

# Digital Skills' Impact on the Use of Digital Learning Tools

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**Abstract:** Innovations and developments in the ICT sector drive significant changes in how higher education institutions (HEIs) execute their teaching and learning processes. HEIs have always succeeded in the implementation of ICT tools for the facilitation of the process of teaching and learning. However, they have faced many challenges related to using these tools. Various tools have been introduced, not only for teaching and learning but also for socialisation. These tools include social media tools that are used to achieve different activities in response to the demands of society. Social media, however, is more utilised than digital learning tools, causing major concerns because users appear more interested in social media tools to perform academic activities than in digital learning tools. Students entering the university spaces are often comfortable using their phones but less comfortable using laptops or PCs. These, however, are the primary devices used in digital classrooms at institutions of higher learning. The basic ability to use them is crucial in succeeding in today's digitised e-learning classrooms. This study investigates the impact digital literacy could have on using digital learning tools in HEIs. The study employed quantitative research methods using a survey developed and distributed to university alums to assess their digital skills upon entering their studies and how this impacted their learning experience. The participants were recruited from two public universities and one private university in the Eastern Cape. The purpose of the study was to formulate a checklist, based on the analysis of the data collected, that will inform the digital literacy factors impacting the use of digital learning in HEIs. While the study acknowledges that different students have different learning needs, it was still possible to create a solution through the suggested checklist consisting of eight (8) interventions developed to guide universities in improving the use of digital learning tools in their institutions.

**Keywords:** Digital skills, Digital learning, Blended learning, Learning management system, Information and Communications Technology

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## 1. Background

Information Communication Technology (ICT) has progressed rapidly, affecting all areas of life. The education sector is not immune to that progress with the advent of learning tools and systems that facilitate learning and teaching (Sharma, 2020). These systems are intended to improve the educational process by providing easier note-taking techniques, improved knowledge creation, accommodating all learning styles, and giving access to updated content and quick delivery of lessons (Irgashevich, 2020). All educational institutions started using some form of technology-enhanced teaching and learning for major and minor educational activities (Tatnall, 2020).

While education changes have been driven by ICT changes, social interaction and behaviour have been impacted significantly, with Social Networking Sites being the main force behind this (Osatuyi & Hiltz, 2019). Social Media (SM) has become the fastest-growing technological tool globally for communication, collaboration, and knowledge sharing (Joshi, 2019). SM is used by individuals across all income levels (Ahmad et al., 2019), and success stories include affordability, low cost, and the advantage that online communities can learn through digital connectivities (Hammerl et al., 2019).

South African institutions of higher learning were at the forefront of social media activism in 2015 and 2016 when student protest action, known as #FeesMustFall, took place nationwide. It was almost solely organised and arranged through SM (Ntuli & Teferra, 2018). Universities moved closer to digital teaching technologies after realising how easily face-to-face classes can be disrupted. These protest actions caused some institutions to close for more than eight weeks.

However, it was not until all institutions faced a further crisis during the COVID-19 pandemic, when they suddenly switched from traditional face-to-face classes to fully online classes, that digital learning spaces became a reality for all universities in South Africa. A study of this digital learning gateway suggested that the relevant digital learning skills needed by the learners to learn efficiently and effectively were lacking (Mulenga & Marban, 2020).

This paper focuses on the digital literacy skills of students in South African HEIs and the impact of the use of digital teaching tools.

## **2. Problem Area and Research Question**

This paper is part of a larger study that identified various factors impacting the use of digital learning tools at universities. One of these factors was the digital skills level of first-year students, as South African students are often not exposed to computers before entering university.

The research question to be considered: (i) what is the impact of digital literacy on the use of digital learning tools? (ii) What interventions can be taken to improve the use of digital learning tools?

## **3. Literature Review**

In order to fully engage with this research, a literature review was done that included Social Media benefits, barriers, and students' use of it. Then, the teaching and learning landscape in South Africa was reviewed, with a focus on traditional and digital learning. Digital learning refers to electronic means of learning, including learning management systems (LMS) and other digital learning tools such as e-books, multi-media courseware (videos, podcasts), and online classes, such as MS Teams and Zoom.

### **3.1 Social Media**

Relying on social media for knowledge acquisition and sharing has become popular because of the capabilities that SM provides to users. These include knowledge acquisition, such as marketing skills, improving business skills, and knowledge sharing by connecting with business partners and mentors (Perreira, 2021). SM has also created the opportunity for businesses, politicians, and SM influencers to communicate effectively through real-time engagement and the sharing of documents and multimedia files (Dimitrova & Matthes, 2018; Spina, 2019). According to Brands, Graham and Broersma (2018), SM has become popular because it has benefits in various fields, including community platforms that allow incident reports to be shared within the community, which is helpful to family and friends and large organisations that use these platforms to engage with colleagues or external workers (Nyaribo, 2018).

SM, however, comes with its barriers. These include fake accounts and fake news that can cause panic and institutional risk (Baccarella, 2018; Etter et al., 2019). Privacy concerns are also raised since personal data is required for many SM platforms. This data can be used maliciously or without consent (Anderson, 2019), as people may not be aware of the associated risks (Bada et al., 2019).

Some higher education institutions incorporated SM into their policies and integrated it into their educational processes due to its effectiveness and use by students and teachers (Mirembe, 2019). Many students today use SM to engage in social matters and informal learning opportunities (Ogbomo, 2019). Considering SM's benefits and use among students, universities are looking at ways to implement SM to boost academic performance (Farinloye et al., 2020). SM only benefits students who are conscious of technology and willing to learn and collaborate with their peers by finding ways to use technology to facilitate their learning (Ma, 2018; Darvishi, 2020).

While many benefits are associated with students' use of technology (Farinloye, 2020), some lecturers are still against students using their cell phones in classes because of the perceptions that the devices cause a distraction from learning, which could cause academic failure (Kausar & Awan, 2019; Diba et al., 2019).

SM has been involved in making radical changes in many areas. The use of SM by students and the impact it can have was evident in the #FeesMustFall movement in 2015 and 2016, where the SA government found itself having to comply with the demands of students (Ntuli & Teferra, 2018; Gwaze et al., 2018). The #FeesMustFall movement revealed social injustices in HEI that resulted in a change in the support provided by the government to HEIs as well as a free/subsidised higher education for students whose households were within a specified income bracket (van den Heever & Rensburg, 2018).

### **3.2 Teaching and Learning Landscape**

The South African teaching and learning landscape consists of public and private institutions. There are also some disparities within public schools and universities, mainly experienced in rural schools that are not well-funded and supported by the government. This paper focuses on higher education institutions in general and will not distinguish between private and public universities.

### *3.2.1 Traditional learning and teaching*

The traditional learning and teaching approach involves a classroom setting, learning and teaching material, and a lecturer with a background in the subject (Mitchell & Sutherland, 2020). Face-to-face teaching has been fading rapidly over the last few years due to technological advancements that have brought new and improved teaching and learning methods (Mitra & Beenen, 2019).

Several drawbacks in the traditional teaching and learning method are evident in today's information age, including being misaligned with how learning takes place, influenced mainly by the ability to work as a team, innovative thinking, and critical thinking, among others (Xiao & Watson, 2019). It is also believed that the traditional teaching approach is more teacher-centred than student-centred and that students tend to forget concepts quickly as the lecturer is more engaged in the activity than the student (Al-Balushi et al., 2020; Sumanasekera et al., 2020).

The traditional teaching method does have some benefits that are often overlooked due to the popularity of digital teaching technologies. These include building solid relationships with lecturers and peers, developing social interaction and communication skills, and improving self-confidence (Machmud, 2020).

### *3.2.2 Digital learning*

Digital learning aims to improve learning and teaching by implementing technological learning tools to improve the classroom and the distance learning experience (Pohjonen, 2019). It is seen as one of the most effective ways to deliver and facilitate teaching and learning; however, it is only applicable if implemented correctly (Nalini, 2020). Digital learning does not simply mean moving processes to an online environment and ensuring that all aspects are appropriately adapted to function effectively online.

HEIs provide a rich space to implement technological learning and teaching innovations. However, a lack of suitable strategies limited its use, with few HEIs successfully implementing mobile learning (Alrasheedi & Capretz, 2018). Despite this, the rapid changes in technology have greatly impacted learning and teaching, which in turn have had significant positive effects on the teaching and learning experience (Bayler & Oz, 2018).

A combination of face-to-face teaching and learning using digital technology is bridging the gap in the understanding of modern learning and teaching. This blended learning approach is being widely used to incorporate self-regulated learning by selecting the learning methods that are most compatible with the student's learning styles and involves some customisation and personalisation while also including face-to-face lessons (Vanslambrouck et al., 2019; Montgomery et al., 2019). Blended learning must follow a formal systematic approach to successfully handle processes, technology and face-to-face learning (Rahim et al., 2020). Digital learning in this study refers to using learning management systems (LMS), multimedia coursework (videos, podcasts), and online classes conducted through platforms such as Zoom and MS Teams.

### *3.2.3 The effects of #FeesMustFall and COVID-19 on South African universities*

The resulting free or subsidised access to higher education from the #FeesMustFall movement meant that many South African matriculants from impoverished backgrounds had access to further studies. The benefit of removing this financial barrier highlighted the digital divide in the classroom.

The abrupt closure of institutions worldwide during the COVID-19 pandemic necessitated the transition to online learning to salvage the academic year. This sudden shift placed lecturers and students in a challenging situation, unprepared for the digital literacy skills required for online learning and teaching. After the pandemic, it was realised that the traditional face-to-face teaching and learning approach was not the only viable option for students and educators. As a result, most universities adopted a blended learning approach.

In the context of universities, this approach to learning and teaching was hindered mainly by the persistent digital divide and unequal access to technology (Mashau & Nyawo, 2021). A study at the University of KwaZulu-Natal (Lembani et al., 2020) highlighted the common barriers students from a disadvantaged background experienced upon entering university. These results corresponded with other researchers, including poor participation, limited technology, lecture preparedness, and lack of personal teaching and learning styles (Aziyona & Nhedzi, 2021). Other challenges include technological failures such as computer crashes, the loss of valuable data, and a lack of backups, which may be related to a lack of ICT skills (Lohr, 2021). In South Africa, technophobia, a term that refers to a dislike or fear of technology, is an additional negative factor associated with developing countries and rural areas (Dintoe, 2019).

### 3.3 Questionnaire, Sampling, and Data Collection

The literature review on the digital landscape informed the development of factors that influence the use of digital learning. The participants were Nelson Mandela University alums from the last six years, as they would have most likely used digital learning technologies. The data collection was done through an anonymous survey conducted in QuestionPro. The online survey was anonymous, and because alums completed it, there was no power relationship in play.

The paper focuses on the digital literacy factors that impact the use of digital learning technologies. These were categorised into digital readiness, ease of use, and ease of improving competency.

## 4. Results

The statistical report revealed that the total number of participants is 52. The level of education indicated that three participants (5.8%) had earned certificates, 25 (48.1%) had diplomas, and 15 (28.8%) had Bachelor's degrees. Nine (17.3%) participants had postgraduate degrees. The largest representation, 65%, in terms of the age of the participants was in the range of 20 – 29 years. The participants' gender was almost equally split, with 52% male and 48% female. The participants' experience with digital learning showed that 50% had less than three years of experience.

The survey showed that the participants' evaluation of their experience with using digital learning systems was mostly (58%) as a novice or frequent user.

The participants' digital learning usage was measured daily and weekly. 48% of participants indicated that they used digital learning at least three times a week, while only 10% indicated that they used digital learning daily. The participants were asked about their skills in using digital learning tools, their ease of using them, and their ability to learn to use them.

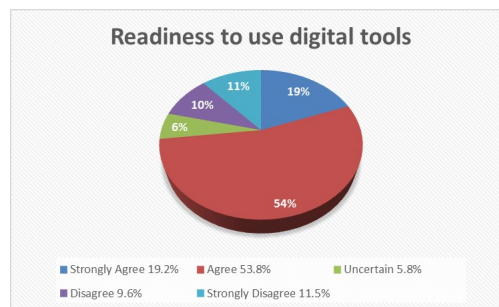


Figure 1: Readiness to use digital tools

Figure 1 indicates that 53.8% of the participants strongly agreed that they are ready to use digital learning tools and that they find them easy to use. 51.9% agreed that developing and growing their competency in using these tools was easy. The participants were also asked about their university experience and digital readiness to use the tools in the modern digital classroom. They were asked to respond to their perceptions of their lecturers' and classmates' experiences with digital learning tools.

A comparison of the participants' experiences when they entered university reveals that they had very different experiences than in the following years. Figure 2 shows that only 26.9% of students felt ready to use digital learning tools. Furthermore, they agreed that only 34.6% of their classmates were digitally prepared.

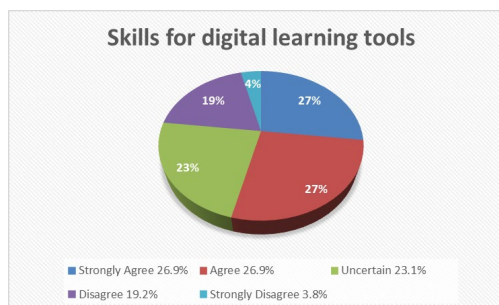


Figure 2: Digital readiness at university

These experiences starkly contrast with the 53.8% confidence the participants have in using digital learning tools. It is concerning that 30.8% agreed, and a further 23.1% strongly agreed, that their lecturers did not possess the digital skills to implement the tools required in a digital classroom.

40.4% of students feel they were given sufficient time to use the digital tools, suggesting that the university recognises the inadequacy of staff and students' skills. The university can play a crucial role in bridging this skills gap by compensating with more time. As recognised by Shadiev and Young (Shadiev, 2020), this intervention could significantly enhance the successful implementation of digital learning technologies.

The response regarding the availability of support for digital learning showed that 38.5% of students agreed there was sufficient support. This was in line with the literature review, which found that ICT support for digital learning is always available in most institutions (Ebner, 2020). In summary, the results indicated that the digital skills level of first-year students impacts their use of digital learning tools.

#### **4.1 Findings and Suggested Interventions**

##### *4.1.1 Digital skills*

Digital learning can only work well if the key users are adequately equipped. This study revealed that staff and students were unprepared for the digital classroom. Participants felt that they were not the only ones experiencing difficulties and agreed that most of their classmates were experiencing similar challenges. The less exposure to digital skills for staff and students, the higher the need to increase digital literacy and classroom readiness. Institutions need to ensure that there are proper systems to gauge each individual's digital skills level so that those lacking sufficient skills are identified early enough for customised interventions to be implemented. The intervention must be student-focused and have a component for staff to improve their digital skills requirements.

##### *4.1.2 Digital learning tool competency development*

According to He and Li (He, 2019), digital learning is better understood when one learns it informally. Students who spend more time on digital literacy skills grow their ability and competence in understanding and using digital learning tools. Since 51% of the students felt that they could easily develop their digital learning tool competence, it is important to ensure that the digital learning competency needs are evaluated and tested (Munoz, 2020). Lecturers who lack skills for teaching online can improve through training, while those who lack skills for using technology can start by looking for an improvement in that area (Perry, 2021).

##### *4.1.3 Time and support for digital learning tools*

Good digital skills enhance digital learning competency. Thus, staff and students must be provided sufficient time to improve their digital skills before interacting with digital classroom technology. These are two separate types of skills and higher education must understand them. Thus, not only should there be a focus on teaching digital literacy skills and digital classroom technology skills, but there should also be a distinction in training staff and students so that the unique skills required for both groups are recognised.

#### **4.2 Suggested Way Forward**

Table 1 has been formulated to address the interventions recommended for the impact of digital skills on the use of digital technology. The aim is not to focus only on factors that negatively impact the use of digital technology but also to ensure that factors that impact the use positively are elevated.

**Table 1: Suggestions to improve use of digital learning tools**

<b>Intervention</b>	<b>Details</b>
1. Digital skills evaluation program	Put in place a digital skills program for students and staff to evaluate the skills gap of each individual.
2. Self-evaluation	Students and staff should be able to perform a self-evaluation.
3. Digital skills course	Create a digital skills course to help upskill in the areas that lack sufficient skills.
4. Pedagogically sound material	Lecturers to be sent for material development course
5. Informal learning of digital literacy skills	Foster digital literacy into the curriculum of all modules and advocate for an informal learning environment.
6. Digital learning ease of use	Ensure that a simplification of user interfaces on digital learning systems.

Intervention	Details
7. Digital competency and literacy development	Ensure enough time to engage with digital learning systems.
8. Digital competency support	Ensure enough support to engage with digital learning system challenges.

Table 1 provides eight possible interventions that higher education institutions in South Africa could adopt to improve the use of digital learning tools. These suggestions include pre-evaluating lecturers' and students' digital skills so that a customised training plan can be followed to upskill in areas lacking competency. Furthermore, a suggestion is made for a self-evaluation tool to be used, which is less intimidating than sitting in a class and taking a "test." Enhancing one's digital skills assists with a greater uptake of digital learning tools.

The same type of assessment would also be valuable to determine which skills are lacking for the use of digital learning tools. A customised approach to becoming upskilled in the relevant areas can be followed. To facilitate the uptake and engagement of the required training material, digital literacy skills must be incorporated into all modules so that their value is appreciated. It is also important to make the training and upskilling programs interesting, and gamified training should be considered. The required time and support must be provided at all times to ensure that individuals involved in the training feel confident that they are supported in each step towards successfully using the tools required in a digital classroom.

## 5. Conclusion

The paper set out to determine the impact of digital literacy on digital learning tools. Data was collected as part of a bigger study, through literature reviews, and via a survey distributed to alums from Nelson Mandela University who completed their studies between 2018 and 2023. The participants' responses showed that the student's learning experience as first-time entering students was challenging, and only 26.9% of students indicated that they possessed the digital skills required to use digital tools when they arrived at the university. While students indicated that it would be easy to learn the digital skills required to use digital technology in classrooms, they also stated that their lecturers often did not possess the required skills. The results confirm that universities must create learning opportunities to upskill their staff in digital literacy before they can use digital teaching tools effectively. They also confirm that often, students entering university do not have the level of digital literacy expected to engage successfully in the digital classroom. Universities, therefore, have to consider how to improve this. Various suggestions were provided in this paper, such as digital skills evaluation programs followed by digital skills improvement courses.

Future studies should evaluate the interventions over a full academic year, using pilot groups of students whose progress can be monitored. Lecturers should also be evaluated and upskilled to ensure they have the digital skills to effectively use digital learning tools in the classroom. This can also be tracked over a full academic year, where the lecturer can demonstrate improved digital skills and proper use of digital learning tools.

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