

Chapter 1

Exploring Perspectives on Teacher Education in the Digital Age: An Introduction



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Abstract This introductory chapter outlines the rest of the publication with regard to different perspectives on teacher education in the digital age. Apart from a brief contextualisation, this chapter then unpacks the nature and relationships between the chapters that follow.

Keywords Teacher education · Digital age · Educational technology · e-learning · Blended learning

1.1 Introduction

This book explores the nature of teacher education in the digital age. This phenomenon should be considered in a time where both key concepts are very complex as teacher education should—due to the needs of a changing society and technological context—be regarded as a lifelong, dynamic and iterative process and an age which is digital in the sense of ever-expanding technological advances occurring in a digitally divided world where access to technology is still not given in all contexts. In a world where there has been a lot of inequality in terms of teacher education (Verma 2021), there is a need to consider how this aspect functions in terms of a digital age. Indeed, Teacher Education could be seen as a lifelong process rather than one that can be completed after a few years of “training”. Teachers should be comfortable with working with risks and change, digital technologies being one of the major sources of risk and change in the profession (Christie 2018). Moreover, there is also the issue of teachers and students having different levels of experience and expertise in terms of technology (Prensky 2001). It was significant that from the chapters the impact of the COVID-19 pandemic, although not the focus of the book,

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was evident as this accelerated the need for greater integration and use of technology in the teacher training sphere. This book hence links up with the wider discourse on teacher education within the context of the COVID-19 pandemic (cf. Allan et al. 2020; Ellis et al. 2020; Ferdig et al. 2020; Flores and Swennen 2020; Moorhouse 2020).

This book brings together original research conducted by a team of leading regional education experts on teacher education specifically in terms of the digital context from research done in Botswana, Eswatini, Mauritius, Namibia, South Africa, Zambia and Zimbabwe. The chapters show how teacher educators and teachers have creatively embraced digital technologies in the region. In the next section, an overview of the chapters that make up this publication is provided.

1.2 Chapter Overview

Like various countries around the globe, the SADC region encounters numerous challenges regarding the education and skills development sector. The main difficulties are mainly about “ensuring access, equity, efficiency, relevance and democracy in the educational and training policies” (SADC 2012). This publication brings together a number of exceptional conceptual and empirical studies related to teacher education within the Southern African region. As such, this book presents a unique view of teacher education in terms of the digital age in four thematically grouped sections.

Apart from this chapter, the next three chapters form part of a section that provides an overview of the introduction and some challenges and needs within the teacher education context. In the second chapter, Mmabaledi K. Seeletso from Botswana sets out an important theoretical framework for this book as this conceptual chapter considers the affordances of improved digital skills and competencies of teachers in the digital age. This chapter also clearly situates this book within a Southern African context which results in not only certain challenges but also many opportunities. Importantly, this chapter concludes that teacher training systems should provide sufficient training. Moreover, there is a need to adapt social practices with regard to technologies in order to allow for effective implementation adoption and transformative teaching in most African institutions. Teacher training should be cognisant of the fact that the student populations at the school level are changing and are increasingly exposed to technology. Hence, teacher training should adapt to this dynamic and technologically integrated milieu. Finally, this context has the potential to facilitate greater participation and opportunities for knowledge creation by students as they may be more informed about technology than their teachers.

Chapter three focused on special needs education teachers enrolled for open distance learning (ODL). This chapter, by Thomas M. Kaputa, Gistered Muleya and Francis Simui, explored the resultant reactions of ODL institutions in response to the disruptions of COVID-19 in Zambia and Zimbabwe in terms of the students’ perspectives. This qualitative study with special needs education teachers at two selected ODL institutions involved participants sharing their experiences during their

practical work as well as the use of e-portfolios. The participants in this study showed varied experiences and this led to some practical recommendations. In this regard, thorough training in e-portfolio management and highlighted implementation were recommended as being very important. The participants also felt a need that explicit instructions should be provided and there seems to be a need for upgrading technical elements.

The focus of chapter four, by Tshepo Batane and Chandapiwa Butale, is the assessment processes in a technology course for an in-service teacher education programme at a selected university in Botswana. Importantly, it is evident that assessment plays a critical role in contributing to the development of teachers' competencies in using technology for teaching. This research advocates that the process of preparing teachers to use technology should be a comprehensive one that involves the development of appropriate skills needed for effective technology-based delivery. Despite some experienced teachers in this research showing skills in what could be considered traditional teaching aspects, they lacked technology-related skills. The chapter reported differences in skills mastery in different contexts. Finally, the chapter also emphasises the need for the provision of digital resources in schools. It was also recommended that some form of assessment be continued on the teachers beyond the training to ensure that they sustain technology use in their work.

The next section relates to experience sharing. The fifth chapter by Overson Shumba, Leonard Nkhata, Alex Simpande and Chewe Fwalo explores experiences of adopting emergency remote teaching and the transition to virtual learning in the context of a teacher education programme at the Copperbelt University, Zambia. This research found that lecturers and students demonstrated that the transition from remote teaching to online learning posed certain problems that had to be addressed at both institutional and personal levels. There is evidently a need to improve connectivity and to allow capacity building as well as provide psychosocial support for self-direction in blended learning environments specifically in the context of the COVID-19 pandemic and other similar emergencies. The need for development in terms of self-directed learning and information processing was clear. The chapter concludes by emphasising the need to re-envision the focus of their teacher education programme in terms of the emerging capacity building needs.

Chapter six, written by Moffat C. Tarusikirwa, aimed to understand the experiences of academics at the Zimbabwe Open University regarding teacher development at diploma, undergraduate and postgraduate levels in the age of ICT-based teaching and learning technologies. Furthermore, this chapter specifically highlighted the delivery of effective teacher development programmes in an Open and Distance e-Learning (ODEL) Institution in Zimbabwe. From the research, a number of issues affecting teacher development were identified, and it is stated that teacher development should evolve in line with technological changes. Evidently, the COVID-19 pandemic also prompted changes as face-to-face interactions were not possible. It is also noted that there is a need to build on the existing teacher development models to infuse ICT-based supervision tools that benefit students and fulfil teacher development standards. Apart from needs around infrastructure, skills of both students and

teachers need to be developed to be responsive to the requirements of increased ICT integration.

The next section handles different approaches. In chapter seven, Vicky Avinash Oojorah and Waaiza Udhin explore the transformation of traditional teaching and learning environments in the primary sector through the introduction of tablets and projectors in classrooms in Mauritius. This study specifically focused on the effectiveness of the empowerment sessions for educators of the Early Digital Learning Programme instituted by the Mauritian Ministry of Education. In this process, they assessed teachers' understanding of the functionalities of a Classroom Management System; measured teachers' abilities to create, edit and push e-assessment activities; and also explored the use of tablet technology by teachers at the classroom level. This research showed that educators not only would be able to implement the technology at the classroom level but also create a context conducive to transformation in the wider teaching and learning practices. The authors emphasise the importance of certain in-school factors such as the teaching and learning spaces as well as support from management; out-school factors such as the policy framework, development opportunities and support; and educators being able to plan their lessons in a skilful manner. Finally, the WAVI radar diagram is proposed, and this diagram illustrates the capabilities of educators to integrate technology in a given educational context. This instrument specifically identifies the following as being important factors in this context: Teacher Attitude, Teacher Knowledge, Teacher Skills, Support from School Management, Teaching and Learning Space, Support, Continuous Professional Development and the Policy framework.

Chapter eight, written by Waaiza Udhin and Avinash Oojorah, continues the focus on teacher education in the COVID-19 context in Mauritius. This chapter explored the affordances of webinars as a means of delivering content on an e-learning platform. This research specifically provides insights into how a webinar was organised, implemented as well as the assessment of learners' experiences. In this regard, the chapter relied specifically on autoethnographic data from notes, e-mails and other documents that charted the preparation and implementation of the webinar. The emphasis of this research was also to foreground the conceptualisation of the webinar and its meaningfulness as a learning activity without downplaying the technological configurations relevant to the intervention. This chapter concludes by stating how the webinar could have been enriched through greater attendee participation and input. Furthermore, the chapter illustrates the functional, social and educational affordances of webinars. Finally, it was also clear that the students attending the webinar felt confident that they would be able to replicate the process of setting up a webinar as well.

Chapter nine, written by Eveline O. Anyolo and Sirkka A. N. Tshiningayamwe, pertains to the contribution of online collaborative learning to Education for Sustainable Development in teacher education in the context of Namibia. This research showed that students were able to develop several sustainability competencies by doing sustainability tasks using online platforms. Some challenges were experienced in terms of creating space for effective collaboration online, and students in this study expressed a preference for face-to-face interaction for the sake of collaboration. However, the students acknowledged the importance of collaborative tasks.

This chapter emphasised the importance of students being collaborative, communicative, problem-solvers, good listeners, critical thinkers and able to take responsibility for their own learning. This chapter also recommended that students are capacitated towards improved communication in groups, developing collaboration skills, allowing for equal participation in collaborative work and being able to manage time as well as conflicts.

The final section relates to STEM and Language Learning. In the tenth chapter, Marietjie Havenga and Jako Olivier researched student teachers' active involvement in online robotics simulations, as part of a module on Information Technology at a South African university, with the aim of developing essential skills for the digital age. This chapter specifically focused on how student teachers can develop essential skills for the digital age through robotics simulations. Within this unique multimodal environment, it was found that student teachers were able to act in a self-directed manner towards developing several skills. Specifically, this involved problem-solving by relying on knowledge of the specific semiotic resources used within the robotics simulation environment. However, the importance of certain cognitive and self-directed learning skills, reflective practices as well as unique technical skills was evident. Furthermore, this chapter also relates to elements of innovation through active involvement in online robot simulations by the students. Finally, a need for differentiated and scaffolded support for student teacher learning in the context of robotics was noted.

In the eleventh chapter, Aletta Mweneni Hautemo and Michele F. van der Merwe explored the use of Wikipedia in presenting an educational design using a multimodal approach in structured environments in which interconnected text-based tasks are presented to stimulate dialogical interaction that could lead to a higher level of critical thinking in students specifically within the context of two Namibian languages. In this study, Wikipedia was used as a tool for language translation from English second language into Oshikwanyama and Oshindonga first languages, respectively, by pre-service language student teachers at a tertiary institution in Namibia. This study not only showed how using a Wikipedia translation task responds to the educational demands of the Fourth Industrial Revolution, but it also has the potential to aid the promotion and development of the languages of Namibia at the tertiary level. Furthermore, the Wikipedia translation task used for this research sets a good example of how student teachers and teachers can apply translation in a technology-enhanced setting for language learning. The skills learned through the process helped the participants to be able to translate in a bilingual setting and to be able to communicate effectively in both the relevant first and second languages. The task also influenced the way the whole learning community perceived translation in the classroom for teaching and learning languages. In conclusion, this chapter recommends the application of Wikipedia translation as a multimodal method that highlights the notion that bilingualism should be seen as an asset instead of a liability in language teaching and learning environments.

Educating French teachers within a digital era is the focus of chapter twelve which was authored by Karen Ferreira-Meyer, Albertus Barkhuizen and Karin Schmid. This chapter also approached this topic within the COVID-19 context and the challenges

posed in terms of French teacher training specifically in Eswatini and South Africa. This chapter considered the ways in which teachers of French in these two countries are trained at both pre- and in-service levels. A need for the digitisation of French teacher training in this context is evident, and this chapter engaged with the relevant variables and contextual factors pertaining to this process. Information was gathered from French lecturers and teachers in the selected countries. This research found that among the participants, there is a lack of understanding regarding pedagogical approaches and teaching methods specifically with regard to online teaching and learning. From this research, it is clear that further training is necessary in order to adapt to the digitisation of teaching and learning and to implement pedagogical approaches suited to the digital era. The chapter recommends developing relevant pedagogical approaches and skills for the purposes of this field in a digital context.

The final chapter, written by Jayaluxmi Naidoo and Asheena Singh-Pillay, involves research on digital pedagogy for mathematics and technology education at a South African teacher education institution. This qualitative study considered mathematics and technology education students' perceptions and experiences of digital pedagogy. For this study, postgraduate mathematics and technology education students, who are also practising school teachers, were invited to take part in interactive online workshops and interviews focusing on teaching and learning using selected digital tools. This chapter found that in this context it is clear that digital pedagogy has strengths for teaching and learning. Furthermore, it is evident that digital pedagogy can empower and motivate teachers and that digital pedagogy inspires virtual collaboration among the connected online community. Finally, the research also showed that digital pedagogy exposes specific unique challenges in a developing country such as South Africa.

1.3 Conclusion

The chapters in this book provide an interesting overview of the implications of the digital age for wider teacher education in seven Southern African countries. Two central themes emanate from the chapters: (1) The uniqueness of the region in terms of the need for development in terms of technology and especially skills among students and teachers in order to be effective in a digital context; as well as (2) the significant effect the COVID-19 pandemic has had on prioritising the need for learning to be negotiated digitally.

When it comes to skills, the needs are varied and often aligned with the availability of technologies within certain teacher training institutions. However, from the research presented in this book a number of highly successful interventions were discussed and the affordances of tools such as tablets, strategies such as collaborative learning and different platforms allowing for virtual learning, robotics simulations or e-portfolios were evident. It is also clear that for teacher education in the region, multimodal approaches are highly relevant and the issues around special needs and language were also prominent in these chapters.

In conclusion, apart from the informative overview of some experiences around teacher education in a digital age researched in this book, this publication also provides recommendations for similar contexts internationally.

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