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Toward Using Technology for Instructional Purposes in Lesotho

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Abstract

Preparing both teachers and students for the technological world is very challenging, requiring a total shift of the entire education system to accommodate the thorough use of technology. Studies show that technological competence is the key factor that holds the entire modern education structure together. However, the use of technology in teacher education is still delayed as student-teachers engage in technology for activities without meaningful learning purposes, such as fun-related activities. This calls for thorough training meant to remove the physical barriers that hinder student-teachers' use of technology in the classroom. This study examined factors that influence student-teachers' self-efficacy in using technology in learning in one teacher education institution in Lesotho. A systematic review approach was adopted to select and analyze studies on student-teachers and the use of technology in tertiary education. After screening for relevance, some studies were excluded. The themes that emerged from the selected studies were analyzed to build themes that are relevant to student-teachers' self-efficacy in using technology in learning. Findings indicate that student-teachers' self-efficacy in using technology is influenced by the lack of technological tools in classrooms and computer laboratories, lack of professional development, lack of information and communication technology (ICT) policy, cost of connectivity, and the benefits of technology in learning entrepreneurship education. These findings imply that teacher education is required to restructure its curriculum and offer adequate support to student- teachers and lecturers. In addition, teacher education must restructure their classrooms and computer laboratories to shape student-teachers for future roles.

Keywords: *Computers; entrepreneurship education; ICT policy; self-efficacy; technology.*

Introduction

The emergence and evolution of technology all around the globe has changed the roles played by individuals in society, including in education (Zahed, 2023). In former times, teachers used to be the only source of knowledge in education for parents and students, complemented by available textbooks (Zhao, 2022). In the case where teacher knowledge is limited, the main source remains the textbook (Zhao,2022). In education, technology has affected the quality of teaching and learning at all levels to affect the development of 21st-century skills in the classroom (Courville 2011). Previous research has shown that the use of technology in Lesotho universities is still in its infancy and that most lecturers and student-teachers are fully capable of using technology for instructional purposes (Turugare & Rudhumbu 2020). Since computers are only available in computer laboratories and not in the classrooms in Lesotho, all students are introduced to the basics at the entry year as a way of sensitizing them to their use in submitting assignments (Sepiriti, 2021).

Other studies show that teacher education must embrace technology and find ways in which they can integrate it in their curriculum for effective teaching and learning (Selialia, Mokhet`sengoane & Kuruta 2023). Thus, there is a big concern in teacher education that student-teachers lack technological competence to embrace the use of technology in learning (Teo, Fan & D, 2023); Courville, 2011). Research indicates that improvements made in technologies have a strong impact on what student-teachers decide to do in class, how they do it, and on their chances of succeeding or not (Zahedi, 2023); Smith, & Green, 2013). This results from their level of self-efficacy, as it determines the roles they play in teaching (Porzaz &Letzel, 2023). However, it has been found that few student-teachers use technology in the learning of entrepreneurship education.

Problem Statement

As technological competencies form the basis of teaching and learning in the knowledge era, student-teachers' technological knowledge, skills, and abilities become essential to improve the quality of education. This also means that thorough teacher education training in relation to the use of technology is required for

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teacher education to keep pace with this era. Although self-efficacy has been investigated and assessed by previous studies, there is still a lack of research assessing student- teachers' self-efficacy, as a large percentage of student-teachers in Lesotho are becoming increasingly incompetent and unskilled with various educational technologies. This is because classroom practices are still embedded with teacher-centric strategies used by lecturers that lead to passive and not digitally interactive teaching and learning. This impedes lecturers' technological usage to enhance the teaching and learning process in the entrepreneurship education classroom. It will also demoralize them, as their students will be more knowledgeable than them in this regard. Institutions of higher education must ensure that information and communication technology (ICT) courses are compulsory and successfully completed to enable continuous teaching and learning in schools and higher education.

Research Question

This study responds to the following question: *What factors influence the use of technology in learning Entrepreneurship Education?*

Self-Efficacy Theory

The study was framed by Albert Bandura's (1977) theory of self-efficacy (Bandura, 1977). According to Bandura, self-efficacy refers to the beliefs that a person holds about their capabilities to organize, execute, and succeed in certain tasks. It therefore refers to the strength of the individual's beliefs in their ability to complete tasks and accomplish certain goals. Bandura believes that skills are not the only factor that can allow an individual to perform and succeed in a task, but that self-efficacy also counts. He further explains that making judgments about own ability motivates in proceeding with whatever one plans to do. This study focuses on student-teachers' self-efficacy in using ICT for instructional purposes, describing the self-confidence they have about using ICT in their teaching and instruction. The focus is also on identifying factors that influence their self-efficacy in using ICT in their teaching practices; it is thus important to examine its impact on the teaching of Entrepreneurship Education (Loo & Choy 2013).

As mentioned by Bandura (1977) self-efficacy is influenced by or developed from four major sources: vicarious experiences, verbal persuasion, physiological and emotional state, as well as mastery experiences. According to Bandura (1977) the most effective way to develop a sense of self-efficacy is through mastering experiences. These refer to experiences that student-teachers had had previously and which, when recalled, can influence the current experiences. He argues that the individual can master or achieve their plans when they can recall that they have the skills and abilities to complete a task. Mastering or completing previous tasks demonstrates self-efficacy and provides authentic evidence that one can master whatever it takes concerning using technology. On the other side, failing to complete a task decreases the level of self-efficacy and leaves the individual to be seen as incompetent.

Vicarious experience, on the other hand, is a process of comparing oneself to others. It arises as a result of watching peers or models. Seeing or watching others succeeding in doing a certain task, that is, learning from those around them, boosts self-efficacy. If student-teachers can see themselves as similar to the models, they are deemed to have positive self-efficacy. Sometimes, self-efficacy increases through positive (verbal) reinforcement from others, called social persuasion. Social persuasion refers to feedback or judgments as well as appraisals received from significant others around them about engaging in and achieving certain tasks. It is a means to change efficacy belief through constructive that student-teachers can receive from either their lecturers or peers during teaching practice increases their self-efficacy. This leaves them feeling that they are able and competent to use technology in successfully teaching entrepreneurship education. Student-teachers can gain appraisal from peers and cooperating teachers for arranging and executing tasks necessary for themselves to achieve certain set objectives. When individuals are supported or motivated, their self-efficacy is likely to increase. The fourth source of self-efficacy is developed from emotional-related factors and can refer to emotional or physical sensations such as anxiety, fatigue, and composure that student-teachers can experience while performing particular tasks (Loo & Choy, 2013). The physiological and emotional state refers to the feeling student-teachers might have as a result of the judgment made or given about their performance. This feedback is likely to decrease or increase their motivation to perform their classroom practices.

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Materials and Methods

The study adopted a systematic review of the literature to organize thoroughly and systematically, effectively conveying the factors that influence the integration of technology in the teaching and learning of Entrepreneurship Education. The study used an integrative literature review (Grove, Burns & Gray 2013; de Carvalho, da Silva, Regueira, de Souza, Rego, Ramos, Marques &Do Santos; Smith. Derane, Begley & Clarke, 2011; and Whittemore & Knafl, 2005). The process commenced by formulating the research question *"What are the factors that influence the integration of technology in Entrepreneurship Education?"* This was the question or concern that was formulated to identify the gap(s) from the literature reviewed. To sample the appropriate literature, which is the selection of studies to be included for critical appraisal, a thorough search strategy was used to select the appropriate studies through keywords or key terms; pre-service teachers and the use of technology, student-teachers and teacher education, and self-efficacy-related from publications between 2011 and 2023 (Torraco, 2005). The selection was done on all relevant studies from 2011 -2023 to ensure that sampling is adequate to increase the responses (Cronin, 2023; Hopia, Latvala & Liimatainen, 2016). Researchers also decided to remain objective based on the literature (multiple perspectives) to avoid bias. So, applying an objective stand on data analysis helped researchers on this issue.

Since a search resulted in a large number of studies that were eligible for the inclusion and exclusion criteria of a literature review, only qualitative studies were included as inclusion and exclusion criteria and databases to refine and narrow down the search of studies that relate to the factors that influence the ability to integrate technology in the teaching of Entrepreneurship Education as the next step of the process. The selected studies articles were further screened for inclusion or exclusion from the study by reading their abstracts to determine relevance using keywords (Hopia et al., 2016; Smith et al., 2011; Whittemore, 2005). The identified studies were grouped thematically resulting in five major themes: use of technology builds collaboration; lack of technological skills and knowledge; learning platforms are not interactive and inclusive; unclear ICT policy; policy infrastructure; availability of internet and a cost of accessibility and relevance of technology (Whittemore & Knafl 2005). These were discussed concerning the main research question "What factors influence the integration of technology in Entrepreneurship Education".

Presentation and Discussion of Findings

To assess student-teachers self-efficacy in using technology in entrepreneurship education in Lesotho, the themes identified are discussed below, responding to the following question: *What factors influence the use of technology in learning entrepreneurship education?*

Use of Technology Builds Collaboration

It was identified from the results that the use of technology creates or builds collaboration among student-teachers, unlike other modes of teaching and learning**.** In some instances, collaboration existed between lecturers and student-teachers in sharing information online. Through collaboration, student-teachers can share information about learning and new strategies, and even those who do not have ideas benefit by discussing matters related to their courses on the relevant platforms. This factor is associated with increasing the self-efficacy of student-teachers in Lesotho in learning entrepreneurship education, as the more they come together and discuss, the more they learn from each other. This is supported by (Turugare & Rudhumbu, 2020), who explain that students can become productive if they initiate learning from their peers because they might end up knowing how to teach using technology. When they share information with other knowledgeable colleagues, they are likely to learn more and succeed in their plans because they are supported by skillful members. This increases their self-efficacy because they might feel that they will succeed just like the more knowledgeable others who share ideas with them. It is also proven by Smith and Greene [8] that when student-teachers come together and discuss matters with other peers, this helps familiarize them with e-learning platforms and even introduces them to the latest learning techniques that they may have been unaware of before. When they learn from and observe others performing and succeeding at a certain task, this increases their self-efficacy in believing that they too can manage to succeed in the same manner. This is indicated in the theory of Bandura above (bandura, 1977). Continuous collaboration with peers seems to be a crucial factor that is sure to increase the regular use of technology by student-teachers until they are used to and can continue to use it in the future.

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Additionally, research shows that self-efficacy increases when some student-teachers informally learn how to use technology in their teaching. Watching their colleagues, especially skillful ones, inspires them to succeed in using technology in learning entrepreneurship education in similar tasks. Conversely, when such individuals (colleagues/peers) fail to succeed in the given task, student-teachers' self-efficacy lowers as they might feel that they are faced with complex issues and do not have the capabilities to succeed in or accomplish their tasks. As has been indicated, watching and learning from other colleagues can reinforce student-teachers' use of technology even when they are discouraged by various factors. Sometimes, even participating in activities during training improves self-efficacy as student-teachers better understand things when learning informally from their peers and colleagues. This means that they can use technology because they are now capable of using it. As Bandura (1977) has indicated, previous experiences can influence student-teachers' ability to use technology in entrepreneurship education classes. Other studies further proved that positive self-efficacy is formed by mastery of teaching using technology coupled with support or collegiate. In support, Cronin (2023) and Bandura (1977) explain that pre-service teachers with higher technology self-efficacy beliefs are likely to use and integrate technology more in the classroom than pre-service teachers with lower self-efficacy beliefs. Therefore, student-teachers with high self-efficacy can happily accomplish the given tasks and enjoy the results of the good behaviors of their peers that they have indeed accomplished their consequently, those with low self-efficacy are afraid of attempting to perform anything because they believe that they are not capable of integrating technology into their lessons and will hence fail to adopt useful techniques in learning entrepreneurship education (Hopia et al., 2016). This implies that teacher education should ensure that learning platforms are monitored and managed to effectively help student-teachers learn. Getting used to learning platforms would mean that student-teachers are capable of using the technology themselves.

Lack of Technological Skills and Knowledge

The study identified that lecturers lack technological skills and knowledge. Since most institutions of higher education forcefully implemented the use of technology during the COVID-19 pandemic period, as an emergency, most lecturers did not receive training on how to use technology for instructional purposes, as instruction was confined to being conducted online. Since then, online teaching and learning have become the norm, even under worse conditions of lack of training for lecturers. This means that lecturers have not received any training about the use of technology, which is why they do not know how technology works in teaching and learning. Meanwhile, student-teachers can learn effectively when they are taught by technologically skilled lecturers. In addition, effective learning can also not take place when lecturers do not undergo professional development. Being professionally developed would make teaching and learning easy for both parties because lecturers will be able to transfer the relevant knowledge to student-teachers. On the other side, self-efficacy may be affected due to the lack of knowledge and skills that are necessary for using technology. Most lecturers at universities are not able to use technology because they have not received training on it. This is proven by [5], [19], and [20], who explain that since teaching using online learning platforms came unexpectedly, lecturers have not volunteered to attend workshops that would sensitize them about its use. As such, the problem of lack of technological skills continues. This compromises the quality of training they offer to student-teachers which means that their capabilities are also weakened due to inadequate training. This also affects student-teachers negatively in building self-efficacy as lecturers are not able to support them due to a lack of skills. As a result, student-teachers start developing negative attitudes against using technology.'

Simply installing necessary equipment in the classrooms or computer laboratories does not suffice for promoting the use of technology for instructional purposes. This is because while some lecturers use computers to present their lessons, they are not using technology or the Internet. It does not mean they can use technology for instruction when they can use certain devices. This is pointed out by (Turugare & Rudhumbu, Raphel & Mtebe 2017, and Yimer & Mohammed, Todase, Solomon & Grutzmaher 2021), that to effectively use technology in teaching and learning requires connecting to the Internet to perform activities online. Adequate goals must also be set, and effective criteria developed for the effective integration of technology. Lecturers still use their old strategies, which creates stress and frustration when they have to shift to the use of new approaches that encourage the use of 21st-century resources. This also makes it difficult for them if they are not trained to use technology at their level. It also proves the failure of management to manage and facilitate the use of technology if lecturers are not adequately trained in using

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technology. This is passed on to the student-teachers, who inherit this behavior and tend to not use technology in their learning. Since entrepreneurship education requires frequent instructional time on computers in that it prepares the officers and accountants of tomorrow, student-teachers must be updated with technological know-how so that they can become experts in the field in the future.

Learning Platforms are not Interactive and Inclusive

It was also identified from the results that the learning platforms used for teaching and learning in teacher education are not interactive and inclusive. The argument is that lecturers just upload materials for student-teachers to access and read without explaining such materials. The materials just pile up and the greater the piles, the more student-teachers stop engaging with them. Since online teaching and learning does not take into consideration the financial implications, it disadvantages those with financial problems as they do not engage with lecturers while away from classes. Hence, no interaction takes place in such a situation. The results also reveal that the materials uploaded onto these platforms are not even of good quality and are unclear. This makes it difficult for these teachers to connect and understand the purpose and meaning of the materials uploaded. These are some of the issues that add to the low usage of technology by student-teachers because they are deemed to be irrelevant. The results also indicate insufficient use of technology by large groups, because there are not enough devices for all to use in the computer laboratories. This accords with Braig & Yadegaridehkordi, 2023) that inadequate computers in classrooms or computer laboratories limit the ability of teachers to transfer knowledge to their students in the future. Hence, student-teachers can start developing negative attitudes toward the use of technology as they may believe that do not have the capabilities to use it. When student-teachers are not provided with the skills and knowledge that allow them to use their capabilities to the fullest, integration might not be visible and may lead to low self-efficacy.

As an external factor, it is indicated that the use of technology can be hindered when lecturers are not confident with using technology as they tend to have low self-efficacy. It also adds to low self-efficacy, as they are not capable of using it and hence abandon its use, consequently hindering future students from acquiring 21st-century skills as planned. Therefore, student-teachers must be supported so that they may feel encouraged to fulfill their roles in the future. The findings also reveal that the learning platforms used are not inclusive enough. The systems do not cater to those student-teachers who are visually impaired. Since they are not able to use these tools, these teachers are forced to ask for help from other people. This is supported by (Raphael & Mtebe, 2017) they pay other individuals to do these things for them, especially when they are given an assignment. This implies that they are not accustomed to these tools and how they are used in the teaching and learning process. Concerning putting it into practice, they find themselves failing as they are not capable of using it. This decreases their motivation, which ends up affecting their self-efficacy when they are not able to accomplish their plans.

Unclear ICT Policy

Another challenge in technology integration is the lack of clear technology policies. In the case of Lesotho, the government has taken the initiative to develop ICT as a tool that will enable its citizens to achieve major goals (Ngidi & Ngidi (2019); Mokhet'sengoane & Malunguja (2023). Even though Lesotho educational institutions have clear policies that guide teachers on how to integrate technology into subjects, these cause challenges for student-teachers. Unclear policies create uncertainties, as noted by scholars such as Johnson, Jacovina, Russell & Soto (2016 and Singh (2014), making it difficult to plan and implement technology initiatives. The results reveal that poor connectivity influences low self-efficacy in entrepreneurship education student-teachers. Most of these student-teachers have indicated that the Internet is very slow, causing them to lose motivation in searching for materials, which is essential to their learning. This happens when they cannot access the Internet, even though they live on a university campus where there is free Wi-Fi for all. As articulated by Ministry of Education and Training (2021), existing policies may not keep pace with technological advancements, which makes it difficult to plan and teach using technology. It might be that the policy is outdated and hinders student-teachers from successfully using technology. The unclear guidelines and absence thereof cause uncertainty for student-teachers and lower their self-efficacy. This also agrees with Atabek, Eck & Sugg (2020), that the lack of policies that regulate technological integration compromises learning and fails to develop essential digital skills in student-teachers.

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On the other hand, student-teachers have to buy Internet data bundles for themselves, as well as devices such as laptops and smartphones, to access and download learning materials uploaded for them. Unfortunately, not all of them can afford this, which makes them hate the use of technology. Another challenge associated with policy includes a lack of support from administrative departments for student-teachers' challenges in integrating technology. This concurs with Author, 2023) that administrators do not support the implementation hence student-teachers feel not supported. This technical matter leads to low self-efficacy and low motivation in the use of technology in student-teachers. This also discourages both student-teachers and their lecturers and they therefore resort to bad habits in using technology as a means of learning. The lack of ICT policy means that no one is responsible for monitoring its functioning.

Poor Infrastructure

Having the necessary equipment installed does not translate into technological integration. Hence, lecturers should interactively engage student-teachers so that they become used to using technology. Research has shown that Lesotho, like other countries, is bound to restructure its teacher education curriculum for effective training of student-teachers for they play their roles and align teaching and learning with the main challenges and opportunities resulting from the use of technology (Atabek (2019). This has been proved by Selialia, Mokhet`sengoane & Kuruta (2023) that teaching and learning have been made easy and effective on many platforms such as Google Meet, Zoom, and other learning management systems (LMSs). These platforms are found to be effective ways in which student-teachers share ideas, work together, and are even involved in active learning in the comfort of their homes Atabek (2019) and Sepiriti (2021). When teacher education has poorly equipped laboratories and slow Internet connection, integration of technology might not be realized. In this sense, technology is viewed as being a flexible and convenient zone for learning for student-teachers. In concurrence, Sepiriti (2021) established that the learning management used in one university does not effectively help student-teachers to use technology. It is becoming even worse because student-teachers lack hardware and software as they cannot afford to buy devices such as smartphones and laptops. This implies that there is less practical and more theory as they are not frequently using or accessing the Internet. Hence, they are not capable of using technology since they are not technologically wise.

Research shows that the integration of technology into higher education is a complex process compounded by the fact that many institutions have poor infrastructure in the way of embracing the integration of technology into their curriculum. This is because they do not have a clear ICT policy on how to implement it and strategies are not well defined. This means that they are not able to support users, that is, both lecturers and student-teachers who use it daily. This accords with Turugare & Rudhumbu (2020) and Ntlobo-Mbele (2022), that the use of technology in the teaching and learning process is not only about availing the learning materials for student-teachers but also about the availability of computers in the teaching and learning classroom, which will change the student-teachers' capabilities. Those who deliver the learning (training), that is, lecturers, must also possess technological skills.

Availability of the Internet and the Cost of Accessing

The Internet (Internet packages) is another factor that determines the effective implementation of online learning. Some student-teachers experience limited Internet access because of their geographical location, where the connection is poor or completely inaccessible. This implies that they cannot access or use the Internet in such situations. Regardless of whether student-teachers have high or low self-efficacy in using technology, the availability of the Internet and the cost of accessing largely impede the use of technology by these teachers. Similarly, limited financial resources can inhibit access to the Internet, because users are not able to purchase Internet data packages (Lisene & Jita 2018). When they are not able to buy these bundles, they are inhibited from accessing the learning materials uploaded onto the Internet for them. Having no Internet access means that they do not know how it operates and the likelihood of not being capable of using it is also high. Research has proven that some student-teachers' self-efficacy remains low because they are not ready to use technology in their learning Ruggiero and Mong (2015). Not only are they not ready to use technology; but they also cannot access the Internet for practice as a result of economic factors. This means that they cannot buy the data needed for accessing the Internet as free access is only obtainable on their campuses. These teachers also experience using technology as complex because they feel that they are not capable of using it for learning. Only those student-teachers with a better financial background can access it and enjoy it. When these teachers are not supported, their self-efficacy will not be built up and

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will remain low. This implies that self-efficacy not only coincides with the implementation of technology but there are other factors as well.

Relevance of Technology

It has been established that student-teachers with high levels of self-efficacy in using technology are eager to try new methods and strategies that accommodate diverse student needs. This implies that they have a great commitment to teaching and hence can spend their time helping their students with difficulties in learning. These are the kinds of teachers who believe that their self-efficacy is high. This is supported by Osborne et al (2020), who show that student-teachers with high self-efficacy tend to use technology, which is essential as lessons are recorded and replayed at a later stage even by those who did not attend the lessons. This provides enough reason for using technology in learning. Similarly, this accords with Selialia and Kuruta (2023) and Sepiriti (2021), who indicate that the use of technology is vital as lessons can be recorded and replayed at a later stage so that students who were not able to access the Internet at the time of the lesson have the opportunity to listen to the recordings of the lesson at a later stage. This automatically increases self-efficacy, which is likely to be translated into using technology for instructional purposes. Furthermore, another added advantage of using technology during teaching practice is that student-teachers can prepare for participation in class by reading the uploaded materials in advance and internalizing them Selialia & Kuruta (2023) and Lisene & Jita 2018). In this sense, communication skills and competence are developed as learning is now personalized. This means that student-teachers can use technology to cater for diverse learning. There is also a notion of learning from anywhere, in that, through the LMS platforms, learning can take place anywhere as long as there is an Internet connection. Sometimes, these learning platforms are not reliable, as poor connection easily affects learning, especially if there is an unexpected interruption during lessons. This also discourages learning as well as lowers self-efficacy, because student-teachers might come to hate teaching using technology. A weak signal can affect or limit Internet access; hence, there must be personnel responsible for managing quality access all the time. Depending on the strength of student-teachers, the use of technology is highly adapted to learning.

Conclusion and Recommendations

Technology has been considered for its wide benefits that facilitate learner-centered learning in the 21st century. This study assessed the self-efficacy of student-teachers in using technology in learning. It showed several benefits that increase their efficacy to continue using technology in learning as well as challenges that impede the use and end up lowering the degree of usage. The study found that when working in collaboration, student-teachers are capable of using technology because they learn other strategies of how to use technology in learning. When self-efficacy is high, student-teachers can continuously use technology in their learning. In addition, the inadequacy of the knowledge and skills of lecturers in using technology in teaching activities also affects and lowers student-teachers' self-efficacy as it can be transferred to them. When the lecturers are not able to use technology, so also will the student-teachers not be able to. Sometimes, unclear ICT policy can lead to student-teachers failing to use technology when there is always a cut-off, nobody is managing the poor connection, and the like, discouraging student-teachers from using technology.

It was further found that technology is not interactive in that student-teachers do not communicate with their lecturers outside of classes. They do not even have space and time to ask questions, and even those asked are not attended to. Furthermore, those with visual impairment are also challenged in the use of technology and have to rely on others to submit their assignments for them. This is the result of an unclear policy set for ICT usage. There are no responsible people who manage or regulations that guide the use of technology. This discourages student-teachers from using technology in learning. Sometimes, poor infrastructure influences the use of technology by student-teachers that computer laboratories do not have enough computers. In most instances, groups of student-teachers must share one computer, which discourages them from using technology because they feel demotivated. Therefore, the study recommends that teacher education improve its infrastructure so that student-teachers can fully use technology for instructional purposes. There should also be administrators who manage connection, use, and other issues that relate to the use of technology, such as the strength of the connection. Teacher education must also offer teaching staff training to help them support student-teachers in using technology. Improvement in

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these aspects will likely increase the self-efficacy of student-teachers in the use of technology for instructional purposes.

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