Pre-service Teachers' Learning Experiences With Educational Technologies in South Africa

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Abstract

Online teaching and learning have become a fundamental platform for teaching and learning in higher education institutions, more so, since globally an extensive academic disruption was experienced during the coronavirus pandemic 2019 (COVID-19) lockdown. This study describes pre-service teachers' perceptions on online teaching and learning platforms at one University in South Africa. The purpose of this paper is to report on the challenges detected in their perceptions. The paper engages a quantitative approach, through 10 statements on a Likert scale to draw the perceptions of 220 pre-service teachers on their online teaching and learning experiences. Data were analyzed by means of MS Excel and presented in the form of bar charts, indicating percentages. The findings indicated that although some pre-service teachers agreed to the benefits of online teaching and learning, challenges such as the lack of access to relevant digital resources, equipment and skills led to the ineffectiveness of this platform. The preservice teachers' perceptions abetted the researchers to conclude that although online teaching and learning practices are in place, the stakeholders still need to ensure equal access to all relevant digital resources for teaching and learning on this platform to be highly effective.

Keywords: Online Teaching and Learning, Coronavirus Pandemic 2019, Challenges, Digital Resources

Introduction

Online teaching and learning have become a fundamental platform for teaching and learning in higher education institutions, more so, since globally an extensive academic disruption was experienced during the coronavirus pandemic 2019 (COVID-19) lockdown. Hence, it is imperative for all institutions to ensure equal access to all relevant digital resources for teaching and learning on this platform to be highly effective.

The use of educational technology in the classroom is growing in popularity every day, greatly expanding the area available for instruction and learning (Beese, 2014). According to studies, these materials also support meaningful information interchange at any distance within the context of the student-teacher system (Bachmaier, 2011; So & Brush, 2008) and allow students to learn their programmes in depth (Aktaruzzaman & Plunkett, 2016). The use of educational technologies in teaching and learning is thus justified as having many advantages over more conventional approaches.

In addition, organisations and educational institutions have steadily increased their investments in technology over the past few decades (Purnama & Subroto, 2016). Organisations have realised that maximising the advantages of information technology is essential for success in the new digital era (ibid). Higher education institutions realised the value of information technology for their institutional success, just as other corporate organisations (Dlamini, 2015). Higher education institutions experienced an unparalleled transformation in how they run their operations as a result of the rapid infusion of information technology.

Although studies have found significant educational technology benefits, institutions continue to encounter infrastructure-related challenges that limit students' access to these tools (Ngampornchai et al., 2016). One issue is that investments are insufficient since technology investments need a costly and long-lasting infrastructure. Solid infrastructure and energy supplies are initially needed by institutions, which is a prerequisite for putting in place solid educational technology systems. A significant barrier to facilitating operations and Internet connectivity is a paucity of supply (Hamidi et al., 2011). Because they lack enough equipment or technological infrastructure, several universities simply emphasise theoretical education rather than practical training (Dahil et al., 2015). These difficulties appear to be common in the case of this study.

Results and Discussion

Below is Table 1 in which the biographical data of the pre-service teachers who participated in this study is presented:

Gender	Female	143 = 65%	Male	77 = 35%
Age	Between 18 and 20 years old	0 = 0%	Above 20 years old	220 = 100%

Table 1: Biographical data of the participants

The pre-service teachers were requested to indicate their single response to each statement by marking X on any of the 5-point Likert scale which entailed the following options: strongly disagree (SD), disagree (D), unsure (U), agree (A), and strongly agree (SA).

The following were the 10 statements that they had to respond to:

1. I am experienced with various online teaching and learning platforms
2. I can access the internet at without any challenges
3. Online teaching and learning are more effective than face-to-face platforms
4. The use technological tools help me learn better
5. Through online activities, I actively engage with other students and my lecturers.
6. My technological skills are above average
7. I have access to all basic technology resources to enable me to do all my work efficiently
8. The use relevant resources from various web sites improved understanding of concepts
9. Video clips from various websites enhance my understanding of seemingly difficult concepts
10. Face-to-face teaching and learning should be permanently replaced with the online teaching and learning
11. Figures 1 to 5 below illustrate insights on the participants' responses to each of the points in the Likert Scale used
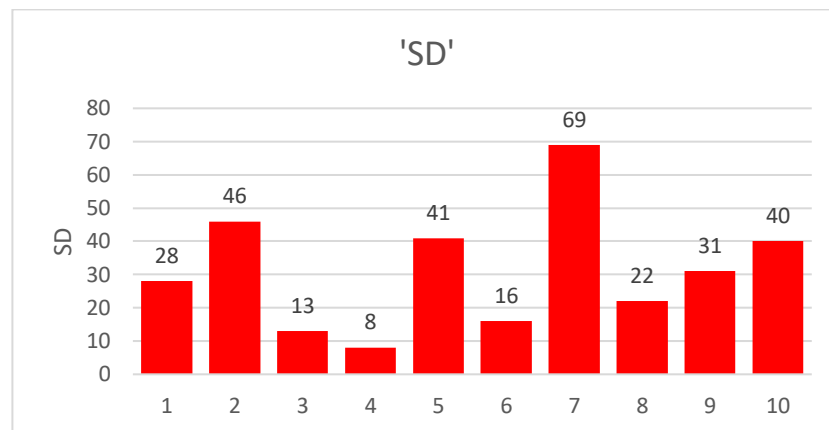

Figure 1: insights on strongly disagree (SD)

Figure 1 illustrates that 69% strongly disagree they have access to all basic technology resources to enable me to do all my work efficiently, and 46% also strongly disagree that they can access the internet at without any challenges. These responses are in line with research findings by Ngampornchai et al. (2016) who state that institutions continue to encounter infrastructure-related challenges that limit students' access to these tools.
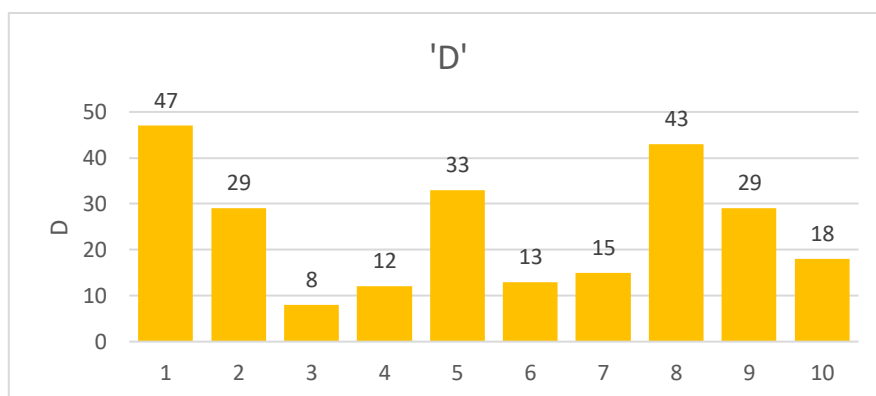

Figure 2: insights on disagree (D)

Figure 2 illustrates that 47% disagree that they can access the internet at without any challenges, and 43% also disagree that the use relevant resources from various web sites improved understanding of concepts. These responses are in line with research findings by Dahil et al., (2015) who argue that because they lack enough equipment or technological infrastructure, several universities simply emphasise theoretical education rather than practical training.
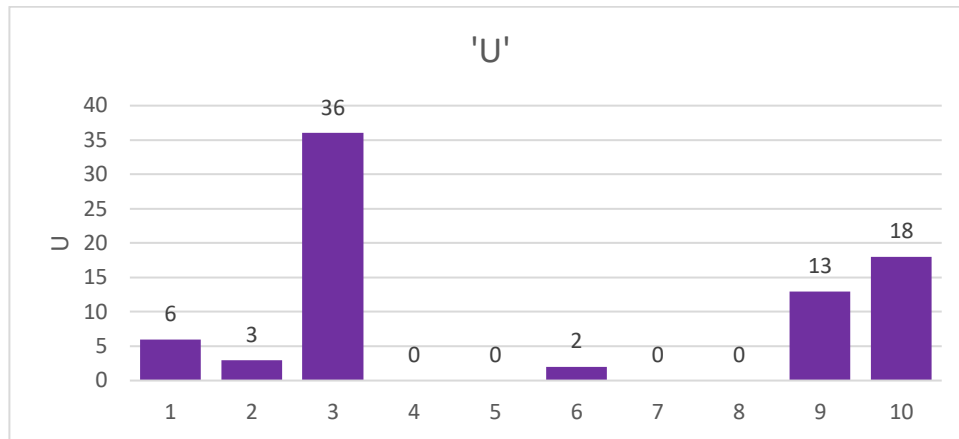

Figure 3: insights on unsure (U)

Figure 3 above illustrates that 36% were not sure whether online teaching and learning are more effective than face-to-face platforms, and 18% were also not sure if face-to-face teaching and learning should be permanently replaced with the online teaching and learning. This clearly implies that the integration of educational technologies has not yet met the expected standards for universities to completely change from traditional teaching and learning methods.
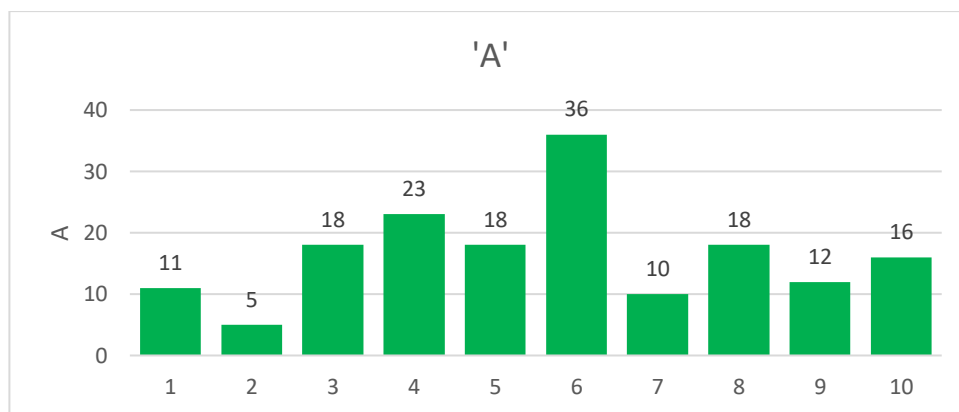

Figure 4: insights on agree (A)

Figure 4 above illustrates that 36% agree that their technological skills are above average, and 18% agree that online teaching and learning are more effective than face-to-face platforms, and that the use relevant resources from various web sites improved understanding of concepts. These responses indicate that although not all students pre-service teachers acknowledge the effectiveness of educational technologies, there is quite a few who benefit from these tools as they allow themto learn their programmes in depth (Aktaruzzaman & Plunkett, 2016).
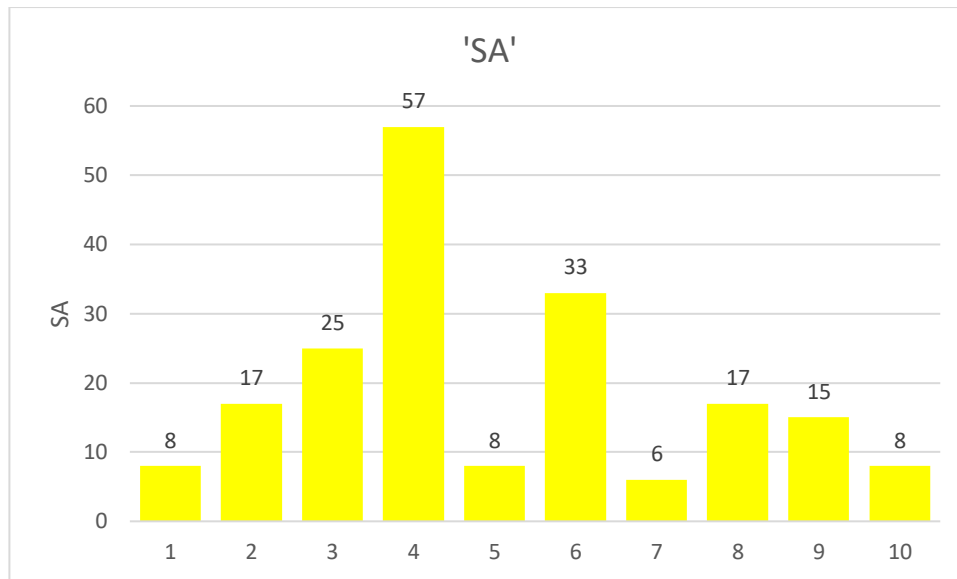
Figure 5: insights on strongly agree (SA)

Figure 5 above indicates that 57% strongly agree that the use technological tools help me learn better, and 33% also agree that their technological skills are above average. This is quite motivating to have pre-service teachers who have good technological skills to meet the expectations of the fourth industrial revolution (4IR). Purnama and Subroto (2016) also support this view in that educational institutions have realised that maximising the advantages of information technology is essential for success in the new digital era.

Conclusion

To some extent, the pre-service teachers indicated that they have some skills in the use of educational technologies for learning. However, the inadequate access to resources hinders their maximum usage. The university managers need to ensure equal access to all relevant educational technologies tools if teaching and learning on this platform is to be highly effective.

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