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Identifying Factors Influencing Pre-Service Teacher Readiness to Use Technology During Professional Practice

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ABSTRACT

Pre-service teachers should be taught how to use technology so that they are equipped to use the knowledge and skills acquired in their professional practice. However, studies have shown that pre-service teachers are not adequately prepared to teach with technology. Therefore, the purpose of this study is to explore pre-service teachers' perspectives on factors that impact on their readiness to teach with technology. The TPACK and UTAUT2 models are used as frameworks. This is a qualitative study in which 16 pre-service teachers were involved in two focus group discussions, and the data obtained are deductively analysed. From the findings, a number of factors enabled and hindered teacher readiness to use technology. These factors include projects and workshops on technology, resources, and teacher-educators and mentor-teachers in schools modelling the use of technology. The study highlights the importance of consistent and effective modelling on the use of technology by teacher educators and mentor teachers in the schools in order to equip pre-service teachers to effectively teach with technology during professional practice.

KEYWORDS

Mentor Teachers at School, Modelling the Use of Technology, Pre-Service Training, Teacher Education Institutions, Teacher Educators, TPACK, Trainings on Technology, UTAUT2

INTRODUCTION

Today's learners are digital natives, as they were born after the advent of digital technology and they use technology, such as Instagram, Facebook, LinkedIn and Twitter (Swanepoel & Bruwer, 2020), on a daily basis for communication and entertainment. Woo, White and Lai (2016) observe that many young people spend increasingly more time engaged in using technology devices in school, work and leisure activities. For learners to be prepared to successfully function in the 4th industrial era which is dominated by the use of technology (Mwapwele, Marais, Dlamini & van Biljon, 2019), Teacher Education Institutions (TEIs) need to prepare pre-service teachers to effectively teach with technology. In response to this, in South Africa, the government has developed ICT policies such as the Minimum Requirements for Teacher Education Qualification (MRTEQ), to inform and foster the

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use of technology in TEIs. MRTEQ stipulates that pre-service teachers should know how to use ICTs for "innovative teaching and enhanced learning" (NDoHE, 2011, pp. 9). This policy document suggests that TEIs should create conditions that would develop pre-service teacher's ability and knowledge to effectively use technology, to improve on their quality of teaching and learning during professional practice. There is evidence in the literature which indicates that teachers who are knowledgeable and skilled in the use of technology, used it to transform their teaching and learning (Umugiraneza, Bansilal, North, 2018). This finding supports the argument made by Sabiri (2020) that learners will benefit more when technology is used constructively for curriculum delivery.

Due to the benefits of technology, there is a need for pre-service teachers to acquire the knowledge and skills to teach with technology during professional practice. Research has shown that pre-service teachers are not adequately prepared to teach with technology as the focus is on content: institutions have limited technology infrastructure, no plan and vision for technology integration and a lack of support from administration (Cuhadar, 2018; Davis & Ariffin, 2013; Tiba, Condy, Chigona & Tunjera, 2015; Valtonen, Kukkonen, Kontkanen, Makitalo-Siegl & Sointu, 2017). It is against this background that researchers explore factors that influence pre-service teacher's readiness to use technology during professional practice. The researchers sought to answer the question:

What factors impact on pre-service teacher's readiness to teach with technology during professional practice?

The sample subjects employed for this study are final-year Intermediate Phase pre-service teachers at a university in the Western Cape, South Africa. These pre-service teachers were selected because they had been trained both on campus and during teaching practice at schools on how to use technology for teaching and learning. The pre-service teachers had workshop sessions and courses that trained them to use technology.

This study is significant since the findings contribute in creating awareness of the key factors that have an impact on pre-service teacher's readiness to use technology. Therefore, the Department of Higher Education, Science and Technology as well as TEIs, may consider the findings of this research and design ways to better prepare pre-service teachers to uptake and effectively use technology during professional practice. This is important because, in order for prepare pre-service teachers to effectively teach in the 21st century classroom which is technology-driven, the starting point should be the TEI, as teachers cannot give what they do not have.

THE TPACK AND UTAUT2 FRAMEWORKS

The Technology Pedagogy and Content Knowledge (TPACK) framework guided this study (Mishra & Koehler, 2006). According to Mishra and Koehler (2006), effective teaching with technology requires a blend of technology, pedagogy and content knowledge (TPACK). They define content knowledge (CK) as a teacher's knowledge of the subject matter to be taught in the classroom; technology knowledge (TK) is a teacher's knowledge and ability to use a variety of technologies for teaching and learning; and pedagogical knowledge (PK) covers knowledge of applying different strategies and teaching approaches during teaching. The intersection between TK, PK and CK produces pedagogy content knowledge (PCK), technology content knowledge (TCK), and technology pedagogy knowledge (TPK). PCK refers to knowledge of the most appropriate pedagogy to teach content; TCK is teachers' knowledge about technology that they can use to teach a particular content; and TPK is linked to a teacher's ability to choose the most appropriate pedagogy when teaching with technology. The concept of TPACK is diagrammatically represented in Figure 1.

As illustrated in Figure 1, TK, PK and CK intersect and overlap in the form of TPACK. According to Koehler, Mishra, Cain and Mishra (2013), all seven domains mentioned above form the basis of

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