Masai, G. M. (2020). Exploring Teachers' self-efficacy towards the use of ICT in teaching and learning processes in public secondary schools in Kenya

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Abstract

Background/Objectives/Scope:
Successful STEM education begins with change in teaching and learning practices. Teacher professional development (TPD) is considered a transformational process incorporating ideas of teacher learning, transfer of training and improved student outcomes. This study focused on Secondary school Mathematics and Science teachers' self-efficacy towards the use of ICT in teaching and learning processes, after undergoing an Online TPD course offered by the Center for Mathematics Science and Technology Education in Africa (CEMASTEA). The content of the TPD aimed at enhancing teacher's content mastery in their specific teaching subjects and competencies in their use of ICT in teaching and learning.

Methodology/Approach:
The study was anchored on the self-efficacy theory by Albert Bandura (1986). Self-efficacy is a person's judgment about his or her ability to organize and execute courses of action to produce the desired outcome. This study focused on three tenets of the theory: mastery experience, vicarious experiences and verbal persuasion. Both quantitative and qualitative data were obtained from a sample of 1163 teachers. The research questions were: 1) What opportunities were provided to teachers to gain mastery? 2) How did verbal support of the trainers promote the teachers' belief in themselves and their classroom practices? 3) How did interactions with other participants promote the teachers' belief in themselves and their classroom practices? Descriptive statistics were used to calculate frequencies and means. Qualitative data was coded and thematized.

Results/Findings:
The findings indicated that the teachers found the training useful in helping them gain skills that they could transfer in their teaching. The teachers indicated that they had received adequate guidance from trainers, though they required prompt feedback on issues raised. Also the teachers indicated that interactions with other participants had influenced their belief in themselves; for instance participant 1 wrote; 'through engagement with colleagues, there are many ways of identifying unknown salt through various investigative methods.' The study also revealed that teachers needed more interactive sessions to learn from each other through group discussions on Zoom or google meet.

Conclusions/ Implications:
The study revealed that adequate guidance and motivation by trainers, provision of opportunities for peer interactions through group discussions on social media platforms, and prior experience of ICT skills, play a key role in improving teachers' ICT self-efficacy, and builds their confidence and competences towards use of ICT in teaching and learning process. Therefore, the study is critical to various stakeholders in education who are involved in provision of teacher education and TPD programs.

Keywords: Teacher professional development, ICT, teachers' self-efficacy