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Values of Clinical Observational Learning in Work-Integrated Learning in Health Sciences Education: Students' Views and Experiences

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Abstract. Students' competency is a critical concern in health sciences education. Therefore, work-integrated learning has become an integral part of health sciences programmes at higher education institutions. This study explored students' views and experiences of clinical observational learning to promote work-integrated learning in the acupuncture programme at a South African university. The authors used the Technological, Pedagogical, and Content Knowledge (TPACK) model as a theoretical lens to guide this study, involving five participants who were purposively selected. A qualitative descriptive single case study design was employed within an interpretivist paradigm. Five participants were recruited for this study. The authors employed semi-structured interviews as the data collection instrument. The data were analysed using the six-step thematic analysis. The findings revealed that students agreed that clinical observational learning significantly improved clinical competency. They reported that clinical observational learning assisted them in memorising content knowledge and obtaining practical experience. Furthermore, participants highlighted that a lack of space, insufficient time, and incompetency of observed student practitioners negatively affected their learning experience. This study concluded that higher education institutions should employ clinical observational learning in the curriculum to assist in transitioning students from theoretical knowledge to clinical practice. It is recommended that further research must be conducted at national and international higher education institutions.

Keywords: clinical observational learning; work-integrated learning; TPACK; student competence; higher education

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1. Introduction

There is much concern about the competency and quality of students produced at Higher Education Institutions (HEIs) in South Africa. Billett et al. (2018) argue that students lack the ability to translate theoretical knowledge into practice. For this reason, there is an urgent need to improve students' competencies in the workplace; this is particularly critical in health sciences education. Atherley et al. (2019) state that there is much criticism of health sciences education. One of the most common challenges cited is that students do not obtain adequate skills that are essential in the working world, which will negatively affect public health. To promote students' competencies, Hu and Venketsamy (2022) reveal that health sciences education should adopt practical pedagogical approaches to ensure students' competencies, especially in clinical training. The authors identified Clinical Observational Learning (COL) as a practical approach to clinical training. This view concurs with Kay and Kibble (2016), Mazerolle et al. (2015) and Powell et al. (2019), who emphasise the importance of COL in promoting students' competencies in clinical practice. This study aimed to explore students' views and experiences of COL in Work-Integrated Learning (WIL) within the South African context.

Observational learning is an integral part of health sciences education. Students are continually observed in a clinical setting by other students, clinicians, and healthcare team members. Clinical observational learning refers to the process of learning through observation but in a clinical setting (Mazerolle et al., 2015). Observational learning allows students to learn necessary and essential behaviours by observing others (Kay & Kibble, 2016). Researchers such as Kay and Kibble (2016) and Zentall et al. (2002) agree that observational learning is vital when learning goals require instructional modelling, demonstration, or imitation. Despite evidence illustrating the value of observational learning, direct observation is rarely used in health sciences education. Powell et al. (2019) concur and point out that there is limited research on the benefits of COL in health sciences education.

Work-integrated learning is a pedagogical approach that promotes integrating theoretical knowledge in the workplace (Billett & Choy, 2014; Billett et al., 2018). Govender and Wait (2018) indicate that WIL enhances students' competency in the workplace since it promotes learning for performance. However, Beigzadeh et al. (2021) argue that students struggle to transition from theoretical studies to clinical practice. To bridge the gap, Powell et al. (2019) believe that COL can assist in this transition by allowing students to learn in a safe environment through WIL and reducing the stress and anxiety associated with clinical training. Literature reveals that there are challenges in WIL in the field of health sciences education. For instance, Gandomkar et al. (2011) state that insufficient time, financial constraints, and multiple responsibilities of clinicians negatively influence students' training. The authors believe that HEIs should employ appropriate technologies to facilitate students' learning in the 21st century. This view is strengthened by McCutcheon et al. (2014) and Noorani (2022), who highlighted the significance of using technologies in HEIs. This study aimed to explore students' views and experiences of COL in the acupuncture programme

at a South African university. Specifically, it sought answers to the following research questions:

1) How do students experience clinical observational learning in work-integrated learning?
2) What are acupuncture students' views of clinical observational learning in work-integrated learning?
3) What are the challenges of clinical observational learning in work-integrated learning?

2 Literature Review

2.1 Concept of Clinical Observational Learning

According to the seminal work by Bandura and the National Institute of Mental Health (1986), observational learning is defined as a process by which a student gains knowledge of necessary and critical responses by watching the behaviours and reactions of others. In their work, Bandura and the National Institute of Mental Health (1986) propose that there are four processes involved in observational learning: attention, retention, production, and motivation. Mukhalalati et al. (2022) indicate that attention refers to observing and extracting from the observed events, and retention is retaining the information from this event. Bandura and the National Institute of Mental Health (1986) explain that production is the process of converting memories into actions. They further propose that motivation is the desire of the student to demonstrate the learnt behaviours. Kay and Kibble (2016) agree with Zentall et al. (2002) that observational learning is essential when the learning goals require instructional modelling, demonstration, or imitation. Observational learning is critical in WIL in health sciences as visual learning allows students to observe clinical and social skills relevant to their profession and then emulate them (Noorani, 2022; Yavich & Rotnitsky, 2020). In this study, COL referred to a process of observational learning in a clinical setting.

Challa et al. (2021) state that observational learning is crucial in health sciences education, as it assists students in learning complex medical procedures. It further ensures patient safety and optimal care while providing learning opportunities (Cordovani & Cordovani, 2016). Irvine et al. (2019) found that observational learning improves self-efficacy by motivating students to increase self-mediated learning. According to Challa et al. (2021), motor skill development is critical to health sciences education and needs to be taught and practised competently. These motor skills are required as health sciences students need to perform numerous procedures in unpredictable and changing environments (Challa et al., 2021). Despite all these benefits, there is limited research into observational learning (Powell et al., 2019). The authors are of the view that COL will assist in ensuring students' competency in health sciences education.

2.2 Importance of work-integrated learning

Berndtsson et al. (2020) articulate that WIL is also known as clinical learning or clinical training. WIL is learning any action a healthcare professional performs that impacts the clinical outcome of patient care (Beigzadeh et al., 2021). In their

work, Atherley et al. (2019) report that students feel stressed and anxious when starting clinical work. Work-integrated learning is of the utmost importance in health sciences education as it provides students with clinical knowledge, clinical skills, clinical reasoning, and communication skills (Beigzadeh et al., 2021). As noted by Ryan and McAllister (2019), qualified clinicians in the respective field usually supervise WIL, and these clinicians perform various roles, including orientating, rostering, assessing, and supervising multiple students. In WIL, students perform or observe duties related to their profession in a real-world setting (see Figure 3). The focus is on preparing students for clinical work by reducing the knowledge gap between pre-clinical and clinical students (Atherley et al., 2019).

Liljedahl et al. (2015) assert that WIL is vital to health sciences students' competency. WIL allows students to gain experiences and prepare them for real-world practice (McKenna et al., 2019). Work-integrated learning helps students to manage their learning, making them aware of the gaps in their knowledge and the areas they need to focus on in their studies (Dornan et al., 2014). Students also gain practical knowledge, which includes clinical skills in patient care, communication, and leadership (Noorani, 2022). Furthermore, Collett et al. (2022) believe that clinical learning allows students access to otherwise inaccessible healthcare knowledge, which can only be taught in a clinical context.

Similarly, Liljedahl et al. (2015) propose that this knowledge is referred to as the hidden curriculum and can include knowledge and skills that can only be learnt in a clinical setting. Salminen et al. (2016) state that clinical learning allows students to build a frame of reference for their studies, helping to make their learning coherent. This view is supported by Dornan et al. (2014), who further postulate that a frame of reference allows students to understand the relevance of knowledge and skills, further assisting their studies.

Work-integrated learning in health sciences education requires a focus on teaching students practical skills, empathetic, patient-centred communication skills, and delivering quality patient care efficiently and cost-effectively in the complex environment of medical facilities (Roy et al., 2012). Dornan et al. (2005) identify the need to promote self-directed and lifelong learning in students. This study is complemented by Gandomkar et al. (2011), who found that health sciences education has many challenges, such as a lack of time for teaching, financial constraints, and multiple responsibilities of clinicians. These views are supported by Seabrook (2003), who proposes additional challenges, such as a lack of adequate facilities, insufficient supervision, and a lack of a definite structure for clinical teaching. Beigzadeh et al. (2021) further propose that students preferred to pass their medical examinations instead of receiving their qualifications by learning the necessary clinical experience and skill competencies. Conversely, Hu et al. (2022b) argue that there is a shortage of effective methods to encourage students' critical thinking in WIL.

2.3 Values of technologies in clinical observational learning

The advances in technology have changed the landscape of student learning, affording the possibility of online learning, known as e-learning (Noorani, 2022). Higher education institutions have started adopting e-learning, with many institutions establishing e-learning platforms like Moodle or Blackboard (McCutcheon et al., 2014). In health sciences education, there are numerous possibilities for e-learning to improve the learning process, such as online simulations, digital teaching aids, online teaching, and virtual learning environments (Moule et al., 2010; Dearnley et al., 2013).

Much literature on e-learning postulates that it provides flexibility to students and teachers, allowing the choice of a suitable time and place for learning (Smedley, 2010). Holmes and Gardner (2006) propose that e-learning allows students access to vast amounts of information. Furthermore, e-learning can compensate for limitations in teaching staff or facilities (Arkorful & Abaidoo, 2015). In health sciences education, e-learning can be used to improve the efficiency and effectiveness of the learning process to aid in overcoming the social, scientific, and pedagogic challenges of the teaching process (Feriandi et al., 2020). McCutcheon et al. (2014) reviewed 13 studies regarding the use of e-learning for health sciences education and found in 10 studies that the students had the same or better knowledge. E-learning resources can assist in overcoming the challenges of limited teaching time and resources identified in many clinical learning environments (McCutcheon et al., 2014).

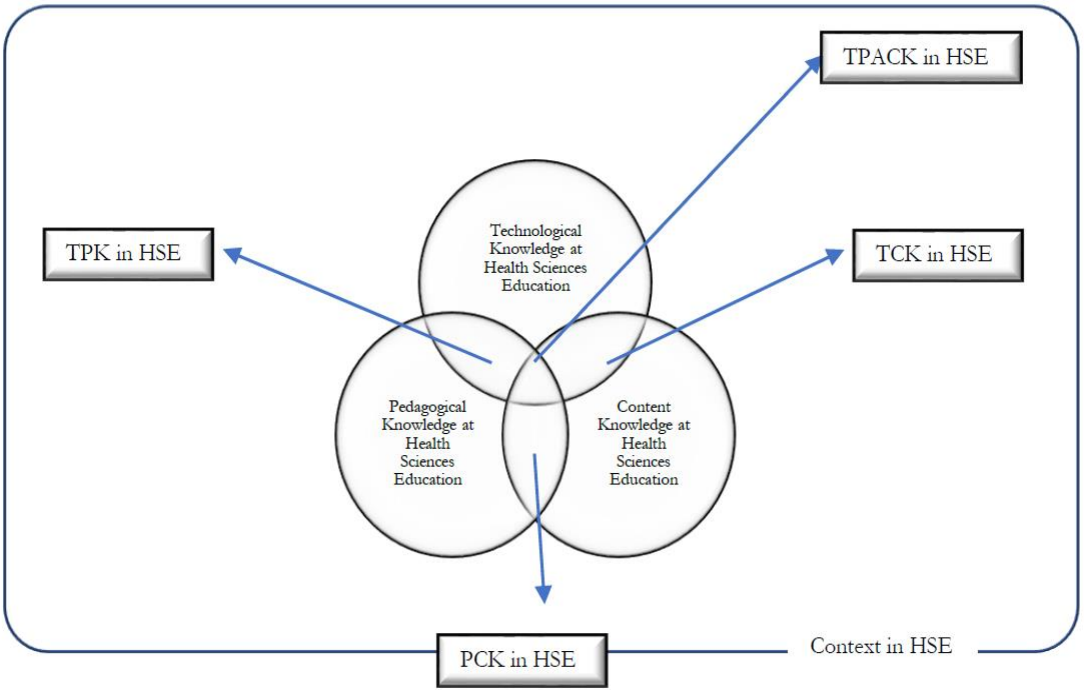
However, there are challenges in e-learning, with some students reporting the inability to gain sufficient direct contact with educators to ask questions or to learn interpersonal skills (Challa et al., 2021). From their studies, Johnson et al. (2013) and Wong et al. (2014) found that students are less satisfied with e-learning than with face-to-face learning. 'Digital inequality' is also a concern where many students do not have the means to access e-learning (Hu & Venketsamy, 2022). Similarly, Hedding et al. (2020) note that a lack of laptops and internet access has negatively influenced e-learning.

2. Conceptual Framework

The conceptual framework anchored in this study was the Technological, Pedagogical and Content Knowledge (TPACK) model proposed by Mishra and Koehler (2006). The TPACK model has been used to promote effective teaching in education by allowing researchers to understand teaching from various perspectives (Koehler & Mishra, 2009; Hu & Venketsamy, 2022).

The TPACK model was expanded upon Shulman's (1986) work, which proposed the study of pedagogical knowledge and content knowledge as a necessary relationship, not two separate domains. The TPACK model elaborates on this by proposing a third domain known as technological knowledge. This model emphasises the associations and limitations among the three core domains. These domains are content (C), pedagogy (P), and technology (T). However, the primary focus of the model is the interplay between these three domains, which creates another four types of knowledge: Technological Content Knowledge

(TCK); Pedagogical Content Knowledge (PCK); Technological Pedagogical Knowledge (TPK) and Technological Pedagogical Content Knowledge (TPCK) (Mishra & Koehler, 2006; Koehler & Mishra, 2009).



HSE: Health Sciences Education **TPK**: Technological Pedagogical Knowledge **PCK**: Pedagogical Content Knowledge **TCK**: Technological Content Knowledge **TPACK**: Technological Pedagogical Content Knowledge

Figure 1: Adapted TPACK Model for Health Sciences Education (as adapted from Hu and Venketsamy, 2022)

3. Methodology

3.1 Research Design

The authors adopted a qualitative single case study design within an interpretivist paradigm. Qualitative research designs enable researchers to understand an identified phenomenon in its natural setting (Hu et al., 2022b; Teherani et al., 2015). In this study, the authors employed a single case study design as this approach allows investigators to describe complex phenomena in detail, such as recent events, essential issues, or programmes (Cronin, 2014; Venketsamy et al., 2021). The authors concur with Alharahsheh and Pius (2020) that the interpretivist paradigm allows researchers to gain detailed insights into a phenomenon (selected case).

3.2 Research setting

The study was conducted at a public university in Gauteng province.

3.3 Participants

The participants of this study were selected through a purposive sampling technique. Campbell et al. (2020) and Venketsamy et al. (2021) postulate that purposive sampling is used to select participants who will provide beneficial

and detailed contributions to the research. Purposive sampling was well suited to this study as it allowed the authors to access participants from a limited population. The population of this study consisted of students who were registered for the Bachelor of Health Sciences (BHsCM) programme. They were invited to participate in this study by exhibiting a research invitation notice on the campus notice board. The inclusion criteria were: a) participants had to be registered for either the third or fourth year of the BHsCM; b) they had to have taken part in clinical observational learning; c) they must be above the age of 18; and d) they had to be willing and consent to participate in the study. Five students agreed to participate in the study by signing the research consent forms. Pseudonyms were utilised in this research to protect the participants' privacy. P1-Y3, for example, referred to Participant 1, who was in her 3rd year. The table below represents the pseudonyms used for each participant.

Table 1: Relevance of objectives of teaching subjects at the university

Participant	Gender	Age
P1-Y3	Female	24
P2-Y3	Female	22
P3-Y4	Male	22
P4-Y4	Female	22
P5-Y4	Male	28

3.4 Data Collection Instrument

The data in this study were collected by employing semi-structured interviews. The interviews took place from January to February 2023. The interview schedule (Appendix 1) was developed using open-ended questions, allowing participants to respond without being led in a predefined direction (Venketsamy et al., 2022; Züll, 2016). All interviews were transcribed, and the data was then analysed.

3.5 Data Analysis

The six-step thematic analysis was followed to analyse the data collected for the study. The authors concur with Hu et al. (2022a) and Venketsamy et al. (2021) that similar opinions about qualitative data can be effectively identified through thematic analysis. The data were analysed inductively. According to Creswell (2014), the six steps included reviewing the data, coding the data, recognising the initial themes, reviewing the initial themes, refining the themes, and answering the research questions (See Figure 2). To ensure the qualitative trustworthiness criteria of credibility, confirmability, dependability, and transferability, the authors utilised appropriate research design, well-established research methods, detailed study descriptions, audit trail, member checking, debriefing between authors and auditing by a second coder.

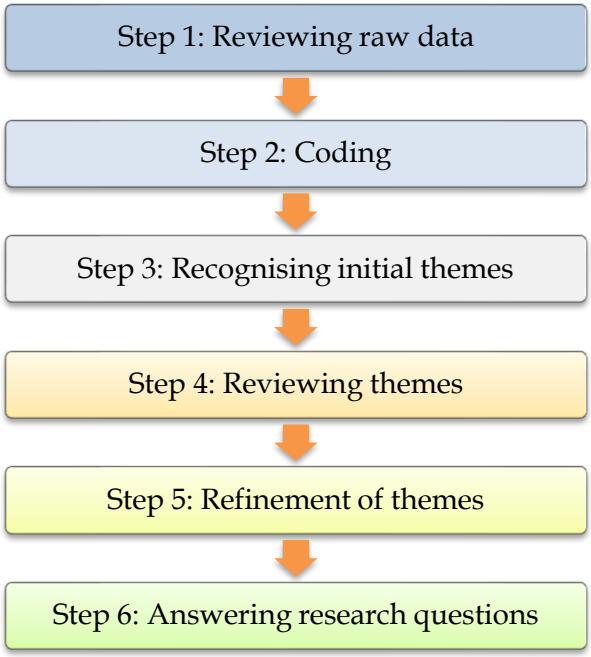


Figure 2: An overview of the six-step thematic analysis (As adapted from Creswell, 2014)

3.6 Ethical Committee Permission

Ethical clearance was approved by a Research Ethics Committee at a public university (Reference: REC-1443-2022).

4. Results

This study explored students' views and experiences of COL in work-integrated learning at a South African university. All participants in this study recognised the importance of COL in WIL. Participants reported multiple benefits of COL in their clinical training. However, some participants revealed that they experienced challenges in WIL. During the data analysis, two major themes emerged, namely, 1) Students' views and experiences toward COL; and 2) Challenges of COL in WIL. Verbatim quotes were included in this section.

Theme 1: Students' views and experiences toward clinical observational learning

The findings of this study revealed that all participants shared positive views and experiences toward COL. They agreed that COL was a practical pedagogical approach for improving clinical competence in work-integrated learning. Furthermore, they believed observation enhanced their learning. They contended that there should be more COL opportunities in the first and second years of study. To this, P1-Y3 stated: "*I love observing other students seeing patients in the clinic.*" P2-Y3 added: "*It is exciting to attend clinics. Because you can see how the knowledge you learn from classrooms can be applied in practice.*" P1-Y3, P3-Y4 and P4-Y4 all concurred that observing in the clinic helped them remember content knowledge. P3-Y4 indicated: "*I remember points [acupoints] better after seeing them in the clinic.*" P4-Y4 stated, "*It [clinical observational learning] helps me identify shortages in my knowledge and weaknesses in my skills*".

P5-Y4 said:

> *Observing in the clinic [COL] helped me identify my shortages. For example, when patients ask the student clinician, I realise I do not know some answers. This is of particular significance because it is difficult to find my own weaknesses in my studies. It showed me the importance of revising content I do not remember well.*

Furthermore, this study's findings highlighted that COL promoted students' learning and improved their communication skills. Evidence can be found in P1-Y3's response, who said: "*It [COL] taught me how to communicate with patients*." P2-Y3, P3-Y4, P4-Y4, and P5-Y4 all agreed that COL assisted them in obtaining an in-depth understanding of the importance of the content knowledge in previous years. P5-Y4 added: "*Clinical observations are beneficial for my knowledge as I feel less pressure in learning when observing student clinicians*."

Figure 3: Clinical observational learning at the identified HEI

Theme 2: Challenges of clinical observational learning in work-integrated learning

Although participants concurred with the important benefits of COL, they acknowledged some challenges in WIL. These challenges were related to limited space, insufficient time, and the incompetency of student clinicians. P1-Y3 and P2-Y3 reported that the limited space in the observation room negatively affected their learning experience. P1-Y3 indicated: "*Although I like attending clinics, I do not feel comfortable standing in the observation room. Because we have too many students observing simultaneously, and there is no space for us to sit*." When responding to the question, "*Please describe your challenges in observation in the clinic.*", P2-Y3 said*:*

> *Too many students were in the observation room. Sometimes we could not enter the observation room, and we had to stand outside the room and observe through the window. I could not hear one word when I stood outside the observation room. I felt that we would gain more experience if sufficient space accommodated all students. Maybe we can*

> *record the consultation or live-stream the consultation, which we can observe in a bigger venue.*

Both P2-Y3 and P3-Y4 reported that sufficient time should be allocated to clinical practice. They articulated that more opportunities should be provided to students for COL. Furthermore, some participants believed some student clinicians were incompetent. Therefore, they reported that observing incompetent student clinicians negatively influenced their learning. This is evident in P4-Y4's answer. She said: "*I learnt bad habits from some fourth-year students [student clinicians]. I have to learn and unlearn.*" P5-Y4 added:

> *The only additional thing [challenges] I can think about is because we are observing students who also do not know everything. It would be beneficial for us to observe a qualified practitioner conducting a consultation and treatments.*

The findings of this study also revealed that language barriers were one of the challenges of COL in WIL. P2-Y3 and P5-Y4 stated that sometimes they could not understand patients if the patients did not speak English.

5. Discussion

5.1 Importance of COL in WIL

This study explored students' views and experiences of COL in the South African context. The literature reveals the significant role of COL in WIL in strengthening students' competence in the working world (Noorani, 2022). The findings of this study revealed that COL is essential for competency in clinical practice. This view concurs with Irvine et al. (2019), Noorani (2022) and Yavich and Rotnitsky (2020), who articulate that COL assists in preparing students for real-world practice. The authors believe HEIs should include COL in WIL in their programmes. The reason is that COL allows students to gain authentic clinical experiences in a safe environment (Cordovani & Cordovani, 2016).

Furthermore, this study highlighted the significance of COL in strengthening students' content knowledge, which is profoundly important for their clinical competence. Evidence can be found in P5-Y4's answer: "*It [COL] reminds me to revise content knowledge from previous years of my study.*" Noorani (2022) agrees with Dornan et al. (2014), who affirm that COL is vital in promoting students' learning. At the identified HEI, the acupuncture programme was designed to be completed within four years. Clinical observational learning is only implemented in the third and fourth years of the acupuncture programme. The authors believe it is significant to employ COL in the first and second years of the programme. This will enable students to better understand the applications of content knowledge through COL (Challa et al., 2021; Powell et al., 2019). Dornan et al. (2014) and Salminen et al. (2016) reveal that COL is an effective pedagogical approach for enhancing students' practical and communication skills. The findings of this study affirmed that students benefited from COL in terms of practical and communication skills. According to the TPACK model, lecturers need to identify and employ appropriate pedagogical approaches in teaching and learning (Koehler & Mishra, 2009; Hu & Venketsamy, 2022).

5.2 Challenges of COL

Despite the crucial role of COL in promoting students' competence in the world of work, researchers such as Beigzadeh et al. (2021), Gandomkar et al. (2011) and Seabrook (2003) highlight that there are challenges in implementing COL. These challenges include a lack of facilities, a shortage of time, and the incompetency of clinicians. The findings of this study found that the limited space, insufficient time, and incompetent student clinicians negatively affected students' learning experiences. The authors contend that limited resources (space and clinicians) are critical barriers to effectively implementing COL in South Africa. This view is supported by Hu et al. (2022a) and Hu and Venketsamy (2022), who report that African HEIs are disadvantaged by poverty. For this reason, the authors agree with Dearnley et al. (2013) and Moule et al. (2010), who indicate that adopting appropriate education technologies will relieve the resource shortage.

The findings of this study revealed that language barriers were also a challenge in clinical observation in WIL. There are eleven official languages in South Africa. The literature indicates that only 9,6% of South Africans speak English (Statistics South Africa, 2012). Therefore, there is a need to provide interpreting services in COL at the identified HEI. In the authors' view, these interpreters can be bilingual students who speak both English and the same language as particular patients. This will enhance students' learning experiences at the HEI.

5.3 Significance of employing technologies in WIL

Technological advances have significantly influenced higher education institutions in the 21st century (Aristovnik et al., 2020). Hedding et al. (2020) report that many students express negative experiences with online teaching and learning due to poor infrastructure or unavailability of devices. On the contrary, the study's authors concur with Koehler and Mishra (2009), Mishra and Koehler (2006) and Hu and Venketsamy (2022), who indicate that employing technologies in teaching and learning is essential in 21st-century education. They believe adopting appropriate technologies for specific purposes is important while considering specific content knowledge (Hu & Venketsamy, 2022).

6. Conclusion

Higher education institutions are responsible for ensuring that their students are competent in the world of work. In the authors' opinion, students' competency is of the utmost importance in health sciences education, as qualified practitioners are responsible for their patients. This study explored students' views and experiences of COL in WIL within the South African context. The findings of this study showed that COL is essential to promote students' competencies in clinical practice. It also aids in the transition from theoretical studies to clinical training while maintaining the quality of care for patients. This study further revealed that a lack of resources, insufficient time, and incompetence of student clinicians in the WIL environment negatively influence students' learning. The findings of this study suggested that HEIs should adopt appropriate technologies in teaching and learning, which would assist in relieving the burden of lack of resources.

7. Recommendations

Based on the findings and discussion, the authors propose the following recommendations.

1. It is recommended that COL should be implemented in the curriculum of health sciences education to improve students' competency. This is particularly essential to assist students in transitioning to WIL while maintaining patient safety.
2. Due to the crucial role of COL in WIL, it is further suggested that COL should be adopted in the early years of health sciences programmes. Students should be encouraged to observe in clinics from their first year of study.
3. It is advised that training should be provided for clinicians to ensure they are competent in supervising clinical practice.
4. It is further recommended that HEIs should ensure sufficient resources are allocated to COL in WIL. These resources include sufficient time and space and competent clinicians. It is recommended that HEIs should utilise appropriate technologies in teaching and learning, particularly in COL, where there are limited resources.
5. To bridge language barriers, it is proposed to provide interpreters to clinics. These interpreters can be students who speak different languages.
6. It is advised that further research be conducted at international universities using diverse research approaches. Since this study was limited to exploring clinical observational learning from students' perspectives, further studies are also recommended to explore clinicians' views and experiences on clinical observational learning.

8. Limitations of the study

In this study, the authors employed a qualitative approach to explore students' views and experiences of COL. The reason is that a qualitative approach allows an in-depth understanding of participants' views and experiences. However, the authors believe that this study had limitations as it was only explored through a qualitative approach. Therefore, they suggest that further studies be conducted by using other research approaches, such as quantitative or mixed-method approaches. This study was also limited to exploring COL from students' perspectives. Further studies should be conducted to investigate clinicians' views and experiences on COL in WIL. To strengthen the trustworthiness of this study, the authors followed a rigorous research design. However, the authors believed that the subjective analysis brought by the interpretivist paradigm was another limitation of this study.

Furthermore, this study was limited to being conducted at one HEI; therefore, the findings lacked comparison. English was the only language that both authors spoke. Consequently, the authors only consulted English literature, which seems to be another limitation of this study.

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