

The Reflective Practitioner in Action: Design Team Reflections on Developing High-Fidelity Obstetric Simulation in South Africa

Nabeela Sujee

Nabeela.sujee@wits.ac.za

University of the Witwatersrand

Rebecca Coetzee

University of the Witwatersrand

advancing-simulation-practice

Keywords: simulation, simulation design, reflective analysis, reflective practitioner, reflection, reflective practice

Posted Date: September 24th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10892515/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

Introduction:

High-fidelity simulation plays an important role in preparing learners for the complexities of obstetric care. Within undergraduate Clinical Associate training, simulation provides a safe environment for developing clinical reasoning, psychomotor skills, teamwork, and professional judgement. Drawing on Schön's reflective practitioner framework, this paper explores how simulation educators engaged in knowing-in-action, reflection-in-action, and reflection-on-action during the design, facilitation, and refinement of a high-fidelity obstetric and gynaecology simulation programme for second-year Clinical Associate students in South Africa.

Methods:

A structured reflective inquiry approach was used to examine the experiences of the two primary simulation designers and facilitators. Following completion of a three-day simulation programme, the design team engaged in a recorded reflective dialogue exploring design decisions, implementation challenges, facilitation dynamics, student engagement, and contextual constraints. The discussion was transcribed into detailed reflective notes and analysed through an iterative process of independent review, collaborative sense-making, and thematic grouping. Reflexivity was incorporated throughout to acknowledge the authors' positionality as educator-participants.

Results:

Two overarching areas of learning emerged from the reflective dialogue: (1) challenges in simulation design and delivery, including role strain associated with multiple educator responsibilities, limited personnel and infrastructure, facilitator variability, student preparedness, emotional labour, and curriculum timing; and (2) considerations for strengthening facilitation and learning, including intentional alignment of fidelity with educational objectives, facilitator preparation and support, comprehensive scripting of embedded roles, structured preparation and debriefing for simulated patients, and strategies for developing a sustainable facilitator pipeline.

Discussion:

Viewed through Schön's reflective practitioner framework, the findings illustrate how educators navigated complexity through both reflection-in-action during programme delivery and reflection-on-action following implementation and subsequently suggests that simulation design and facilitation extend beyond the application of technical educational principles. Educators drew on tacit knowledge, professional judgement, and contextual responsiveness as they adapted to uncertainty and negotiated

competing educational and operational demands. Reflection enabled the design team to transform experience into actionable knowledge for programme refinement and faculty development.

Conclusion:

This study demonstrates how simulation educators enact reflective practice through cycles of design, facilitation, adaptation, and review. By foregrounding educator experience, the findings illustrate how professional knowledge is generated through reflective engagement with practice. Establishing structures that support facilitator development, collaborative reflection, and ongoing programme refinement may strengthen both simulation quality and sustainability, particularly within resource-constrained educational settings.

Introduction

Simulation-based education is increasingly being integrated into health professions education curricula (1,2). It offers a safe, controlled environment where students can demonstrate and refine their clinical skills, clinical reasoning, and problem-solving abilities without compromising patient safety (3). High-fidelity simulation includes creating a realistic clinical scenario, and the inclusion of a structured debrief promotes reflection, requiring the educator to design the session, ensuring it aligns with defined learning outcomes and professional competencies (4,5).

While reflection is frequently positioned as an activity undertaken by learners during debriefing, less attention has been paid to simulation educators' own reflective practice (6–8). This study demonstrates that simulation educator practice extends beyond the technical implementation of educational design principles. Through cycles of planning, facilitation, adaptation, reflection and redesign, the design team engaged in forms of knowing-in-action, reflection-in-action and reflection-on-action consistent with Schön's reflective practitioner framework (6,9).

Author context and positionality:

The reflections were generated by the two primary simulation designers and facilitators involved in delivering the obstetrics and gynaecology simulation within the second-year of the Clinical Associate programme at the University of the Witwatersrand in South Africa. Both authors participated in the scenario design, preparation, facilitation, and post-session debriefing activities with co-facilitators and simulated patients.

NS is the simulation coordinator in the Faculty of Health Sciences under the Centre for Health Science Education at the University of Witwatersrand; she is also a Clinical Associate by profession. She has experience in simulation design, facilitation, debriefing and is responsible for faculty development. She has completed various simulation courses and holds a postgraduate diploma in simulation.

RC is a lecturer in the Division of Clinical Associates under the Department of Family Medicine and Primary Care in Faculty of Health Sciences at the University of Witwatersrand. She is a nurse by profession and has completed degree in nursing education which includes components of simulation training.

Background:

Simulation-based education (SBE) is an evolving pedagogy in health professions education(1). It has increasingly been advocated to be integrated in the training of healthcare professionals (10,11). This is due to the opportunities provided for practice and/or demonstration of clinical skills in a safe environment without harm to real patients (12). In high fidelity simulation, the creation of a realistic clinical environment in a controlled setting, enables simulation participants to immerse themselves and manage a clinical case as they would in the real world. The impact of such a learning opportunity includes students feeling safe to make mistakes, learn from them and reflect on their reactions, management approaches, communication and inherent biases that may influence their patient care approaches in a structured, facilitated debrief (13,14). The role of the simulation educator is important in SBE, they are responsible for designing the clinical case, ensuring it aligns with the learning outcomes and professional competencies, preparing the relevant equipment and/or simulated patients and potential co-facilitators for the session, providing oversight and co-facilitation of the session and often debriefing the facilitators at the end of the session (15). In addition, simulation educators must make situated judgements before, during and after the scenario, especially when high-fidelity design is implemented in resource-constrained contexts.

Reflection is recognised as a cornerstone of SBE where learning arises not only from participation in scenarios but from the deliberate examination of experiences, decisions, and emotions that occur throughout the simulation process (16,17). Debriefing itself is grounded in principles of conscious reflection, which supports insight, integration of learning, and improved future performance, making reflective processes central to simulation pedagogy (16). Beyond supporting learners, reflective practice is increasingly acknowledged as an important scholarly activity for simulation educators, offering a structured way to interrogate design decisions, facilitation strategies, and contextual constraints (18–20). These decisions are not purely technical and involve judgement, uncertainty and the awareness to be responsive to the context. Reflective accounts enable educators to move beyond technical decision-making by surfacing tacit knowledge, exploring uncertainty and judgement, and generating insights to strengthen simulation design and delivery (20). Such reflection contributes directly to advancing simulation practice by informing faculty development, strengthening psychological safety, and enhancing alignment between pedagogical intent and scenario enactment (19). In this way, reflective analysis serves not only as a mechanism for educator growth but as a legitimate and valuable form of simulation scholarship that deepens understanding of how simulation functions within real educational and clinical contexts.

Obstetrics and Gynaecology Simulation

The role of high-fidelity obstetric simulation is critical to improving maternal outcomes (21). Particularly, in South Africa, where the maternal morbidity rates are concerning and healthcare professionals are expected to manage emergencies with limited time and resources (22,23). The obstetrics and gynaecology department presents unique challenges and needs requiring improved readiness in undergraduate students to be comfortable with engaging in the clinical environment. The unpredictable patient presentations, high emotional intensity, and the need for coordinated team responses, can be overwhelming for inexperienced learners (24). As a result, undergraduate students require enhanced preparation and confidence prior to entering the clinical setting. High-fidelity simulation provides a bridge between classroom learning and real-world clinical practice, enabling students to practise critical decision-making, communication, and technical skills without risk to patients (24,25). By immersing learners in realistic scenarios and supporting them through structured debriefing, these simulations can cultivate both competence and psychological readiness for the complexities of obstetric care (24,26,27).

The Clinical Associate Curriculum in South Africa

The Clinical Associate profession, described as a mid-level healthcare professional, was introduced in South Africa in 2008 to alleviate the burdens of increased patient waiting times, enhance continuity and quality of care, and address staffing shortages that compromise timely clinical management (28,29). The role of the Clinical Associate is to function as part of the healthcare team and deliver clinical care to patients, including obtaining patient histories, performing physical examinations, ordering and interpreting common diagnostic investigations, providing emergency care for common and urgent conditions, and carrying out a range of diagnostic and therapeutic procedures appropriate to their level of training and under the supervision of a medical practitioner (28,30).

The Bachelor of Clinical Medical Practice is offered at three South African universities, including the University of the Witwatersrand, where this study was conducted. The integrated three-year curriculum progresses from foundational medical and clinical sciences in the first year, to clinical medical practice in the second year, and district-based clinical training in the third year. The second year (the focus of this study) comprises four blocks covering adult, child, and maternal health, with each discipline including a theory and skills component followed by a clinical rotation to apply learning in practice settings.

Context of the simulation:

We designed and delivered a high-fidelity obstetrics and gynaecology simulation programme for the second-year students over three days. Students attended in groups of 12 for a three-hour session, beginning with a 20-30 minute prebrief before rotating through two facilitated simulation activities run concurrently. The first was a manikin-based normal vaginal delivery scenario using a high-fidelity manikin and an actor in the role of a guiding midwife. The second was a simulated patient consultation in which students obtained a history from a patient presenting with symptoms of a sexually transmitted infection and a background of sex work. Simulated patients were trained prior to implementation. Each scenario was followed by a facilitated debrief, with all students participating actively in both simulations. The

sessions were facilitated by the core simulation team, supported by Clinical Associate programme staff who participated as co-facilitators and observers to develop simulation facilitation skills.

Theoretical framework

This study is informed by Schön's concept of the reflective practitioner, which challenges the view that professional practice consists solely of applying technical knowledge to predefined problems(6,9,31). Schön argues that practitioners frequently work in situations characterised by uncertainty, complexity, and competing demands, where effective action requires professional judgement, tacit knowledge, and responsiveness to context (9). Within these situations, practitioners draw on *knowing-in-action* to adapt in the situation. This is characterised by the often implicit understandings which are developed and understood through experience, tacit knowledge and context. They will then engage in *reflection-in-action* as they adapt their decisions while practice is unfolding (9). This perspective is particularly relevant to simulation-based education, where educators must continually balance learner needs, educational objectives, contextual constraints, and psychological safety during the design and facilitation of learning experiences (15,20,32).

Schön further proposes that professional learning occurs through *reflection-on-action*, a deliberate process of revisiting and interrogating practice after an event has concluded (9). Reflection-on-action enables practitioners to surface tacit assumptions, reinterpret challenges, and generate insights that inform future practice (9). In this study, Schön's framework provides a lens for understanding how we made sense of our experiences during the design, implementation, and review of a high-fidelity obstetrics and gynaecology simulation activity. Rather than structuring the findings themselves, the framework is used to demonstrate how educator learning emerged through cycles of action, adaptation, reflection, and refinement, illustrating reflective practice in action within simulation-based education.

Methods

Study Design:

This paper adopts a reflective inquiry approach, treating the design team's post-simulation dialogue as reflection-on-action and the implementation experiences discussed in that dialogue as evidence of knowing-in-action and reflection-in-action (33,34).

As the purpose of this work was professional learning and programme improvement, the analysis is grounded in the author's educator reflections, insight generation, and structured meaning-making.

Reflective Procedure: from action-present to reflection-on-action

After completion of the three-day simulation programme, the two primary facilitators (the authors NS and RC), who also designed the scenario, engaged in a recorded reflective dialogue facilitated by an external lecturer in the faculty. The discussion revisited key moments from the planning, facilitation, and review phases of the session, with attention to decisions made, unexpected challenges encountered, and

adaptations implemented throughout the process. The dialogue provided an opportunity to examine how prior experience, tacit knowledge, contextual judgement, and real-time decision-making informed simulation practice.

The audio-recorded discussion was transcribed and coded to support deeper analysis and thematic interpretation.

Analytical Approach

We used Braun and Clarke's reflexive thematic analysis in our approach, with emphasis on sensemaking and critical practitioner reflection rather than objective coding frameworks (35–37). Both authors independently reviewed the reflective notes and generated initial impressions and meaning units, noting recurring ideas, concerns, and insights. These preliminary observations were then brought together in a collaborative working session where the authors compared interpretations, grouped similar ideas, and discussed alternative explanations. The authors engaged in iterative dialogue to examine decisions, challenges, and adaptations that occurred throughout the simulation process.

Reflexivity

As insiders to the simulation environment, responsible for the design, facilitation, and educator development, we acknowledge the dual influence of expertise and positionality on this analysis. Our closeness to the work provides rich contextual understanding but also carried a risk of normalising entrenched challenges or overlooking systemic contributors. We mitigated this by: independently generating initial reflections before joint discussion, challenging each other's assumptions during theme development, and explicitly articulating areas of uncertainty or discomfort arising during the reflective process (6,38). In this way we ensure transparency and trustworthiness of the insights presented.

Ethical Considerations

No identifiable data from students, staff, or simulated patients were collected or analysed. The reflective process involved only the authors' professional experiences; therefore, formal ethical approval was not required.

Findings

Analysis of the reflective dialogue revealed two overarching areas of learning: (1) challenges in simulation design and delivery, and (2) considerations for strengthening facilitation and learning. Together, these findings demonstrate how the design team engaged in both reflection-in-action and reflection-on-action, as they navigated challenges during simulation delivery and subsequently revisited these experiences to inform future practice. Table 1 summarises the findings to highlight the knowledge-in-action, reflection-in-action and reflection-on-action.

1. Challenges in Simulation Design and Delivery

1.1. Role Strain and Logistical Burden

We found that taking on multiple roles simultaneously- technical operator, embedded midwife, and lead facilitator- diluted our capacity to observe, guide, and support students and, importantly, new facilitators effectively. The size of student groups and the need to rotate activities across multiple days further compounded logistical strain. In addition, the simulation facility itself is small and the number of trained facilitators available to support the sessions was limited, which amplified the operational pressures experienced during delivery.

1.2. Inconsistent Facilitator Participation and Preparation

The rotation of co-facilitators across simulation days led to a lack of continuity in delivery, making it difficult to ensure consistent student experiences and pedagogical coherence. Although co-facilitators received briefings, these processes were often insufficient to fully prepare them, particularly for embedded roles and the nuances of learner support. Due to staff constraints when emergencies arose for the scheduled briefed co-facilitators, an external facilitator joined was not fully briefed and therefore took on a more observer role for the session.

1.3. Student Unpreparedness and Emotional Tension

Students, when theoretically underprepared, resulted in forced participation and missed opportunities for deeper engagement. This created perceived emotional tension for facilitators, who struggled between wanting to correct students immediately and preserving psychological safety during debriefings.

1.4. Emotional Labour of Facilitation

Leading the facilitation of the simulation was found to be emotionally taxing by the design team. Being the lead facilitator for entire days alone, managing student frustrations, regulating personal emotions, and maintaining a safe learning environment required substantial emotional effort. We reflected on internal conflict within ourselves, when students failed to demonstrate expected knowledge or behaviours. These impressions left us disappointed and identified the need for strategies to limit biases throughout the session and, importantly, the debrief.

1.5. Timing of Simulation Within the Curriculum

Simulations were scheduled immediately after intense theory blocks and assessments. This aligned well with the spiralling of the curriculum but we noticed students arrived fatigued, demotivated, and cognitively overloaded. These emotions were perceived to affect engagement and performance. We questioned whether this timing hindered learning, but also acknowledged that unpredictability reflects real-world clinical practice.

2. Considerations for Strengthening Facilitation and Learning

2.1. Intentional Scenario Design and Alignment

The emphasis on alignment between the scenarios, learning objectives, student level, and the contextual realities of South African public health settings, e.g., the resources found in the labour ward in a public hospital in South Africa was crucial. We found strong alignment in the decisions we made regarding choice of modality (Simulated patient (SP) for the gynaecology consultation and high technology manikin for the labour scenario) as well as the integration of embedded roles (midwife for the labour scenario) in achieving the learning objectives for our context. We acknowledged this was crucial in enhancing students' immersion, ensuring adequate contextual relevance and authenticity.

2.2. Enhanced Facilitator Preparation

During our reflection, we identified the need for structured preparation processes, including:

- Facilitator dry runs, which include discussions of the value-add of the simulation for the students and its alignment with the learning objectives.
- Demonstrations or modelling of debriefing
- Opportunities to shadow experienced facilitators
- Clear articulation of in-scenario expectations

Novice facilitators sometimes assumed a passive presence as an embedded participant rather than understanding the subtle prompting required to support learner thinking without breaking immersion. In the debrief, we found value in having a co-debriefer; the shared load helped a novice facilitator and equally provided support to the lead facilitator.

2.3. Importance of Scripting Embedded Roles

For scenarios requiring embedded confederates (midwife in the labour scenario), we found the need for comprehensive scripting vital to creating the authentic environment. Junior students required predictable, role-appropriate prompts that were not always intuitive to facilitators unfamiliar with the clinical workflow. We noted that improved scripting is needed to ensure consistency, reduce cognitive load, and scaffold learners effectively.

2.4. Supporting and Debriefing Simulated Patients (SPs)

We found the SP's script and behaviour portrayal to be adequate for the scenario and the SP's included in the days were consistent and appropriately trained. However, we found that their involvement was often under-considered beyond conventional role training. Conventional training for role portrayal includes the value-add of their role, behaviours and scripts to stick to throughout, as well as adequate context-specific responses. The emotionally charged nature of obstetric and gynaecology simulations, however, required:

- Dedicated SP debriefing
- Explicit reassurance that student behaviour is not personal

- Reflection on how interactions may influence SP perceptions of healthcare

SP emotional processing was seen as vital but underdeveloped in current practice. We also reflected on the terminology used when an SP is part of a simulation and the need to move away from “using an SP” to “involving or integrating an SP” in an effort to be more inclusive and ensure that the SP sees that they are an important part of the team.

2.5. Strategies to Build a Sustainable Facilitator Workforce

We discussed several strategies for strengthening simulation delivery:

- Maintaining a consistent core facilitation team across simulation periods
- Implementing scaffolded role rotation (observe → support → co-facilitate → lead)
- Embedding the meta-debrief into the simulation day
- Collecting facilitators’ expectations, fears, and learning needs upfront
- Including facilitators early in scenario design and preparation phases

These strategies were seen as essential for capacity building, safety, and long-term programme sustainability.

Discussion

This reflective analysis offered an opportunity to examine the complexities of designing and delivering high-fidelity simulations within an undergraduate Clinical Associate programme. Viewed through Schön's reflective practitioner framework, the findings suggest that simulation design extends beyond the application of technical educational principles. Rather, educators engaged in ongoing cycles of interpretation, adaptation, and learning as they balanced educational intentions with contextual realities. The experiences described in this study illustrate how professional knowledge emerged through knowing-in-action, reflection-in-action, and reflection-on-action, demonstrating Schön's reflective practitioner in action within simulation-based education.

The table below summarises the findings into Schön’s reflective framework:

Reflection Cycle:	Finding:
Knowing-in-Action:	Fidelity as a contextually responsive design decision
	Aligning simulation design with learner needs and curriculum outcomes
	Designing authentic roles and learning environments
	Drawing on prior educator experience to guide scenario development
Reflection-in-Action:	Multiple educator roles and competing demands
	Facilitator preparedness and workforce challenges
	Student preparedness
	Emotional labour and maintaining psychological safety
Reflection-on-Action:	Strengthening facilitator preparation and support
	Student readiness and curriculum timing
	Supporting simulated patients as members of the simulation team
	The value of co-debriefing and collaborative facilitation
	Meta-debriefing as a mechanism for programme improvement

Table 1: Schön-categorised findings

Simulation Design Beyond Technical Rationality

Simulation design is often described as a systematic process involving learning outcomes, scenario construction, fidelity selection, facilitation, and debriefing. However, our reflections suggest that simulation design was rarely a purely technical process. Instead, educators continually negotiated competing educational, organisational, and contextual demands. Schön's critique of technical rationality provides a useful lens for understanding these complexities, highlighting how professional practice requires judgement and adaptation in situations where problems are neither stable nor clearly defined (39). This perspective aligns with contemporary simulation literature, which increasingly recognises simulation as a complex social and relational practice rather than a technical educational intervention alone (40,41). The challenges associated with staffing, space, facilitator continuity, and learner readiness demonstrate how educators must continually balance educational intentions with contextual realities, supporting calls for contextually responsive simulation design and implementation.

Knowing-in-Action: Tacit Expertise in Simulation Design

Many of the design decisions reflected in this study appeared to draw on tacit knowledge developed through prior facilitation and clinical experience which included the level of student, scope of practice, curriculum requirements, the obstetrics and gynaecology context in the South African setting and the

available resources for the activity. Decisions regarding simulation modality, role allocation, learner progression, and levels of fidelity extended beyond written design principles and reflected professional judgement accumulated through contextually relevant practice (24,42,43). Schön describes this process as knowing-in-action, whereby expertise is embedded within action itself (6,44). Within simulation scholarship, similar ideas are reflected in discussions around functional and psychological fidelity, where the educational effectiveness of a simulation depends not on reproducing reality as closely as possible but on aligning design decisions with intended learning outcomes (1,43). Our reflections suggest that fidelity should be viewed as a contextually responsive educational strategy rather than a fixed property of simulation, reinforcing contemporary arguments that educational effectiveness depends on thoughtful design rather than increasing realism alone.

Reflection-in-Action: Facilitating Learning in the Midst of Uncertainty

The findings highlight how facilitators continually adjusted their actions while the simulation was unfolding. Decisions regarding fidelity, learner support, timing of interventions, management of psychological safety, and responses to student preparedness were made in real time rather than being fully predetermined. These experiences resonate strongly with Schön's notion of reflection-in-action, whereby practitioners think within action and modify their approach as situations evolve (6).

During the simulation, the combination of limited personnel, a small facility, and the need for facilitators to assume multiple roles highlighted how high physical realism can unintentionally increase cognitive and emotional load for facilitators (45). These practical constraints underscored that fidelity decisions must balance immersion with feasibility and educator capacity. This aligns with literature suggesting that fidelity should be tailored to the educational purpose of the scenario rather than maximised indiscriminately, with functional and psychological fidelity often serving learners more effectively than elaborate physical detail (42,46). Our experience reinforces this view: predictable cueing structures, clear facilitator scripts, and focused scenario objectives supported learner engagement while reducing unnecessary complexity for both students and facilitators (46).

Reflection-on-Action: Towards Reflective Simulation Systems

The reflective dialogue enabled the design team to revisit experiences that were initially encountered as operational challenges and re-examine them as opportunities for learning and programme development. Through reflection-on-action, assumptions regarding facilitator preparation, learner readiness, fidelity, and programme design became visible and open to critique. Schön argues that professional learning arises when practitioners interrogate their own actions and reinterpret experience in ways that generate new understanding (6).

Variation in facilitator participation across simulation days emerged as a significant challenge. Inconsistency disrupted continuity, placed disproportionate pressure on the primary facilitator, and created uneven learning experiences for students. This finding aligns with the expectation that simulation-based education should incorporate structured debriefing processes and appropriate faculty

preparation to promote quality, consistency, and psychological safety(13,18,19,47,48). Co-debriefing was also explored as an important strategy to assist with the support required for new facilitators, as well as to assist lead facilitators with the cognitive and emotional load(49) . Importantly, our reflections highlight that facilitator preparation extends beyond technical readiness. The emotional labour required to support students, especially in obstetric scenarios that carry inherent tension, calls for intentional support structures. Facilitator debriefs, scaffolded role progression (confederate), and opportunities for co-facilitation may help mitigate this load and contribute to more sustainable simulation delivery (49,50).

Psychological safety emerged as a central thread woven through student engagement, facilitator experience, and SP integration. Students' anxiety or limited preparedness occasionally resulted in facilitators absorbing emotional strain, prompting ongoing negotiation of how much guidance to offer in the moment without compromising reflective opportunities. The centrality of psychological safety in simulation-based learning is widely recognised, particularly in relation to the learner's ability to reflect meaningfully (13,51)

Our reflections extend this conversation by underscoring that psychological safety must also encompass educators and simulated patients. SPs, especially those portraying sensitive obstetric presentations, will benefit from structured preparatory conversations and post-scenario debriefing to process their experience, an approach consistent with the role of reflective learning conversations in supporting emotional and cognitive integration (52,53) .

The involvement of SPs in the simulation highlighted an area often overshadowed by learner-centred reflection (53,54). SPs contributed substantially to authenticity, yet their emotional experience of portraying distress, vulnerability, or sensitive histories required careful attention. Our reflections suggest that SP-specific briefing and debriefing are not only supportive practices but are also essential to maintaining scenario consistency and safeguarding SP well-being. This aligns with literature emphasising the value of reflective conversations as a mechanism for enhancing understanding, emotional processing, and role clarity among simulation participants (52–55).

A recurring theme across our reflections was the need for a more structured approach to facilitator development (48,56). Resource-constrained programmes often rely on rotating facilitators whose levels of simulation literacy vary considerably. International consensus statements on simulation practice underscore the importance of faculty development, standardisation, and contextual adaptation to ensure sustainable and equitable access to high-quality simulation (57). Our experience suggests several context-appropriate approaches. such as early facilitator involvement in scenario design, incremental role progression, and routine co-debriefing, that may support more stable facilitation teams and help cultivate shared mental models within diverse educator groups (58).

Conclusion

This reflective inquiry highlights the complexity of simulation educator practice within a resource-constrained undergraduate Clinical Associate programme. Viewed through Schön's reflective practitioner

framework, the findings suggest that simulation design and facilitation involve far more than the application of educational techniques or adherence to established simulation principles. Throughout the planning, implementation, and review of the obstetrics and gynaecology simulations, educators drew on tacit knowledge, exercised professional judgement, and adapted to contextual realities including limited personnel, variable facilitator readiness, and differing levels of learner preparedness. These experiences highlight how simulation educators engage in ongoing cycles of knowing-in-action, reflection-in-action, and reflection-on-action as they navigate uncertainty and complexity in practice.

The findings further demonstrate that educator learning emerged not only through the delivery of simulation activities, but through deliberate reflection on the decisions, challenges, and adaptations that shaped those experiences. Issues relating to fidelity, facilitator preparedness, psychological safety, and simulated patient support were revealed as interconnected aspects of a broader reflective process through which educators continually refined their understanding of effective simulation practice. By foregrounding the perspectives of the design team, this study aims to contribute to simulation scholarship by illustrating how professional knowledge is generated and transformed through reflective engagement with practice.

Ultimately, we suggest that sustainable simulation programmes require more than technical expertise and educational resources. They depend on structures that support ongoing reflective practice among educators, facilitators, and simulated patients. Facilitator development, collaborative facilitation, structured debriefing, and opportunities for meta-debriefing may strengthen both programme quality and educator learning. For programmes operating in resource-constrained contexts, fostering reflective simulation systems may provide an important mechanism for enhancing educational quality, supporting faculty development, and ensuring the continued refinement of simulation-based learning experiences.

Declarations

Ethics approval and consent to participate

This manuscript reports a structured reflective inquiry undertaken by the two simulation educators involved in the design, facilitation, and review of a high-fidelity obstetric and gynaecology simulation programme. No research participants were recruited, and no identifiable data from students, simulated patients, facilitators, or staff were collected, analysed, or reported. The reflective process focused exclusively on the authors' professional experiences and reflections on simulation practice. Consequently, formal ethical approval and participant consent were not required.

Consent for publication:

Not applicable.

Availability of data and materials

The data supporting the findings of this study consist of reflective notes and transcripts generated during a recorded reflective dialogue between the authors. These materials contain personal reflections intended for scholarly analysis and are not publicly available. Requests for further information may be directed to the corresponding author.

Competing interests

The authors declare that they have no competing interests.

Funding

No external funding was received for the study or development of this manuscript.

Authors' contributions

NS and RC conceptualised the study. NS and RC participated in the design, implementation, facilitation, and review of the simulation activity. NS and RC engaged in the reflective dialogue, analysed the reflections, interpreted the findings, and contributed to manuscript development. Both authors reviewed and approved the final manuscript.

Acknowledgements

The authors would like to acknowledge the facilitators, simulated patients, and Clinical Associate students who participated in the obstetric and gynaecology simulation activity and contributed to the learning environment that informed these reflections. We would also like to acknowledge Dr. Lizelle Crous who facilitated our reflective dialogue.

References

1. Maran NJ, GlavinDr. Low-to high-fidelity simulation-a continuum of medical education? Med Educ. 2003;22–8.
2. Al-Elq AH. Simulation-based medical teaching and learning. J Family Community Med. 2010;17(1):35–40. 10.4103/1319-1683. 68787 PubMed PMID: 22022669.
3. Salas E, Wilson KA, Lazzara E, King HB, Augenstein JS, Salas E et al. Simulation-Based Training for Patient Safety: 10 Principles That Matter. J Patient Saf [Internet]. 2008;4(1):3–8. Available from: <https://commons.erau.edu/publication/974>
4. Issenberg SB, Scalese RJ. Best evidence on high-fidelity simulation: what clinical teachers need to know. Clin Teach. 2007;4:73–7.
5. Nehring WM, Wexler T, Hughes F, Greenwell A. Faculty Development for the Use of High-Fidelity Patient Simulation: A Systematic Review. Int J Health Sci Educ. 2013;1(1).
6. Schon DA. Educating the Reflective Practitioner Toward a New Design. Jossey-Bass Inc; 1987.

7. Anderson J. In search of reflection-in-action: An exploratory study of the interactive reflection of four experienced teachers. *Teach Teach Educ.* 2019;86. 10.1016/j.tate.2019.102879.
8. Machost H, Stains M. Reflective Practices in Education A Primer for Practitioners. *CBE Life Sci Educ.* 2023;22(2). 10.1187/cbe.22-07-0148 . PubMed PMID: 36972335.
9. Schon DA. *The Reflective Practitioner.* Basic Books; 1983.
10. Issenberg SB, McGaghie WC, Petrusa ER, Gordon DL, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: A BEME systematic review. *Med Teach.* 2005. pp. 10–28. doi:10.1080/01421590500046924 PubMed PMID: 16147767.
11. Gaba DM. The future vision of simulation in health care. *Quality and Safety in Health Care.* 2004. 10.1136/qshc.2004.009878 PubMed PMID: 15465951.
12. Lamé G, Dixon-Woods M. Using clinical simulation to study how to improve quality and safety in healthcare. *BMJ Simulation and Technology Enhanced Learning.* BMJ Publishing Group; 2020. pp. 87–94. 10.1136/bmjstel-2018-000370.
13. Nestel D, Bruun B, Dieckmann P, Tulloch S, Gormley GJ. Tending the garden of psychological safety in simulation-based education. *J Healthc Simul.* 2025. 10.54531/CPZH5763.
14. Pelletier C, Kneebone R. Learning safely from error? Reconsidering the ethics of simulation-based medical education through ethnography. *Ethnography Educ.* 2016;11(3):267–82. 10.1080/17457823.2015.1087865.
15. Davidson B, Howells S, Davenport R, McAllister S, Caird E, Aldridge D, et al. Same But Different: The Role and Perceptions of the Simulation Clinical Educator. *Teach Learn Communication Sci Disorders.* 2023;7(2). 10.30707/tlcsd7.2.1690393489.657912.
16. Rudolph JW, Simon R, Rivard P, Dufresne RL, Raemer DB. Debriefing with Good Judgment: Combining Rigorous Feedback with Genuine Inquiry. *Anesthesiol Clin.* 2007;361–76. 10.1016/j.anclin.2007.03.007 . PubMed PMID: 17574196.
17. Kolb A, Kolb D. Eight important things to know about the experiential learning cycle. *Australian Educational Lead.* 2018;40(3).
18. Mariani B, Cantrell MA, Meakim C. Nurse educators' Perceptions about structured debriefing in clinical simulation. *Nurs Educ Perspect.* 2014;35(5):330–1. 10.5480/13-1190. .1 PubMed PMID: 25291930.
19. Muhumuza A, Najjuma JN, MacIntosh H, Sharma N, Singhal N, Hollaar GL, et al. Understanding the barriers and enablers for postgraduate medical trainees becoming simulation educators: a qualitative study. *BMC Med Educ.* 2023;23(1). 10.1186/s12909-022-03995-3 . PubMed PMID: 36641526.
20. Allvin R, Berndtson M, Carlzon L, Edelbring S, Hult H, Hultin M, et al. Confident but not theoretically grounded – experienced simulation educators' perceptions of their own professional development. *Adv Med Educ Pract.* 2017;8:99–108. 10.2147/AMEP.S123517.
21. Schaffer AC, Babayan A, Einbinder JS, Sato L, Gardner R. Association of Simulation Training With Rates of Medical Malpractice Claims Among Obstetrician-Gynecologists. *Obstet Gynecol.*

- 2021;138(2):246–52. 10. 1097/AOG.0000000000004464 PubMed PMID: 34237759.
22. Maternal. mortality rate on the decline in SA | Statistics South Africa [Internet]. [cited 2026 Feb 25]. Available from: <https://www.statssa.gov.za/?p=15321>
 23. Mahada T, Tshitangano TG, Mudau AG. Strategies to Reduce Maternal Death Rate and Improve the Provision of Quality Healthcare Services in Selected Hospitals of Vhembe District Limpopo Province. *Nurs Rep.* 2023;13(3):1251. 10.3390/nursrep13030107 . PubMed PMID: 37755350.
 24. Donkers K, Truscott J, Garrubba C, DeLong D. High-Fidelity simulation use in preparation of physician assistant students for neonatal and obstetric care. *J Physician Assistant Educ.* 2016;27(2):68–72. 10. 1097/JPA.0000000000000070 PubMed PMID: 27123596.
 25. Ennen CS, Satin AJ. Training and assessment in obstetrics: The role of simulation. *Best Practice and Research: Clinical Obstetrics and Gynaecology.* 2010. pp. 747–58. 10.1016/j.bpobgyn.2010.03.003 PubMed PMID: 20537592.
 26. Satin AJ. Simulation in Obstetrics. *Obstet Gynecol.* 2018;132(1):199–209. doi:10.1097/AOG.0000000000002682 PubMed PMID: 29889745.
 27. Ennen CS, Satin AJ. Training and assessment in obstetrics: The role of simulation. *Best Practice and Research: Clinical Obstetrics and Gynaecology.* 2010. pp. 747–58. 10.1016/j.bpobgyn.2010.03.003
 28. Ngcobo S, Bust L, Couper I, Chu K. The role of clinical associates in South Africa as a health workforce: A scoping review. *Afr J Prim Health Care Fam Med.* 2024;16(1):4421. 10.4102/PHCFM.V16I1.4421 . PubMed PMID: 38832380.
 29. Why. Clinical Associates matter • Spotlight [Internet]. [cited 2026 Feb 25]. Available from: <https://www.spotlightnsp.co.za/2014/06/08/why-clinical-associates-matter/>
 30. Health professions council of South Africa. Core competencies for undergraduate students in clinical associate, dentistry and medical teaching and learning programmes in South Africa. Medical and Dental Professions Board of the Health Professions Council of South Africa [Internet]. 2014. Available from: [http://www.hpcsa.co.za/uploads/editor/UserFiles/downloads/medical_dental/MDB Core Competencies - ENGLISH - FINAL 2014.pdf](http://www.hpcsa.co.za/uploads/editor/UserFiles/downloads/medical_dental/MDB_Core_Competencies_-_ENGLISH_-_FINAL_2014.pdf).
 31. Schön DA. The Theory of Inquiry: Dewey's Legacy to Education. *Curriculum Inq.* 1992;22(2):119–39.
 32. Hong S. Crossing the divide: lessons to take on facilitating simulation from student to educator. *Int J Healthc Simul.* 2024 Mar;27. 10.54531/sbul2114.
 33. Mortari L. Reflectivity in Research Practice: An Overview of Different Perspectives. *Int J Qual Methods.* 2015;14(5). 10.1177/1609406915618045.
 34. Moe A, Tronvoll IM, Gjeitnes K. A reflective approach in practice research. *Nordic Social Work Res.* 2014;4:14–25. 10.1080/2156857X.2014.982157.
 35. Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health.* Routledge; 2019. pp. 589–97. 10.1080/2159676X.2019.1628806.
 36. Byrne D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Qual Quant.* 2022;56(3):1391–412. 10.1007/s11135-021-01182-y.

37. Braun V, Clarke V, Understanding. TA | Thematic Analysis [Internet]. [cited 2025 Sep 20]. Available from: <https://www.thematicanalysis.net/understanding-ta/>
38. Olmos-Vega FM, Stalmeijer RE, Varpio L, Kahlke R. A practical guide to reflexivity in qualitative research: AMEE Guide 149. *Med Teach*. 2023;45(3):241–51. 10.1080/0142159X.2022.2057287.
39. Kinsella EA. Technical Rationality in Schön's Reflective Practice: dichotomous or non-dualistic epistemological position. *Nurs Philos*. 2007;8:102–13. 10.1111/j.1466-769X.2007.00304.x.
40. Dieckmann P, Friis SM, Lippert A, Østergaard D. The art and science of debriefing in simulation: Ideal and practice. *Med Teach*. 2009;31(7). 10.1080/01421590902866218 PubMed PMID: 19811136.
41. McGaghie WC, Issenberg SB, Barsuk JH, Wayne DB. A critical review of simulation-based mastery learning with translational outcomes. *Med Educ*. 2014;375–85. 10.1111/medu.12391 . PubMed PMID: 24606621.
42. Liu D, Macchiarella ND, Vincenzi DA. Simulation fidelity. *Human Factors in Simulation and Training*. CRC; 2008. pp. 61–74. 10.1201/9781420072846.ch4.
43. Carey JM, Rossler K. The How When Why of High Fidelity Simulation [Internet]. 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK559313/?report=classic>
44. Schön DA. Knowing-In-Action: The New Scholarship Requires a New Epistemology. *Change: The Magazine of Higher Learning*. 1995;27(6):27–34. 10.1080/00091383.1995.10544673
45. Fraser KL, Ayres P, Sweller J. Cognitive load theory for the design of medical simulations. *Simulation in Healthcare*. Lippincott Williams and Wilkins; 2015. pp. 295–307. 10.1097/SIH.000000000000097 PubMed PMID: 26154251.
46. Carey JM, Rossler K. The How When Why of High Fidelity Simulation. *StatPearls*. 2023 May 1. PubMed PMID: 32644739.
47. Shellenbarger T, Edwards T. Nurse Educator Simulation: Preparing Faculty for Clinical Nurse Educator Roles. *Clin Simul Nurs*. 2012. 10.1016/j.ecns.2010.12.006.
48. Oikawa S, Berg BW, Lee-Jayaram J. An international, culturally adaptive faculty development fellowship for simulation educators. *Med Teach*. 2021;43(8):914–5. 2021.1929905 PubMed PMID: 34043933.
49. Cheng A, Grant V, Dieckmann P, Arora S, Robinson T, Eppich W. Faculty development for simulation programs: Five issues for the future of debriefing training. *Simul Healthc*. 2015;10(4):217–22. 10.1097/SIH.000000000000090 PubMed PMID: 26098492.
50. Nestel D, Mobley BL, Hunt EA, Eppich WJ. Confederates in health care simulations: Not as simple as it seems. *Clinical Simulation in Nursing*. Elsevier Inc.; 2014. pp. 611–6. 10.1016/j.ecns.2014.09.007.
51. Turner S, Harder N. Psychological Safe Environment: A Concept Analysis. *Clinical Simulation in Nursing*. Elsevier Inc.; 2018. pp. 47–55. 10.1016/j.ecns.2018.02.004.
52. Freytag J, Holzer H, Sonntag U. Adherence to Trained Standards After a Faculty Development Workshop on Teaching With Simulated Patients. *GMS J Med Educ*. 2017;34(4).

53. Nestel D, Clark S, Tabak D, Ashwell V, Muir E, Paraskevas P, et al. Defining responsibilities of simulated patients in medical education. *Simul Healthc*. 2010;5(3):161–8. 10.1097/SIH.0b013e3181de1cb6 . PubMed PMID: 20651478.
54. Cleland JA, Abe K, Rethans JJ. The use of simulated patients in medical education: AMEE Guide No 42 1. *Medical Teacher*. Informa Healthcare; 2009. pp. 477–86. doi:10.1080/01421590903002821 PubMed PMID: 19811162.
55. Maureen Hillier A, Williams TL, Chidume Affiliations T. Standardization of Standardized Patient Training in Medical Simulation. *StatPearls* [Internet]. 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK560864/?report=printable>
56. Abulebda K, Srinivasan S, Maa T, Stormorken A, Chumpitazi CE. Development, Implementation, and Evaluation of a Faculty Development Workshop to Enhance Debriefing Skills Among Novice Facilitators. *Cureus*. 2020 Feb 11. 10.7759/cureus.6942
57. Gardner A, Ahmed RA, Misra A. Examining faculty development through a global lens: current trends and innovations. *Int J Healthc Simul*. 2024 Apr;29. 10.54531/tffk6609.
58. Oliver N, Mellanby E. The Meta-Debrief Club: An embedded model for ongoing faculty development and quality assurance. *Int J Healthc Simul*. 2024 Feb;27. 10.54531/ixiz4714.