011 when they were each given a HP tablet to use in their teaching. Several already had e-mail accounts and checked their e-mail messages through their mobile phones.
- By July 2012, all eight teachers had gained considerable comfort with using e-mail, and creating Word and PowerPoint documents.
- We found three different patterns of technology integration, which we describe in three cases.

Case #1

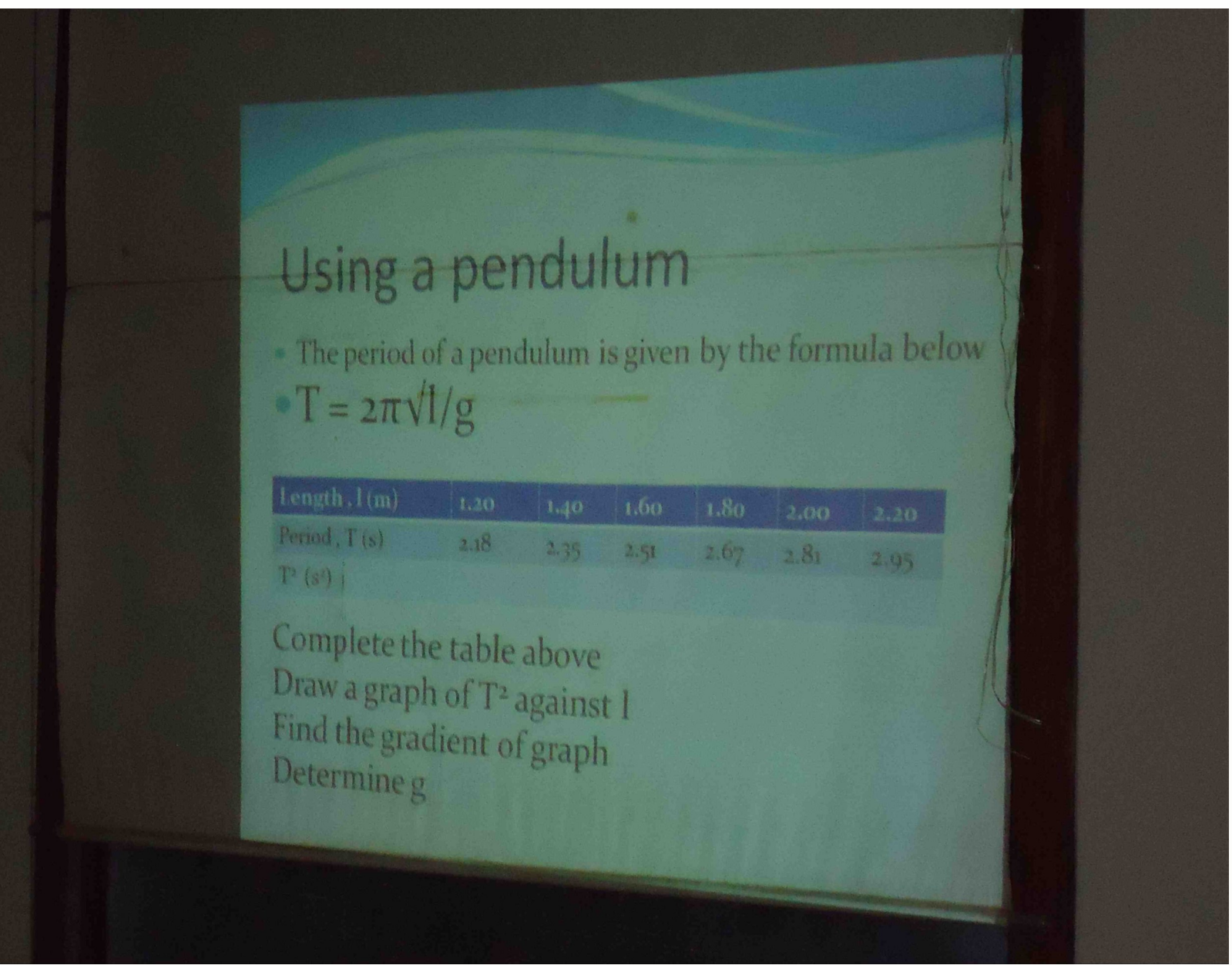
- Teacher A is a male teacher at the boys' school with 17 years experience teaching physics and chemistry. He enthusiastically embraced using technology in his teaching.
- Teacher A used (a) productivity tools, such as Word, Excel and PowerPoint, (b) web resources, (c) e-mail, (d) social media (he created a Facebook page for the physics club), and (e) engaged his students in using the tablet to research concepts on the Internet and present their findings in class.

Case #2

- Teachers B, C, D, and E are female teachers at the girls' school. They have between 23 and 31 years of teaching experience in mathematics, biology, chemistry and physics.
- While a bit apprehensive about using technology initially, these teachers worked closely together, planned together, and became proficient at using e-Learning material and PowerPoint in their teaching.
- These four teachers used online chat capabilities to communicate with each other and also brought other members of the mathematics and science departments. We categorized Teachers B, C, D and E's pattern of technology integration as collaborative.



Teachers planning lessons during a workshop



Physics lesson using PowerPoint



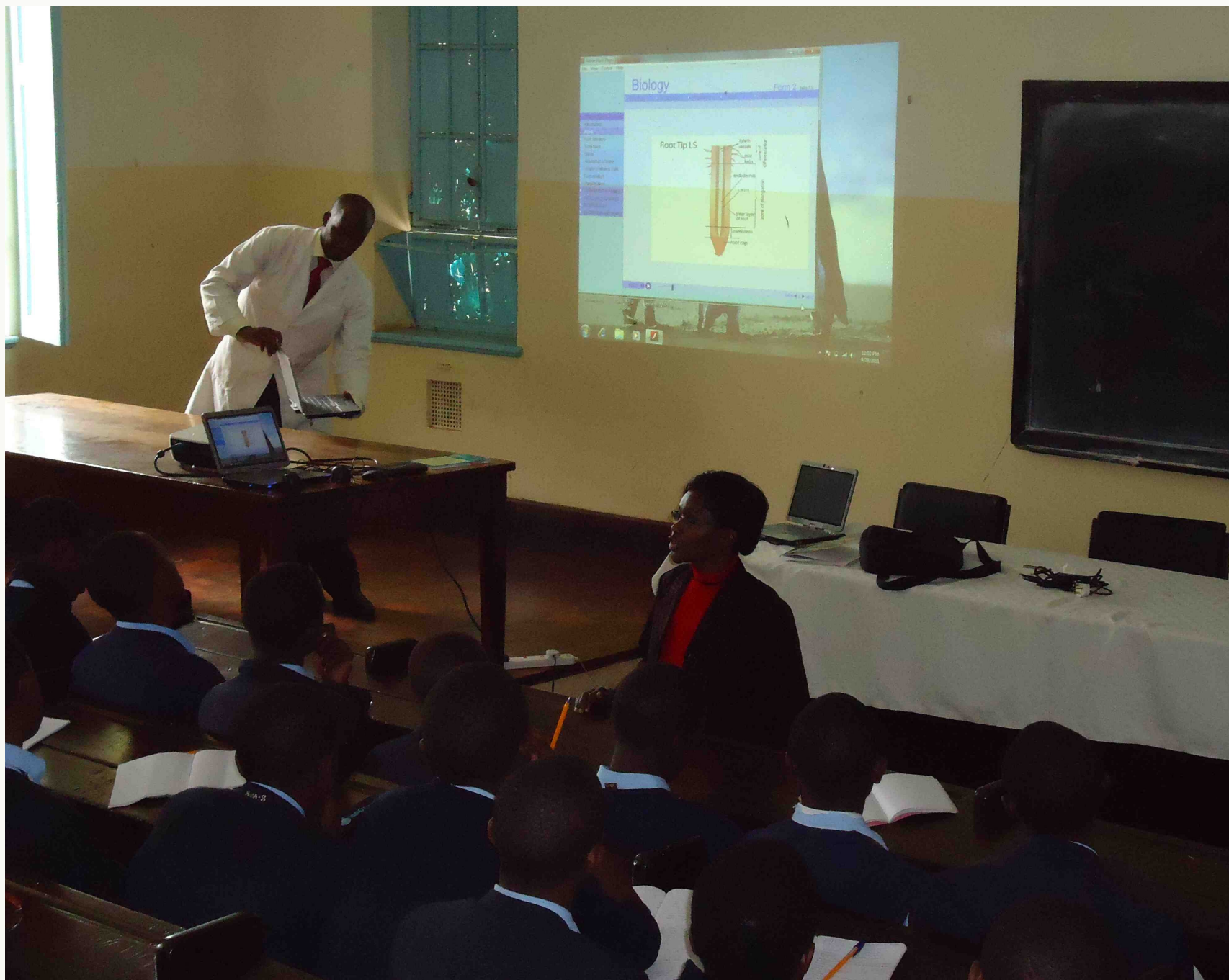
Mathematics teacher using e-Learning materials



Case #3

- Teachers F, G and H are teachers at the boy's school. One is female and two are male. They have between 7 and 32 years of teaching in mathematics, biology, chemistry and physics.
- These teachers are now active in using e-mail, web resources, and social media for their personal use, but they have been slow to use technology in teaching. When they knew we were coming to observe them teach, they created mini-lessons (10 -15 minutes in length) that used either PowerPoint or e-Learning materials; however, they report that they do not integrate technology into their teaching on a regular basis. We categorized Teachers F, G and H's pattern of technology integration as infrequent.

We are continuing to analyze data from these eight teachers and interpret their patterns of technology use and integration.



Biology teacher using e-Learning materials

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