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Strengthening critical thinking through debriefing – experiential learning theory: A case study

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Abstract:

BACKGROUND: There is a dire need to strengthen students' critical thinking in clinical training since it is an essential skill in clinical practice to optimize patient care. Debriefing is a formal or informal post-activity discussion that aims to improve learning outcomes, including critical thinking in clinical practice. There is a lack of research that focuses on students' experiences of debriefing to promote critical thinking in the South African context using experiential learning theory as a theoretical lens.

OBJECTIVE: This study aimed to explore South African students' lived experiences of debriefing to improve critical thinking.

MATERIALS AND METHOD: The author employed a qualitative single-case study design within an interpretivist paradigm. A purposive sampling technique was adopted. Six participants were recruited for this study. The author invited the participants to participate in semi-structured interviews. Data were analyzed through the six-step data analysis framework proposed by Creswell. To ensure the trustworthiness, the author employed multiple techniques to improve the credibility, conformability, dependability, and transferability of this study. These techniques included a well-planned research design and methods, thick descriptions of data, and an audit trail that was audited by a second coder.

RESULTS: The findings revealed that participants shared positive experiences toward debriefing and furthermore debriefing through optimized student engagement and improved learning outcomes. This study also revealed that students experienced less stress in group debriefings. However, this study also identified some challenges in conducting debriefing. The challenges were primarily related to incompetent facilitators, inappropriate duration of debriefing sessions, and limited space in the clinic. Moreover, small group debriefing is recommended.

CONCLUSION: Debriefing is an effective pedagogical approach to optimize critical thinking in clinical practice. It is recommended that debriefing should be implemented as a norm in clinical training at higher education institutions. Further studies are recommended to be conducted at national and international levels.

Keywords:

Clinical training, critical thinking, debriefing, experiential learning experience, health sciences

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Introduction

The importance of optimizing learning outcomes in clinical training cannot be over-emphasized. Advanced critical thinking in clinical practice is one of the most crucial perspectives in clinical training to improve students' competency in the world of work. The literature reveals that there is a misalignment between clinical training and students' competency in clinical practice, such as an absence of critical thinking.[1,2] According to Barwani,[1] even if students actively engage in classroom activities, they may not retain the intended learning outcomes. Upon concluding the lesson, it is discovered that despite the efforts made to impart the concepts of development and idea evolution, students retained only the visual aids and the enjoyment they experienced

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during the lesson.[1] To improve learning outcomes, debriefing is an effective approach to promote students' critical thinking in clinical practice.[3,4] Debriefing refers to a post-experience learning process that occurs in the form of a discussion after particular events.[5,6] Debriefing activities share the benefits of providing reflection time as well as an opportunity for students to interact.[3] However, there is a lack of research that focuses on improving critical thinking through debriefing in health sciences in the South African context. For this reason, this study explored South African students' experiences of strengthening critical thinking by utilizing debriefing in clinical practice. To explore students' lived experiences, the author employed a qualitative single-case study design. The theoretical framework underpinning this study was the experiential learning theory (ELT) proposed by Kolb (1984).[7] The author asked the research question, '*How do students experience debriefing in clinical training to improve their critical thinking*?'

Critical thinking is an essential skill for the 21st century, particularly in the field of health sciences.[8,9] Ennis[10] defines critical thinking as "reasonable reflective thinking that is focused on deciding what to believe or do". While there is no well-accepted definition of critical thinking, Fahim and Bagheri[11] concur with Paul,[12] who asserts that critical thinking involves using observation and information to explore genuine and accurate knowledge and to arrive at logical conclusions. According to Paul and Elder,[13] critical thinking involves reasoning to enhance one's thinking skills by assessing and evaluating information. Critical thinking also enables students to evaluate their own thinking and expand their existing knowledge.[11] In essence, critical thinking is a valuable ability that enables individuals to make informed judgments by examining and evaluating information from various sources.[14]

Sahamid[15] believes that critical thinking is characterized by the ability to reason theoretically and to think logically and abstractly. In a similar vein, Kanbay and Okanli[16] state that critical thinking is an essential skill in clinical practice as it enables healthcare providers to make sound judgments, solve problems, and deliver safe, efficient, and effective patient care. Critical thinking involves the analysis, evaluation, and synthesis of information to form evidence-based conclusions and make informed decisions. From his study, Alfaro-LeFevre[17] reports that critical thinking is closely related to optimized decision-making and patient outcomes. This view concurs with Papp *et al*.,[18] who state that advanced critical thinking skills significantly reduce medical errors. In the author's opinion, there is a need to strengthen students' critical thinking by adopting effective pedagogical approaches, such as debriefing.

Debriefing as a pre-designed discussion that allows students to express their experiences, requires active engagement between facilitators and students.[19] Gardner[5] states that debriefing is a learning process which employs reflections. According to Fanning and Gaba,[20] debriefing refers to "facilitated or guided reflection in the cycle of experiential learning". It provides insights into phenomena which they can apply in similar situations in future.[20,21] In his work, Gardner[5] explains that debriefing is a discussion of analytical processes after particular events, which further evaluates and integrates experiences into students' cognition. Moreover, Abegglen *et al*.[22] are of the view that debriefing is a formal or informal post-activity discussion during classes that aims to improve learning outcomes. Despite the diverse definitions of debriefing, the literature agrees that debriefing is a crucial pedagogical approach to improve learning outcomes in clinical training. In this study, debriefing refers to discussions about specific cases after clinical activities in a clinical setting. In the discussions, students are able to make sense of an event by identifying strengths and deficiencies in the facts that occur during the events.[21] The discussion further ensures that students clarify what can be done to improve in future.

Debriefing was first proposed by John Dewey in 1910, who posited the concept of reflective thinking.[4] Schön[23] further expands this concept to provide students with an opportunity to review their actions during and after an activity, namely, reflection-in-action and reflection-on-action. Fanning and Gaba[20] and Rudolph *et al*.[24,25] all agree that debriefing should be conducted immediately after activities. Gardner[5] further emphasizes that it is of profound significance to ensure effective debriefing. To successfully conduct debriefing, Dreifuerst[26] believes there is a need to enhance active engagement, which relies on experiential learning.[27] To conduct debriefing effectively, facilitators should have an in-depth understanding of the aim and process of debriefing and the ability to engage students.[21] Gardner[5] suggests that facilitators should constantly refine debriefing skills by reviewing learning activities and self-evaluation. This view agrees with Abegglen *et al*.,[22] who report that to improve the effectiveness of debriefing, facilitators should not focus solely on the content of the debriefing but also on the process and structure of the discussion. Furthermore, they should provide a psychologically and physically conducive learning environment.

In debriefing sessions, feedback from facilitators is important. Rao[19] points out that feedback should be provided without shaming, blaming, or criticizing. Furthermore, debriefing must take place in a psychologically safe environment where students feel

respected.[28] A successful debriefing requires active engagement, an environment of mutual respect, and a focus on learning.[19] In order for a debriefing session to be successful, students need to feel psychologically safe to share their observations, reflections, thoughts, and ideas.[21] Kolbe *et al*.[28] indicate that a safe physical environment can be a private room where the confidentiality of participants can be ensured. According to Kolbe *et al*.[28] and Rao,[19] the safety principles for debriefing include a) respect for your students, b) respect for your own knowledge and expertise, and c) the importance of asking thought-provoking questions and paying attention to the answers. The author agrees that it is crucial to provide comments in a respectful manner. Consequently, clinical facilitators should consider possible methods to create a friendly environment, both physically and psychologically, for debriefing in clinical practice education.

There are three phases in debriefing, namely, the reaction phase, the understanding phase, and the summary phase.[5] In his work, Gardner[5] explains that the reaction phase occurs immediately after an activity. Facilitators should pay attention to the authentic feelings expressed by students, which may be in verbal conversations on the way to the debriefing area.[28] The initial reflections assist facilitators in gaining insight into students' direct experiences. The understanding phase is the center of a debriefing process in which the facilitator encourages participants through guided discussions. In this phase, facilitators obtain a deeper understanding of what students think. According to Rudolph *et al*.,[25] the facilitator acts as a cognitive detective to explore students' performance and learning outcomes through observations. The author believes that reflection through observation provides transparency, which allows the facilitator to provide accurate feedback on students' performance. The summary phase is the last phase of a debriefing activity which reviews lessons learned.[19] The author concurs with Gardner,[5] who highlights that it is important to provide students with takeaway notes after discussions. The author also agrees with Hu *et al*.[2] and Hu and Venketsamy[29] that to promote learning outcomes in the 21st century, it is crucial to employ technologies in education, especially in the African context with limited resources.

Bilgin *et al*.[30] are of the view that debriefing can be conducted by using technologies, such as computer-based or virtual conversations. This view agrees with Venketsamy *et al*.,[31] who emphasize the importance of technologies in promoting student engagement and improving learning outcomes. This opinion is further supported by Bilgin *et al*.,[30] who report that both contact and virtual debriefings are effective and that no significant differences can be found between these forms of debriefing. In a typical debriefing activity, a facilitator assists one student (or a group of students) in analyzing, synthesizing, and evaluating particular issues.[5,28] The purpose is to allow students to apply lessons and experiences to similar situations.[30] In their work, Dufrene and Young[4] point out there is limited research on the comparison of different methods of conducting debriefing sessions. Bilgin *et al*.[30] and Fanning and Gaba[20] are of the view that debriefing can be conducted with or without a facilitator. Furthermore, Bilgin *et al*.[30] contend that it is important to allocate an appropriate length of time for a debriefing session.

Researchers[19,21,28] recognize the importance of debriefing in promoting critical thinking about particular phenomena. Gardner[5] posits debriefing has been utilized in various fields, including the military and aviation industries, psychology, business, and education. In their opinion, Bilgin *et al*.[30] contend that debriefing is an effective pedagogical tool to improve student engagement and academic motivation. In a similar vein, Dreifuerst[26] highlights that debriefing is of particular importance in clinical teaching by employing students' reflections on particular phenomena. Furthermore, it encourages students to reflect on their experience in learning and strengthen their critical thinking in clinical practice.[26] Decker *et al*.[32] and Shinnick *et al*.[33] all agree that debriefing is crucial for learning clinical experiences in clinical settings. The author believes that debriefing promotes students' critical thinking in clinical practice to improve clinical competency.

Optimized critical thinking is of particular importance for optimizing students' critical thinking because it encourages student engagement, reflection, and analysis of phenomena, which further allows them to apply knowledge and experience in the world of work.[19] Scholars such as Dreifuerst[26] and Rao[19] acknowledge the importance of debriefing in promoting learning outcomes in health sciences. In the author's view, debriefing enhances students' communication skills. This view agrees with Johns and Moyer,[34] who articulate that debriefing strengthens students' communication skills because it is typically constructed as a group or class discussion. In group debriefings, students gain insight from other students' discussions. This is of particular significance for enhancing students' confidence in their communication skills and assisting students who experience difficulties while participating in debriefings. Bilgin *et al*.[30] explain that students need to summarize and describe their observations, feelings, and critical thinking about particular phenomena. Because it occurs after particular events, Dreifuerst[26] concludes that debriefing is conducted purposively and reflectively.

The teacher-centered approach is a dominant pedagogical strategy in health sciences education, when information

is presented to students in traditional classrooms.[34] Gardner[5] is of the view that debriefing is a pedagogical strategy that coordinates learning processes and learning outcomes in a reflective way. Reflective thinking in debriefing assists students in gaining an in-depth understanding of cases, which further enables them to apply it to similar phenomena.[3] In the author's view, reflective thinking in debriefing encourages students to evaluate learning and their own knowledge to improve clinical competency. This view concurs with Kim and Son,[3] who affirm that reflective thinking encourages students to engage with learning activities. Debriefing is an effective and cost-effective pedagogical approach to promote learning outcomes.[22]

Active student engagement is enhanced in debriefing through guided discussions. Despite the significance of students' engagement in teaching and learning, Barwani[1] believes that there is a need to evaluate the learning outcomes of the optimized student engagement. Barwani[1] argues that there is no direct link between improved learning outcomes and student engagement. The author believes that debriefing is an approach to promote learning outcomes through students' active engagement. Furthermore, Bilgin *et al*.[30] indicate that it is of significant importance to ensure the allocation of sufficient time for debriefing sessions.

The theoretical framework anchored in this study was the experiential learning theory (ELT) proposed by Kolb.[7] Kolb[7] explains that ELT refers to "the process whereby knowledge is created through the transformation of experience; knowledge results from the combination of grasping and transforming experience". According to Kolb,[7] a group of scholars who were interested in exploring the crucial role of experience in learning contributed to the development of ELT. These scholars include John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, and Carl Rogers.[6,7] Dillette and Sipe[35] articulate that ELT has been successfully utilized in many studies to improve teaching, learning, and practices. The theory emphasizes the significant role of experience in the learning process.[7,35] According to Kolb and Kolb,[6] there are six propositions in ELT, illustrated in Table 1 as follows:

Table 1: Six propositions of experiential learning theory[6,7,35]

Propositions	Descriptions
Learning is a process.	Optimized student engagement in the learning process is crucial to improve learning outcomes. Learning is a continuous reconstruction of existing experience.
All learning is relearning.	To achieve the best outcomes, learning should be developed from previous experience and knowledge that can be examined and integrated by new experiences and knowledge.
Learning requires the resolution of conflicts.	Learning is driven by conflicts about understanding.
Learning is a holistic and continuous process of adaptation.	Learning does not refer to the retention of knowledge only. It is closely related to thinking, feeling, perceiving, and behaving.
Learning is the result of transactions between persons and their environment.	The process of learning involves the equilibrium of dialectic processes, which are assimilation and accommodation.
Learning is the process of creating knowledge	ELT agrees with the constructivist theory which contends that knowledge is created and recreated in the personal knowledge of students.

Furthermore, Kolb[7] synthesized ELT into a four-phase learning process to better apply the theory into practice. These four phases are concrete experiences, reflective observation, abstract conceptualization, and active experimentation.[36] Concrete experiences are defined as experiences that one can physically take part in. The concrete experience can be either a novel experience that is encountered for the first time or a familiar experience that is encountered again. Reflective observation occurs on the premise of concrete experience.[7,36] Students should pay attention to what they experience and what they learn. Abstract conceptualization on the other hand refers to thinking about a concrete experience with the hope of gaining some understanding. It can lead to a new idea or the modification of an old idea.[35] Abstract conceptualization thus involves reflecting on a concrete experience to gain a deeper understanding. This process of thinking can lead to the creation of new ideas or the refinement of existing ones.[6] Active experimentation takes place when a student or individual applies their newly acquired knowledge in real-world settings outside the classroom. This involves using the insights gained from concrete experiences and abstract conceptualization to experiment with new ideas, behaviors, or approaches.[36] By actively testing their understanding in different contexts, individuals can refine their knowledge and develop a deeper understanding of how it applies in practical situations. According to Kolb and Kolb,[6] experiential learning is:

> A process of constructing knowledge that involves a creative tension among the four learning modes that is responsive to contextual demands. This process is portrayed as an idealized learning cycle or spiral where the learner 'touches all the bases'—experiencing, reflecting, thinking, and acting—in a recursive process that is responsive to the learning situation and what is being learned.

Effective learning in Kolb's model occurs when a person progresses through all four stages and, as a result, uses the information gained to learn in future situations.[36] Dillette and Sipe[35] and McCarthy[37] report that Kolb's

experiential learning theory has been widely utilized in many fields with optimized learning outcomes. For example, Stansbie *et al*.[27] report on the positive effects of using ELT in advancing internships. In their review, Dillette and Sipe[35] discover that learning outcomes are enhanced through experiential learning activities such as authentic case studies. The author thereafter was of the opinion that this framework was suitable for this study since the aim of the research was to explore students' experiences of debriefing to strengthen critical thinking in clinical settings.

Materials and Methods

Study design and setting

Venketsamy and Hu[38] state that a research methodology is a systematic approach to answering research questions. In this study, a qualitative single-case study design was adopted to explore South African students' experiences of debriefing to improve their critical thinking in clinical training. This study took place at an identified public higher education institution (HEI) in Gauteng province. The interpretivist paradigm was employed. The author believed that the interpretivist paradigm was of particular significance in this study as it provided an opportunity for the author to comprehend students' lived experiences. Hu and Venketsamy[29] state that a single-case study design is appropriate when the phenomenon is critical, unusual, and relevant to the researcher. The identified case for this study was critical since students' critical thinking is crucial for their competency in the world of world. The selected case was unusual since the selected acupuncture program was the only one of its kind at a higher education institution in South Africa. Furthermore, the selected case was also relevant to the author since he was the lecturer for the program.

Sampling and participants

In this study, a purposive sampling technique was adopted. Cohen *et al*.[39] and Hu *et al*.[2] explain that a purposive sampling strategy is of particular value when the selected case has a limited population. In this study, the identified HEI was the only university that offered an acupuncture program in South Africa. Therefore, the author purposively invited only students who were registered for the Bachelor of Health Sciences in Complementary Medicine (BHScCM) to participate in this study. To recruit participants, the author displayed a research invitation post on the noticeboard on the identified campus. The inclusion criteria for this study were as follows: i) participants must be registered students for the BHScCM program, ii) participants had to be in the fourth year of their study in the acupuncture program, iii) participants had to be above the age of 18, and iv) participants had to express their willingness to voluntarily participate in the study by signing the research consent forms.

Data collection tools and procedure

Students who responded to the invitation and met the inclusion criteria were invited to participate in a semi-structured interview. The interviews took place between February and March 2023. Six participants were recruited for this study since only six students responded to the invitation. To ensure confidentiality and anonymity, pseudonyms were used throughout the research. Table 2 below illustrates the participants and the respective codes used in the data analysis.

Data analysis

Data analysis is a systematic process to analyze raw data in research.[31] In this study, the author employed thematic analysis to comprehend students' lived experiences. The data were analyzed inductively. The author agrees with Venketsamy *et al*.[31] and Hu *et al*.[2] that important aspects of findings will be identified through a systematic process of analysis. Subsequently, the author followed the six-step thematic analysis proposed by Creswell.[40] In step 1, the author reviewed the transcripts several times to be familiar with the data. Thereafter, the raw data were coded in step 2, which was followed by identifying initial themes in step 3.[41] The author then started to review (step 4) and refine (step 5) the initial themes. In step 6, the codes and themes were utilized to answer the research question. To ensure the trustworthiness of this study, the author employed multiple techniques to improve the credibility, conformability, dependability, and transferability of the findings. These techniques included a well-planned research design and methods, thick descriptions of data, and an audit trail that was audited by a second coder.

Ethical consideration

This study was approved by a research committee at a public university in the Gauteng province (Ref: REC-1443-2022).

Result

This study explored students' experiences of debriefing to improve critical thinking in clinical practice. All participants shared positive views and attitudes toward

Table 2: Biographical data of participants

Pseudonyms	Gender
P1	Female
P2	Female
P3	Male
P4	Male
P5	Female
P6	Female

debriefing. They agreed that debriefing in the clinic significantly improved their critical thinking, which assisted them in making sound decisions in clinical practice. However, some participants revealed that some challenges were encountered during the debriefing in the clinic. Two major themes emerged during the data analysis, namely, a) students' experiences of debriefing and b) challenges of debriefing. Verbatim quotes are presented in this section.

Theme 1: Students' experiences of debriefing

The findings of this study highlighted the crucial role of debriefing in strengthening students' critical thinking in clinics. They believed that successful debriefing assisted them in identifying deficiencies in their thinking. P1, P2, P4, P5, and P6 all concurred that they felt more confident when seeing patients with similar situations to what had been discussed in the debriefing. Compared to individual debriefings, P2, P4, and P5 reported that they preferred to participate in debriefing sessions as a group. The reason was that they felt less stress in a group. P1 said, "*Answering questions that related to the patient I saw in the clinic was helpful. Because it helped me to identify where I went wrong in my thinking when making conclusions.*" P2 stated, "*I like debriefing after seeing patients. Clinicians helped me to find the deficiencies in my knowledge*." P3 indicated, "*Immediately, I knew where I went wrong when answering questions [debriefing] step by step*." P4 added,

> "The most enjoyable part of debriefing sessions Is when clinicians probed into my deficiencies. It seemed that the clinicians could see where I went wrong in my critical thinking. They then guided me to reflect on my own thinking by asking questions during the debriefing sessions. I felt that I gained a deeper understanding in clinical practice, and it was rewarding when I recognised my own mistakes".

P5 stated,

> "Debriefing forced us to focus on our studies. I felt like it improved my learning experience by enhancing engagement. Because we are in such a small group of students, no one could stay as an outsider during the debriefing sessions. The clinician might ask anyone to answer the questions. It continuously encouraged our engagement in clinical practice".

In her response, P6 said, "*I like the discussions [debriefing] after seeing patients in the clinic. I learned the most from the discussions. I feel more competent and confident when I encounter similar situations in future as I know it is correct!*"

Theme 2: Challenges of debriefing

Despite all participants acknowledging the importance of debriefing to enhance their critical thinking in clinical practice, the findings of this study revealed some challenges in implementing debriefing effectively. These challenges were predominantly related to incompetent facilitators, inappropriate duration of debriefing sessions, and limited space in the clinic. Participants reported that they experienced frustration when the debriefing sessions were conducted by incompetent facilitators. Both P1 and P3 explained that some facilitators who guided the debriefing sessions did not know the correct answers to particular questions. This was particularly frustrating because they were guided in an incorrect way. To this, P1 said, "*I felt frustrated when Dr X explained the information to us initially and then he realised that he was conflicting with himself in the end*." P3 indicated, "*For many times, I did not know if the answers from Dr Y were correct or not. Because many mistakes were found in his explanation*." P2, P3, and P4 believed that debriefing sessions should be led by experienced clinicians. Incompetent clinicians negatively influenced their learning experiences. In their opinions, P2 and P4 stated that there was a shortage of competent clinicians in acupuncture programs. To this, P4 stated, "*From my experiences in the clinics with different clinicians, I felt like one of the most challenging parts was clinicians' competencies*." P5 added, "*I realised that some clinicians asked random questions which might not lead to a conclusion*."

Furthermore, some participants contended that debriefing sessions should be allocated appropriate time frames, neither too long nor too short. P2 stated, "*The discussions took such a long time. I felt that I could not concentrate on the intense discussion for such a long period*." P3, P4, and P5 concurred with P2 that the debriefing session should not be too long. On the contrary, P1 and P6 reported that there was insufficient time for debriefing sessions in clinics as they were rushing to see the next patient. They proposed that sufficient time should be allocated for each debriefing session. Moreover, all participants agreed that there was limited space in the clinic where the debriefing sessions were conducted. They believed that the absence of sufficient space negatively affected their learning. To this, P1 stated, "*The clinic was so crowded. We don't even have space to stand*." P2 said, "*I cannot hear what the discussion was about. Because the clinician room was full of students, and I could not go into the clinician room*." P4 added, "*I had to stand outside the door of the clinician room*."

Discussion

Critical thinking is an essential skill in clinical practice.[8,9] It assists students to make sound decisions in particular situations. Fahim and Bagheri[11] state that critical thinking encourages students to evaluate their own thinking and further develop their existing knowledge. The findings of this study revealed that debriefing is an effective

pedagogical approach to strengthen critical thinking in clinical training. The analysis, evaluations, and synthesis of skills in critical thinking significantly promote students' competency in clinical practice.[18] Gardner[5] points out that debriefing encourages self-reflection in the learning process, which significantly enhances student engagement. In the author's opinion, debriefing should be implemented in clinical training. However, there is a need to ensure all facilitators are competent to guide debriefing sessions. This view is supported by Gardner[5] and Rao,[19] who articulate that facilitators should acquire insights into particular debriefing sessions to be able to deliver discussions effectively. According to ELT, new knowledge is developed from previous knowledge.[6,36] Therefore, it is crucial to engage students in the learning process.[35,37] The author believes that the active involvement of students in debriefing sessions significantly promotes learning outcomes. In their work, Jenkins and Clarke[36] and Kolb[7] emphasize the crucial role of previous experiences (concrete experience) and reflective observation in promoting student learning. The author argues that this further supports the value of debriefing in clinical training where students can observe and reflect on their own deficiencies.

The findings of this study correspond with Johns and Moyer[34] and Rao,[19] who indicate that group debriefing strengthens students' communication skills. Students felt less stress when debriefing took place in a group. The author contends that it is significant since students are able to communicate, observe, and reflect on their own strengths and weaknesses in a group of students. This view is supported by Fahim and Bagheri,[20] who highlight the significant role of reflective observation in improving learning outcomes. To improve learning outcomes, there is a need to optimise active students' engagement in the learning process. The author argues that small group debriefing will improve student engagement, while minimizing students' stress in learning. To this, P6 stated, "*I prefer the debriefing sessions without the third-year students when we are only nine of us in the clinic. Because each student gets a chance to express their opinions*."

Moreover, ELT further highlights the importance of abstract conceptualization in the learning process.[6,7,36] The findings of this study also revealed that the debriefing sessions should be well planned. Furthermore, the findings stressed that facilitators should be competent to guide the debriefing sessions. As mentioned by Kolb and Kolb,[6] learning is a process of constructing knowledge. The author contends that this process will be easier when facilitators are properly trained since they will be able to assist students in summarizing the concepts and important perspectives in the situations (abstract conceptualization). Evidence supporting this view can be found in participants' responses. For instance, P1 said, "*I felt frustrated when Dr X explained the information to us initially and then he realised that he was conflicting with himself*." P3 indicated, "*For many times, I did not know if the answers from Dr Y were correct or not. Because many errors were found in his explanation*." The findings of this study concur with Hu *et al*.[2] and Hu and Venketsamy[29] that a lack of resources negatively influences students' learning experiences.

Limitations

This study explored students' experiences of debriefing to promote critical thinking at a South African higher education institution. Although the selected case was significant as explained in the methodology section, the findings of this study lacked comparisons, which negatively affected the generalization of the findings in other contexts. The author concurs with Yin,[42] who highlights that the responsibility of a qualitative researcher is to provide rich descriptions of a phenomenon. Whether or not the findings can be generalized for other contexts will depend on readers' own judgement.[29] The author believes debriefing is not the only pedagogical approach to improve critical thinking in clinical education. Therefore, there is a need to explore other effective techniques to strengthen clinical training.

Conclusion

Higher education institutions are responsible to empower students to be confident and competent in the world of work. Advanced critical thinking is a crucial skill in ensuring students' competencies in clinical practice.[2,13] According to Zare and Mukundan[14], critical thinking promotes students' thinking skills by structured reasoning, assessing, and evaluating. Debriefing, as a post-experience learning process, occurs in a form of discussions after specific events.[4] This study revealed that debriefing is an effective pedagogical approach to criticize critical thinking in clinical practice. Furthermore, there were several benefits of implementing debriefing in clinical training. These benefits included criticizing student engagement and improved learning outcomes. This study also revealed that students experienced less stress in group debriefings. However, the author is of the view that it is preferable for group debriefing to be conducted within a small group of fewer than 10 participants. This will ensure that each student has an opportunity to participate actively in discussions.

According to ELT, previous knowledge and experience play a significant role in the learning process[6,35] The completion of the four phases in the learning process further strengthens learning outcomes.[7,36] The findings of this study reiterate that ELT is a valuable lens to

promote learning outcomes in education. Based on the above discussion and conclusions, the author proposes the following recommendations:

- Due to the critical value of debriefing in strengthening students' critical thinking, it is recommended that debriefing should be implemented as a norm in clinical training at HEIs. It is further suggested that debriefing should be conducted in time after clinical tasks.[5,19]
- It is further recommended that HEIs should support emerging facilitators/clinicians by providing debriefing workshops. This will enhance their confidence and competence in conducting debriefing sessions, which would positively influence students' learning experiences and learning outcomes.
- It is recommended that facilitators should create a psychologically and physically safe learning environment for students to participate productively in debriefing sessions. This can be achieved by conducting debriefing sessions during allocated times and at relevant venues. Furthermore, feedback should be provided without blaming, criticizing, and discriminating.
- Further studies are to be conducted at national and international HEIs to expand the value of debriefing in strengthening critical thinking.

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Conflicts of interest

There are no conflicts of interest.

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