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Digital Pedagogical Approaches for Preparing South African Matric Teachers for Higher Education

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ABSTRACT

South African Higher Education Institutions (HEIs) are undergoing a digital revolution, facing challenges from social, historical, and cultural diversity and low schooling backgrounds. Incorporating digital technology into teaching and learning has become essential, yet a notable digital divide persists. Students with Information Communication Technology (ICT) skills perform better in higher education compared to those from resource-restrained or marginalized communities, such as Pinetown, Durban, South Africa. This research aims to equip learners and teachers in South Africa to adapt to the rapid pace of technological change while examining the pedagogical approaches of matric teachers in digitally preparing matric learners for HEIs. A quantitative research approach was utilized to collect primary data from a sample of 363 teachers across 25 high schools in Pinetown, selected based on Krejcie and Morgan's (1970) methodology, ensuring an appropriate representation for the population of 1,300. A high response rate was achieved, facilitated by a pilot phase that clarified the research subject for participants. In addition to primary data, relevant secondary literature was also utilized. The findings revealed that a majority of teachers prefer problem-based and project-based pedagogical approaches and acknowledge the benefits of an online learning environment. These results indicate that most teachers are capable of digitally preparing matric students for higher education. Therefore, problem-based and project-based teaching and learning approaches should be emphasized in the field of digital technology. It is also recommended that teachers and lecturers in HEIs utilize online platforms to enhance the curriculum.

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INTRODUCTION

Pedagogy, while simply defined by Merriam-Webster 'as the art and science of teaching', encompasses a broader spectrum that includes empirical research and practical reform in educational contexts. Scholars like Biesta, Friesen, & Su emphasize that pedagogy is a normative discipline focused on the processes of personal development rather than merely teaching methods.[1] Pedagogy seeks to determine

[1] Gert Biesta, "Risking Ourselves in Education: Qualification, Socialization, and Subjectification Revisited," *Educational Theory* 70, no. 1 (February 16, 2020): 89–104, https://doi.org/10.1111/edth.12411; Norm Friesen and Hanno Su, "What Is Pedagogy? Discovering the Hidden Pedagogical Dimension," *Educational Theory* 73, no. 1 (February 15, 2023): 6–28, https://doi.org/10.1111/edth.12569.

what is best for learners in specific contexts, thereby underscoring its essential role in the holistic process of human development.[2] The term "pedagogic technology" is defined as a combination of programmes, stages, and resources that are focused on the knowledge of the teaching methods that would move in a rational way to implement this process.[3] The term also refers to the rational way of accomplishing this process but not only that, but also to learning the positive ways of achieving its objective.[4] Digital pedagogy is what helps increase the effectiveness of learning and easier appropriation of themes or educational content.[5] All the tools that help teachers and learners for successful realisation of the teaching and learning process can be used as teaching tools. These learning tools are digital working tools, which help in the efficient performance of duties of the school. All media resources which complement one another touch on a more creative and successful learning process.

Considering the backdrop of digital technology from a global viewpoint it is essential to investigate the pedagogical techniques of matric teachers in preparing matric students for higher education. Studies from the nineteenth century have examined digital literacy as a change in the interaction between a teacher and a learner, which is triggered by newly emerged needs of South Africa and the South African society, which is to enhance the fourth industrial revolution, thus compelling teaching and learning to occur in an authentic and interactive learning environment.[6] In addition, the current Curriculum Assessment Policy Statement (CAPS) strives to boost learner engagement during teaching and learning in response to a substantial increase in the number of students who are interested in digital technology.[7]

This research holds significant importance due to the existing research gap in digital technology studies regarding the pedagogical approaches utilized in digitally preparing matric learners for HEIs.[8] Additionally, Herrmann and Nagel, Carrasco-Ramírez and Islam highlight that while teachers are qualified to teach their specialized content, there is a lack of clear evidence regarding their digital literacy background knowledge.[9] Furthermore, the literature presents contextual challenges that hinder the effective integration of digital literacy, but the specific context of the Pinetown district, which has not been previously explored, remains untouched. Research such as Buchner and Andujar, Norris, Devasena reveals a lack of information on matric learners' attitudes towards digital literacy in

[2] Friesen and Su, "What Is Pedagogy? Discovering the Hidden Pedagogical Dimension."
[3] Ruth McManus et al., "'A World of Possibilities': The Future of Technology in Higher Education, Insights from the COVID-19 Experience," *Education Sciences* 14, no. 1 (January 5, 2024): 63, https://doi.org/10.3390/educsci14010063.
[4] Adaylah Rajab and Nigel Wright, "Government Constructions of the Pedagogical Relationship between Teachers and Children in Saudi Preschool Education: Issues of Adoption or Adaptation?," *Pedagogy, Culture and Society*, January 17, 2018, 1–14, https://doi.org/10.1080/14681366.2018.1427140; Melissa Bond et al., "A Meta Systematic Review of Artificial Intelligence in Higher Education: A Call for Increased Ethics, Collaboration, and Rigour," *International Journal of Educational Technology in Higher Education* 21, no. 1 (January 19, 2024): 4, https://doi.org/10.1186/s41239-023-00436-z.
[5] Rama Krishna Reddy Kummitha and Nathalie Crutzen, "How Do We Understand Smart Cities? An Evolutionary Perspective," *Cities* 67 (July 2017): 43–52, https://doi.org/10.1016/j.cities.2017.04.010.
[6] Maximilian Hösl, "Semantics of the Internet: A Political History," *Internet Histories* 3, no. 3–4 (October 2, 2019): 275–92, https://doi.org/10.1080/24701475.2019.1656921; Yi-Ling Lai and Jonathan Passmore, "Unfolding Executive Coaches' Identity Work through the Social Constructivist Lens: Coach–Coachee–Organisation," *International Journal of Training and Development* 28, no. 1 (March 7, 2024): 1–21, https://doi.org/10.1111/ijtd.12301; Melanie Walker, "Youth Voices on Social Justice: Doing Repair Work in a South African Higher Education Space," in *Reparative Futures and Transformative Learning Spaces* (Cham: Springer Nature Switzerland, 2023), 45–68, https://doi.org/10.1007/978-3-031-45806-4_3.
[7] McManus et al., "'A World of Possibilities': The Future of Technology in Higher Education, Insights from the COVID-19 Experience"; Arif Sarıçoban, İrfan Tosuncuoğlu, and Özkan Kırmızı, "A Technological Pedagogical Content Knowledge (TPACK) Sssessment of Pre-Service EFL Teachers Learning to Teach English as a Foreign Language," *Journal of Language and Linguistic Studies* 15, no. 3 (2019): 1122–38.
[8] Sonja Herrmann and Christian Nagel, "Early Careers of Graduates from Private and Public Universities in Germany: A Comparison of Income Differences Regarding the First Employment," *Research in Higher Education* 64, no. 1 (February 5, 2023): 129–46, https://doi.org/10.1007/s11162-022-09698-4; M. H. Rosnazri et al., "Real-Time Vision-Based Hand Gesture to Text Interpreter by Using Artificial Intelligence with Augmented Reality Element," 2024, 040001, https://doi.org/10.1063/5.0183121.
[9] Herrmann and Nagel, "Early Careers of Graduates from Private and Public Universities in Germany: A Comparison of Income Differences Regarding the First Employment"; José Gabriel Carrasco Ramírez and Md.Mafiqul Islam, "Utilizing Artificial Intelligence in Real-World Applications," *Journal of Artificial Intelligence General Science (JAIGS) ISSN:3006-4023* 2, no. 1 (February 7, 2024): 14–19, https://doi.org/10.60087/jaigs.v2i1.p19.

preparation for HEIs.[10] The COVID-19 pandemic compelled the country to prioritize learning on digital platforms to enforce social distancing and mitigate the spread of the virus. However, studies have shown that an increasing number of learners are struggling to cope with new technologies.[11] Thus, this research aims to support South African learners and teachers in keeping pace with the urgency and changes by exploring the pedagogical approaches employed by matric teachers in digitally preparing matric learners for higher education institutions.

LITERATURE REVIEW

Digital Literacy Background and Policies in South Africa

Focusing on South Africa, the government launched the National Development Plan 2030 in 2013, accompanied by the establishment of the National Advisory Council on Innovation by the Department of Science and Technology. These initiatives aimed to address various gaps, including livelihoods and capacity.[12] The National Development Plan 2030 specifically proposes improvements in school infrastructure, including full access to high-speed broadband, as well as enhancing human capacity. Consequently, the responsibility falls on educators and parents to collaborate in developing millennials into fully competent digital citizens. Additionally, during the State of the Nation Address, the South African president emphasized the emergence of the Fourth Industrial Revolution (4IR), which revolutionized traditional schooling methods and transformed learning environments in Higher Education Institutions (HEIs).[13] In all 23 South African HEIs, first-year students are required to possess a mobile computing device, such as a laptop or tablet, as certain module materials, assignments, and lecturer feedback are provided online.[14]

The South African government is strengthening digital literacy programs in schools to equip matric learners with the necessary skills to meet the demands of the 4IR.[15] Hence, it is expected that matric learners have digital literacy, encompassing the ability not only to use digital technologies but also to navigate information and knowledge for meaningful learning within the digitized HEIs environment.[16] Moreover, learners need to actively participate in educational, social, and vocational life by utilizing digital tools, managing digital learning platforms, and effectively employing advanced-

[10] Josef Buchner and Alberto Andujar, "The Expansion of the Classroom through Mobile Immersive Learning.," *International Association for Development of the Information Society*, 2019; Trevor Norris, "Educational Futures after COVID-19: Big Tech and Pandemic Profiteering versus Education for Democracy," *Policy Futures in Education* 21, no. 1 (2023): 34–57, https://doi.org/10.1177/14782103221080265; R Devasena, "Artificial Intelligence in Education: An Alternative to Traditional Learning," *Journal of English Language Teaching* 66, no. 1 (2024): 13–21.

[11] Wanjiru Gachie, "Higher Education Institutions, Private Sector and Government Collaboration for Innovation within the Framework of the Triple Helix Model," *African Journal of Science, Technology, Innovation and Development* 12, no. 2 (Feruary 23, 2020): 203–15, https://doi.org/10.1080/20421338.2019.1631120.; Jussara Reis-Andersson, "School Organisers' Expression on the Expansion of the Access and Application of Digital Technologies in Educational Systems," *The International Journal of Information and Learning Technology* 40, no. 1 (January 11, 2023): 73–83, https://doi.org/10.1108/IJILT-03-2022-0070; Walker, "Youth Voices on Social Justice: Doing Repair Work in a South African Higher Education Space."

[12] NDP 2030, *National Development Plan 2030* (Pretoria: National planning Commission: The presidency Republic of South Africa, 2013), https://www.nationalplanningcommission.org.za/assets/Documents/NDP_Chapters/NDP 2030-Prelims.pdf; NACI, *South African Science, Technology and Innovation Indicators., Department of Science and Technology* (Pretoria: Department of Science and Technology, 2017), https://www.naci.org.za/wp-content/uploads/2018/07/South_African_Science_Technology_And_Innovation_Indicators_Report_2017.pdf.

[13] State of the Nation Address, *President Cyril Ramaphosa: 2020 State of the Nation Address* (CapeTown: Government Communication, 2020).

[14] Debby Erce Sondakh, Kamisah Osman, and Suhaila Zainudin, "A Proposal for Holistic Assessment of Computational Thinking for Undergraduate: Content Validity," *European Journal of Educational Research* volume-9-2020, no. volume9-issue1.html (January 15, 2020): 33–50, https://doi.org/10.12973/eu-jer.9.1.33; Norris, "Educational Futures after COVID-19: Big Tech and Pandemic Profiteering versus Education for Democracy"; Rosnazri et al., "Real-Time Vision-Based Hand Gesture to Text Interpreter by Using Artificial Intelligence with Augmented Reality Element."

[15] Emmanuel O Adu and Sindiswa S Zondo, "Enhancing Teachers' Digital Skills in Teaching of Economics in South African Secondary Schools," *International Journal of Educational Research Open* 6 (June 2024): 100310, https://doi.org/10.1016/j.ijedro.2023.100310; Carrasco Ramírez and Islam, "Utilizing Artificial Intelligence in Real-World Applications."

[16] Sondakh, Osman, and Zainudin, "A Proposal for Holistic Assessment of Computational Thinking for Undergraduate: Content Validity"; Adu and Zondo, "Enhancing Teachers' Digital Skills in Teaching of Economics in South African Secondary Schools."

level digital tools.[17] It is against this backdrop of digital literacy in South Africa that this research is grounded.

Nature of Matric Learners' Digital Preparedness in South Africa for Higher Learning Institutions

Examining the nature of matric learners' digital preparedness in South Africa for higher learning institutions is a crucial endeavour. Research indicates that South African learners still face inequalities in accessing technology, influenced by factors such as income, ethnicity, and race.[18] Consequently, this research emphasizes that the South African education system holds the responsibility to empower matric learners to their fullest potential in order to cope with the increasing technological demands in higher learning institutions.[19] Moreover, the alignment of high school curricula and teaching approaches with the requirements of higher learning institutions should be prioritized to meet the needs of matric learners.[20]

Teachers' Digital Pedagogical Approach for Learner Preparedness

This research also recognizes the importance of exploring the concept of "digital pedagogy," which refers to the combination of programs, stages, and resources focused on teaching methods that progress in a logical manner to implement this process.[21] In other words, digital pedagogy involves leveraging media resources and digital tools in a complementary manner to enhance creativity, improve learning effectiveness, and encourage engagement among learners from diverse backgrounds and with varying abilities.[22] Achieving the success of digital pedagogy as described requires the integration of technology with learning content, ensuring accessibility for learners, authenticity in practice, and fostering active participation in the learning process.[23]

Similarly, this research aims to delve into teachers' digital pedagogical approaches in preparing matric learners. Studies have indicated that classrooms in Southern Africa have predominantly relied on explicit direct instructional practices, where teaching strategies heavily rely on teacher explanations and demonstrations, focusing primarily on content coverage within limited time frames for assessments.[24] Consequently, the important goals of digital technology education, which are intricately

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[17] Devasena, "Artificial Intelligence in Education: An Alternative to Traditional Learning."
[18] Sam Takavarasha, Liezel Cilliers, and Willie Chinyamurindi, "Navigating the Unbeaten Track from Digital Literacy to Digital Citizenship: A Case of University Students in South Africa's Eastern Cape Province," *Reading and Writing* 9, no. 1 (November 6, 2018), https://doi.org/10.4102/rw.v9i1.187; Omneya Kandil et al., "Investigating the Impact of the Internet of Things on Higher Education: A Systematic Literature Review," *Journal of Applied Research in Higher Education*, January 16, 2024, https://doi.org/10.1108/JARHE-05-2023-0223.
[19] Nico Jooste and Cornelius Hagenmeier, "Policy Framework for the Internationalisation of Higher Education in South Africa: A Compass for Comprehensive Internationalisation?," *Journal of Studies in International Education* 26, no. 4 (September 5, 2022): 415–35, https://doi.org/10.1177/10283153221105318; Olen Gunnlaugson et al., "Revisiting the Nature of Transformative Learning Experiences in Contemplative Higher Education," *Journal of Transformative Education* 21, no. 1 (January 7, 2023): 84–101, https://doi.org/10.1177/15413446211067285.
[20] Reis-Andersson, "School Organisers' Expression on the Expansion of the Access and Application of Digital Technologies in Educational Systems"; Emmanuel Ayisi Abedi, "Tensions between Technology Integration Practices of Teachers and ICT in Education Policy Expectations: Implications for Change in Teacher Knowledge, Beliefs and Teaching Practices," *Journal of Computers in Education*, September 12, 2023, https://doi.org/10.1007/s40692-023-00296-6; Bond et al., "A Meta Systematic Review of Artificial Intelligence in Higher Education: A Call for Increased Ethics, Collaboration, and Rigour."
[21] Rajab and Wright, "Government Constructions of the Pedagogical Relationship between Teachers and Children in Saudi Preschool Education: Issues of Adoption or Adaptation?"; Abedi, "Tensions between Technology Integration Practices of Teachers and ICT in Education Policy Expectations: Implications for Change in Teacher Knowledge, Beliefs and Teaching Practices."
[22] Gachie, "Higher Education Institutions, Private Sector and Government Collaboration for Innovation within the Framework of the Triple Helix Model"; Carrasco Ramírez and Islam, "Utilizing Artificial Intelligence in Real-World Applications"; Devasena, "Artificial Intelligence in Education: An Alternative to Traditional Learning."
[23] Kummitha and Crutzen, "How Do We Understand Smart Cities? An Evolutionary Perspective"; Kandil et al., "Investigating the Impact of the Internet of Things on Higher Education: A Systematic Literature Review."
[24] University at Buffalo, "Constructivism," Office of Curriculum, Assessment and Teaching Transformation, 2022, https://www.buffalo.edu/catt/teach/develop/theory/constructivism.html; Jessica Cira Rubin, "'We Felt That Electricity': Writing-as-becoming in a High School Writing Class," *Literacy* 57, no. 1 (January 13, 2023): 51–60, https://doi.org/10.1111/lit.12306.

linked to effective real-life teaching, are often overlooked.[25] This highlights the scarcity of digital skills; wherein high school education plays a critical role in preparing learners.

THEORETICAL FRAMEWORK

A research model serves as a scientific framework that explains the variables (constructs) associated with a particular phenomenon and their interrelationships.[26] This research was grounded in three theories that formed the basis of the research model: Social Constructivism theory, Expectancy theory, and Technological, Pedagogical, and Content Knowledge (TPACK). Social Constructivism is based on the idea that individuals actively construct their own knowledge, and reality is shaped by their experiences as learners.[27] This suggests that in order for effective learning to occur, new learning experiences must consider human factors and assist learners in assimilating new knowledge into their existing cognitive structures.[28]

Expectancy theory, as described by Bandura, provides a technical and developmental framework that is valuable in addressing the research topic, specifically addressing the readiness of matric learners and teachers for HEIs.[29] Expectancy theory explores the motivations and desires of matric teachers as they employ different teaching approaches and digital tools to prepare matric learners for HEIs.[30] The TPACK framework, adapted from Shulman's concept of Pedagogical Content Knowledge (PCK), describes how teachers' knowledge of digital technology, pedagogy, and content interact to produce effective teaching with technology.[31] TPACK emphasizes the importance of aligning digital literacy content, pedagogy, and subject matter, recognizing that a comprehensive digital literacy curriculum benefits from this careful alignment.[32]

Building on the discussion of these three theories, the conceptual model representing teachers' pedagogical development in Information Communication Technology (ICT) for this research has been derived (see Figure 1 for reference). These theories and the TPACK framework have guided the researcher in collecting, analysing, and interpreting data for this research.[33]

[25] Bond et al., "A Meta Systematic Review of Artificial Intelligence in Higher Education: A Call for Increased Ethics, Collaboration, and Rigour"; Rosnazri et al., "Real-Time Vision-Based Hand Gesture to Text Interpreter by Using Artificial Intelligence with Augmented Reality Element."
[26] M. Saunders, P. Lewis, and A. Thornhill, *Research Methods for Business Students*, 7th ed. (Edinburgh Gate Harlow: Pearson Education Limited, 2016).
[27] L. S. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge: Harvard University Press, 1978).
[28] Rubin, "'We Felt That Electricity': Writing-as-becoming in a High School Writing Class"; Devasena, "Artificial Intelligence in Education: An Alternative to Traditional Learning"; Peng Sun and Xiaode Zuo, "Philosophical Foundations of Management Research: A Comprehensive Review," *Journal of Scientific Reports* 6, no. 1 (2024): 1–22, https://doi.org/10.58970/JSR.1031.
[29] Albert Bandura, *Self-Efficacy: The Exercise of Control* (Macmillan, 1997).
[30] Gachie, "Evaluation of a New Online Learning Resource: The Human Computer Interface Design."; Reis-Andersson, "School Organisers' Expression on the Expansion of the Access and Application of Digital Technologies in Educational Systems."
[31] Lee Shulman, "Knowledge and Teaching: Foundations of the New Reform," *Harvard Educational Review* 57, no. 1 (1987): 1–23; Matthew Koehler and Punya Mishra, "What Is Technological Pedagogical Content Knowledge (TPACK)?," *Contemporary Issues in Technology and Teacher Education* 9, no. 1 (2009): 60–70.
[32] Koehler and Mishra, "What Is Technological Pedagogical Content Knowledge (TPACK)?"; Sun and Zuo, "Philosophical Foundations of Management Research: A Comprehensive Review."
[33] J. W. Creswell, C. Plano, and L. Vicki, *Designing and Conducting Mixed Methods Research* , 3rd ed. (London: Sage, 2017).

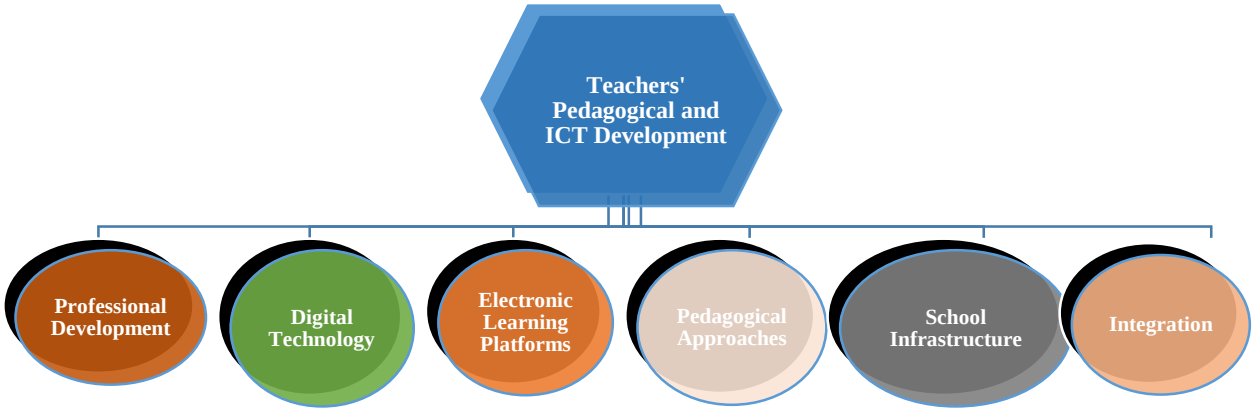

Figure 1: Conceptual model Representing Teacher's Pedagogical ICT Development
(Source: Designed by the Researcher, 2024)

Furthermore, Figure 1 provided the framework for collecting, analysing, interpreting data, and informing future research plans.

METHODOLOGY

This research employed an exploratory design, utilizing a reasonably large sample size and employing statistical analysis to comprehensively investigate the digital pedagogical approaches of matric teachers in relation to students' digital technology readiness for participation in HEIs. The research adopted a survey research strategy, which is commonly utilized in the social sciences to collect quantitative data.[34]

The target population for this research consisted of teachers instructing matric learners in high schools across the four circuits in Pinetown. A sample size of 363 teachers was selected from 25 schools, as determined by the research conducted by Krejcie and Morgan.[35] This sample size was considered acceptable, given a population of 1,300. A high response rate was achieved through a pilot research phase conducted prior to the main research, which provided participants with an understanding of the research subject.

Ethical clearance was obtained from the University of KwaZulu-Natal, South Africa, ensuring the maintenance of anonymity and confidentiality. All information provided by the participants was treated as confidential and was not disclosed to any third party.

Data Collection

Questionnaires were utilized as the data collection method in this research to gather standardized quantitative responses from a large population of teachers.[36] The questionnaires aimed to provide a quantitative measure of the subjective digital preparedness of matric learners for HEIs.[37] Each section of the questionnaire consisted of both close-ended and open-ended questions. Close-ended questions utilized a 5-point Likert scale, allowing respondents to indicate their level of agreement or

[34] Louis Cohen, Lawrence Manion, and Keith Morrison, *Research Methods in Education* (London: Routledge, 2017), https://doi.org/10.4324/9781315456539; John W Creswell and J David Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Sage publications, 2017); Colin Foster, "Methodological Pragmatism in Educational Research: From Qualitative-Quantitative to Exploratory-Confirmatory Distinctions," *International Journal of Research & Method in Education* 47, no. 1 (January 5, 2024): 4–19, https://doi.org/10.1080/1743727X.2023.2210063; Martina Y. Feilzer, "A Pragmatist Approach to Mixed Methods Research," in *Philosophical Foundations of Mixed Methods Research* (London: Routledge, 2023), 13–29, https://doi.org/10.4324/9781003273288-3.
[35] Robert V. Krejcie and Daryle W. Morgan, "Determining Sample Size for Research Activities," *Educational and Psychological Measurement* 30, no. 3 (September 1, 1970): 607–10, https://doi.org/10.1177/001316447003000308.
[36] Feilzer, "A Pragmatist Approach to Mixed Methods Research."
[37] Cohen, Manion, and Morrison, *Research Methods in Education*; Creswell and Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*.

disagreement using response options such as "strongly agree," "agree," "neutral," "disagree," and "strongly disagree."

Out of the 363 questionnaires, 300 questionnaires were completed and returned by participants. Out of the 300 returned questionnaires, 250 were considered usable, because 50 were not completed in full. The survey responses from the participants were generally complete, with only a few incomplete responses to individual questions. To enhance the content validity of the questionnaire, a pilot research phase was conducted involving 10 respondents. Out of the 10 pilot questionnaires distributed, 8 were returned without any errors, indicating that the participants were able to answer the questions easily.

To assess the reliability of the questionnaire, Cronbach's alpha, a widely used reliability test, was employed in this research. Cronbach's alpha is an important concept in evaluating the questionnaire's reliability.[38] In this research, Cronbach's alpha reliability coefficient was calculated for the Likert-type scales used in both the teachers' and matric learners' questionnaire forms. Twenty matric teachers' questionnaire forms were distributed through Google Docs, and 10 matric learners' questionnaires were administered in four different schools based on their quintiles. The results of the reliability analysis indicated that the scores were above 0.60, demonstrating that the instruments used in the research were reliable.

Data Analysis

Data was analysed using the Statistical Package for the Social Sciences (SPSS). Firstly, the demographic characteristics of the respondents were presented. Secondly, the matric subjects of teachers who are participating in the research were presented. Thirdly the digital, technological, and pedagogical knowledge of the teachers were analysed. Lastly, the teachers' digital pedagogical approaches were examined.

PRESENTATION OF FINDINGS

Demographic Data

This section presents the demographic information of participants. This includes participants' gender, age group, educational qualification, and teaching experience. As presented in Table 1, the majority of the respondents were female 149 (58.7%). In other words, there were more females than males 106 (42.3%) who participated in the research, which reflects the representativeness of the randomly sampled respondents. Additionally, the sample was composed of various age groups. Majority of the respondents were within the age group of 31-40 years and 20-30 (29%); this constitutes 74 and 124 participants respectively, which represents 77.8% of the total respondents.

Table 1: A Demographic Representation of the participants

	Background Characteristics	Frequency	Percentage
Gender	Male	106	42.3
	Female	149	58.7
Age Group	20-30 years	74	29.1
	31-40 years	124	48.8
	41-50 years	33	13
	50 and over	23	10.1
Education qualification	Diploma	61	24
	B.Ed.	98	38.6

[38] Mohsen Tavakol and Reg Dennick, "Making Sense of Cronbach's Alpha," *International Journal of Medical Education* 2 (June 27, 2011): 53–55, https://doi.org/10.5116/ijme.4dfb.8dfd; Foster, "Methodological Pragmatism in Educational Research: From Qualitative-Quantitative to Exploratory-Confirmatory Distinctions."

	B.Ed. (Honours)	58	22.8
	Master's degree	38	14.6
Teaching experience	0-5 years	86	33.9
	6-10 years	78	30.7
	11-20 years	44	17.3
	21-30 years	35	13.8
	31 and over	11	4.3

Source: Developed by researcher for research purposes

The results from Table I indicate that there were more middle-aged teachers in the schools. Perhaps the participation of more middle-aged teachers in the research is an indication that middle-aged teachers are keen to integrate Information Communication Technology (ICT) in their teaching. However, the difference may also indicate that in most schools, the majority of teachers are young, which is a positive response for digitally preparing matric learners for higher learning institutions.
Furthermore, most of the respondents, namely 98((38.6%) were bachelor's degree holders, 61(24%) diploma holders, 58(22.8%) were honours degree holders and 38(14.6%) were master's degree holders. The group with the lowest number of respondents was the master's degree holders (14.6%). The small percentage of master's degree holders may be attributed to the fact that most teachers after obtaining their honours degree do not bother to enrol for a master's degree because it is not a compulsory requirement for teachers.

Likewise, majority of the respondents 86(33.9%) had 0-5 years of teaching experience, 78(30.7%) had 6-10 years, 44(17.3%) had 11-20 years, 35(13.8%) had 21-30 years, while 31 years and above constituted 11 (4.3%). As the number of years of teaching increases, the number of teachers decreases. More than 20% of the participants have 10 years of teaching experience or less. This indicates that a majority are still new in the teaching profession. This is a good sign showing that there is a potential for ICT integration in education in the future in South Africa. The number of teachers who participated in the research consisted of more middle-aged teachers who had average teaching experience.

Matric Subjects

The purpose of Table 2, which displays the matric subjects, is to provide an overview of the number of participants per subject. This information offers insights into the subjects taught by teachers who expressed interest in participating in the technology research. It indicates their willingness to integrate technology into their teaching practices, thereby digitally preparing matric learners for higher education institutions.

Table 2: Outline of Matric Subjects

Matric Subjects	N	%
Accounting	10	3,9%
Afrikaans FAL	6	2,4%
Business Studies	3	1,2%
CAT	5	2,0%
Civil Tech	3	1,2%
Consumer Stud.	1	0,4%
Dramatic Arts	10	3,9%
Economics	11	4,3%
EGD	10	3,9%
Electrical Tech.	2	0,8%

English FAL	2	0,8%
English Home Lang.	5	2,0%
Geography	9	3,5%
History	10	3,9%
Hospitality Stud.	3	1,2%
Information Tech.	4	1,6%
IsiZulu FAL	1	0,4%
IsiZulu Home Lang.	7	2,8%
Life Orientation	9	3,5%
Life Sciences	11	4,3%
Mathematical Lit.	7	2,8%
Mathematics	44	17,3%
Mechanical tech	2	0,8%
Music	7	2,8%
Physical Sciences	9	3,5%
Tech.Science	1	0,4%
Technical Maths.	2	0,8%
Tourism	10	3,9%

Source: Developed by the researcher for research purposes

Furthermore, Table 2 demonstrates that participants teaching Mathematics had the highest percentage of respondents (17%) who completed the questionnaire, followed by Economics and Life Sciences at 4.3%. While there is a significant difference of 13% between Mathematics respondents and Economics and Life Sciences, it is important to note that the response rates from Tech. Science, IsiZulu FAL, and Consumer Studies were even lower, indicating fewer participants from these subjects.

The purpose of Table 3 is to showcase the distribution of respondents per matric subject according to their age groups. From Table 3, it can be observed that there were more respondents aged between 31 and 40 who taught Mathematics, with a total of 44 participants in this age group.

Table 3: Crosstab of respondents Age with Outlines of Matric subjects

Age with Outlines of Matric subjects		Age				Total
		20-30	31-40	41-50	51 and over	
Subjects	Accounting	3	4	3	0	10
	Afrikaans FAL	0	3	3	0	6
	Business Studies	1	0	0	2	3
	CAT	1	3	1	0	5
	Civil Tech	0	3	0	0	3
	Consumer studies	1	0	0	0	1
	Dramatic Arts	7	3	0	0	10
	Economics	1	10	0	0	11
	EGD	2	7	1	0	10
	Electrical Tech.	0	2	0	0	2
	English FAL	0	1	1	0	2

	English Home Lang.	4	1	0	0	5
	Geography	4	2	0	3	9
	History	3	2	3	2	10
	Hospitality	1	1	0	1	3
	Information Tech.	2	2	0	0	4
	IsiZulu FAL	0	0	1	0	1
	IsiZulu Home Lang.	4	2	0	1	7
	Life Orientation	5	4	0	0	9
	Life Sciences	6	4	1	0	11
	Mathematical Lit.	0	5	2	0	7
	Mathematics	2	31	7	4	44
	Mechanical Technology	0	1	0	0	1
	Mathematics	0	0	2	0	2
	Music	3	2	0	2	7
	Physical Science	0	1	0	0	1
	Tech. Maths	0	1	0	0	1
	Tech. Science	0	1	0	0	2
	Tourism	6	1	1	2	10
Total		**74**	**124**	**33**	**24**	**255**

Source: Developed by the researcher for research purposes

Moreover, Table 3 reveals that mathematics teachers exhibited a higher level of interest in participating in this research, potentially indicating their willingness to modify their teaching practices in order to digitally prepare matric learners for higher education institutions. Additionally, the total number of participants across all age groups was highest for the 31-40 age range. This suggests that most science subjects are predominantly taught by teachers in their mid-30s. Interestingly, the majority of younger respondents (20-30 age group) were teaching Dramatic Arts and Life Sciences, while they were present across all other subjects except for Mathematics and Technical subjects. This observation is not ideal, as younger teachers could be the best group to integrate 21st-century teaching and learning skills.

Moving on, Table 4 demonstrates the relationship between teaching experience and matric subjects. Teaching experience plays a crucial role in shaping teachers' pedagogical approaches in digitally preparing matric learners for higher education institutions.

Table 4: Crosstab of respondents teaching experience with the outline of Matric subjects.

		Teaching experience					Total
		0-5 years	6-10 years	11-20 years	21-30 years	31 and over	
Subject	Accounting	1	2	3	4	0	10
	Afrikaans FAL	2	0	0	4	0	6
	Business Studies	0	1	0	1	1	3
	CAT	2	2	0	1	0	5
	Civil Tech	2	1	0	0	0	3
	Consumer stud.	1	0	0	0	0	1

	Dramatic Arts	3	3	0	3	1	10
	Economics	6	4	1	0	0	11
	EGD	5	3	1	0	1	10
	Electrical Tech.	0	2	0	0	0	2
	Electrical Technology	0	1	0	0	0	1
	English FAL	1	0	1	0	0	2
	English Home Lang.	4	0	1	0	0	5
	Geography	3	0	1	5	0	9
	History	3	3	1	2	1	10
	Hospitality Stud.	0	3	0	0	0	3
	Information Tech.	2	2	0	0	0	4
	IsiZulu Home Lang.	3	4	0	0	0	7
	Life Orientation	6	2	1	0	0	9
	Life Sciences	4	6	1	0	0	11
	Mathematical Lit.	0	3	4	0	0	7
	Mathematics	13	12	12	6	1	44
	Mechanical tech	2	0	0	0	0	2
	Mathematics	0	0	2	0	0	2
	Music	2	0	3	0	2	7
	Physical Sciences	2	2	3	2	0	9
	Tech.Science	0	1	0	0	0	1
	Technical Maths.	2	0	0	0	0	2
	Tourism	2	5	3	0	0	10
Total		**86**	**78**	**44**	**35**	**11**	**254**

Source: Developed by the researcher for research purposes

Table 4 also indicates that Mathematics has the highest representation across all levels of teaching experience. However, it is noteworthy that the 0 to 5 years teaching experience category had the highest number of respondents and a fair distribution across various subjects. On the other hand, the data suggests that respondents with more teaching experience were less likely to participate in the research.

Digital Content Knowledge

Table 5 presents statements aimed at examining the participants' digital content knowledge, specifically their familiarity with the use of open learning platforms as a lesson delivery tool. It is crucial for teachers to possess a comprehensive knowledge base of the subject matter, enabling them to retrieve and teach content in a logical and organized manner. Therefore, including a question on content knowledge in this research provided valuable data regarding the participants' level of content knowledge.

Table 5: Outline of computer applications used by participants.

	N	%
Only Ms Word	40	15,7%
Ms Word, Excel, PowerPoint, and Paint	165	65,0%
I cannot do calculations on Excel but I can use Ms PowerPoint and Ms Word for my lessons	43	16,9%
I have never used a computer	6	2,4%

Source: Developed by the researcher for research purposes

Table 5 also highlights that a majority of participants have a basic understanding of computer applications. While this is a positive response, effective preparation of students for a digital future typically requires more than just a fundamental knowledge of computer applications. Proficiency in applications such as Microsoft Word, Microsoft Excel, and Microsoft PowerPoint is essential as they form the foundation for all other online learning platforms.

It is concerning, however, that 2.4% of participants have never had any experience with computers. This raises questions about how these individuals will be able to digitally prepare learners for higher learning institutions. On the other hand, Table 5 reveals that 16.9% of participants are potentially capable of digitally preparing matric learners for higher education institutions. This suggests that they are proficient in utilizing online learning platforms and can effectively prepare matric learners.

Technological Knowledge

Table 6 presents the assessment of participants' knowledge of online learning platforms. In digitally preparing matric learners for higher education institutions, teachers need to possess the necessary technological knowledge or online teaching experience. Table 6 will provide insight into whether teachers are adequately prepared to guide learners toward a digital future or if they require further professional development.

Table 6: Outline of online learning platforms

Statements	N	%
Online learning promotes active learning	152	59,8%
I do not really use online learning platform in my teaching	87	33,5%
I am not sure	17	6,7%

Source: Developed by the researcher for research purposes

Table 6 reveals that 59.8% of respondents agreed that online learning promotes active learning, indicating that they have likely encountered online programs or have utilized online learning in their own teaching practices. However, it is surprising to note that a relatively high percentage (33.5%) of respondents do not use online teaching platforms in their practice. This is not an ideal situation in the 21st century, where most teachers are expected to incorporate at least some aspects of 21st-century teaching skills. Additionally, Table 6 indicates that 6.7% of respondents expressed uncertainty about what online learning entails, suggesting that a small number of teachers still lack a clear understanding of online learning platforms.

Pedagogical Knowledge

Moving on to Table 7, its purpose is to indicate the pedagogical approaches employed by the participants in digitally preparing matric learners for higher education institutions. The table shows that problem-based learning (31.1%) and project-based learning (21.7%) received the highest percentages of respondents. This suggests that participants find it more effective to teach by assigning

projects and engaging in problem-solving activities with their learners. This is a positive indication of active learning and authentic teaching practices taking place in the classroom.

Table 7: Outline of teaching approaches of participants

Statements	N	%
Situated based learning	10	3,9%
Problem based learning	79	31,1%
Case based learning	23	9,1%
Project based learning	55	21,7%
Inquiry based learning	24	9,4%
Role-play and simulation	40	15,7%
None of them	23	9,1%

Source: Developed by the researcher for research purposes

Table 7 also highlights that 15.7% of respondents chose role-play and 9.4% selected simulation as their preferred pedagogical approach. This suggests that teachers possess some knowledge of pedagogical approaches that can facilitate the integration of ICT in their practice, thereby digitally preparing matric learners for higher education institutions.

However, it is concerning to note that 9.1% of respondents indicated that they have no knowledge of the teaching approaches they use. This raises the possibility that these teachers have never received professional guidance on various teaching and learning approaches, or they may be unwilling to attempt different approaches, or they might be using them unknowingly. The teaching and learning approaches listed in Table 7 are considered 21st-century approaches for effective teaching and learning. In order to adequately prepare learners for a digital future, it is essential for teachers to have a comprehensive knowledge of these approaches and be able to utilize them effectively.

Digital Technology Knowledge

In examining the digital knowledge of teachers' participants were asked to respond to Likert-type statements using a five-point scale, ranging from 1 (indicating strong agreement) to 5 (indicating strong disagreement). Table 8 consists of statements that assessed teachers' digital knowledge. These statements are essential for this research as they helped answer the research question regarding the competencies and digital knowledge of matric teachers. According to Erduran, digital knowledge refers to understanding how to use applications software such as Office suites, social media, blogs, and the internet as a whole, as well as teachers' knowledge of digital calculation devices and software.[39] Additionally, Saricoban, Tosuncuoglu, and Kirmizi state that digital knowledge should involve a well-organized use of various types of digital technology and devices in social, formal, and informal contexts.[40]

Table 8 indicates that 30.3% of respondents perceive that every subject has corresponding technological resources that can be integrated into their teaching practices. This suggests a positive attitude towards technology integration. Additionally, Table 8 reveals that respondents face resource shortages (35.6%), but they express a strong desire to integrate technology into their instruction (30.3%).

[39] Ayten Erduran and Burcin Ince, "Identifying Mathematics Teachers' Difficulties in Technology Integration in Terms of Technological Pedagogical Content Knowledge (TPCK).," *International Journal of Research in Education and Science* 4, no. 2 (2018): 555–76.

[40] Sarıçoban, Tosuncuoğlu, and Kırmızı, "A Technological Pedagogical Content Knowledge (TPACK) Sssessment of Pre-Service EFL Teachers Learning to Teach English as a Foreign Language."

Table 8: Identification of digital technology as resources

Statement N=255	SD	D	N	A	SA
I carefully specify technologies that best suit the subject that I teach	11.4%	8.7%	18.9%	30.3%	31.7%
I do not need to integrate digital technology when teaching my subject	16.9%	19.7%	26.4%	15.7%	21.3%
Resources shortage is the reason why I do not use digital technology in my subject	11.8%	10.6%	24.0%	18.9%	35.6%
The subject that I teach does not have any matching digital resources	30.3%	11.4%	28.0%	15.4%	15.0%
I make use of online settings to provide resources for my subject	22.0%	13.4%	19.3%	21.7%	23.2%
I recognise how digital technology and my subject content influence and constrain one another	12.6%	10.6%	22.0%	23.2%	31.5%

Source: Developed by researcher for research purposes

Digital Pedagogical Approaches

Table 9 examines digital pedagogical approaches that aim to develop learners' technological intelligence by immersing them in authentic environments, including virtual reality.[41] The purpose of Table 9 is to analyse the teachers' digital pedagogical approaches, aligning them with the literature as discussed by Alhirtani,[42] which outlines approaches in a digital classroom, such as real-life teaching and learning, utilization of online platforms[43] and problem-based learning. [44]

Table 9 indicates a positive response, with 41.3% and 28.0% of respondents strongly agreeing with the use of digital technology in their teaching practices. These participants claim that digital technology helps them stay relevant in modern society.

Table 9: Digital pedagogical approaches

Statements	SD	D	N	A	SA
Learning and thinking in education must examine the pedagogy of digital technologies to ensure that they achieve aims of my subject	3.1%	5.5%	31.1 %	23.2 %	37.0 %
The use of technology in teaching encourages critical thinking in learners	2.8%	6.7%	26.4 %	22.8 %	40.2 %
Digital technology "should" be implemented into teaching practice	2.0%	7.5%	24.4 %	27.2 %	39.0 %
Using digital technology in my teaching helps me remain relevant an in step with modern society	1.6%	3.1%	26.0 %	28.0 %	41.3 %
I embrace e-learning in my teaching no matter how complex and fast moving it is because it is important	4.7%	13.4 %	28.3 %	15.7 %	37.8 %
I regularly research new teaching approaches that would assist me integrate digital technology in my teaching	9.4%	13.4 %	35.0 %	16.1 %	26.6 %
My teaching approaches do not need any digital technology integration	5.9%	20.1 %	29.9 %	16.9 %	26.8 %

[41] Hösl, "Semantics of the Internet: A Political History."
[42] Nahla A. K. Alhirtani, "The Use of Modern Teaching Methods in Teaching Arabic Language at Higher Education Phase from the Point View of Arabic Language Professors—A Case of a Premier University," *International Education Studies* 13, no. 1 (December 27, 2019): 32, https://doi.org/10.5539/ies.v13n1p32.
[43] Elnaz Safapour, Sharareh Kermanshachi, and Piyush Taneja, "A Review of Nontraditional Teaching Methods: Flipped Classroom, Gamification, Case Study, Self-Learning, and Social Media," *Education Sciences* 9, no. 4 (2019): 273.
[44] Jacob Davidsen, Pernille Viktoria Kathja Andersen, and Ellen Christiansen, "Problem-Based Learning in a Box: Lessons Learned from an Educational Design Experiment," *Journal of Problem Based Learning in Higher Education* 7, no. 1 (2019).

Digital technology is a waste of time, in need to compete the syllabus on time	29.9 %	13.0 %	17,3 %	15,4 %	24,4 %

Source: Developed by researcher for research purposes

In Table 9, there is a significant portion of respondents (20.1%) who disagree with the statement that digital technology integration is not relevant for their subjects. This indicates a positive attitude towards the relevance of digital technology across different subject areas. However, it is concerning that a high percentage (35.0%) of respondents are unsure about being lifelong scholars who actively seek better resources, online platforms, and digital pedagogical approaches. This suggests a potential need for further professional development and support in fostering a mindset of continuous learning and exploration of digital tools and resources.

Digital Preparedness

Table 10, presents an assessment of teachers' knowledge regarding the effective digital preparation of matric learners for higher education institutions. Some studies argue that teachers should adopt an interdisciplinary, immersive, multi-age, project-based, and collaborative approach to teaching and learning.[45]

Table 10: Teachers' knowledge of better digital preparation of matric learners for HEIs.

Statement N=255	SD	D	N	A	SA
I possess effective teaching with digital technology	6.3%	13.0%	29.1%	31.9%	19.7%
I recognise the representation of my subject concepts and culture using digital technology	6.3%	14.2%	29.9%	25.2%	24.4%
I have knowledge of pedagogical techniques that use digital technologies in constructive ways to teach my subject	12.2%	11.8%	28.7%	21.3%	26.0%
I have the knowledge of what makes my subject concepts difficult or easy to learn and how digital technology can help redress some of the problems that my learners face	7.1%	9.4%	26.0%	31.5%	26.0%
I often integrate my knowledge of digital technology and my subject content and different teaching approaches into my teaching	5.1%	11.8%	27.6%	30.7%	24.8%
I have knowledge of my learner's prior knowledge and their knowledge of the world in this 21st century	5.9%	10.2%	28.3%	31.1%	24.4%
I have knowledge of how digital technology can be used to build an existing knowledge to develop new world views or strengthen new ones	6.7%	14.6%	32.3%	20.9%	25.6%

Source: Developed by researcher for research purposes

Table 10 reveals that the majority of respondents (26%) possess knowledge of pedagogical approaches that utilize digital technologies in constructive ways to teach their subjects and understand how technology can assist them in problem-solving within their teaching practice. Furthermore, Table 10 indicates that a significant portion of respondents (31.9%) are already integrating technology into their teaching.

[45] Kristin Novotny, "Maker's Mind: Interdisciplinarity, Epistemology, and Collaborative Pedagogy," *Journal of Interdisciplinary Studies in Education* 8, no. 1 (2019): 45–62.

However, it is concerning to note that a high percentage (32.3%) of respondents are still unsure about the connection between technology and pedagogy. This suggests a potential resistance to change or a lack of exploration of newer teaching methods that incorporate technology. It may also indicate a need for further professional development and training in utilizing technology effectively for teaching and learning purposes.

DISCUSSION

The findings of this research indicate that the overall pedagogical approaches of teachers are promising. It is encouraging to see that most teachers have knowledge of different teaching and learning approaches and prefer those they believe work best in their own practices. Understanding the pedagogical approaches of matric teachers is crucial as they play a vital role in shaping learners and preparing them for the evolving world.

Problem-based and project-based teaching and learning approaches are essential components of digital technology integration. The fact that a majority of teachers in this research express a preference for these approaches suggests that they have the potential to digitally prepare matric learners for higher learning institutions. However, it is important to ensure that these pedagogical approaches are aligned with the specific learning goals outlined in the curriculum. As observed by Flores, Lopez, and Moore-Russo, effective digital preparedness requires pedagogical approaches that not only align with the curriculum but also cater to the individual needs of learners.[46]

The use of online learning platforms is another aspect that needs attention. The results indicate that only teachers who have prior experience of being taught online demonstrate the ability and enthusiasm to teach using online platforms. This implies that learners would need to develop skills in navigating such platforms and engage in mini-projects that demonstrate their mastery of the platform and their ability to engage in content development and critical thinking tasks related to 21st-century skills. Engaging learners in mini-projects can also contribute to the development of teachers' technological skills, as highlighted by Shafie, Majid, and Ismail.[47]

In conclusion, instilling digital literacy pedagogy among teachers is crucial for encouraging higher-order thinking, self-directed learning, and interactive learning experiences. The effective use of digital technology in classrooms relies on proper digital preparation and alignment of pedagogical approaches with curriculum goals. Engaging both teachers and learners in online learning platforms and mini-projects can further enhance digital preparedness and foster the development of 21st-century skills.

RECOMMENDATIONS

The following recommendations are based on the findings of this research and provide a foundation for understanding the current state of digital preparedness among matric teachers. These recommendations highlight key areas where improvements can be made and suggest actionable steps to enhance digital readiness and pedagogical approaches. By addressing these areas, the research aims to support teachers in effectively preparing learners for higher education and ensuring they are equipped to meet the demands of the digital age.

1. **Enhanced Professional Development Programs**
    - **Tailored Training:** The Department of Education (DoE) should develop and implement professional development programs specifically tailored to address gaps in digital preparedness and pedagogical knowledge. These programs should focus on equipping teachers with advanced digital skills, familiarity with online learning platforms, and effective integration

[46] Crisólogo Dolores Flores, Martha Iris Rivera López, and Deborah Moore-Russo, "Conceptualizations of Slope in Mexican Intended Curriculum," *School Science and Mathematics* 120, no. 2 (February 11, 2020): 104–15, https://doi.org/10.1111/ssm.12389.
[47] Hidayu Shafie, Faizah Abd Majid, and Izaham Shah Ismail, "Technological Pedagogical Content Knowledge (TPACK) in Teaching 21st Century Skills in the 21st Century Classroom," *Asian Journal of University Education* 15, no. 3 (December 31, 2019): 24, https://doi.org/10.24191/ajue.v15i3.7818.

techniques. Schools should actively participate in these programs, ensuring that their teaching staff is trained and supported.

- **Ongoing Support:** The DoE should provide continuous support and resources for teachers to stay updated with evolving digital tools and pedagogical approaches. This can include organizing workshops, webinars, and online courses that cover the latest advancements in educational technology. Schools should facilitate participation and encourage ongoing professional learning among their teachers.

2. **Resource Allocation and Technological Integration**
   - **Address Resource Shortages:** The DoE should work to overcome barriers related to resource shortages by ensuring schools have adequate access to digital tools and online learning platforms. This may involve exploring partnerships with technology providers to facilitate access to necessary resources. Schools should identify their specific needs and collaborate with the department to secure the required resources.
   - **Integrate Technology Strategically:** The DoE should provide guidance and support to schools on integrating technology in a way that aligns with curriculum and teaching goals. Schools should apply this guidance to effectively incorporate digital resources into their teaching practices, selecting and utilizing appropriate tools for different subjects and pedagogical approaches.

3. **Promote Active Digital Pedagogy**
   - **Encourage Innovative Teaching Methods:** Schools should create an environment where teachers feel comfortable experimenting with new digital pedagogical approaches, such as problem-based and project-based learning. The DoE can support this by offering incentives for innovative practices that effectively use technology to enhance learning outcomes.
   - **Develop Digital Literacy:** Schools should focus on developing students' digital literacy through mini-projects and practical applications of technology. The DoE can provide resources and frameworks to support the integration of digital literacy into the curriculum, ensuring that learners engage in real-world scenarios that reinforce their technology skills.

4. **Support and Collaboration**
   - **Create Collaborative Platforms:** The DoE should establish platforms for teachers to share best practices, challenges, and solutions related to digital technology integration. Schools should encourage their teachers to participate in these collaborative platforms, fostering a community of practice and peer networking.
   - **Encourage Reflective Practice:** Schools should promote a culture of reflective practice where teachers regularly assess and adapt their use of digital technology based on feedback and observed outcomes. The DoE can support this by providing frameworks and resources for reflective practices.

5. **Continuous Evaluation and Feedback**
   - **Regular Assessment:** The DoE should implement regular assessments of digital preparedness among teachers to identify areas for improvement and adjust training programs accordingly. Schools should participate in these assessments and provide feedback on the effectiveness of digital tools and methods.
   - **Adapt to Emerging Trends:** Both the DoE and schools should stay attuned to emerging trends and technological advancements in education. The department should ensure that teachers are informed about new developments, while schools should integrate these innovations into their teaching practices.

CONCLUSION

In conclusion, the evolving landscape of education necessitates a transformation in the roles of both learners and teachers. As knowledge sources diversify and technology advances, it is imperative for teachers to evolve from traditional transmitters of information to dynamic facilitators of learning. This shift presents both a challenge and an opportunity to enhance teaching practices and adapt to the changing educational environment. The findings of this research underscore the critical need for teachers to embrace creativity and adaptability. Effective teaching in the digital age requires the integration of advanced digital technologies and innovative pedagogical methods. Teachers must leverage these tools to create engaging, critical thinking, and collaborative learning opportunities that align with the goals of the curriculum. To address the challenges identified, it is essential that professional development programs be tailored to enhance teachers' digital skills and pedagogical knowledge. Overcoming resource shortages and integrating technology strategically into teaching practices will be crucial. Encouraging teachers to adopt and experiment with digital pedagogical approaches, such as problem-based and project-based learning, will further support their efforts to prepare students effectively for higher education. As the educational landscape continues to evolve, teachers should remain committed to continuous learning and adaptation. By staying updated with advancements in digital technology and pedagogical strategies, they can better integrate technology into their practices, leverage online learning platforms, and explore innovative teaching methods. This will enable them to effectively prepare matric learners for higher education and equip them with the skills necessary for success in the digital era. This research highlights the importance of a collaborative and dynamic approach to teaching and learning. It advocates for a shift towards integrating technology and innovative pedagogical approaches, ensuring that teachers are well-equipped to support the digital preparedness of matric learners. By adopting these recommendations, educators can contribute significantly to their students' readiness for the challenges of higher education and the future workforce.

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