

Prospects and Prevalence of Higher Education Learning Technologies for Secondary Social Sciences Student-teachers in South Africa and Lesotho: A Comparative Study

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Abstract

The South African Development Community's educational framework for Higher Education emphasises the enhancement of learning technologies to ensure quality teaching and learning. This study seeks to compare the advancements in learning technologies within Higher Education in South Africa and Lesotho, specifically in social sciences education. One university from South African and one from Lesotho were purposefully selected for this comparative study. Adopting a pragmatic paradigm, the study prioritises the methods that best address the research questions, employing a qualitative approach. The primary participants were student-teachers, selected purposefully from each university. Data was gathered through interviews and analysed thematically. The findings reveal that in both countries, learning technologies serve various purposes, including providing learning resources, facilitating and assessing learning, promoting cooperative learning, enabling learning anywhere, and managing COVID-19 impacts. The available learning management systems at each university, Thuto (Lesotho) and eThuto (South Africa), are supported by devices such as computers and smartphones.

Keywords: Learning technologies, student-teachers, higher education, social sciences education.

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Introduction

In the context of the fourth industrial revolution, education remains fundamental to national development, facilitated through international treaties (Bukoye, 2019). Development encompasses improvements across social, political, economic, and environmental spheres. International organisations spearhead development through education, with Higher Education (HE) - studies at colleges and universities - being the most impactful. This level of education is pivotal as it produces experts, including future schoolteachers (Owate, 2018). The effectiveness of Higher Education Institutions (HEIs) is largely determined by the quality of their learning technologies (LTs), which are digital tools and resources for education (David & Vera, 2017).

In the Southern African region, HE is influenced by efforts from the African Union and the United Nations to promote programme comparability and harmonisation (Hoosen, Chetty & Butcher, 2018). The region has also established the Southern African Development Community (SADC), which, through its Protocol on Education and Training Policy (1997), aims to enhance the availability of LTs within HE (SADC, 1997). Mavimbema (2020) notes that the policy framework lasted until 2020. The conclusion of this framework necessitates a comparative investigation into HE across participating countries, with the scope determined by the researchers' resources. Both South Africa and Lesotho are SADC members and have committed to improving LTs in HE. This study focuses on Lesotho and its neighbour, South Africa, due to the proximity and affordability for the researcher based in Lesotho. In a Social Science education context, the authors aimed to compare similar programmes at universities in these two countries. Additionally, the study addresses a gap in comparative research between Lesotho and South Africa, despite their shared educational frameworks.

Social Sciences education – training on the socio-economic and political behaviour of societies (Salui and Odjugo, 2020) – applies in various levels in education system. In HE, Social Sciences education, initially, is a department which offers Social Sciences education programme for schoolteachers covering (but not limited to) Economics, History, Development Studies and Accounting (Central University of Technology (CUT), 2017; National University of Lesotho (NUL), 2024). In schools, it appears that South Africa and Lesotho offer Social Sciences education as a conglomerate and introduction of some subject specialisations beyond primary education (Department of Basic Education (DBE)-South Africa, 2011; Ministry of Education and Training (MoET)-Lesotho, 2008). The succeeding secondary education emerges as foundation to HE Social Sciences education subject specialisations (DBE, 2011; MoET, 2008). Within HE, student-teachers undertake training to serve in delivery of foundational Social Sciences education subject specialisations within secondary education (CUT, 2017; NUL, 2024). Precisely, they employ LTs in acquisition of knowledge on instructional design and content, and use of pedagogies for professional growth (Salui et al, 2020). At their tenure, Hao and Lee (2017) argue that Social Sciences teachers essentially suppose to integrate LTs in teaching-learning processes, which Salui et al. (2020) shortly illustrate as employing LTs in creation of interactive lessons and facilitation of active learning pedagogies. Enabling learners to use LTs, they take allegiance by equipping learners with operational skills owing to rich learning content on Social Sciences education in the 21st century (Salui et al, 2020).

The adoption of LTs in South Africa and Lesotho appears to have occurred at different times. Bagarukayo and Kalema (2015) note that several South African universities implemented LTs like WebCT LMS, Sakai, Vula, and Moodle between 1995 and 2010. In contrast, Mashinini (2020) reports that Lesotho's established learning management system, Thuto, was introduced in 2010 at one of its universities. This suggests that South Africa adopted LTs earlier than Lesotho, likely due to its stronger economic position.

This comparative literature highlights the general timeline of LTs adoption in South Africa and Lesotho but does not address the extent to which individual programmes have been supported or the impact these technologies have had. This study aims to fill that gap by focusing on Social Sciences education, specifically Development Studies Education (DSE) at a Lesotho university and Economics Education (EE) at a South African university. The researcher, a DSE specialist, selected EE as the most comparable subject when no direct equivalent to DSE was available. Both subjects include themes from Development Economics, making them suitable for comparison. The focus of this study is on the LTs

used in these subject areas, which are typically similar across Social Sciences education programmes at each institution.

Problem statement

The SADC has emphasised the importance of adequate LTs for effective education within HEIs (SADC, 1997). Social Sciences education programmes, like other disciplines, require sufficient LTs to effectively train competent student-teachers for secondary education. However, both South Africa and Lesotho face challenges in this regard, as noted by Mafenya (2014) and the Council on Higher Education-Lesotho (2013), which identified a scarcity of LTs readily available. This shortage hinders pedagogical approaches such as blended learning, which is highly motivational for students. Consequently, this study is interested in exploring how these countries have addressed the scarcity of LTs to improve learning outcomes in Social Sciences education programmes. The problem statement gives rise to the research questions and significance of the study.

Research questions

This paper aims to answer the following research questions:

- What is the purpose of learning technologies in Social Sciences education?
- How prevalent are learning technologies in Social Sciences education?

Significance of the study

The study explores the extent to which LTs in Social Sciences education have improved from 2014 to 2023. It also assesses the impact of the available LTs during this period. Based on the findings regarding the current state and effectiveness of LTs, the study offers recommendations for improving learning technology policy statements. Overall, the content of this study provides a foundation for other comparative studies within the SADC context.

Conceptual framework and related literature

The study is conceptually guided by the Technological, Pedagogic, and Content Knowledge (TPACK) model, which is important for quality learning and teaching in Social Sciences education (Colón, Rus, Moreno & Montoro, 2023). Within this model, the focus is on technological knowledge (TK), which refers to the understanding that lecturers and students have of how to use LTs (Adalar, 2021; Mishra & Keohler, 2006). The study investigates the availability of these technologies, as their use depends on their existence. Furthermore, it explores the significance of LTs in Social Sciences education from an ontological perspective.

LTs in Social Sciences education are essential from various perspectives. Ogbaji (2017) highlights that LTs are a vital source of information for learning. Cervino and Vera (2017) add that LTs facilitate learning by presenting information in multiple formats, including text, visuals, and audio. Yambi (2018) points out that LTs can also assess student-teachers through tests, quizzes, and examinations, providing prompt feedback (Mashau & Nyawo, 2021; Aina&Ogegbo, 2021). Furthermore, LTs enable student-teachers to engage in cohort-based learning. Cohort-based learning serves as a vital support for lecturers adapting to contemporary learning trends, methods, and challenges. It has emerged as a response to the evolving landscape of online education, promoting new principles and active learning. These principles emphasise that groups, rather than individuals, are the primary units of learning (Rawashdeh, Mohammed, Arab, Alara & Al-Rawashdeh, 2021). Whether learning individually or in groups, LTs allow education to occur anywhere (Fernandez-Batanero, Montenegro-Rueda, Fernandez-Cerero& Tadeu, 2022). Additionally, during the COVID-19 pandemic, LTs ensured that learning continued uninterrupted (Coman, Tîru, Mesesan-Schmitz, Stanciu&Bularca, 2020).

While LTs are prevalent in HEIs, their extent within Social Sciences education needs further clarification. In Nigeria, Jolaosho (2023) has identified LTs such as Virtual Reality and Google Classrooms used for EE lectures. The COVID-19 pandemic highlighted the importance of LTs, leading to widespread adoption across HEIs. Haththotuwa and Rupasinghe (2021) in Sri Lanka found that LTs are widely available and used extensively, with usage rates ranging from 50 to 70 percent. However, Adeyemi (2020) reported that the influence of lecturers on LT use was low due to a lack of incentives, resulting in limited utilization. In Turkey, Erdogan and Serefli (2021) identified complementary LTs including Twitter, Messenger, Facebook, Instagram, and WhatsApp.

In addition to lecture-based LTs, e-library technologies are becoming more prevalent as libraries transition from traditional operations (Owate, 2018). Mbambo-Thata (2021) noted the use of e-library resources such as Emerald, Ebscohost, Proquest, Dawsonera, and JSTOR, which provide access to e-books, e-journals, theses, dissertations, magazines, and newspapers. Onuoha and Mbama (2021) reported that the use of these resources in social sciences education is extremely high, ranging between 80 and 100 percent. HEIs typically provide desktops and smartboards for both lecturers and students at the university (Erdogan & Serefli, 2021), while students use personal devices like laptops, smartphones, tablets, and iPads (Salhab & Daher, 2023). SADC has emphasised the importance of adequate LTs for effective education.

Method

The study has adopted a research paradigm, which is defined as a framework that researchers agree upon as optimal for conducting scientific investigations (Perera, 2018). Specifically, it employs pragmatism - a paradigm that permits the use of elements from other paradigms such as positivism, interpretivism, and critical theory to address research problems (Cohen, Manion & Morrison, 2018). Pragmatism is particularly relevant because it enables the researcher to effectively address the study's questions (Perera, 2018).

The study employs a qualitative approach, which is pertinent for gaining a deep understanding of phenomena, exploring human experiences, and developing new insights and theories (Ugwu & Eze, 2023). Specifically, the study utilises case studies as its qualitative design (Cohen et al., 2018). Case studies are employed to provide a comprehensive understanding of experiences within their natural contexts (Halkias, Neubert, Thurman & Harkiolakis, 2022). Among various types of case studies, the study uses multiple-case studies (Coombs, 2022), involving data collection and comparison from two different locations.

The study was conducted in the districts of Motheo in South Africa and Maseru in Lesotho. Lesotho is situated within the borders of South Africa. The research involved one university from each mentioned district - designated as South African University (SAU) and Lesotho University (LU) - to compare findings and assess improvements in LTs.

The target population includes participants involved in Social Sciences education, specifically in EE and DSE. The selected sample should represent the target population (Gumpili & Das, 2022). The sample consists of lecturers, student-teachers, librarians, and e-learning and educational technology support specialists. For sampling, the researcher employed a non-probabilistic, purposive technique to identify relevant participants from the university populations (Olasunkanmi & Ademiran, 2023; Stockemer, 2019). Purposive sampling involves selecting participants based on specific characteristics relevant to the research study. This method is commonly employed in qualitative research and when focusing on particular groups (Akpan & Piate, 2023). The sample size included 7 student-teachers in their 4th-year of study, 1 lecturer, 1 librarian, and 1 educational technology support specialist from each institution ensuring that there is at least a balanced understanding of the findings.

Data collection and analyses

The study used interviews as a data collection method, where researchers engage with participants directly. Recently, interviews have increasingly been conducted online, which assist in reducing geographical distances (Brinkmann, 2018). Semi-structured interviews were selected for data collection due to their relevance of eliciting data through interviewees subjective view. The interviewer asked open-ended questions regarding the LTs purpose, and answers were given as much as interviewees could bear. The same questioning style was administered on LTs prevalence, particularly on lectures and in library along with their use rate. Lastly, it covered ownership of devices utilised in support of LTs application. The questions were broadly identical across contacted departments in the study areas to maintain comparative nature of the study. Inconsistencies applied only in some interview techniques across study areas ensuring gathering required data as a response to confronted geographic and financial constraints. According to Madill (2023), interview data is typically recorded using inter alia, notetaking, audio and visual devices, and personal memory. These interviews were conducted via face-to-face interactions, MS Teams, WhatsApp, and email. For physical face-to-face interviews at both institutions, audio and

note-taking were used. Electronic face-to-face interviews conducted via MS Teams at SAU were recorded online and additional notes were taken. WhatsApp interviews were recorded as audio in both institutions, while email interviews at LU were recorded in text format.

Data analysis involves reviewing and organising data to identify similarities, making sense of it, and drawing conclusions (Frey, 2018). For analysing field data, the study employed thematic analysis, which involves identifying themes from the categories established by the researcher (Preiser, Garcia, Hill & Klein, 2021). The analysis used semantic themes, which involve applying meaningful codes derived from the data, and closed coding, which involves extracting codes directly from the data (Kampira, 2021). Codes were assigned for different participants: e-learning and educational technology support specialists were coded as Participant 1, librarians as Participant 2, and lecturers as Participant 3 for each institution. Student-teachers were coded as #1 through #7 per institution. Participants contributed data based on the relevance of their departments to the involved LTs. With a diverse group of participants, the study was able to gain insights on LTs for each theme, guided by complementation and/or supplementation within the data.

Ethical considerations

Applications for ethical clearance were submitted to both universities and were approved. Research ethics are guidelines that researchers must adhere to in order to prevent any potential harm or misconduct during and after the study (Cohen et al., 2018). The study implemented informed consent, ensuring that participation was voluntary and not coerced. Additionally, confidentiality was promised, guaranteeing that participants' information would be used solely for the purpose of the study. To protect participant privacy and encourage honest responses, their names were omitted from the study to avoid any potential reluctance to share information due to concerns about being identified.

Study Findings

Table 1.

The purpose of LTs in social sciences education

		Responses	
	Participants	SAU	LU
Source of information	Part. 1		"...they provide learning resources ..."
	Part. 3		"... navigate and exchange learning material on it"
	#4	"... to provide us with everything we need regarding academics in one place"	
	#5	"... access materials"	
facilitate Learning process	#1		"... it is used for teaching just like a physical classroom"
	#6	"...getting notes and discussing in groups. This assists us to have more information than just the textbook"	
Assessment of learning	#4		"... they were a means to be given quizzes for which the answers were given just afterwards"
	#5	"... take tests and submit assignments online"	

Table 1 continuing

Cooperative learning	#5		“...with technology we are able to interact with other students in discussions”
	#6	“...discuss some aspects of the work in groups, which assist us with understanding ...” “... I benefited a lot because when we did not understand in class, we help each other through online group discussion”	“...Whatsapp allows us to discuss and help one another and has helped me to my progress from one year to another. I suggest that there should be tools to help with practice teaching as well”
COVID-19 zero tolerance	#3	... because we as students were not allowed to come to campus during COVID-19, LTs were used”	
	#4		“... during COVID-19, the technology we used were a means to access all our learning materials”

Responses from the two institutions show that Learning Technologies (LTs) are utilised for a shared purpose. Specifically, they serve as sources of information, facilitate learning processes, assess learning outcomes, promote cooperative learning, and help prevent the spread of COVID-19.

Table 2.

The prevalence of LTs in social sciences education

Categories	Participants	Responses	
		SAU	LU
Lecture LTs	Part. 1&3	“... lecturers make use of eThuto (blackboard) to engage with students online and that the most preferred method is using the Learning Management System (blackboard) to submit learning information for students”	“... Thuto (blackboard-Sakai) ... and Zoom”
Usage of lecture LTs	Part. 3	“... the general use of technology for learning mostly applied during COVID-19 and not now so much”	“LMSs are not so much used when the university moved back to face-to-face lecturing after COVID-19”
	#2		“... Thuto was much used during COVID-19 when everybody had to use it. Now we have moved back to using it just now and again”
	#7	“... I don’t use this [Thuto] much; it is not every day that posting is done by lecturers”	
Library LTs	Part. 2	“African Journal Online, EBSCO Host, Emerald, Taylor & Francis, and Science Direct and Proquest Central”	“African Journal Online, EBSCO Host, Emerald, Taylor & Francis, and Science Direct, and Research4Life and JSTOR”

Table 2 continuing

Usage of LTs	Part. 2 #3	“...a wide variety of online sources are available for students to access information needed for their learning at anytime, anywhere they are”	“...we are given a link to access online material from the library and I use it to get additional information”
Institutional devices & connectivity	Part. 2 Part. 3	“...it has laptop connections and both class projection television and monitors... and that ...most classrooms have PowerPoint projections, respectively.” “... on campus, there is a wide coverage of Wi-Fi.”	“... on campus, Wi-Fi and computers are available throughout the year.: The data indicated that students on both campuses have access to the necessary technological hardware, software, and Wi-Fi to effectively engage with their studies.”
Student-teacher devices	Part. 2 #1 #2 #6	“...students have laptops and almost all students have smartphones, and, on a smartphone, we can link to anything these days.” “...I have a laptop and a smartphone, so I only need Wi-Fi, which I get on campus. “I also buy data for my smartphone to use it at home.”	“...we as students have our smartphones and also many have laptops.” “We have access to anything we want.” .

The HEIs have similarly organised lecture LTs. However, their usage became especially significant during the COVID-19 period. Libraries also have LTs available, which student-teachers utilise to access learning materials. Additionally, the HEIs have provided devices and Wi-Fi to support the use of LTs. On a personal level, student-teachers own devices that allow them to effectively explore LTs across the HEIs.

Discussion and Conclusion

The purpose of LTs in Social Sciences education

The study has found that LTs in SAU and LU are planned to be used as the source of information. In SAU, #4 and #5 confirm the intent of their use of LTs as “... to provide us with everything we need regarding academics in one place and ... access materials.” In LU, participants 1 and 3 pointed out that LTs are sources of information by saying “...they provide learning resources ... and ... navigate and exchange learning material on it.” The findings are constant with literature as it highlights LTs provide information for learning to take place (Ogbaji, 2017).

The study found that, at both SAU and LU, LTs are expected to play a supportive role in the learning processes of social sciences education. In SAU, #6 understood LTs as a means that enhance learning facilitation through expressions as “...getting notes and discussing in groups. This assists us to have more information than just the textbook.” In LU, #1 confirmed the purpose of using LTs by saying “... it is used for teaching just like a physical classroom.” The literature supports the findings by indicating that LTs are valuable resources for enhancing the learning process (Cervino & Vera, 2017). In addition, at SAU and LU, LTs are utilised to assess the performance of student-teachers in their learning activities. Within SAU, #5 indicated that LTs enable them to “... take tests and submit assignments online.” In the case of LU, #4 stated that “... they were a means to be given quizzes for which the answers were given

just afterwards.” The use of LTs for assessing learning is supported by Yambi (2018) who states that a key advantage of LTs is their ability to generally provide immediate feedback to both students and lecturers.

The study revealed that LTs at the SAU and LU are expected to provide student-teachers with opportunities to collaborate and engage in cooperative learning, enhancing their educational experience and interactions. In SAU, #6 said that they as student-teachers have the opportunity to “...discuss some aspects of the work in groups, which assist us with understanding ...” In LU, #5 stated that “...with technology we are able to interact with other students in discussions.” In SAU and LU, while it is implied that individualised learning takes place, participants have indicated that cooperative learning is upheld by LTs. In SAU, #6 asserted that “... I benefited a lot because when we did not understand in class, we help each other through online group discussion.” In LU, #5 identically commented that “...Whatsapp allows us to discuss and help one another and has helped me to my progress from one year to another. I suggest that there should be tools to help with practice teaching as well.” This role is supported by literature, which indicates that, in addition to individualized learning, student-teachers also participate in group learning as an additional pedagogical approach (Rawashdeh et al., 2021).

The study found that at SAU and LU, LTs are anticipated to support both on-campus and off-campus student-teachers in their learning activities. In SAU, participant 1 indicated that LTs “...enable us to get resources on our own anywhere and at any time we want for learning.” In LU, participant 2 said that “... the library website is the learning page for us students, the staff and everybody. There are also part-time students, and with electronic platforms everybody can access information.” The literature aligns with the findings, indicating that learning - whether individualised or group-based - can occur regardless of where student-teachers are located (Fernandez-Batanero et al., 2022).

The study revealed that SAU and LU initially planned to use LTs as a strategy to enforce a zero-tolerance policy for the spread of COVID-19 among student-teachers. In SAU, #3 stated “... because we as students were not allowed to come to campus during COVID-19, LTs were used.” In LU, #4 indicated that “... during COVID-19, the technology we used were a means to access all our learning materials.” The literature, consistent with the findings, indicates that LTs were once relied upon to control the spread of COVID-19 by preventing physical contact among student-teachers (Coman et al. 2020).

The prevalence of LTs in Social Sciences education

At SAU and LU, LTs used for lectures and in certain instances, assessments, include eThuto and Thuto, respectively. In SAU, participants 1 and 3 said “... lecturers make use of eThuto (blackboard) to engage with students online and that the most preferred method is using the Learning Management System (blackboard) to submit learning information for students”. In LU, participants 1 and 3 asserted that LTs involve, inter alia, “... Thuto (blackboard-Sakai) ... and Zoom.” Consistent with the literature, Jolaosho (2023) indicates that within Economics Education, lecturers use online platforms for disseminating information and communicating with students, enhancing the overall educational experience.

The study also found that the usage rates of eThuto at SAU and Thuto at LU have declined since COVID-19. In SAU, participant 3 commented that “... the general use of technology for learning mostly applied during COVID-19 and not now so much.” #7 stated that “... I don’t use this [Thuto] much; it is not every day that posting is done by lecturers.” In LU, participant 3 pointed out that “LMSs are not so much used when the university moved back to face-to-face lecturing after COVID-19.” #2 opined that Thuto use is scarce specifically saying that “... Thuto was much used during COVID-19 when everybody had to use it. Now we have moved back to using it just now and again.” Adeyemi (2020) assert that LTs are not optimally used in lectures because lecturers lack sufficient motivation to integrate these tools into their teaching methods, leading to underutilisation.

Regarding e-library LTs, the study found that both SAU and LU have similar LTs such as African Journal Online, EBSCO Host, Emerald, Taylor & Francis, and Science Direct. These similarities indicate that social sciences education LTs are multidisciplinary. However, there are also differences: LU uniquely has Research4Life and JSTOR, while SAU exclusively uses Proquest Central. The findings are supported by literature from Mbambo-Thata (2021), which highlights LTs like EBSCO Host, Proquest, Dawsonera, and JSTOR. These LTs provide access to e-books, e-journals, themes, dissertations, magazines, and newspapers, among other resources.

At both SAU and LU, e-library services utilising LTs are frequently used by students to search for information, significantly supporting their learning processes and academic research efforts. In SAU, participant 2 revealed that "...a wide variety of online sources are available for students to access information needed for their learning at anytime, anywhere they are." In LU, student-teacher #1, #2, #3 and #4 indicated his use of library LTs by stating that "...I never go to the library or use their available online sources, I normally just Google for information." #2 asserted that "...the library offers JSTOR home platform for online material search, which I find very helpful." #3 stated that "...we are given a link to access online material from the library and I use it to get additional information", whereas #4 commented that "... I use the online library and they have a Remotex App that is useful to get information for my courses." This usage aligns with the literature, as Onuoha and Mbama (2021) report that the adoption of e-library services in social sciences education is high, with usage rates ranging between 80 percent and 100 percent.

The study has established that there are complementary LTs in SAU and LU. In SAU, participant 3 stated that "Whatsapp groups are frequently used by lecturers to give us information ...", which has been confirmed by student-teacher #6. #1 indicated that "...I use Google a lot because I can type in different keywords to get information." In LU, #4, #5, #6 and #7 asserted that "...we use Whatsapp messages with lecturers as well as our fellow students. Some students have formed learning groups where they discuss the learning." Only #3 and #7 have mentioned that "...I also use You Tube videos because there are a lot of such videos that link with what we have to learn... and ... we are sending emails if we need to attach a document to the lecturer or other students." The finding aligns with the literature, as Moghavvemi, Sulaiman, Jaafar and Kasem (2018) highlight the use of complementary social media LTs, such as YouTube, Facebook, Google, Instagram, and WhatsApp, in educational contexts.

The study found that both SAU and LU provide computers for student use and also supply Wi-Fi, ensuring that student-teachers have the necessary technological resources and internet access to support their learning. In SAU, participants 2 and 3 noted that the university is equipped with devices, specifically mentioning that "...it has laptop connections and both class projection television and monitors... and that ...most classrooms have PowerPoint projections, respectively." Participant 2 further added that "... on campus, there is a wide coverage of Wi-Fi." In LU, participant 2 stated that "... on campus, Wi-Fi and computers are available throughout the year.: The data indicated that students on both campuses have access to the necessary technological hardware, software, and Wi-Fi to effectively engage with their studies. Erdogan and Serefli (2021) support this, noting that learning institutions typically own devices that facilitate LTs. In social sciences teaching and learning, devices such as desktops and smart boards are commonly used, especially for visual aids.

The study revealed that at both SAU and LU, student-teachers possess personal devices, such as laptops and smartphones, which allow them to effectively engage with and utilise LTs for their education. In SAU, participant 2 stated that "...students have laptops and almost all students have smartphones, and, on a smartphone, we can link to anything these days." #1 and #6 confirmed the afore-mentioned by stating that "...I have a laptop and a smartphone, so I only need Wi-Fi, which I get on campus. I also buy data for my smartphone to use it at home." In LU the responses were similar, indicating to at least have a smartphone and in many instances, also laptops. Both student-teachers #1 and #2 responded that "...we as students have our smartphones and also many have laptops. We have access to anything we want." Ownership of smartphones and laptops are widespread and effective technological tools for communication and learning (Aheto& Cronje, 2018).

The study was guided by a philosophical stance and conceptual framework provided by TPACK, focusing analytically on LTs in terms of their purpose and prevalence within the selected universities. Through the philosophical assumption of axiology (which pertains to the study's significance), the study identified that the purpose of social sciences education LTs is to provide learning information, facilitate learning, and assess performance equally in both SAU and LU. This answers the question regarding the purpose of LTs in social sciences education.

Regarding ontology, the study identified eThuto at SAU and Thuto at LU as lecture-based learning technologies, although their usage was limited. Other technologies were extensively used for information retrieval in libraries. In addition to institutional LTs, student-teachers also utilized

complementary tools such as social media platforms like YouTube and WhatsApp. Successful integration of LTs requires digital skills, and both SAU and LU provide formal training for student-teachers to acquire these skills. This addresses the application of LTs in social sciences education at both universities. Both SAU and LU have succeeded in using available LTs to supply information for learning, facilitate learning, and access resources for developing student-teachers' content knowledge.

As content knowledge is enhanced, pedagogical knowledge is also promoted and practiced through individualised and cooperative learning. Both content knowledge development and pedagogical knowledge support in social sciences education occur regardless of whether student-teachers are on-campus or off-campus. Despite the significant impact of LTs during the COVID-19 pandemic, their usage has declined as lecturers returned to physical classrooms.

To address limiting factors, recommendations include securing funds, expanding Wi-Fi access, providing data, ensuring reliable electricity, and using updated devices. These recommendations aim to mitigate the impact of LTs in social sciences education in SAU and LU from a comparative perspective.

The authors suggest conducting targeted analytical studies to examine the impact of LTs within specific subject specializations, either individually or comparatively. These studies could use a survey-based research strategy to gain a deeper understanding of the application of LTs in various social sciences education programs. The findings obtained in the research can be explained with tables, figures, graphics, or pictures in accordance with the purpose of the study.

In conclusion, the study explored the prospects and prevalence of LTs in Social Sciences education at (HEIs in South Africa and Lesotho. Focusing on the EE program at SAU and the DSE programme at LU, the research found that LTs are predominantly used by student-teachers as key sources of information to facilitate learning, and to conduct assessments. The study also identified libraries as valuable sources of LTs, while student-teachers engage with complementary LTs based on social media platforms that have emerged since 2013. Additionally, the study noted variations in device ownership, with some devices provided by the institutions and others personally owned by student-teachers. Overall, LTs have significantly improved social sciences teacher education in both SAU and LU over time.

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Ethics statement: In this study, we declare that the rules stated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive" are complied with and that we do not take any of the actions based on "Actions Against Scientific Research and Publication Ethics". At the same time, we declare that there is no conflict of interest between the authors, which all authors contribute to the study, and that all the responsibility belongs to the article authors in case of all ethical violations.

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