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Teaching Innovations in Public Health Education: Integrating Simulation and Case-Based Learning

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Abstract

This study examines the integration of simulation-based learning and case-based learning in public health education to explore their influence on student engagement, critical thinking, collaborative problem-solving, and reflective learning. Using a qualitative phenomenological approach, data were collected through semi-structured interviews, focus group discussions, reflective journals, and classroom observations involving undergraduate public health students and educators. The findings indicate that simulation activities enhanced active participation, communication, confidence, and experiential engagement, while case-based learning strengthened analytical reasoning, contextual understanding, and evidence-based decision-making. The integration of both approaches created a collaborative learning environment that connected theoretical knowledge with practical public health application. The novelty of this study lies in its integrated examination of simulation and case-based pedagogies within public health education from both student and educator perspectives. The findings imply that experiential and student-centered learning approaches can support curriculum innovation and improve professional preparedness for addressing complex public health challenges in higher education settings.

INTRODUCTION

Public health education has experienced a substantial pedagogical transformation in response to increasingly complex global health challenges, including emerging infectious diseases, environmental crises, health inequities, and the growing demand for interdisciplinary collaboration. Traditional lecture-centered instruction is often considered insufficient to prepare students for dynamic professional environments that require analytical reasoning, rapid decision-making, and collaborative problem-solving (Pham et al., 2023; Uduokhai et al., 2023; Kotsis, 2025; Yonwilad et al., 2025). Contemporary educational paradigms therefore emphasize experiential and student-centered learning approaches that encourage active engagement, reflective practice, and the application of theoretical knowledge to real-world contexts. Within this shift, simulation-based learning (SBL) and case-based learning (CBL) have emerged as influential instructional innovations capable of strengthening practical competencies and professional readiness in health education (Dzhumatovich & Salimrouhi, 2025; Karkera et al., 2024; Rubaia'an, 2023).

Simulation-based learning has gained considerable attention in medical and public health education because it provides realistic and controlled learning environments where students can practice responding to complex situations without risking patient or community safety. SBL allows learners to experience authentic public health scenarios such as outbreak investigations, disaster response coordination, vaccination campaigns, and health policy implementation (Elendu et al., 2024; Gonah & Nomatshila, 2024; Rascon et al., 2024; Babatuyi et al., 2024). Through immersive activities, students are encouraged to develop critical thinking, communication, leadership, and collaborative decision-making skills that are essential in professional practice. Previous studies indicate that simulation-based approaches improve learners' confidence, clinical reasoning, and ability to transfer theoretical concepts into practical actions (Bahattab et al., 2023; Dias et al., 2022). In public health contexts specifically, simulation activities also foster adaptive thinking and resilience when addressing uncertain and rapidly evolving community health problems.

Alongside SBL, case-based learning has become an important pedagogical strategy for enhancing analytical and evidence-based reasoning. CBL exposes students to authentic or hypothetical public health cases that require systematic problem identification, evaluation of alternative solutions, and justification of decisions using scientific evidence (Zhang & Hu, 2024; Sukackė et al., 2022; Tegginamani & Vanishree, 2024)). Unlike passive learning models, CBL encourages active participation through discussion, reflection, and collaborative interpretation of complex situations. Research has shown that case-based approaches improve knowledge retention, critical analysis, and professional competence among health students (Wang & Ji, 2021). CBL also contributes to the development of communication and teamwork skills because learners are required to negotiate perspectives and defend arguments collectively (Astbury et al., 2021; Hu & Shu, 2025; Cao et al., 2025). These competencies are increasingly important in public health practice, where multidisciplinary collaboration is central to effective intervention and policy implementation.

Despite the demonstrated effectiveness of SBL and CBL individually, educational scholars increasingly argue that integrating both approaches may produce a more comprehensive learning experience. The integration of simulation activities with structured case analysis enables students not only to interpret public health problems conceptually but also to apply solutions within realistic scenarios requiring immediate judgment and collaborative action (Moslehi et al., 2022). Such integration reflects the principles of experiential learning theory, which emphasizes learning through direct experience, reflection, experimentation, and contextual application (Passarelli & Kolb, 2023; Khalid et al., 2023). By combining analytical discussion with experiential engagement, integrated SBL-CBL approaches may strengthen higher-order cognitive skills, deepen conceptual understanding, and improve professional preparedness more effectively than isolated teaching methods.

Empirical evidence regarding integrated SBL and CBL approaches in public health education, however, remains limited and fragmented. Existing studies predominantly focus on nursing or clinical education settings, while research specifically examining public health education is still underdeveloped (Tar Lim et al., 2024; Farsi et al., 2022). Furthermore, many studies emphasize student satisfaction and perceptions rather than exploring how integrated learning experiences shape engagement, collaboration, and reflective problem-solving processes in depth (Sultana et al., 2024). Several investigations also rely heavily on quantitative outcome measures without adequately capturing the lived experiences of learners and educators involved in implementing innovative teaching strategies. Consequently, there is insufficient understanding of how students interpret and respond to

integrated experiential learning environments in public health contexts, particularly regarding the interaction between engagement, critical thinking, and collaborative learning.

Another important limitation in previous literature concerns the role of educators in facilitating integrated pedagogical innovations. The successful implementation of SBL and CBL depends not only on curriculum design but also on educators' ability to guide reflective learning, manage realistic scenarios, and balance instructional structure with learner autonomy (Alinier & Oriot, 2022; Makhlouf & Rabahi, 2025; Geetha, 2025). However, the perspectives and experiences of educators are often overlooked, despite their critical contribution to shaping meaningful learning environments. Understanding facilitators' experiences is essential for identifying institutional barriers, pedagogical challenges, and strategies that support the sustainability of experiential learning practices in higher education.

The growing complexity of contemporary public health problems requires educational institutions to prepare graduates who are not only knowledgeable but also capable of collaborative decision-making, adaptive reasoning, and evidence-based intervention in uncertain situations (Vinokur et al., 2023; Hussein et al., 2025; Raman et al., 2025). Integrating SBL and CBL represents a promising pedagogical response to these demands because it connects theoretical instruction with experiential application while fostering active participation and reflective inquiry. Nevertheless, the limited qualitative evidence concerning the integration of these approaches in public health education demonstrates a significant research gap that requires further scholarly attention.

This study therefore aims to explore the integration of simulation-based learning and case-based learning in public health education by examining students' and educators' experiences related to engagement, critical thinking, problem-solving, collaboration, and instructional facilitation. The novelty of this research lies in its focus on the combined implementation of SBL and CBL within public health education through a qualitative phenomenological perspective, allowing a deeper understanding of how these pedagogical strategies shape experiential learning processes. The study contributes theoretically by expanding experiential learning discourse in public health education and contributes practically by providing evidence-based insights for curriculum developers and educators seeking to strengthen active learning and professional competency development in higher education.

METHODS

Research Design

This study employed a qualitative phenomenological design to explore the lived experiences of students and educators involved in the integration of simulation-based learning (SBL) and case-based learning (CBL) in public health education. A phenomenological approach was selected because it enables researchers to examine how participants interpret and assign meaning to specific educational experiences within their social and academic contexts (Stolz, 2023). The design was considered appropriate for capturing nuanced perceptions related to engagement, collaborative learning, critical thinking, and problem-solving processes that emerge through experiential learning activities. Through this approach, the study aimed to generate an in-depth understanding of how integrated pedagogical innovations influence learning experiences in public health education.

Research Context and Participants

The research was conducted in the Public Health undergraduate program at the Faculty of Nursing, Universitas Katolik Widya Mandala Surabaya, Indonesia. The

institution has increasingly adopted active learning approaches to strengthen students' professional competencies and practical readiness in responding to contemporary public health challenges. The study involved 25 participants consisting of 20 undergraduate students and 5 educators who actively participated in the implementation of SBL and CBL activities during one academic semester.

Participants were selected using purposive sampling to ensure rich and relevant experiential data. Student participants were required to have completed at least one full cycle of simulation and case-based learning activities, while educator participants were selected based on their direct involvement in planning, facilitating, and evaluating these teaching approaches. The sampling strategy also considered diversity in academic achievement, prior exposure to innovative learning methods, and demographic background to strengthen the credibility and depth of the findings.

Data Collection Techniques

Data collection was conducted through semi-structured interviews, focus group discussions, reflective journals, and classroom observations. Semi-structured interviews enabled participants to describe their experiences, perceptions, and challenges related to SBL and CBL in detail while allowing flexibility for probing and clarification. Interviews with educators focused on instructional facilitation, curriculum implementation, and perceived student development, whereas student interviews explored engagement, collaboration, and learning experiences.

Focus group discussions were conducted with students to encourage interactive reflection and collective interpretation of learning experiences. Reflective journals were also maintained by students throughout the six-week learning intervention to document their responses, analytical reasoning, and perceived skill development during simulation and case analysis sessions. In addition, non-participant observations were undertaken during classroom and simulation activities to capture interaction patterns, participation dynamics, and collaborative problem-solving behaviors. All interviews and discussions were audio-recorded and transcribed verbatim to ensure data accuracy and completeness.

Data Analysis

The collected data were analyzed using thematic analysis following the procedures proposed by Naeem et al. (2023). The analysis began with repeated reading of transcripts and reflective documents to achieve data familiarization. Initial codes were subsequently generated to identify significant statements and recurring patterns associated with learning engagement, critical thinking, collaboration, and instructional experiences. Similar codes were then grouped into broader themes representing the essence of participants' lived experiences. Thematic refinement was conducted iteratively to ensure coherence, consistency, and alignment with the research objectives. NVivo 14 software was utilized to support systematic coding, organization, and retrieval of qualitative data.

Trustworthiness and Research Validity

To ensure the trustworthiness of the findings, the study applied credibility, transferability, dependability, and confirmability criteria as proposed by Megheirkouni & Moir (2023). Credibility was strengthened through methodological triangulation involving interviews, focus groups, reflective journals, and observations. Member checking was also conducted by returning summaries of interpreted findings to selected participants for verification and clarification. Transferability was enhanced through detailed contextual descriptions of participants and research settings, enabling readers to assess the applicability of findings to other educational contexts. Dependability and confirmability were supported through maintaining an audit trail documenting data collection

procedures, coding processes, analytical decisions, and reflective memos throughout the study.

RESULTS AND DISCUSSION

This section presents the findings derived from semi-structured interviews, focus group discussions, reflective journals, and classroom observations regarding the integration of simulation-based learning (SBL) and case-based learning (CBL) in public health education. Data analysis generated three interconnected themes: students' engagement and participation in simulation-based learning, the influence of case-based learning on critical thinking and problem-solving abilities, and educators' experiences in facilitating innovative learning approaches. The findings demonstrate that the integration of SBL and CBL created an experiential learning environment that strengthened analytical reasoning, collaborative learning, reflective practice, and professional preparedness among students. Data saturation was achieved when recurring patterns consistently emerged across interviews, reflective journals, focus group discussions, and observation records. Table 1 summarizes the thematic findings generated from the analysis process.

Table 1. Major Themes and Sources of Data

Major Themes	Sub-Themes	Sources of Data
Students' Engagement in SBL	Active participation, collaborative interaction, reflective learning, confidence development	Interviews, observations, reflective journals
Impact of CBL on Critical Thinking	Analytical reasoning, evidence-based decision-making, contextual understanding	FGDs, interviews, reflective journals
Educators' Experiences	Facilitative teaching, instructional challenges, student development	Educator interviews, classroom observations

Source: Processed qualitative data from interviews, FGDs, observations, and reflective journals, 2025

Students' Engagement and Participation in Simulation-Based Learning

The findings revealed that simulation-based learning significantly increased students' engagement, participation, and emotional involvement during public health learning activities. Students consistently described simulations as immersive experiences that enabled them to understand how theoretical concepts operate in real public health situations. Observation records showed that students became more communicative, collaborative, and responsive during simulation activities compared to traditional lecture sessions. Classroom observations also indicated that students actively divided responsibilities, coordinated interventions, and negotiated decisions during outbreak response and community health simulations.

The integration of realistic scenarios encouraged students to become directly involved in decision-making processes. Many participants explained that simulation activities generated a sense of urgency and responsibility, which motivated them to participate more seriously in learning activities. Reflective journals frequently indicated that students experienced increased awareness of teamwork, communication, and professional accountability after participating in simulation exercises.

One participant explained:

> *"During the outbreak management simulation, I felt like I was actually working in a real public health emergency. We had to respond quickly, discuss intervention priorities, and think carefully before making decisions because*

every action affected the next stage of the simulation. It was stressful at first, but it made me realize how important communication and coordination are in public health situations. I became more focused because the learning felt realistic rather than theoretical."

This statement demonstrates how SBL transformed passive classroom learning into experiential participation. Students were not merely receiving information but actively interpreting situations, evaluating alternatives, and implementing decisions collaboratively. The immersive nature of simulation activities increased emotional engagement and strengthened students' sense of responsibility during learning processes.

Another student highlighted the collaborative dimension of simulation activities:

"What made the simulation different from ordinary class discussions was the teamwork. Everyone had different responsibilities, and we needed to communicate constantly to solve the problem. Sometimes our opinions were different, so we had to negotiate and agree on the best strategy together. Those interactions helped me understand that public health work always depends on collaboration between different people and disciplines."

The quotation indicates that SBL strengthened collaborative learning and interpersonal communication. Observation notes further revealed that students frequently encouraged quieter group members to participate, distributed tasks according to team strengths, and collectively reflected on intervention outcomes during debriefing sessions. These findings suggest that simulation activities promoted shared responsibility and active peer learning.

Reflective journal entries also revealed changes in students' confidence and self-awareness throughout the intervention period. Many students initially reported anxiety when participating in realistic scenarios, particularly because they feared making mistakes or providing incorrect responses during group discussions. However, repeated exposure to simulation activities gradually increased their confidence and participation.

One student wrote:

"At the beginning, I felt nervous because I was afraid my decisions would be wrong and judged by others. After several simulations, I became more comfortable expressing ideas and defending my reasoning. The feedback sessions helped me recognize mistakes without feeling embarrassed. I started to see mistakes as part of the learning process rather than something negative."

This finding demonstrates that reflective feedback sessions played a crucial role in supporting students' learning development. Debriefing activities enabled participants to evaluate their own performance, identify weaknesses, and consider alternative strategies for future practice. Observations confirmed that students became increasingly confident and engaged after receiving constructive feedback from educators and peers.

A similar perspective was expressed by an educator:

"I noticed significant changes in student participation after several simulation sessions. At first, some students remained passive and hesitant to speak, but gradually they became more active in discussions and decision-making. Simulations encouraged them to take responsibility because they realized that their actions influenced the group outcomes."

The educator's statement reinforces the observation that SBL contributed to increased learner engagement and accountability. Students became more willing to

communicate, collaborate, and participate actively when learning activities resembled authentic public health situations.

The findings indicate that simulation-based learning enhanced active participation, collaborative interaction, reflective thinking, and confidence development among students. The combination of realistic scenarios, teamwork, and reflective debriefing created a meaningful experiential learning environment that connected theory with professional practice. Source: Interview transcripts, reflective journals, and classroom observation records (2025).

Impact of Case-Based Learning on Critical Thinking and Problem-Solving Abilities

The second major theme concerned the role of case-based learning in strengthening students' critical thinking, analytical reasoning, and evidence-based problem-solving abilities. Participants consistently reported that case discussions required them to evaluate complex public health situations systematically and formulate realistic intervention strategies based on available evidence. Unlike conventional lecture-centered learning, CBL encouraged students to interpret multidimensional problems collaboratively and justify their decisions critically.

Focus group discussions revealed that students initially struggled with ambiguous case scenarios because many cases did not provide single or definitive solutions. Nevertheless, participants acknowledged that this ambiguity ultimately strengthened their analytical abilities by encouraging them to compare alternatives, prioritize issues, and evaluate potential consequences.

One participant explained:

> *"When we analyzed the vaccination program case, we realized there was no perfect answer because every strategy had limitations. We had to consider public trust, budget constraints, misinformation, and ethical concerns at the same time. The discussion forced us to think carefully before making recommendations because every decision affected different groups in society."*

This quotation demonstrates that CBL encouraged students to engage with complexity and uncertainty in realistic ways. Students learned that public health decision-making involves balancing multiple considerations rather than simply applying theoretical knowledge mechanically.

Another participant stated:

> *"Case discussions trained us to think more systematically. We could not immediately jump to solutions because we first needed to identify the root causes of the problem and evaluate the available evidence. Sometimes our group spent a long time debating priorities, but those debates actually improved our understanding of the issue."*

The statement indicates that collaborative discussion strengthened students' analytical reasoning and evidence-based argumentation. Observation records confirmed that students frequently referenced epidemiological concepts, policy frameworks, and community conditions while defending their interpretations during group discussions.

Reflective journals also revealed how CBL helped students connect theoretical concepts with real-world application:

> *"Before participating in case discussions, many public health theories felt abstract and difficult to apply. After analyzing actual cases, I understood why those concepts are important in practice. The discussions helped me realize that*

solving public health problems requires both theory and contextual understanding."

This finding suggests that case-based learning improved contextual comprehension and conceptual integration. Students became more capable of interpreting how theoretical frameworks operate within practical public health settings.

Educators also observed significant improvement in students' analytical and communication abilities during case discussions. One educator explained:

> *"Students gradually became more confident in presenting arguments and defending their decisions with evidence. In the beginning, many students relied on personal opinions, but after repeated case discussions they started using data, research findings, and theoretical concepts to support their reasoning."*

The quotation demonstrates that CBL contributed to the development of evidence-based reasoning and professional communication skills. Educators noted that students became increasingly capable of organizing arguments logically and responding critically to alternative perspectives.

Another educator highlighted the collaborative value of case discussions:

> *"Case-based learning encouraged students to listen to each other and consider different viewpoints before reaching conclusions. Those discussions were important because public health practice always involves collaboration and negotiation between multiple stakeholders."*

This finding indicates that CBL not only strengthened individual analytical skills but also fostered collaborative problem-solving competencies essential for multidisciplinary public health practice.

In general, the findings demonstrate that case-based learning significantly enhanced students' critical thinking, analytical reasoning, contextual understanding, and evidence-based decision-making abilities. Through collaborative interpretation of realistic public health cases, students developed greater confidence in evaluating complex problems and proposing practical interventions. Source: Focus group discussions, reflective journals, and educator interviews (2025).

Educators' Experiences in Facilitating Innovative Learning Approaches

The third theme explored educators' experiences in implementing integrated SBL and CBL strategies within public health education. Educators described the transition from lecture-centered instruction toward facilitative and student-centered learning approaches as both rewarding and demanding. They emphasized that innovative teaching methods required careful preparation, pedagogical flexibility, and continuous reflection to create effective experiential learning environments.

Educators explained that designing simulation scenarios required substantial planning and coordination. Scenarios needed to be realistic enough to stimulate engagement while remaining manageable for students' competency levels and aligned with learning objectives.

One educator stated:

> *"Preparing simulations is much more complex than preparing ordinary lectures. We have to create realistic situations, anticipate possible student responses, and prepare feedback strategies for different outcomes. The process requires time and creativity, but it is rewarding because students become more engaged and active during learning."*

The statement highlights the instructional complexity involved in facilitating experiential learning. Educators were required to act not only as instructors but also

as facilitators who guided reflection, encouraged participation, and monitored collaborative interaction.

Another educator emphasized the importance of balancing guidance with learner autonomy:

> *"In simulations and case discussions, we cannot immediately provide answers because students need opportunities to analyze problems independently. Sometimes they feel uncomfortable with uncertainty, but that discomfort actually encourages deeper thinking and stronger problem-solving abilities."*

This quotation illustrates how educators intentionally created reflective learning environments that encouraged independent reasoning and active participation. Classroom observations confirmed that facilitators frequently used probing questions and reflective prompts instead of direct explanations during discussions.

Educators also observed substantial improvements in students' interpersonal communication and teamwork skills throughout the intervention period. One participant explained:

> *"After several sessions, students became more confident in discussing ideas, negotiating strategies, and leading group discussions. At the beginning, some students were passive and hesitant to participate, but gradually they became more collaborative and responsible during learning activities."*

The statement suggests that integrated active learning approaches contributed not only to cognitive development but also to interpersonal and professional skill formation. Educators perceived these competencies as essential for future public health practice, particularly in multidisciplinary work environments.

Despite the positive outcomes, educators also identified several implementation challenges. Limited instructional time, resource constraints, and differences in students' readiness occasionally affected the effectiveness of learning activities. Some educators explained that simulations required additional logistical preparation, including classroom arrangements, supporting materials, and facilitation training.

One educator reflected:

> *"The biggest challenge is balancing time, resources, and learning objectives. Simulations and case discussions require longer preparation and implementation compared to lectures. Some students also need more guidance at the beginning because they are not familiar with active learning approaches."*

This finding demonstrates that successful implementation of innovative pedagogies depends on institutional support, educator preparedness, and adaptive facilitation strategies. Nevertheless, educators consistently emphasized that the educational benefits outweighed the practical challenges associated with implementation.

Educators perceived the integration of simulation-based and case-based learning as highly effective in strengthening engagement, reflective learning, critical thinking, and collaborative competencies among public health students. The findings suggest that experiential learning approaches can create more dynamic and professionally relevant educational environments when supported by thoughtful instructional design and reflective facilitation. Source: Educator interviews, classroom observations, and reflective field notes (2025).

Integrating Simulation-Based and Case-Based Learning to Strengthen Experiential Public Health Education

This study revealed that the combined use of simulation-based learning (SBL) and case-based learning (CBL) can greatly aid in the enhancement of active engagement, critical thinking, collaborative problem-solving, and reflective learning in public

health education. The results support the emerging academic view that experiential and student-centered pedagogies outperform traditional approaches that are based on lectures when it comes to equipping students with the skills needed for complex professional settings (Pham et al., 2023; Tar Lim et al., 2024). The integration of SBL and CBL provided learners with learning scenarios in which they had to understand real-life public health issues, make decisions in a participatory way, and apply theory in real-life situations. This aligns with the experiential learning approach suggested by Passarelli and Kolb (2023) that posits that learning occurs when it is related to a person's experience, reflected upon, and applied to the context.

The study's findings indicated that student engagement was higher, consistent with previous studies that showed that simulation education facilitates active participation, emotional involvement, and motivation of learners (Bahattab et al., 2023; Elendu et al., 2024). In this study, students found simulations to be realistic, immersive, and helped build their confidence and professional awareness. This research differs from earlier studies, which concentrated on clinical skills in nursing or medical education, because public health education involves working together to make decisions and to solve problems in the community, skills that are essential for the profession. The results are thus of theoretical value as they show that experiential simulation methods can also be applied in non-clinical public health settings where intervention is policy-directed and coordination is multidisciplinary.

The emerging results on the effect of case-based learning also align with previous research that highlighted the importance of the CBL approach in enhancing analytical thinking and decision making based on evidence (Wang & Ji, 2021; Saleem & Khan, 2023). Case discussions were reported to have promoted students' systematic approach to the analysis of multi-dimensional public health problems and taken into account ethical, social and contextual aspects at the same time. This study, however, provides a more integrated view by demonstrating how CBL supports simulation tasks in the context of reflective interpretation and collaborative reasoning. Previous research has focused on either SBL or CBL, while this research is novel in that it shows that both SBL and CBL are interconnected in experiential processes that enhance cognitive competencies as well as interpersonal and professional competencies.

The other significant contribution of this study is that of the role of educators in facilitating the active learning environment. As stated by Alinier and Oriot (2022) the results show that the role of the teacher needs to shift from simply transmitting knowledge to being a reflective facilitator who is able to lead inquiry, promote independence in learning, and play a role in the regulation of collaborative learning. Teachers in this study stated that scenario design, facilitating the process adaptively and providing feedback structures are key to successful implementation, when working with integrated SBL and CBL. The results show how important institutional support and faculty development programs are for maintaining innovative teaching methods in higher education, in practice. Experiential learning techniques can be challenging to carry out successfully unless well planned, well resourced and flexible with the teaching.

The study also has practical implications because it has shown that the gap between theory and practice in public health is real and can be addressed with the use of integrated experiential pedagogies. Students developed the ability to apply epidemiological theories, health promotion principles, and intervention strategies through simulations and case discussions to make more realistic decisions. This is especially appropriate today, when public health practitioners are expected to be adept at responding to the uncertain and rapidly evolving nature of health problems. The results thus endorse efforts for curriculum reorientation aimed at emphasizing

active learning, collaborative learning and problem-solving in context for public health education.

There are, however, some things that must be noted. The study took place in a single institutional context, and the findings may not be extrapolated to other contexts in primary or secondary education or to other cultures. Furthermore, the qualitative phenomenological design used was mainly oriented towards the participants' lived experiences and perceptions, and not on a quantitative measure of competency outcomes in the long term. Additionally, the results may not be representative of the wider range of teacher views on instruction, as the number of educator participants was relatively small. The restrictions indicate the need for wider comparative studies across a variety of institutions and across different educational disciplines.

Future studies should investigate the lasting effect that the combination of SBL and CBL has on the development of professional competency, preparation for work, and public health performance following graduation. Mixed methods and longitudinal studies may give more insight into the impact of experiential learning on both cognitive and behavioural results over time. Comparative analysis of institutions, disciplines and cultures would also help determine replicable models for implementing experiential public health education. In addition, future research could focus on the development of digital simulations, virtual learning environments and the use of artificial intelligence to enhance the use of active learning methods in higher education.

CONCLUSION

This study demonstrates that the integration of simulation-based learning and case-based learning contributes significantly to strengthening student engagement, critical thinking, collaborative problem-solving, and reflective learning in public health education. The findings reveal that experiential and interactive learning environments encourage students to apply theoretical knowledge in realistic situations while simultaneously developing communication, teamwork, and evidence-based decision-making skills. Educators also perceived these integrated pedagogical approaches as effective in fostering active participation and professional readiness, although successful implementation requires substantial preparation, institutional support, and adaptive facilitation strategies.

The study contributes theoretically by extending experiential learning discourse into public health education through the combined application of simulation and case-based pedagogies. Practically, the findings provide evidence supporting curriculum innovation that prioritizes contextual and student-centered learning to prepare graduates for increasingly complex public health challenges. Nevertheless, the study was limited to a single institutional setting and focused primarily on participants' experiences rather than long-term competency outcomes. Future research should therefore involve comparative and longitudinal studies across diverse educational contexts to examine the sustained impact of integrated experiential learning approaches on professional performance and workforce preparedness in public health practice.

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