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Towards an Online Teaching Practice Supervision Model for Zimbabwe: Challenges and Possibilities in the context of the 4IR

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ABSTRACT

The 21st Century brought with it new technologies, new knowledge and the Fourth Industrial Revolution (4IR). This caused rapid changes in human life and the way people work. A change in the way people live and work prompts educational reforms to meet the rapid demands of changes in the workplace. Changes in the curriculum entail changes to the way teachers are developed. Several frameworks for rethinking curriculum reforms have been debated. This study set out to establish the feasibility of an online Teaching Practice model for pre-service student teachers on teaching practice at one teacher education institution in Zimbabwe. Through Domestication Theory, the study adopted a qualitative approach to gather data through teacher-educator interviews, student-teacher-focused group discussions and document analysis. The results indicate that online TP supervision would save time and financial resources. However, teacher education institutions in Zimbabwe are not yet ready for online TP supervision in terms of e-resources to support an online supervision model. The study recommends that for Zimbabwe teacher education to align itself with the demands of the 4IR era, the government through the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development and the Ministry of Primary and Secondary Education should invest in e-resources to equip teacher education institutions and schools with necessary Information and Technology tools. This study contributes to the ongoing discourse on the use of blended learning in teacher education and the possibility of using the online TP supervision and assessment model taking advantage of the advancement in technology brought about by the 4IR.

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INTRODUCTION

The important role that assessment plays in educational circles cannot be questioned. Gikandi et al., maintain that assessment is held as a major component of teaching and learning and without it, no effective learning takes place.[1] Assessment is necessary for the provision of feedback to educators on the performance of their students and at the same time it guides students on where they need to correct.[2]

[1] Joyce Wangui Gikandi, Donna Morrow, and Niki E Davis, "Online Formative Assessment in Higher Education: A Review of the Literature," *Computers & Education* 57, no. 4 (2011): 2333–51.
[2] S. Bloom, *Violence against Women and Girls: A Compendium of Monitoring and Evaluation Indicators* (Chapel Hill, NC: MEASURE Evaluation, 2008); Sunil Kumar Prabhakar and Seong-Whan Lee, "Holistic Approaches to Music Genre Classification Using Efficient

The advent of the Fourth Industrial Revolution brought some changes to how things are done in education. This pertains to how educators teach, how learners learn and how learners' work is assessed. This change calls for a paradigm shift from the "chalk–talk" and paper and pen to modern digital modes of teaching and learning which are more inclined to digital methods than traditional methods of teaching.Walsh reports that the International Council for Open and Distance Education envisaged that globally, the most significant mode of teaching and learning in higher education will be online learning.[3] Since online learning is fast becoming the new instructional method in higher education, it becomes imperative to take a closer look at how the online course and modules could be designed. This is in line with the opinions of Kearns and Ithindi and Shikalepo, who observed that it is essential to study the design of online teaching and learning modes because they are becoming handy and widely used in higher education institutions in this 4IR era.[4] It is equally important to highlight the effectiveness of online teaching and learning practices within the digital environment, which will allow teacher educators the chance to propose learning and assessment strategies that are authentic within digital learning and assessment environments. Higher education must embrace change and move from traditionally acceptable instructional practices to more modern and digital strategies. COVID-19 has awakened higher education globally to realize the feasibility and necessity of digital modes of learning. To ensure continuity of teaching, learning, and assessment during COVID-19 lockdowns, teacher educators were forced to try online learning. There are several benefits to using online learning. However, some challenges are still faced in the digital teaching and learning process. The assessment part of online learning seems to pose more challenges as authenticity issues crop up.[5] Although there are several online assessment strategies, the challenges faced in implementing them are not well documented. Online assessment of written assignments has its challenges. However, online assessment and supervision of student teachers on teaching practice, while it is applauded for embracing the 21st Century educational practice, poses even more challenges than possibilities in Zimbabwe and other developing countries.

In Zimbabwean teacher education programmes, the Teaching Practice (TP) is given more prominence and weighted more than the theory component which is offered on campus. The TP component is highly dependent on the expertise and competencies of the school-based supervisors who are the Head of the school, the Deputy Head, Teacher-In-Charge, and mentors. These persons assist the student teachers in acquiring the necessary teaching skills. However, the university lecturers visit their student teachers to offer clinical supervision and assess their students' level of teaching skills acquisition. Certification assessment and evaluation are based on the mark given by the university-based supervisors.[6]

COVID-19 has shown the world that it is possible to teach and assess online in higher education.[7] Many studies have shown that learning in higher education is no longer limited to the four walls of lecture rooms and lecture theatres. Virtual classrooms are a norm in the 4IR era. The 4IR has brought numerous possibilities in virtual learning and assessment activities. However, there is still a challenge in the online assessment of student teachers. Despite recommendations for online TP supervision made by some scholars, online TP supervision has not yet seen the light of day at least at the case university. Whenever the issue of online supervision and assessment comes up, teacher educators embrace it for the theoretical component of teacher education but do not welcome the same for teaching practice. This raises a question about the challenges posed to teacher educators by online TP supervision. Therefore, this study sought to close the online TP supervision gap by pinpointing the challenges of online TP supervision and suggesting ways to overcome the challenges so that teacher education institutions embrace the 4IR era

Transfer and Deep Learning Techniques," *Expert Systems with Applications* 211 (January 2023): 118636, https://doi.org/10.1016/j.eswa.2022.118636.

[3] J. Walsh, *Generalist Social Work Practice. Intervention Methods* (Australia, UK, USA: Cengage Learning, 2009).

[4] Ade Kearns and Ray Forrest, "Social Cohesion and Multilevel Urban Governance," *Urban Studies* 37, no. 5–6 (May 1, 2000): 995–1017, https://doi.org/10.1080/00420980050011208; Elock Emvula Shikalepo, "Attributes Underlying Learner Performance in Rural Schools: The Perspectives of Rural School Teachers in Namibia," *International Journal of Multidisciplinary Education and Research* 5, no. 1 (2020): 6–11.

[5] E. E. Shikalepo, "Defining a Conceptual Framework in Educational Research," 2020, https://www.researchgate.net/publication/342010918.

[6] Bekithemba Dube and Nathan Moyo, "COVID-19 Pandemic and The Precarity of Life: Rethinking a Pedagogy of Compassion so That The People of This Earth May Live," *Journal of Education, Teaching and Learning* 6, no. 2 (2021): 146–53.

[7] Shoorai Konyana and Modise Alfred Motalenyane, "A Changing World and a Changing Teaching Practice Model for Zimbabwe in a Post Covid-19 Context," *Journal of Culture and Values in Education* 5, no. 1 (2022): 43–58.

and utilise online supervision. During the COVID-19 pandemic, most local universities indicated their strategic plans to embrace technology and adopted online learning to maintain an uninterrupted learning process despite lockdown measures taken to maintain social distance. However, most teacher educators and student teachers have very limited experience in conducting online assessments.[8] The purpose of this study was to establish the challenges and possibilities of supervising student teachers in teaching practice from a distance using online means.

While most primary teacher education is offered in teachers' colleges scattered in all provinces of Zimbabwe, this study was carried out at a university faculty of education offering a pre-service primary teacher education. The institution offers pre-service primary teacher education following a 2-1-1 model. In this model, the first two years of teacher education are offered on campus and these are meant to expose student teachers to the theoretical component of teacher education. The third year, which is the first one on the 2-1-1 model is spent on TP where student teachers are expected to learn to practically deliver lessons in classrooms under the guidance who qualified teachers who are their mentors. In the last year of the model, student teachers are expected to return to campus to engage in more teacher education modules and reflect on their teaching practice experiences against the theories of education taught. This study aims to establish the feasibility of an online TP assessment model that would align teacher education within the 4IR. It is believed that online assessment offers some benefits in terms of cutting transport costs for university-based supervisors to travel to the various schools where students are deployed for TP. Furthermore, the online assessment method saves time and resources. The motivation to carry out this study was triggered by the need to align teacher education assessment with the developments in the 4IR era. To guide this study and in line with the above problem, the following research questions were posed.

- What are the challenges faced by teacher educators in implementing online TP supervision?
- What measures can be put in place to overcome the challenges faced in assessing student teachers on TP through online methods?
- How effective are the online assessment methods in supervising and assessing student teachers on TP?

The above research questions were carefully raised to inform the study's quest to explore the challenges faced by teacher educators in their endeavour to use online TP supervision and assessment. The questions were also set to establish the possibilities of online teaching practice in teacher education institutions. The findings are presented in this paper.

LITERATURE REVIEW

Heil and Ifenthaler define online assessment as an organised way of generating information on a learner's learning processes to draw conclusions about the learner's dispositions.[9] It allows for the provision of meaningful feedback and a collaborative support system for learners. Online assessments also have an influence on how learners engage in their learning process and on the outcome of their learning. Baker, Chung, and Cai perceive online assessment as a systematic method of gathering information or artefacts about a learner and learning processes to draw inferences about the person's dispositions using information and communication technology.[10] Conrad and Openo hold that online assessment refers to the assessment of learners' learning using strategies that include information and communication technologies.[11] The implementation of online assessments may be blended with other formats to gain a richer and more valid outcome, depending on the demands and dictates of the context in which it is being utilized.[12]

[8] Jennifer Catharine Evans et al., "Blended Learning in Higher Education: Professional Development in a Hong Kong University," *Higher Education Research & Development* 39, no. 4 (June 6, 2020): 643–56, https://doi.org/10.1080/07294360.2019.1685943.
[9] Joana Heil and Dirk Ifenthaler, "Online Assessment in Higher Education: A Systematic Review," *Online Learning* 27, no. 1 (March 1, 2023), https://doi.org/10.24059/olj.v27i1.3398.
[10] Eva L Baker, Gregory K W K Chung, and Li Cai, "Assessment Gaze, Refraction, and Blur: The Course of Achievement Testing in the Past 100 Years," *Review of Research in Education* 40, no. 1 (2016): 94–142.
[11] Dianne Conrad and Jason Openo, *Assessment Strategies for Online Learning: Engagement and Authenticity* (Athabasca University Press, 2018).
[12] Gikandi, Morrow, and Davis, "Online Formative Assessment in Higher Education: A Review of the Literature."

Benefits of Online Assessment in General and TP Supervision in Particular

The most important merit of online assessment is that it is flexible and accessible.[13] Its flexibility in terms of time and geographical space for taking the assessment influences the learning experiences of students. The use of technology in online assessment ensures validity and reliability. Furthermore, timeous and interactive feedback is improved by online assessment[14] Furthermore, Ogange, Agak, Okelo and Kiprotich observe that prompt feedback is guaranteed from computer-reviewed work rather than from lecturer-marked work.[15] Computer-aided assessment is faster and more accurate. Nevertheless, it is important to establish if these advantages of online assessment could also be realised when it comes to supervision and assessment of student teachers on TP.

Taole et al support the use of Microsoft Teams on the basis that it can be easily accessed through the Internet and technological devices such as mobile phones, desktops and laptops.[16] Supervision meetings can be scheduled beforehand to give room for pre-service student teachers to get ready for online supervision. MS Teams was recommended for its recording feature that enables the supervisor and the supervised student teacher to revisit the taught lesson many times as self-reflection.

Several authorities have deliberated on the challenges of online teaching, learning, and assessment. Mupfiga et al et al. and Moyo pointed out that the challenges in online learning, especially in developing countries are many and these include lack of internet connectivity, students' failure to acquire mobile devices due to high cost, high broadband costs, unavailability of mobile learning management systems, lecturers who resist technological change and lack of Wi-Fi connectivity.[17] Furthermore, Maposa blamed institutional culture as a hindrance to online learning.[18] Weaver pointed out that feedback on online assessment by tutors is unclear. Lee et al. reported that some students were not ready for online assessment.[19]

Online Supervision Models

From a Turkish context, Koşar describes the self-reflection of a university teacher educator‘s experience of online teaching practice supervision.[20] The author concluded that because online TP supervision is a new phenomenon in teacher education, it is having some teething problems. Koşar identified motivational challenges and mediation between the student teacher and the mentor.[21]

Online TP supervision entails the utilisation of online learning tools like ZOOM, Google class, Microsoft Teams and many more. Taole et al document the online supervision model used at an open and distance learning institution in South Africa.[22] In their paper, the authors identified the merits of using Microsoft Teams platform to supervise student teachers remotely while on TP in schools. The merits include the fact that online supervision allows university-based supervisors to assist their student teachers

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[13] Catarina Rolim and Pedro Isaias, “Examining the Use of E-assessment in Higher Education: Teachers and Students’ Viewpoints,” *British Journal of Educational Technology* 50, no. 4 (July 20, 2019): 1785–1800, https://doi.org/10.1111/bjet.12669.

[14] Diana Bajzek et al., “Assessment and Instruction: Two Sides of the Same Coin,” in *ELearn: World Conference on EdTech* (Association for the Advancement of Computing in Education (AACE), 2008), 560–65.

[15] Betty Obura Ogange et al., “Student Perceptions of the Effectiveness of Formative Assessment in an Online Learning Environment,” *Open Praxis* 10, no. 1 (2018): 29–39.

[16] Matshidiso Taole et al., “Supervisors’ Challenges with Online Supervision Using Microsoft Teams in Supervising Open Distance and E-Learning (ODeL) Pre-Service Teachers,” *Teacher Education through Flexible Learning in Africa (TETFLE)* 5 (2024).

[17] Paul Mupfiga, Margaret Chirimumimba Mupfiga, and Tinashe Gwendolyn Zhou, “Enhancing Teaching and Learning through the Use of Mobile Technologies in Zimbabwean Universities,” *Journal of Systems Integration* 8, no. 2 (2017): 43; Nathan Moyo, “Covid-19 and the Future of Practicum in Teacher Education in Zimbabwe: Rethinking the ‘New Normal’in Quality Assurance for Teacher Certification,” *Journal of Education for Teaching* 46, no. 4 (2020): 536–45.

[18] V. Maposa, “ Teachers’ Perspectives on Remote Teaching and Learning in the Covid-19 Era: Re-Thinking Technology Availability in Zimbabwe,” *European Journal of Interactive Media and Education* 2, no. 1 (2020): 1–11.

[19] David Maxwell, *African Gifts of the Spirit: Pentecostalism and the Rise of a Zimbabwean Transnational Religious Movement* (Harare: Weaver Press, 2006); Yan Chen et al., “Understanding Inconsistent Employee Compliance with Information Security Policies Through the Lens of the Extended Parallel Process Model,” *Information Systems Research* 32, no. 3 (September 2021): 1043–65, https://doi.org/10.1287/isre.2021.1014.

[20] Gülten Koşar, “A Self-Study on the Challenges a University Supervisor Faced in Online Teaching Practicum and How She Met Them,” *International Journal of Teacher Education and Professional Development* 6, no. 1 (February 3, 2023): 1–12, https://doi.org/10.4018/IJTEPD.317218.

[21] Koşar, “A Self-Study on the Challenges a University Supervisor Faced in Online Teaching Practicum and How She Met Them.”

[22] Taole M.J., *Teaching Practice, Perspectives and Frameworks* (Pretoria: Van Schaik, 2015).

with technical support.[23] Online learning improves communication between supervisers and student teachers.[24] It reduces long-distance travel to remote places for supervisors and at the same time, supervisors become more accessible to the student teachers. Collaboration between supervisors and student teachers is enhanced.[25]

In Zimbabwe, Mhishi, Gwizangwe and Bhukuvhani report on a pilot study of an online TP supervision model for science student teachers from one university mandated with the training of science teachers in the country.[26] The model involves a pre-teaching practice component of the teacher education programme where student teachers learn to develop teaching documents and video-recording teaching sessions through peer teaching. Students are expected to pass this TP preparation exercise before they finally embark on the school-based TP.

At the onset of their TP in schools, stident teachers and their mentors are provided with a TP handbook which will guide them in their practice. While on TP the pre-service student teachers are required to produce schemes of work and Detailed Lesson Plans (DLPs) for the lessons they teach each day. Pre-service student teachers are monitored daily by their mentors, Deputy Head and School Heads. Each month the pre-service student teachers email their dossiers (schemes of work, lesson plans and other records they use, and assessments from the school administrators) to the university TP coordinator for further assessment and feedback. The TP coordinator and other

The TP coordinator would then check on the progress of the pre-service student teachers based on the school-based assessments submitted.[27] A TP WhatsApp forum is formed for pre-service student teachers to ask questions and share challenges they encounter on their TP. The TP coordinator together with other university supervisors responds to these questions and advises pre-service students on how to overcome the challenges they meet on TP. The TP coordinator follows up on all students without the required number of dossier submissions.

THEORETICAL FRAMEWORK

This study also employed the Domestication Theory (DT) as a lens to analyse the topic under investigation. DT describes how users incorporate new technology into their formal and informal activities.[28] The DT in this study's setting entails supervisors using online platforms in their official duty of supervising and assessing pre-service student teachers while they are delivering lessons in schools. The use of online platforms for TP supervision is a new phenomenon in teacher education. Through the DT, the researchers were able to understand and interpret the constraints that teacher educators face in the implementation of online TP supervision. According to Yere-Arne, DT makes it easier for researchers to understand the relationships between users and different types of technology.[29] In the same vein, Haddon maintains that DT goes beyond users' acceptance of technology to consider what technology means to them, how they perceive it, and how it functions in their daily lives.[30]

According to the DT, when domesticating modern technologies in their day-to-day activities, individuals go through four stages namely: appropriation, objectification, incorporation, and conversion stages. During the appropriation stage, people are motivated to employ technology by integrating it into

[23] Paulina Sepulveda-Escobar and Astrid Morrison, "Online Teaching Placement during the COVID-19 Pandemic in Chile: Challenges and Opportunities," *European Journal of Teacher Education* 43, no. 4 (2020): 587–607.
[24] Carisma Nel and Elma Marais, "Preservice Teachers Use of WhatsApp to Explain Subject Content to School Children during the COVID-19 Pandemic.," *International Journal of Work-Integrated Learning* 21, no. 5 (2020): 629–41.
[25] Serkan Çankaya and Gürhan Durak, "Integrated Systems in Emergency Distance Education: The Microsoft Teams," 2020.
[26] Misheck Mhishi, Isaac Gwizangwe, and Crispen Bhukuvhani, "Towards a Sustainable Technology-Enhanced Supervision and Assessment of Teaching Practice: A Pilot Case of an e-Supervision Model at a University in Zimbabwe.," *International Journal of Education and Development Using Information and Communication Technology* 18, no. 2 (2022): 68–79.
[27] Mhishi, Gwizangwe, and Bhukuvhani, "Towards a Sustainable Technology-Enhanced Supervision and Assessment of Teaching Practice: A Pilot Case of an e-Supervision Model at a University in Zimbabwe."
[28] Sofie Lindeman, Maria Svensson, and Ann-Britt Enochsson, "Digitalisation in Early Childhood Education: A Domestication Theoretical Perspective on Teachers' Experiences," *Education and Information Technologies* 26, no. 4 (2021): 4879–4903.
[29] Brita Ytre-Arne, "Media Use in Changing Everyday Life: How Biographical Disruption Could Destabilize Media Repertoires and Public Connection," *European Journal of Communication* 34, no. 5 (2019): 488–502.
[30] Leslie Haddon, "The Contribution of Domestication Research to In-Home Computing and Media Consumption," *The Information Society* 22, no. 4 (2006): 195–203.

their daily routines and comprehending its features and efficacy.[31] Since they are aware of the benefits of using online platforms to carry out their supervision duties, supervisors are now required to incorporate the tool into their task of teaching practices supervision. Users give the technological tool significance during the objectification stage by recognising its practical worth and utility in their day-to-day tasks. Supervisors can watch the pre-service teacher teach, observe pupils in the classroom, and give feedback using online platforms. According to Lindeman et al., technology users utilise the new technology for different goals during the incorporation stage.[32] At this point, supervisors can do more with the online platforms than just keep an eye on pre-service student teachers. The last phase of the Domestication Theory is the conversion step. This phase happens when modern technology users engage and communicate with others using modern technologies.[33] In addition to streamlining the teaching practice supervision process, this can improve the rapport between pre-service teachers and their supervisors.

METHODOLOGY

For any research study to be successful, it depends on the approach adopted and the suitable design used to carry out the research. The study adopted a qualitative approach to obtain data from teacher educators on the feasibility of conducting online TP supervision and assessment. This is in line with Mavhunga who emphasised that an appropriate research design provides a systematic strategy and plan for selecting, rationalising and organising the sequence of procedures for collecting and handling the evidence or information relevant to solving the research problem.[34] For this study, the case study design that lends itself more to the qualitative research approach was used. The choice of a case study was based on the fact that the educational processes are complex and multifaceted. Such that focusing only on cause and effect, products, outcomes or correlations in research in institutions of higher learning is of limited value. Due to the complexity of the education process, there is a need to engage a number of techniques and in this case, the qualitative research design becomes handy and more appropriate. Furthermore, the researchers employed the case study design because they believed that it is the only qualitative research design that views human systems as capable of developing a characteristic wholeness or integrity and are not simply loose connections of traits. Consequently, researchers use case studies because they believe that to know a case, to explain why things happen the way they do, and to generalise or predict with certainty from a sample of cases, one has to carry out an in-depth inquiry into the interdependencies of parts or samples and of the patterns that emerge thereof.[35]

Sampling

For this study, the researchers involved a university in Masvingo province in Zimbabwe. The university's School of Heritage and Education offers pre-service teacher education to both aspiring primary and secondary school teachers. The research targeted the pre-service primary student teachers and teacher educators from the Department of Educational Foundations and Curriculum Development where issues of teaching practice are handled. In line with the recommendations of Creswell the study purposively sampled one Departmental Chairperson, one TP Coordinator, five teacher educators from the teacher development department, and five teacher educators from other departments who also participate in the supervision and assessment of student teachers and eighteen student teachers.[36] Taking a leaf from Baiju,

[31] Taole et al., "Supervisors' Challenges with Online Supervision Using Microsoft Teams in Supervising Open Distance and E-Learning (ODeL) Pre-Service Teachers."
[32] Lindeman, Svensson, and Enochsson, "Digitalisation in Early Childhood Education: A Domestication Theoretical Perspective on Teachers' Experiences."
[33] Lindeman, Svensson, and Enochsson, "Digitalisation in Early Childhood Education: A Domestication Theoretical Perspective on Teachers' Experiences."
[34] Pharoah Joseph Mavhunga, "Vocationalisation of the Secondary School Curriculum as an Instrument for Human Resources Development: Zimbabwean Experiences, Challenges, and the Way Forward," 2002.
[35] Shoorai Konyana and Elias Konyana, "Computerisation of Rural Schools in Zimbabwe: Challenges and Opportunities for Sustainable Development (the Case of Chipinge District)," *African Journal of Teacher Education* 3, no. 2 (2013).
[36] John Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, SAGE, Ca; Ofprnia* (California: Sage Publications, 2013).

all the participants selected for the sample were considered to possess valuable knowledge on the practice and implementation of TP at the case teacher education institution.[37]

Research Instruments

Open-ended and unstructured interviews were used to collect data. The researchers used interviews because they enabled them to gather rich data from the participants. Open-ended and unstructured interviews gave room for flexibility and the chance to realise certain points stressed in the focus groups.[38] Student teachers engaged in online focus group discussions and this improved diversity of thinking and helped the researchers to note contradictions and differences when they arose. The interviews were directed at participants from the teacher education department administration and the TP coordinators. Hour-long interviews were carried out twice every week. The researchers used the times which were convenient for the participants to interview them. An open-ended interview guide was used to guide the researchers during the interviews. Since the questions were open-ended and unstructured, they gave the respondents the freedom to further explain points of interest and expand on others' viewpoints. The issues raised in the interviews were expanded by participants in the focus group discussions. With the consent of the participants, the researchers transcribed generated data in notepads.

Data Collection Procedure

One Departmental Chairperson, one TP Coordinator, five teacher educators from the teacher development department and five teacher educators from other departments who also participated in the supervision and assessment of student teachers and eighteen student teachers were involved in the study. Purposive sampling was used to obtain this sample. The sample involved only a smaller part of the population of cases which was easily accessible. The researchers made efforts to create conditions that supported the maximum opportunity to gather the most appropriate data on the feasibility of online teaching practice supervision and assessment. Purposive sampling was performed to select only those participants who were deemed to be information-rich in terms of TP supervision and assessment. Tshuma and Mafa hold that information-rich cases are those participants from whom one can acquire a great deal of information concerning issues that are important to the study.[39] The TP coordinator is the one who runs TP issues including students' placements at schools and allocation of supervisors to the students while they are on TP, keeps the information on the student-teacher deployment, and keeps all supervision and assessment reports for all students on TP. The TP coordinator reports directly to the Departmental Chairperson. The other teacher educators within the teacher education department help with the supervision of students and produce narrative supervision and assessment reports for each student teacher supervised. Teacher educators were interviewed to establish their opinions on the adoption of online learning in the 4IR era and its feasibility taking into account the context of their institution.

Data Analysis

The researchers used qualitative content analysis to interpret and make sense of the debate that teacher educators engaged in when the Department of Teacher Education was asked to assess student teachers online. In line with the recommendations of Creswel, content analysis was used to analyse the data and produce a systematic examination and interpretation of the data presented.[40] This was done in order to establish themes, patterns, meanings, and biases related to the views of teacher educators on online supervision and assessment of student teachers. Data were thematically analysed following Creswell's open-coding procedures.[41] These procedures include organising and categorising data systematically and then describing them through themes. The researchers assigned codes to themes to make the data

[37] Fr Baiju Thomas, "The Role of Purposive Sampling Technique as a Tool for Informal Choices in a Social Sciences in Research Methods," *Just Agriculture* 2, no. 5 (2022): 1–8.
[38] N. Osborne and D. Grant-Smith, " In-Depth Interviewing," in *Methods in Urban Analysis*, ed. N. Osborne (Queensland: Springer, 2021).
[39] R. Tshuma and O. Mafa, "Research Designs," in *Preparing Your Dissertation at a Distance: A Research Guide* , ed. S. M. Tichapondwa (Vancouver: Virtual University for Small States of the Commonwealth, 2013), 114–34.
[40] J. W. Creswell, *Education Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (Upper Saddle River, NJ: Prentice Hall, 2012).
[41] Creswell, *Education Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*.

manageable. Real names of participating teacher educators were not used. Numbers were assigned to each participating teacher educator to maintain anonymity and confidentiality in data reporting.

PRESENTATION OF FINDINGS

The thematic analysis that was used to analyse data brought about four themes which are: 1) possibilities of utilising online TP supervision and assessment, 2) the challenges faced in the use of online TP supervision and assessment 3) Solutions to challenges of online TP supervision and 4) Effectiveness of the suggested solutions to online TP supervision. Presented below are each of these themes and their sub-themes including the evidence for them from data gathered.

Theme 1. Challenges faced by teacher educators in implementing online supervision

Covid-19 brought with it devastating circumstances for humankind. However, solutions to the challenges faced during the pandemic, especially within the education sector, accelerated the use of online teaching and learning. Despite its evil nature, the pandemic brought about new ideas that will remain with us and change our lives for the better. The use of online learning is one such positive side effect of the Covid-19 pandemic. The 4IR era ushered in the noble idea of online learning and assessment of learning. The technological revolution made it possible for teaching and learning to be done from a distance. However, there are some challenges faced in the online assessment of TP in Zimbabwe. Responding to the challenges likely to be faced in the assessment of student teachers through online means, teacher educator 4 (female aged 51) pointed out that:

> *Online assessment is a good idea for the assessment of theoretical assignments. When it comes to TP, some challenges hinder this noble idea. While the university is well equipped in terms of technological devices and internet connectivity, the schools are not as e-resourced as the university. Therefore, it becomes a challenge for the student teacher to deliver a lesson while the supervisor is observing online. The schools do not have such a technological support system.*

In addition, the TP coordinator (male aged 50) observed that:

> *Our students do not have the technological expertise to handle an online lesson for the benefit of an online supervisor.*

In their FGDs, student teachers also pointed out some challenges that would hinder online TP assessment and supervision. One student teacher from FGD2 explained that:

> *While online TP assessment and supervision would save time and finances, a lot still has to be done to empower student teachers. Some of us are still not techno-savvy. We still struggle to use some IT applications. Therefore, being assessed through online means would add unnecessary anxiety to us.*

Besides the issue of poor technological skills, teacher educator 6 (male aged 46) indicated that:

> *Teaching practice assessment and supervision as a major component of the whole pre-service teacher education programme demands more than just observing a student teacher deliver a lesson through your computer. It takes you as a supervisor or assessor to practically and physically go through the student's professional documents and see if the student has planned the lesson well, if all the records are up to date and if the student is preparing relevant, appropriate and adequate teaching media for his or her lessons.*

In support of the above observation, educator 1 (female aged 53) argued that:

> *TP, unlike the other forms of teacher education learning, demands that supervisors and assessors be physically on the ground to assess the whole teaching performance of the student teacher, including their class and classroom management, and their rapport with learners. Some of these skills cannot be captured by the online video camera, they*

demand the physical and practical engagement of the assessor and supervisor with the physical work environment of the supervisee.

Student teachers in their FGDs lamented the cost of data for online supervision and assessment. They indicated that:

Where internet connectivity is good, there still remains the challenge of data bundles. It is very expensive for us to buy data bundles that would sustain an online lesson for the online supervisor or assessor to observe.

These participants raised pertinent issues as far as online TP assessment is concerned. Not all student teachers have the ICT devices required to engage in online learning, let alone TP supervision and assessment, which may take longer periods. Furthermore, most of the schools where student teachers are deployed for TP do not have internet connectivity, especially those in rural areas.

Theme 2. Possibilities of online TP supervision

The study made an effort to establish ways by which the teacher education institution under study could overcome the challenges associated with online TP supervision and assessment. Teacher educators mostly believe that online learning cannot be extended to TP supervision and assessment. Teacher educator 2 (female aged 52) argued that:

TP is a practical skills development exercise that demands the physical observation of a student teacher in action. Online supervision and assessment may not capture the intricacies and dynamics involved in a live teaching and learning process.

However, some teacher educators gave online TP supervision a chance by suggesting possible ways of implementing it. The Departmental Chairperson (male aged 48) indicated that:

There is a possibility for online TP supervision. It is a costly method at first, but in the end, it will give the institution value for its money. There is a need for the institution to partner with some schools which are already well connected to the internet and make these schools its Professional Practicing Schools (PPSs). It becomes the mandate of the university to develop a collegiality and collaborate closely with the PPSs. The university helps the schools upgrade their internet connectivity and assists in e-resourcing them. Then the university deploys its student teachers in these well-resourced PPSs. That way, the hindrance of connectivity will be overcome and the online TP supervision and assessment could be carried out smoothly.

In the same line of thinking, the TP coordinator (male aged 50) suggested that:

Student teachers should be exposed more to ICT skills acquisition during the two years they are on campus learning. Furthermore, the teacher education institution should invest in promoting some schools which it adopts as its Professional Practicing Schools. In these PPSs, the institution should employ ICT technicians who will assist student teachers with setting up virtual lessons where supervisors can join. The issue of the cost of data bundles should be handled by the teacher education institution by billing it on student teachers' tuition fees.

Furthermore, in addressing the challenge of poor ICT skills in teacher educators, teacher educator 4 (female aged 46) recommended that:

Since ICT applications are ever-changing and new ones are cropping up frequently, in order to keep abreast of times, the teacher education department should frequently hold ICT workshops where teacher educators are exposed to novel ICT applications and packages.

The solutions to the challenges of online TP supervision and assessment suggested by the participants are important and worth trying. The idea of PPSs is not new and some countries are practicing it. Selecting

well-resourced schools as PPSs would go a long way in supporting an online TP supervision model since the PPSs would have internet connectivity already.

Theme 3. Effectiveness of the PPSs as a solution to online TP supervision

Commenting on the effectiveness of PPSs in improving online TP supervision and assessment, the Departmental Chairperson indicated that:

> *PPSs would be very effective if considered for partnering with the university. In fact, as part of its education 5.0 compliance strategy, the university can adopt some schools or establish its own schools that will offer a double service. First as offering educational services to the community and also as offering practising grounds for student teachers on their TP. After adopting the schools or even establishing some, the university is supposed to support these schools so that they have the ICT support system to host online TP supervision.*

However, Teacher Educator 2 (female aged 52) pointed out some challenges with establishing PPSs in Zimbabwe. She indicated that:

> *While the establishment of PPSs is a noble idea, it is necessary to first establish a good relationship between the university and the schools. There seems to be a gap in terms of collegiality between these two important institutions in pre-service teacher education. Furthermore, universities in Zimbabwe are not financially stable enough to establish their own Primary and Secondary schools. They heavily rely on the already established schools within the Ministry of Primary and Secondary Education for deploying their student teachers for TP.*

The relationship between schools and institutions of higher learning s important and it is important to keep a warm relationship between these institutions since teacher education can only take place when the two are in sync.

DISCUSSION OF FINDINGS

The study confirmed what most studies globally discovered concerning the importance of utilising online platforms for supervising pre-service student teachers while they are out in schools taking advantage of the opportunities brought about by the 4IR. Although the use of online platforms for TP in particular is a new phenomenon, especially in Africa, online learning was used extensively during the COVID-19 era and beyond. However, some challenges still surround the implementation of online TP supervision.

Barriers to Online TP Supervision

The study aimed to explore the feasibility of utilising online platforms for TP supervision. Although online TP is quite beneficial, its implementation poses some challenges. These include lack of digital skills, unavailability of appropriate digital tools for pre-service student teachers, lack of communication between supervisors and pre-service student teachers and unsupportive internet connectivity. The study resonates with Lee who maintains that teacher education institutions should consider that not all pre-service student teachers are at an advanced technological age and that they need to be intensively supported so as to be able to engage in online supervision.[42] While supervisors receive technical training before getting involved in online supervision, pre-service student teachers do not receive such training. Therefore, not all pre-service student teachers have the pre-requisite digital skills to participate in an online supervision programme. As advised by Strydom, Wessels and Anley, it is prudent to exclude pre-service student teachers who lack digital skills from online supervision.[43] In line with Taole, Naidu,

[42] Hilary Du Cros and Yok Shiu F Lee, *Cultural Heritage Management in China: Preserving the Cities of the Pearl River Delta* (Routledge, 2007).

[43] Sonja C Strydom, Helena Wessels, and Casey Anley, "Moving beyond the Tools: Pre-Service Teachers' Views on What They Value in a Digital Literacy Short Course," *South African Journal of Childhood Education* 11, no. 1 (2021): 1–11.

Gcabashe and Maphumulo, the study observed that there is a lack of communication between supervisors and pre-service student teachers due to a lack of digital skills in both parties.[44]

The lack of appropriate digital or ICT devices also hinders the online TP initiative. This confirms the findings by Taole et al., who observe that most pre-service student teachers do not have computers.[45] They own cell phones and use them for online supervision. However, cell phones have smaller screens, and consequently, mentors would have to move around the classroom so that the supervisor gets an enhanced viewing potential. Closely related to the unavailability of digital devices is the unavailability of internet connectivity at some schools. This finding resonates with those of who observed that internet connectivity in rural schools is a challenge in Zimbabwe.[46] Therefore, no matter how the university embraces the 4IR era, if the schools in which the student teachers are deployed do not have internet connectivity, online supervision, and assessment remain a documented wish which can never come to fruition.

The issue of the cost of data was also raised by the participating student teachers as a hindrance to the successful implementation of online TP supervision and assessment. This is in line with the findings of Octaberlina and Muslimin, and Maposa who outlined the constraints of online learning as involving scarcity of appropriate ICT devices, inaccessibility of internet access, and poor digital skills among student teachers.[47] These challenges skewed the ability of the student teachers to prepare for an online lesson that could be supervised and assessed online. Tariq, Ishak and Nafi, also add to this list, poor or limited technological skills by teacher educators and student teachers.[48] The authors point to institutional culture as the major hindrance to the implementation of online learning including supervision and assessment of practicum. This suggests that despite the efforts by higher education to embrace the 4IR by introducing online learning, TP online supervision has a number of hindrances which need serious consideration in order to overcome them.

Possible Solutions to Online TP Supervision Challenges

The challenges proffered as hindering the implementation of an online TP model at one university in Zimbabwe are commonly associated with a lack of internet connectivity, especially in some rural schools. Participants proposed the establishment of Professional practising schools. These schools would be selected because they already have strong internet connectivity. The idea of Professional Practicing Schools is not new and it matches the international standards in the form of such schools as the Professional Development Schools described by Darling-Hammond in the USA, and the urban teacher residencies, also in the USA.[49] The PPSs are similar to the internship schemes in the United Kingdom,[50] in Hong Kong, they have school-university partnerships,[51] and the same initiatives are found in many other countries.[52] In South Africa, Kwenda and Robison describes how teacher education institutions proposed the use of PPSs for their student teachers' TP.[53] PPSs are described by Robinson as schools that are able to offer excellent learning opportunities for student teachers during their Teaching Practice

[44] Taole et al., "Supervisors' Challenges with Online Supervision Using Microsoft Teams in Supervising Open Distance and E-Learning (ODeL) Pre-Service Teachers."
[45] Taole et al., "Supervisors' Challenges with Online Supervision Using Microsoft Teams in Supervising Open Distance and E-Learning (ODeL) Pre-Service Teachers."
[46] Konyana and Motalenyane, "A Changing World and a Changing Teaching Practice Model for Zimbabwe in a Post Covid-19 Context."
[47] Like Raskova Octaberlina and Afif Ikhwanul Muslimin, "EFL Students Perspective towards Online Learning Barriers and Alternatives Using Moodle/Google Classroom during COVID-19 Pandemic," *International Journal of Higher Education* 9, no. 6 (August 10, 2020): 1, https://doi.org/10.5430/ijhe.v9n6p1; Maposa, " Teachers' Perspectives on Remote Teaching and Learning in the Covid-19 Era: Re-Thinking Technology Availability in Zimbabwe."
[48] S Tariq, K Ishak, and S Nafi, "Measuring E-Learning Success with the Extension of Technology Factor in Delone & Mclean Is Success Model," *International Journal of Advanced Research* 6, no. 11 (2018): 422–28.
[49] Linda Darling-Hammond, "Strengthening Clinical Preparation: The Holy Grail of Teacher Education," *Peabody Journal of Education* 89, no. 4 (2014): 547–61.
[50] Liz Browne and Jay Reid, "Changing Localities for Teacher Training: The Potential Impact on Professional Formation and the University Sector Response," *Journal of Education for Teaching* 38, no. 4 (2012): 497–508.
[51] A Tsui et al., "Learning in School-University Partnership," *Sociocultural Perspectives. NY: Routledge*, 2009.
[52] M. Mattson, T. Vidar Eilertsen, and D. Rorrison, *A Practicum Turn in Teacher Education* (Rotterdam: Sense Publishers, 2011).
[53] Chiwimbiso Kwenda, "In Search of a Model for Best Practice in Student Teaching Practice: A Comparative Study of South Africa and Zimbabwe," *Journal of Educational Studies* 13, no. 2 (2014): 216–37; E.E. Biggs et al., "Home Literacy Environment and Interventions for Children with Intellectual and Developmental Disabilities: A Scoping Review," *Journal of Speech, Language, and Hearing Research* 66, no. 6 (2023): 2118–40.

period, or practicum.[54] The teacher education institutions intended to identify enough PPSs in the country that offer the best support to all pre-service teacher education students. These schools, if adopted in Zimbabwe, would go a long way to improving online TP supervision because they are chosen because they offer the best in terms of teaching skills to student teachers and that they are well-resourced. However, most of these well-resourced schools with internet connectivity are urban schools. Therefore, the use of PPSs would disadvantage rural schools yet as observed by Kwenda Zimbabwean teacher education is applauded for serving the rural schools too through deploying student teachers in rural schools for TP.[55]

Furthermore, the deployment of student teachers in well-resourced schools deprives them of the opportunity to experience the real situation in rural schools where they will end up employed when they obtain their teaching qualifications.

Based on the findings of this study, the researchers note that some pre-service student teachers have not yet 'appropriated' online platforms for their online supervision. Neither had they 'objectified' any online platform for TP supervision. Unlike in the findings from Taole et al, supervisors and pre-service student teachers in this study were still behind in terms of appropriating and objectifying the online platforms.[56] It is important to note that there is a need to choose and adopt one online platform as the teacher education institution's online TP supervision model. That way, supervisors and pre-service student teachers will concentrate their energy on learning how to use the chosen platform thereby perfecting their online skills using that platform

RECOMMENDATIONS

To adopt an online TP model, the University's faculty of education should establish PPSs, ensuring that some of the PPSs are in rural areas so as not to disadvantage rural schools. The chairperson of the teacher development department should organise ICT workshops for both supervisors and student teachers and adopt an online platform that should be used for online supervision for example ZOOM or Microsoft Teams. The chairperson should engage the ICT department in choosing the convenient, reliable and efficient online platform to be adopted for the online TP supervision model. The TP Officer should liaise with the school Head of selected schools to pave the way for PPSs. The University administration should support the selected PPSs so that they are well-e-resourced to the university standards. The TP officer should encourage student teachers to invest in acquiring a laptop for online TP supervision since cell phones have small screens and are not ideal for online TP supervision. Student teachers should also familiarise themselves with online platforms while still at university before the start of their deployment for TP in schools. That will assist them in being able to handle online supervision during their TP. The study views teacher education as a "Hybrid space" where institutional boundaries are crossed in an attempt to produce competent teachers and achieve quality education. Therefore, partnerships and mutual support of schools by universities would easily usher in the possibility of an online TP supervision and assessment model.

CONCLUSION

This study reports on the perspectives of teacher educators and pre-service student teachers on the feasibility of adopting an online TP model and taking advantage of the 4IR at one university in Zimbabwe. This study confirmed that it is feasible to adopt an online TP model at the university and it has some benefits. Some of the benefits include the fact that the initiative is intended to save travel costs by university-based supervisors and assessors. Furthermore, an online TP model would enable university supervisors to spend their time effectively and efficiently doing research and innovation. They are saved from the risks associated with travelling long distances to and from schools located far away in rural districts. However, a number of hindrances were noted and these include the lack of e-resources especially in rural schools, poor ICT skills for both teacher educators and student teachers, cost of data

[54] Maureen Robinson, "Professional Practice Schools as a Form of School-University Partnership in Teacher Education: Towards a Social Justice Agenda," *Education as Change* 20, no. 2 (2016): 11–26.
[55] Kwenda, "In Search of a Model for Best Practice in Student Teaching Practice: A Comparative Study of South Africa and Zimbabwe."
[56] Taole et al., "Supervisors' Challenges with Online Supervision Using Microsoft Teams in Supervising Open Distance and E-Learning (ODeL) Pre-Service Teachers."

bundles for online learning for student teachers, and unavailability of internet connectivity in schools. Furthermore, the establishment of PPSs posed a challenge of hindering the teacher education institution from fulfilling its mandate of serving rural communities in need. Suitable PPSs are mostly located in urban, therefore, adopting urban schools as PPSs would promote the urban and rural schools divide which higher education is supposed to help close.

BIBLIOGRAPHY

Bajzek, Diana, Judy Brooks, William Jerome, Marsha Lovett, John Rinderle, Gordon Rule, and Candace Thille. "Assessment and Instruction: Two Sides of the Same Coin." In *ELearn: World Conference on EdTech*, 560–65. Association for the Advancement of Computing in Education (AACE), 2008.

Baker, Eva L, Gregory K W K Chung, and Li Cai. "Assessment Gaze, Refraction, and Blur: The Course of Achievement Testing in the Past 100 Years." *Review of Research in Education* 40, no. 1 (2016): 94–142.

Biggs, E.E., A.P. Arserio, S.E. Robison, and M.E. Ross. "Home Literacy Environment and Interventions for Children with Intellectual and Developmental Disabilities: A Scoping Review." *Journal of Speech, Language, and Hearing Research* 66, no. 6 (2023): 2118–40.

Bloom, S. *Violence against Women and Girls: A Compendium of Monitoring and Evaluation Indicators*. Chapel Hill, NC: MEASURE Evaluation, 2008.

Browne, Liz, and Jay Reid. "Changing Localities for Teacher Training: The Potential Impact on Professional Formation and the University Sector Response." *Journal of Education for Teaching* 38, no. 4 (2012): 497–508.

Çankaya, Serkan, and Gürhan Durak. "Integrated Systems in Emergency Distance Education: The Microsoft Teams," 2020.

Chen, Yan, Dennis F. Galletta, Paul Benjamin Lowry, Xin (Robert) Luo, Gregory D. Moody, and Robert Willison. "Understanding Inconsistent Employee Compliance with Information Security Policies Through the Lens of the Extended Parallel Process Model." *Information Systems Research* 32, no. 3 (September 2021): 1043–65. https://doi.org/10.1287/isre.2021.1014.

Conrad, Dianne, and Jason Openo. *Assessment Strategies for Online Learning: Engagement and Authenticity*. Athabasca University Press, 2018.

Creswell, J. W. *Education Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Upper Saddle River, NJ: Prentice Hall, 2012.

Creswell, John. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. *SAGE, Ca; Ofprnia*. California: Sage Publications, 2013.

Cros, Hilary Du, and Yok Shiu F Lee. *Cultural Heritage Management in China: Preserving the Cities of the Pearl River Delta*. Routledge, 2007.

Darling-Hammond, Linda. "Strengthening Clinical Preparation: The Holy Grail of Teacher Education." *Peabody Journal of Education* 89, no. 4 (2014): 547–61.

Dube, Bekithemba, and Nathan Moyo. "COVID-19 Pandemic and The Precarity of Life: Rethinking a Pedagogy of Compassion so That The People of This Earth May Live." *Journal of Education, Teaching and Learning* 6, no. 2 (2021): 146–53.

Evans, Jennifer Catharine, Hennie Yip, Kannass Chan, Christine Armatas, and Ada Tse. "Blended Learning in Higher Education: Professional Development in a Hong Kong University." *Higher Education Research & Development* 39, no. 4 (June 6, 2020): 643–56. https://doi.org/10.1080/07294360.2019.1685943.

Gikandi, Joyce Wangui, Donna Morrow, and Niki E Davis. "Online Formative Assessment in Higher Education: A Review of the Literature." *Computers & Education* 57, no. 4 (2011): 2333–51.

Haddon, Leslie. "The Contribution of Domestication Research to In-Home Computing and Media Consumption." *The Information Society* 22, no. 4 (2006): 195–203.

Heil, Joana, and Dirk Ifenthaler. "Online Assessment in Higher Education: A Systematic Review." *Online Learning* 27, no. 1 (March 1, 2023). https://doi.org/10.24059/olj.v27i1.3398.

Kearns, Ade, and Ray Forrest. "Social Cohesion and Multilevel Urban Governance." *Urban Studies* 37, no. 5–6 (May 1, 2000): 995–1017. https://doi.org/10.1080/00420980050011208.

Konyana, Shoorai, and Elias Konyana. "Computerisation of Rural Schools in Zimbabwe: Challenges and Opportunities for Sustainable Development (the Case of Chipinge District)." *African Journal of Teacher Education* 3, no. 2 (2013).

Konyana, Shoorai, and Modise Alfred Motalenyane. "A Changing World and a Changing Teaching Practice Model for Zimbabwe in a Post Covid-19 Context." *Journal of Culture and Values in Education* 5, no. 1 (2022): 43–58.

Koşar, Gülten. "A Self-Study on the Challenges a University Supervisor Faced in Online Teaching Practicum and How She Met Them." *International Journal of Teacher Education and Professional Development* 6, no. 1 (February 3, 2023): 1–12. https://doi.org/10.4018/IJTEPD.317218.

Kwenda, Chiwimbiso. "In Search of a Model for Best Practice in Student Teaching Practice: A Comparative Study of South Africa and Zimbabwe." *Journal of Educational Studies* 13, no. 2 (2014): 216–37.

Lindeman, Sofie, Maria Svensson, and Ann-Britt Enochsson. "Digitalisation in Early Childhood Education: A Domestication Theoretical Perspective on Teachers' Experiences." *Education and Information Technologies* 26, no. 4 (2021): 4879–4903.

Maposa, V. " Teachers' Perspectives on Remote Teaching and Learning in the Covid-19 Era: Re-Thinking Technology Availability in Zimbabwe." *European Journal of Interactive Media and Education* 2, no. 1 (2020): 1–11.

Mattson, M., T. Vidar Eilertsen, and D. Rorrison. *A Practicum Turn in Teacher Education*. Rotterdam: Sense Publishers, 2011.

Mavhunga, Pharoah Joseph. "Vocationalisation of the Secondary School Curriculum as an Instrument for Human Resources Development: Zimbabwean Experiences, Challenges, and the Way Forward," 2002.

Maxwell, David. *African Gifts of the Spirit: Pentecostalism and the Rise of a Zimbabwean Transnational Religious Movement*. Harare: Weaver Press, 2006.

Mhishi, Misheck, Isaac Gwizangwe, and Crispen Bhukuvhani. "Towards a Sustainable Technology-Enhanced Supervision and Assessment of Teaching Practice: A Pilot Case of an e-Supervision Model at a University in Zimbabwe." *International Journal of Education and Development Using Information and Communication Technology* 18, no. 2 (2022): 68–79.

Moyo, Nathan. "Covid-19 and the Future of Practicum in Teacher Education in Zimbabwe: Rethinking the 'New Normal'in Quality Assurance for Teacher Certification." *Journal of Education for Teaching* 46, no. 4 (2020): 536–45.

Mupfiga, Paul, Margaret Chirimumimba Mupfiga, and Tinashe Gwendolyn Zhou. "Enhancing Teaching and Learning through the Use of Mobile Technologies in Zimbabwean Universities." *Journal of Systems Integration* 8, no. 2 (2017): 43.

Nel, Carisma, and Elma Marais. "Preservice Teachers Use of WhatsApp to Explain Subject Content to School Children during the COVID-19 Pandemic." *International Journal of Work-Integrated Learning* 21, no. 5 (2020): 629–41.

Octaberlina, Like Raskova, and Afif Ikhwanul Muslimin. "EFL Students Perspective towards Online Learning Barriers and Alternatives Using Moodle/Google Classroom during COVID-19 Pandemic." *International Journal of Higher Education* 9, no. 6 (August 10, 2020): 1. https://doi.org/10.5430/ijhe.v9n6p1.

Ogange, Betty Obura, John O Agak, Kevin Odhiambo Okelo, and Peter Kiprotich. "Student Perceptions of the Effectiveness of Formative Assessment in an Online Learning Environment." *Open Praxis* 10, no. 1 (2018): 29–39.

Osborne, N., and D. Grant-Smith. " In-Depth Interviewing." In *Methods in Urban Analysis*, edited by N. Osborne. Queensland: Springer, 2021.

Prabhakar, Sunil Kumar, and Seong-Whan Lee. "Holistic Approaches to Music Genre Classification Using Efficient Transfer and Deep Learning Techniques." *Expert Systems with Applications* 211 (January 2023): 118636. https://doi.org/10.1016/j.eswa.2022.118636.

Robinson, Maureen. "Professional Practice Schools as a Form of School-University Partnership in Teacher Education: Towards a Social Justice Agenda."*Education as Change* 20,no.2(2016):11–26.

Rolim, Catarina, and Pedro Isaias. "Examining the Use of E-assessment in Higher Education: Teachers and Students' Viewpoints." *British Journal of Educational Technology* 50, no. 4 (July 20, 2019): 1785–1800. https://doi.org/10.1111/bjet.12669.

Sepulveda-Escobar, Paulina, and Astrid Morrison. "Online Teaching Placement during the COVID-19 Pandemic in Chile: Challenges and Opportunities." *European Journal of Teacher Education* 43, no. 4 (2020): 587–607.

Shikalepo, E. E. "Defining a Conceptual Framework in Educational Research," 2020. https://www.researchgate.net/publication/342010918.

Shikalepo, Elock Emvula. "Attributes Underlying Learner Performance in Rural Schools: The Perspectives of Rural School Teachers in Namibia." *International Journal of Multidisciplinary Education and Research* 5, no. 1 (2020): 6–11.

Strydom, Sonja C, Helena Wessels, and Casey Anley. "Moving beyond the Tools: Pre-Service Teachers' Views on What They Value in a Digital Literacy Short Course." *South African Journal of Childhood Education* 11, no. 1 (2021): 1–11.

Taole M.J. *Teaching Practice, Perspectives and Frameworks*. Pretoria: Van Schaik, 2015.

Taole, Matshidiso, Katharine Naidu, Nduduzo Gcabashe, and Thabisile Maphumulo. "Supervisors' Challenges with Online Supervision Using Microsoft Teams in Supervising Open Distance and E-Learning (ODeL) Pre-Service Teachers." *Teacher Education through Flexible Learning in Africa (TETFLE)* 5 (2024).

Tariq, S, K Ishak, and S Nafi. "Measuring E-Learning Success with the Extension of Technology Factor in Delone & Mclean Is Success Model." *International Journal of Advanced Research* 6, no. 11 (2018): 422–28.

Thomas, Fr Baiju. "The Role of Purposive Sampling Technique as a Tool for Informal Choices in a Social Sciences in Research Methods." *Just Agriculture* 2, no. 5 (2022): 1–8.

Tshuma, R., and O. Mafa. "Research Designs." In *Preparing Your Dissertation at a Distance: A Research Guide* , edited by S. M. Tichapondwa, 114–34. Vancouver: Virtual University for Small States of the Commonwealth, 2013.

Tsui, A, Gwyn Edwards, Fran Lopez-Real, Tammy Kwan, Doris Law, Philip Stimpson, Rosina Tang, and Albert Wong. "Learning in School-University Partnership." *Sociocultural Perspectives. NY: Routledge*, 2009.

Walsh, J. *Generalist Social Work Practice. Intervention Methods*. Australia, UK, USA: Cengage Learning, 2009.

Ytre-Arne, Brita. "Media Use in Changing Everyday Life: How Biographical Disruption Could Destabilize Media Repertoires and Public Connection." *European Journal of Communication* 34, no. 5 (2019): 488–502.

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