

# COVID-19: A Transformative Epoch For Effective Online Mentoring Of Pre-Service Teachers On Teaching Practice: The Use Of Technology Acceptance Model (TAM) Theory And Practice

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**Abstract:** The gradual transformation of teacher education practices towards the 4<sup>th</sup> industrial revolution (4IR) teacher education practices was further expedited by the advent of the COVID-19 pandemic in the world. The current educational practices aligned to the 4IR are mainly identified with the use of technology in almost all aspects, teaching, learning and mentoring. This paper explores literature to determine how the Technology Acceptance Model (TAM) theory may be used to guide mentoring of pre-service teachers on teaching practice to effective online mentorship of pre-service teachers on teaching practice. The findings in this paper reveal that there was an interconnection between the existence of the COVID-19 and the need for effective online mentoring of pre-service teachers on teaching practice, technology acceptance and use, social and educational transformations. This paper concluded that the advent of COVID-19 sparked fears of the spread of coronavirus, which causes COVID-19 and the WHO called for social isolation. This move further transformed pre-service teacher mentorship to online processes. This paper also concluded that in order to provide effective online mentoring to pre-service teachers on teaching practice, a pre-service teacher must be paired with a competent and technologically skilled mentor teacher. Pre-service teachers also require support in their daily practice, proper online interactions, and online mentor teachers who are secure in their ability to carry out their tasks as online mentors. This paper recommends that the TAM theory be used to influence the mentorship of pre-service teachers on teaching practice. Another recommendation is that teacher education institutions should encourage both pre-service teachers and mentor teachers to use technology and provide technological tools and software that make online mentoring of pre-service teachers on teaching practice easier.

**Keywords:** COVID-19, online mentoring, online classrooms, mentor teacher, pre-service teacher, teaching practice.

## 1. INTRODUCTION

Teacher education is a multiplex, contextual and distinctive process with various components that a pre-service teacher is expected to go through [1]. Teaching practice mentoring is one vital component of teacher education that allows the pre-service teacher to gain the teaching experience in schools and encounter the actual teaching and learning environment with real learners under the guidance of practising experienced teachers [2]. The emergence of the COVID - 19 pandemic that affected the entire globe led to the closure of institutions and created a paradigm shift in the traditional methods of mentorship during teaching practice. Whilst pre-service teachers on teaching practice were meant to have face to face interactions with learners in real classrooms and in physical school settings, the fear of spreading the corona virus that causes COVID-19 changed this practice to online teaching practice processes. Technology became the available tool to ensure that mentor practice and mentorship continued using the online methods which are detects of the 4<sup>th</sup> industrial revolution (4IR). The new shift to absolute online practices in mentoring of pre-service teachers on teaching practice became the new normal. Just like any adventure, online mentoring of pre-service teachers on teaching practice posed some opportunities and challenges. The new normal meant that teaching practice activities including mentorship got aligned to the 4IR expectations by the shift to online methods, as there was a need to subscribe to world health organisation protocols and regulations. The existence of the global pandemic COVID-19 forced the teaching profession into quickly accepting the use of technology in teaching practice mentoring [3]. In teacher education the various learning contexts and activities like

university course work and field work depend on a wide array of factors such as opportunities for developing professional knowledge, support, facilitation of different forms of reflection, classroom observation and modelling by mentor teachers [4]. Mentoring is a relationship where mutual learning occurs, and the professional and personal development of those involved are supported by trust, respect, and commitment [5]. During the COVID-19 pandemic period teaching practice mentoring relationships had to be created online to maintain social distancing WHO regulations.

### 1.2 The preceding practice during teaching practice

Normally, teaching practice was done in schools where pre-service teachers will benefit from being in the real school environment with real learners. In the practising schools, pre-service teachers on teaching practice were attached to practising and experienced teachers who are expected to mentor them on the daily happenings of the classroom and the school. Teaching practice offers the pre-service teachers a chance for the practical application of teaching skill, under normal circumstances under supervision in a real classroom environment in the school [6]. The practice during teaching practice was that mentor teachers and pre-service teachers would learn from each other in the classroom through observations and imitations so that they deliver high-quality instruction [7]. Currently observations and imitations are still being done, but through online means as COVID-19 regulations stipulate maintaining social distance to prevent the spread of the coronavirus. Teaching practice is one of the most important phases of a pre-service teacher's professional preparation as it provides the pre-service teachers with the

opportunity to put the theory they have learnt in the teacher education institute into practice [8]. This means that teacher education institutes are mandated to integrate technological pedagogies in training pre-service teachers to ensure that the theory pre-service teachers have is in line with the 4IR forms of lesson delivery. Mentoring a pre-service teacher on teaching practice is an essential practice for pre-service - teacher preparation for quality teacher education. Mentoring is a relationship in which the mentor teacher is more experienced than the pre-service teacher and can provide knowledge and skills that the mentee needs [9]. The mentoring of pre-service teachers was physical in real classrooms. This set-up has been changed by the advent of COVID 19, hence the traditional teacher education programs are no-longer responsive to present-day demands of teaching and are often distant from contemporary practice [10]. The global pandemic COVID-19 led pre-service teachers and mentor teachers to using innovative strategies to support the change to online teaching and learning [11].

### **1.3 The current practice of online mentoring pre-service teachers on teaching practice**

The online mentoring has extended beyond the traditional educational boundaries to enhance support for pre-service teachers while developing partnerships with mentor teachers and other pre-service teachers through online collaboration [12]. A mentor mentoring pre-service teachers on teaching practice ought to have participated in a course or workshop about teaching online, have strong technology skills and an interest in using new technology to teach and learn [13]. Teacher education programs in universities or colleges the world over allow pre-service teachers to put the theories and principles of education which they learn in their coursework into classroom performance. This is the practical part of teacher education called 'teaching practice' [14]. The new norm does not allow pre-service teachers to be in schools as teaching and learning is done online. This online mentoring of pre-service teachers during the COVID-19 period allowed teacher education to go on as learning was taking place, but posed some challenges in that mentor teachers had to first learn how to coach, guide and direct a pre-service teacher online in a limited timeframe. The current change in the teacher education mode from face-to-face to online compels instructors in teacher education institutes to develop new skills, which must be taught or demonstrated in order for the online mode to be effective [15]. [12] reveal that there is a need for teacher education faculties in institutes to investigate their practices with the deliberate focus on successful online practices so as to be in a position to transform pedagogical practices aligned to the 4IR teacher education practices. The existence of the COVID-19 pandemic in the world led to abrupt closing of educational institutions leaving learning to only online means, thus mentoring of pre-service teachers had to be done through online means. Online mentoring of pre-service teachers is beneficial as it helps the pre-service teachers become connected and part of a virtual community, feel valued and inspired [16]. In the same vein, a lot of investment should be met on online human and material resources. Online mentoring is the use of e-mail or computer conferencing systems to support a mentoring relationship when a face-to-face connection would be unfeasible [17]. Online mentoring facilitates a medium of exchange between mentor and mentee that is less threatening, safe to COVID-19 and not

confrontational, but conducive to building a community of learners [18].

### **1.4 Benefits of online mentoring of pre-service teachers**

The presence of the COVID-19 pandemic strengthened the online mentoring practices in that pre-service teachers get connected to not only one expert mentor teacher, but can learn from several mentor teachers they meet online and other pre-service teachers as well their teacher education institute instructors. The existence of the COVID-19 pandemic, online mentoring for pre-service teachers on teaching practice has become popular. There are benefits of online mentoring of pre-service teachers In online mentoring the pre-service teacher is expected to learn from a mentor teacher who is a knowledgeable and experienced expert, observer, role model, counsel, a quality controller, critical friend, assessor and manager [19]. Pre-service teachers are also awarded an opportunity to acclimatise to the online school environment and culture through support, advice and suggestions to improve their practice. During the COVID-19 pandemic there was onsite closure and online openness. Mentor teachers were expected to provide support through frequent interactions with pre-service teachers on teaching practice. Pre-service teachers are still expected to be listened to, have their questions answered, coached and guided to professional growth [20]. [21] reveal that mentoring gives pre-service teachers opportunities to share ideas with their mentor teachers, share resources, and get advice from the expert teachers mentoring them. Mentoring gives pre-service teachers an opportunity to hear from other pre-service teachers who are going through a similar process and also increase openness to try new things in their practice. There is a need to schedule meetings between mentor teachers and pre-service teachers, where they are expected to meet and discuss at least weekly and also have additional contact through text, email, phone calls, and impromptu classroom visits. Though mentor-mentee interactions are now done online in response to social distancing requirements of the COVID-19 pandemic, the focus remained the same, professional development of a pre-service teacher on teaching practice [22]. The COVID-19 pandemic activated the use of online interaction formats for mentoring pre-service teachers on teaching practice [23]. Online mentoring has advantages over face-to-face mentoring in that mentoring a pre-service teacher online is convenient as the mentor teacher needs not to travel to be in the same location with the pre-service teacher [24]. Virtual mentoring also eliminated driving time for mentors and mentees teaching in separate buildings or separate districts, which resulted in more time spent mentoring [11]. The impact of social distancing as stipulated by the World Health Organisation (WHO) to alleviate the spread of COVID-19 resulted in virtual environments created for all operations in the education system [25]. Virtual environment for teaching and mentoring enhanced the reciprocal relationship between mentors and pre-service teachers, as pre-service teachers shared their technology expertise with the mentors [11] Information and communication technologies are used as a means to connect and communicate between the mentor and the mentee. This allowed the mentor and the mentee to meet more frequently, which prompted them to connect, respond, and share resources more often [11]. The COVID-19 pandemic increased remote working and the emergence of web-based virtual mentoring which had many benefits to both the

mentor teacher and the mentee pre-service teacher [26]. Mentors and pre-service teachers reported that virtual mentoring saved time and allowed flexibility in scheduling meeting times [11]. Mentoring a pre-service teacher online gives flexibility of access to both the mentor teacher and the pre-service teacher, as it occurs at times convenient to participants. Readily available devices such as the smart phone or a tablet may be used as long as the gadget can access the web. It was an expectation during the COVID-19 pandemic that people be physically separated. Mentoring of pre-service teachers on teaching practice, thus, became a remote activity through online means. Online mentoring occurs when the pre-service teacher and the mentor teacher are in different locations. This fosters some degree of anonymity and a less threatening environment, which can encourage pre-service teachers to ask questions they are less likely to ask in person [27]. Online mentoring also assists in that the status difference between the pre-service teacher and the mentor teacher will not be obvious [28]. Mentoring a pre-service teacher online reduces costs as no travel or time away from job is taken. Group online mentoring may also be done and it has the capacity to contribute to the development of a community of learners, thus saving costs on data and time [29]. Online mentoring of pre-service teachers allowed group online mentoring as COVID-19 regulations restricted physical group contacts. There are problems associated with online mentoring. Online mentoring may have challenges on the availability of suitable mentors who are prepared to devote their time to mentor pre-service teachers online [30]. There may also be challenges in having an ongoing commitment from all parties as mentoring is a process. One party along the way may fail to finish the process of mentoring or be slow and delay the end of the process [31]. Another challenge could be in the ongoing access to digital resources that may break communication channels between the mentor teacher and the mentee. Whenever there is a break, the mentor teacher and the pre-service teacher may fail to re-establish their relationship [32]. Thus, it is important to have a theory guiding the online teaching practice mentoring process.

## 2. RESEARCH QUESTIONS

- What theory could be used to guide pre-service teachers' online mentorship on teaching practice?
- How can effective online mentoring of pre-service teachers on teaching practice be accomplished through practice?

## 3. THEORETICAL FRAMEWORK

The technology acceptance model (TAM) is an information systems theory that may be employed to guide the online teaching practice mentoring process [33]. The TAM is a theory that models how technology users come to accept and use a technology and adopt virtual learning environments [34]. The TAM theory explains in this context the mentor teacher and the pre-service teacher's behaviour with regard to the acceptance of technology applications in online mentoring of pre-service teachers on teaching practice. The external variables in the TAM model are the Perceived usefulness and the Perceived ease of use. These two become the motivators to attitudes towards using technology, behavioural intention to use and the actual system use [35]. The use of technology in online mentoring of pre-service teachers may be influenced by the Perceived Usefulness of

technology. Having a user-friendly website and software is more likely to be perceived as a useful one and this influences an individual's attitude towards using a given technology [36]. Thus, the mentor teacher and the pre-service teacher's attitudes towards the use of technology in mentoring pre-service teachers on teaching practice influences their actual use of online means to mentoring influenced by the perceived usefulness of the technology in question.

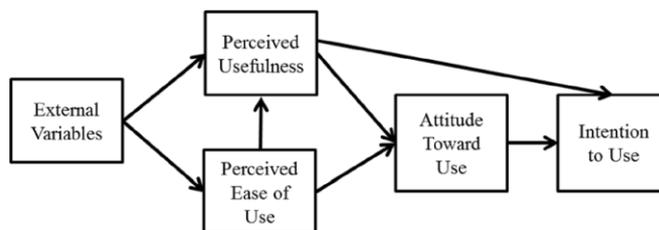


Figure 1. TAM model [37].

In employing the TAM theory in online mentoring of pre-service teachers on teaching practice, the context of digital technology tools available determines the perceived ease of use and enhances a state in which using digital technology becomes the primary reward in the activity [38]. The availability of digital technology tools for online mentoring is considered important and helps to describe user-technology interaction and provides a useful means of researching a user's intrinsic motivations in adopting an online environment. When users derive enjoyment from interaction with a virtual environment they are more inclined to involve themselves in and attach greater value to online services, which has a positive influence on the mentor teacher and the pre-service teacher's behavioural intention to use online means to mentor pre-service teachers on teaching practice [39].

## 4. RESEARCH METHODOLOGY

In this paper literature survey has been used to gather data. According to [40], a good literature survey summarises sources, it analyses, synthesises, and critically evaluates to give a clear picture of the state of knowledge on the subject. Building a study on existing knowledge and relating it to the topic is the foundation of all academic research activity, regardless of subject. As a result, all academics should make it a point to do so correctly. This is why the literature survey is more important than ever as a research method. A literature survey is a method of collecting and summarising previous research that is more or less systematic [41] [42] As a research approach, an effective and well-conducted review establishes a solid foundation for increasing knowledge and aiding theory development [43] A literature review can address research topics with a power that no single paper can match by combining findings and viewpoints from a variety of empirical data. This research methodology has been relevant to this paper as this phenomenon being studied is still very new to the current education system.

## 5. THE RESULTS OF THE STUDY

In this paper literature was reviewed to answer the research questions: What theory could be used to guide pre-service teachers' online mentorship on teaching practice? How can effective online mentoring of pre-service teachers on

teaching practice be accomplished through practice? The results were presented under the following themes: The need for a mentor teacher during teaching practice, the use of online means as influenced by the COVID-19 pandemic and the means to effective online mentoring of pre-service teachers on teaching practice

### **5.1 The need for a mentor teacher during teaching practice**

For effective online mentoring of pre-service teachers on teaching practice, pre-service teachers need to be attached to a mentor teacher for support as they deliver instruction online, if they have to deliver high-quality lessons [11]. There are a number of means that may be used to mentor pre-service teachers online. The TAM is a theory that describes how people come to embrace and use technology, as well as how they adapt virtual learning settings. In this context, the TAM theory describes the behaviour of the mentor teacher and the pre-service teacher in terms of technology adoption in online mentoring of pre-service teachers on teaching practice.

### **5.2 The use of online means as influenced by the COVID-19 pandemic**

During the COVID-19 pandemic teaching practice mentoring had to be conducted online to keep a distance so as to minimise the spread of the coronavirus. Technology transformations in the 4IR era and the presence of the COVID-19 pandemic have fuelled the complexities of teacher education processes, especially the teaching practice mentoring component [44]. The 4IR entails the use of technology and this is the current expectation in facilitating teaching practice mentoring [45]. The transformation in instructional delivery from face-to-face to online instructional delivery in higher education institutes was heightened by the World Health Organisation (WHO) regulations on social distancing individuals to curb the spread of the global pandemic COVID-19 [46]. Higher education institutes were tasked with influencing the acceptability of technology for teaching and learning in all teacher education procedures, as it was the only way to keep pre-service teachers educated while remaining at a distance. This is in keeping with the TAM theory, which states that the Perceived Usefulness of technology influences the use of technology for effective online mentoring of pre-service teachers on teaching practice.

## **6. USING ONLINE METHODS TO MENTOR PRE-SERVICE TEACHERS ON TEACHING PRACTICE**

Online methods used to mentor pre-service teachers on teaching practice require both the mentor teacher and the pre-service teacher to be well trained. COVID-19 did not give the pre-service teachers and mentor teachers enough time to train to use technology but learning took place in practice, hence the need to engage in continuous training [47]. There is a need for both to have an understanding that learning is to take place virtually where the pre-service teacher and the mentor teacher will have to access the classroom online. Discussions between the pre-service teacher and the mentor teacher also have to take place in space using technology. Teacher education institutes need to ensure that there is adequate training for both pre-service teachers and mentor teachers in using technology as well the provision of appropriate technologies that support online

mentoring of pre-service teachers on teaching practice [48]. This is in line with the principle of the TAM theory that the use of technology in online mentoring of pre-service teachers on teaching practice is influenced by the Perceived Usefulness of technology, according to TAM theory.

### **6.1 Pertinent online mentoring relationships**

For an effective online mentoring of pre-service teachers on teaching practice the mentor teacher and the pre-service teacher need to engage in online interactions where discussions are done several times daily on issues such as classroom management, teaching strategies and lesson content [49]. This pattern needs to be possible through online means as long as there is access in the school. During teaching practice pre-service teachers may have questions on what they see happening or how to handle some anticipated situations that arise in the virtual classroom, as mentees, pre-service teachers must be in a position to communicate their uncertainties for help with the mentor teacher [50]. Pre-service teachers also need to be in a position to communicate with their mentor teacher on their virtual classroom experiences and seek advice on practices appropriate for online teaching and learning [9]. Appropriate online interactions between the pre-service teacher and the mentor teacher are consistent with the TAM theory's notion that the Perceived Usefulness of technology influences the suitable usage of technology in online mentoring of pre-service teachers on teaching practice.

### **6.2 The online mentors' self-assuredness**

Effective online mentoring of pre-service teachers on teaching practice requires a mentor teacher who has knowledge and understanding about online teaching. The knowledge, skills and abilities developed during online mentoring of pre-service teachers on teaching practice should also benefit the mentor teacher to heightened confidence in their practice (Redmond, 2015). Another apparent benefit of being an online mentor teacher is the acquisition of skills to deal with requests for advice from pre-service teachers on teaching practice and an exploration of a wide range of teaching challenges that teachers encounter and solve in virtual classrooms [51]. This is in line with the TAM theory that has a premise which describes how people come to embrace and use technology, as well as how they adapt virtual learning settings.

### **6.3 Support for pre-service teachers**

An effective practice of online mentoring of pre-service teachers on teaching practice requires mentor teachers who would be in a position to support and build confidence on the pre-service teachers so that they may clearly articulate the online teaching and learning skills. Pre-service teachers also need to be valued and appreciated for the efforts they make in online teaching while the mentor teachers also are cherished for the level of support they provide to the pre-service teachers [52]. As recommended by the TAM theory, the support provided to pre-service teachers during teaching practice might range from individual lesson ideas to career counselling, including advice on embracing the use of technology in virtual learning contexts.

## 7. CONCLUSIONS

This paper concludes that the advent of COVID-19 sparked fears of the spread of coronavirus, which causes COVID-19 and the WHO called for social isolation. This move shifted pre-service teacher mentorship to online processes. The paper concludes that the TAM theory can be used to guide the online mentoring of pre-service teachers on teaching practice. This paper also concludes that for effective online mentoring of pre-service teachers on teaching practice there is need to have a pre-service teacher attached to a knowledgeable and technologically skilled mentor teacher for guidance. Pre-service teachers also need support in their daily practice, appropriate online interactions and online mentor teachers who are confident in their execution of online mentoring roles.

## 8. RECOMMENDATIONS

This paper recommends that the TAM theory be used to influence the mentorship of pre-service teachers on teaching practice. The paper also recommends that technology should be integrated in training pre-service teachers for them to be able to connect with online teaching in their practising schools. Another recommendation is that teacher education institutions should train both pre-service teachers and mentor teachers to use technology and provide technological tools and software that makes online mentoring of pre-service teachers on teaching practice easier

## 9. References

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