Identity and agency of engineering educators in Zimbabwe

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Conference Key Areas: *Building Communities and Coordination, Cooperation for Development*
Keywords: *educator's competences, identity, agency, educational transformation*

ABSTRACT

Educational transformations require educators with competences to deliver quality education. This raises the issue about capacity building in staff and in particular in the engineering disciplines where pedagogical practices are heavily reliant on didactic approaches such as traditional lectures and tutorials. The global Covid19 pandemic has forced educators to move away from traditional approaches and although the response was quick it is unclear if many of these changes will remain in future, given that they were not done by design but as a reaction to the unexpected situation. This study considers the training of engineering educators in different engineering disciplines and in a number of higher education institutions in Zimbabwe who were part of a HEPSSA-Royal Academy of Engineering UK project. At this conceptual stage the study explores how effective capacity building activities are in enabling educators to transform their practice to an active student-centred approach both in face-to-face and online modes. It further explores how the training experience might empower educator's sense of agency and change their identity within the boundaries of their institutions and country. The research design is grounded on the theories of agency and, self-efficacy and motivation. It uses an interpretative approach, Qualitative Content Analysis, for the analysis of data collected via interviews with the engineering educators participating in the project. This research design aims to find how engineering educators can be supported through their educational transformation journey and also to inform policy makers at institution and national level in order to enhance sustain development.

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doi:10.5821/conference-9788412322262.1267

1 INTRODUCTION

1.1 Background

The socio-economic development of Zimbabwe requires capable engineers able to face current and future challenges in the country. This makes it essential for institutions delivering on engineering education to consider the best approaches to provide students with opportunities not only to develop their knowledge but also the skills for meeting societal needs. Didactic pedagogies where the students are passive recipients of knowledge [1, 2] are the most common current approaches in compulsory education in sub-Saharan countries [3]. These same practices persist through higher education, and, until recently, were prevalent in engineering education in Zimbabwe, hindering opportunities for students to develop professional skills. Pedagogical approaches that are student-centred and promote active learning support the development of professional skills [4, 5] so needed by graduates to be able to face new and uncertain career situations.

Although Kurasha and Chabaya [6] conclude that curriculum development in higher education should adapt to global trends Tabulawa [7] argues that past failure of educational reforms from didactic approaches to student-centred approaches has not been based on deficiencies in the implementation of innovation but rather in the oversight of the socio-cultural context when trying to embed new pedagogical practices. The epistemological stance of educators and their perception on the purpose of education as well as social structures plays a key role in determining the success of sustained pedagogical change in schools [7].

Clearly, educational transformations required not only changes in systems and structures but also educators with competences to deliver quality education. This raises the issue about capacity building in staff in relation to adequate pedagogies for professional skill development and how we can establish what support is needed and why educators might or not be inclined to change their practice.

In 2019 the Zimbabwean government launched their Education 5.0 initiative as a policy driven approach to support the transformation of the higher education sector in areas of education, science and technology [8].

The Higher Education Partnerships in Sub-Saharan Africa (HEP SSA) scheme, supported by The Royal Academy of Engineering through the GCRF-Anglo-Platinum Foundation, focuses on training engineering educators in the broad range of academic activities and to enable them to build their capacity in research and teaching and in turn transform the educational landscape of their country. It is within the context of a project sponsored through the HEPSSA programme in Zimbabwe that the current research is situated. Pedagogical transformation in practice requires more than simply participating in a set of training activities. The socio-cultural and professional context of educators needs to be carefully considered if changes are to be sustained. The questions that this study explores are how do capacity building and training activities impact on the development of the engineering educators' agency and identity and how these activities can produce sustained change.

1.2 Theoretical framework

A critical element of this study is the importance of context and the understanding of the individual's experience and their social constructions and, therefore, this study is framed within the Interpretativist paradigm [9,10]. In addition, the theory of human agency [11] serves as a framework to guide the research design and later as a lens to interpret the data. The research design is primarily guided by the ideas that individuals as agents can self-regulate their actions and influence themselves and the environment around them. Similarly, individuals do not operate in isolation but rather in socially situated contexts given raise to interpersonal transactions where each one can act as someone else's environment. A key element, within Bandura's theory of human agency, that is relevant to this study is the idea of self-efficacy which is a key aspect associated to personal development and change [11].

Based on different approaches to agency Eteläpelto et al. [12] have conceptualised the idea of professional agency at work, that is, an approach to agency that pays "attention to [the] subjects' construction of their identity position at work, and focusing on how they negotiate agency in education and working life in order to construct meaningful careers and life courses". Given that the current study considers the socio-cultural context as critical in understanding the potential success of pedagogical training, this approach will serve as a lens for the data analysis.

2 RESEARCH DESIGN

This study is specifically defined within the context of two workshops, with participants from a range of institutions and industries, were carried out at different points in time during the life of the HEPSSA project and, led by Midlands State University in Zimbabwe. The first workshop (early 2019) focused on participants' discussions about state-of-the art of curriculum in Zimbabwe whereas the second workshop (late 2020) was delivered online and focused on active-learning and student-centred pedagogies including online delivery.

The analytical approach considered to explore the data is Qualitative Content Analysis which in line with the questions to be explored [13]. Data will be collected via means of interviewing engineering educators working in different engineering disciplines within different higher education institutions in Zimbabwe. The interviews are carried out online and recorded for subsequente transcription. Only people who participated in the capacity building activities of the project were invited to take part in this study. Ethical approval has been obtained from the University of Strathclyde Departmental Ethics Committee.

3 SUMMARY AND ACKNOWLEDGEMENTS

Data collection has unfortunately been delayed due to slow participant recruitment and interview availability. Results and analysis are not available yet as interviews are being conducted. However, the research design and theoretical framework used for the study of 'professional identity' [12] provides benefits for the larger engineering community. The review of the literature reveals that any educator training needs to

attend to the local needs and cultural expectations of those participating in the learning process (i.e. students and staff alike). Sustained change requires to alter the epistemic stance of educators in relation to their belief about knowledge, the goal of education and their roles as educators. This study will provide answers to these questions and will help to inform policy making.

3.1 Acknowledgements

The authors would like to acknowledge the financial support provided by the Royal Academy of Engineering through the HEP SSA scheme that enabled the capacity building activities discussed in this work under project (HEPSSA 18/20).

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