Evaluating a Gamified Peer-Mentorship Simulation for Student Engagement and Employability-Related Skills in IT Education: An Exploratory Mixed-Methods Pilot Study

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Abstract

Student engagement, retention, and graduate employability-related skills remain persistent challenges within Information Technology (IT) education, particularly in resource-constrained higher education contexts. Although gamification, peer mentorship, and simulation-based learning have individually demonstrated potential for improving student outcomes, limited research has explored their integration within a single educational framework. This exploratory mixed-methods pilot study evaluated *Isibani* Quest, a culturally responsive gamified peer-mentorship simulation implemented within a South African IT programme. Drawing on Communities of Practice (CoP), Self-Determination Theory, Situated Learning, and Social Constructivism, the intervention combined role-based simulation, gamified progression systems, and structured peer mentorship to support first-year student engagement while fostering employability-related skills among final-year students. Data were collected from 17 participants through Learning Management System (LMS) analytics, attendance records, pre- and post-intervention surveys, and reflective journals. Findings indicated increased attendance (68% to 89%), high quest completion rates (92%), was associated with self-efficacy and sense of belonging among first-year students, and perceived growth in leadership, communication, and peer mentorship skills among final-year mentors. Qualitative findings further suggested that authentic role participation, peer mentorship, and continuous feedback contributed to students' engagement and professional identity development. The study contributes to the literature by proposing an integrated model that combines gamification, simulation, and peer mentorship; extending CoP theory within gamified IT learning environments; demonstrating the feasibility of culturally responsive educational design through the

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Isibani framework; and providing preliminary evidence to inform future large-scale implementations in African higher education. The findings provide preliminary exploratory evidence that gamified peer-mentorship simulations may support engagement and employability-related skill development in similar educational contexts.

Keywords: gamification; peer mentorship; communities of practice; student engagement; employability-related skills

Introduction

Student engagement and retention remain significant challenges in higher education, particularly in Information Technology (IT) programmes where students must master complex technical concepts while adapting to university life. These challenges often contribute to low participation, reduced confidence, poor attendance, and increased attrition. Research consistently identifies engagement as a key predictor of academic success, persistence, and retention (Katona and Gyonyoru 2026; Nkomo, Daniel and Butson 2021).

At the same time, higher education institutions face growing pressure to prepare graduates for a rapidly evolving digital economy. Although many IT graduates possess strong technical knowledge, they often have limited opportunities to develop employability-related skills such as communication, leadership, teamwork, and problem-solving in authentic professional contexts. This creates a gap between academic preparation and workplace readiness.

To address these challenges, researchers have increasingly explored gamification, simulation-based learning, and peer mentorship. Gamification can enhance motivation and participation through mechanisms such as points, badges, and progression systems. Simulation-based learning provides authentic environments where students can apply knowledge and develop professional skills, while peer mentorship promotes belonging, confidence, academic success, and leadership development.

Despite their individual benefits, these approaches are typically implemented separately. Limited research has explored how gamification, simulation, and peer mentorship can be integrated to simultaneously support first-year engagement and final-year employability-related skill development, particularly within African higher education contexts.

This study evaluates *Isibani* Quest, a culturally responsive gamified peer-mentorship simulation designed for IT education in South Africa. Drawing on Communities of Practice (CoP), Self-Determination Theory, Situated Learning, and Social Constructivism, the intervention integrates role-based simulation, gamified progression, and structured peer mentorship. The study explores the feasibility and educational value

of this integrated approach as a potential strategy for enhancing student engagement and employability-related skill development in IT programmes.

Problem

Although simulation-based learning, gamification, and peer mentorship have independently demonstrated positive educational outcomes, limited research has examined how these approaches can be integrated within a single intervention to simultaneously support first-year student engagement and final-year professional skill development in IT education, particularly within African and resource-constrained higher education contexts.

Literature Review

Student Engagement and Retention in IT Education

Student engagement is widely recognised as a key predictor of academic success, persistence, and retention in higher education. In IT programmes, students face additional challenges associated with complex technical content, problem-solving demands, and adjustment to university life, often contributing to low participation and attrition (Nkomo, Daniel and Butson 2021). Previous studies have established positive relationships between engagement and student success; however, findings differ regarding the effectiveness of technology-enhanced interventions. While some studies report improved engagement through digital learning environments, others suggest that technology alone is insufficient without social and academic support structures (Bond et al. 2020). Furthermore, much of the literature relies on self-reported data and short-term evaluations, limiting understanding of long-term retention outcomes. Recent systematic reviews indicate that student engagement is influenced not only by technology adoption but also by the quality of interaction, feedback mechanisms, and opportunities for collaborative participation (Bond et al. 2020).

Gamification and Learning Motivation

Research has established that gamification can enhance motivation, participation, and engagement through elements such as points, badges, and progression systems (Subhash and Cudney 2018). However, findings remain inconsistent regarding its impact on learning outcomes and intrinsic motivation. Some studies report significant improvements in engagement, whereas others identify only temporary motivational effects or limited influence on academic performance (Mekler et al. 2017). Methodologically, many studies employ small samples, short intervention periods, and self-report measures, making it difficult to determine the sustainability of observed outcomes. These findings suggest that gamification is most effective when embedded within meaningful learning experiences rather than functioning solely as a reward mechanism. Recent meta-analyses suggest that gamification is most effective when

integrated with authentic learning activities and social interaction rather than implemented as a standalone reward system (Dar et al. 2026; Gyedu et al. 2026).

Peer Mentorship in Higher Education

Peer mentorship has been shown to improve student belonging, confidence, academic integration, and retention, particularly among first-year students (Nuis, Segers and Beausaert 2023). Research has also highlighted benefits for mentors, including leadership and communication skill development (Guerreiro and Jesus 2025). However, outcomes vary across studies due to differences in programme design, mentor training, and institutional support. Additionally, many studies focus exclusively on mentee outcomes and use cross-sectional designs, limiting understanding of how peer mentorship simultaneously influences both mentor and mentee development. Recent reviews indicate that structured peer mentorship programmes contribute to academic integration, confidence, persistence, and leadership development, although programme effectiveness varies according to mentor preparation and institutional support (Guerreiro and Jesus 2025; Nuis et al. 2023).

Simulation-Based Learning in IT Education

Simulation-based learning has been widely recognised for supporting authentic learning, problem-solving, and workplace readiness by allowing students to apply theoretical knowledge in realistic professional contexts (Herrington, Reeves and Oliver 2010). While studies generally report positive effects on technical skill development, evidence regarding its influence on motivation, belonging, and professional identity formation is less conclusive. Many simulation studies focus on isolated modules and short-term outcomes, limiting understanding of how simulation can contribute to broader educational goals such as engagement and employability-related skills. Contemporary research suggests that simulation-based environments support the development of technical competence, problem-solving ability, and workplace readiness by enabling learners to engage with realistic professional scenarios (Katona and Gyonyoru 2026).

Research Gap and Conceptual Positioning

Although research has demonstrated the individual value of gamification, simulation-based learning, and peer mentorship, there remains limited understanding of how motivational, social, and experiential learning mechanisms interact within a unified educational ecosystem. This limitation is particularly evident within African higher education, where contextually relevant and resource-conscious approaches remain underrepresented in the literature (Zeleza 2021). Drawing on CoP, Self-Determination Theory, and Social Constructivism, the present study addresses this gap by examining how these complementary mechanisms may collectively support engagement, identity formation, and employability-related skill development within IT education.

Self-Determination Theory (Deci and Ryan 2000) and identity-based learning (Gee 2003) were retained to provide theoretical grounding. However, these seminal contributions were complemented with contemporary scholarship on gamification, peer mentorship, educational simulations, student engagement analytics, employability-related skill development, and African higher education. This approach strengthens the relevance of the study while situating the intervention within current scholarly debates.

Figure 1 illustrates the *Isibani* Quest conceptual framework, integrating gamification, peer mentorship, and simulation–based learning within a culturally responsive context. The model positions students along a developmental continuum from novice to expert, supported by motivational (Self-Determination Theory), social (CoP), and cognitive (Social Constructivism) mechanisms. Gamified elements (XP, badges, progression) interact with role-based mentorship to facilitate engagement, identity formation, and professional skill acquisition.

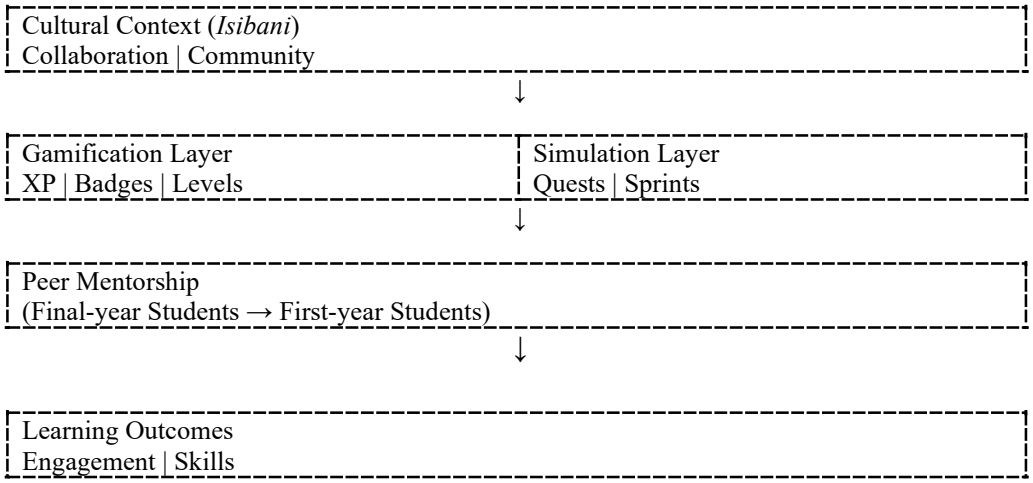

Figure 1: *Isibani* Quest Conceptual Framework

Research Objectives

The study aimed to explore the educational value of the *Isibani* Quest intervention within an IT education context. Specifically, the study sought to:

1. Explore how participation in a gamified peer-mentorship simulation is associated with first-year student engagement, attendance, self-efficacy, and sense of belonging.

2. Examine how participation in structured peer mentorship influences final-year students' perceptions of leadership, communication, peer mentorship, and employability-related skill development.

3. Investigate students' experiences of role-based simulation, gamification, and peer mentorship within an authentic learning environment.

4. Evaluate the feasibility of implementing a culturally responsive gamified peer-mentorship model within a South African higher education context.

5. Generate preliminary design principles to inform future large-scale implementations and research on integrated engagement and employability-related skills interventions in IT education.

Methodology

Research Design and Sample Justification

This study adopted a mixed-methods exploratory design, integrating quantitative and qualitative approaches to provide a comprehensive understanding of both measurable outcomes and lived student experiences. It combines behavioural analytics, survey data, and reflective qualitative data. Mixed-methods research is particularly suited to educational interventions, as it supports triangulation between behavioural data, self-reported perceptions, and reflective insights, thereby enhancing validity and interpretive depth (Creswell and Plano Clark 2018; Tashakkori and Teddlie 2009).

The sample consisted of 17 students (12 first-year and five final-year) enrolled in a Bachelor of Information Systems programme. While the sample size is small, it is methodologically justified for several reasons:

- **Exploratory and Design-Based Nature:** This study aligns with design-based research (DBR) principles, which prioritise iterative development, contextual sensitivity, and in-depth observation over statistical generalisability. Small samples are common in DBR to allow refinement of interventions in authentic settings.

- **High-Interaction Intervention:** The peer-mentorship model required close pairing (mentor-mentee guilds), continuous monitoring, and weekly feedback loops. A larger sample would have reduced the quality and consistency of mentorship interactions.

- **Rich Qualitative Insight:** Smaller cohorts enable deep qualitative analysis, capturing nuanced experiences, such as identity formation, belonging, and professional skill development, which are often lost in large-scale studies.

- **Pilot Study Positioning:** The study functions as a pilot implementation, generating preliminary evidence and informing future large-scale research.

Thus, the emphasis is on analytic generalisation (theoretical insight) rather than statistical generalisation (population inference).

This study is positioned as an exploratory pilot implementation informed by DBR principles. The purpose was not to produce statistically generalisable findings but rather to investigate the feasibility, perceived value, and educational potential of the *Isibani* Quest intervention within an authentic learning context. Consistent with DBR, the emphasis is placed on analytic generalisation, whereby findings contribute to theory development and design principles that may inform future implementations in similar contexts, rather than population-level inference. The results should therefore be interpreted as preliminary evidence intended to guide subsequent large-scale investigations.

Ethical clearance was obtained, and all participants provided informed consent. Final-year students were selected based on high academic performance and communication competence to ensure effective mentorship. Pairs formed collaborative guilds, completing weekly quests aligned with academic milestones and professional competencies.

Sample Size Justification

The study involved 17 participants, comprising 12 first-year IT students and five final-year student mentors. While this sample size is relatively small for studies seeking statistically generalisable findings, the study was intentionally designed as an exploratory mixed-methods pilot implementation informed by DBR principles.

The primary purpose of the study was not to test hypotheses or generate population-level inferences, but rather to evaluate the feasibility, educational value, and implementation of the *Isibani* Quest intervention within an authentic higher education context. Consistent with DBR, small and context-specific samples are frequently employed to examine how educational innovations function in practice and to generate design principles for future refinement and investigation (Anderson and Shattuck 2012; McKenney and Reeves 2019).

The quantitative component was used descriptively to identify patterns of participation, engagement, and self-reported development rather than to establish statistical significance. Similarly, the qualitative component sought to provide contextual insights into participants' experiences of gamification, peer mentorship, and role-based simulation rather than achieve theoretical saturation. The integration of multiple data sources, including LMS analytics, attendance records, surveys, and reflective journals, enabled methodological triangulation and strengthened the credibility of the findings despite the limited sample size.

Accordingly, the findings should be interpreted as exploratory and analytically generalisable rather than statistically generalisable. The value of the study lies in its

contribution to theory-informed intervention design, contextual understanding, and the development of preliminary design principles that may inform future large-scale implementations and research within IT education.

Theoretical Framework

This study is primarily grounded in CoP theory (Lave and Wenger 1991; Wenger 1998), which conceptualises learning as a process of participation in a shared social practice. According to CoP, learning occurs when novices engage with more experienced members of a community and gradually move from peripheral participation towards fuller participation and professional competence. Central concepts include mutual engagement, joint enterprise, shared repertoire, identity formation, and legitimate peripheral participation. Through participation in authentic activities, learners develop both knowledge and professional identities.

The *Isibani* Quest model positions first-year students as novice IT practitioners and final-year students as experienced practitioners and mentors. This structure reflects the CoP principle that learning is fundamentally social and occurs through participation in authentic communities where knowledge, skills, and professional norms are shared. The theory therefore provides the overarching framework through which engagement, mentorship, and employability-related skill development are understood in this study.

Self-Determination Theory and Motivation

Self-Determination Theory (SDT) (Deci and Ryan 2000) was used to explain the motivational mechanisms embedded within the intervention. SDT proposes that motivation is enhanced when learners experience autonomy, competence, and relatedness. Within *Isibani* Quest, autonomy was supported through role-based participation and ownership of tasks, competence through XP, badges, progression systems, and feedback, and relatedness through guild membership and mentor-mentee interactions. SDT therefore informed the design of the gamification elements and provided a lens for interpreting changes in engagement, participation, and self-efficacy.

Social Constructivism and Mentor-Guided Learning

The study also draws on Social Constructivism, which views learning as a socially mediated process in which knowledge is constructed through interaction, collaboration, and guided support. From this perspective, mentors acted as more knowledgeable peers who provided scaffolding, feedback, and guidance to support first-year students' learning. Social Constructivism informed the structured peer mentorship process, weekly check-ins, reflective activities, and collaborative guild-based learning. It also guided the interpretation of findings related to belonging, confidence, and knowledge development.

Situated Learning and Professional Participation

Situated Learning Theory (Lave and Wenger 1991) complements CoP by emphasising that learning occurs most effectively within authentic contexts that resemble real-world practice. Rather than learning abstract concepts in isolation, students develop competence through participation in meaningful activities that reflect professional practice. In *Isibani* Quest, quests, sprints, challenges, and role-based activities were designed to simulate authentic IT workflows. Situated Learning therefore informed the design of the simulation environment and the interpretation of findings relating to professional identity formation, workplace readiness, and employability-related skill development.

Application of the Theoretical Framework

The four theories informed the study in complementary ways. CoP served as the primary framework by explaining how students learn through participation in a professional learning community. Self-Determination Theory informed the motivational design of the gamification components. Social Constructivism explained how mentor-guided interactions supported learning and confidence development. Situated Learning informed the design of authentic role-based activities that mirrored professional IT practice.

These theories also informed the data collection and analysis processes. Quantitative measures of engagement, self-efficacy, attendance, and participation were aligned with constructs from SDT and CoP, while qualitative reflections explored experiences of belonging, mentorship, identity development, and authentic participation. Together, the theoretical framework provided a coherent explanation of how motivational, social, and experiential learning processes interact to support student engagement and employability-related skill development within IT education.

The *Isibani* Quest model integrates:

- **Situated Learning Theory** → role–based participation
- **Self-Determination Theory** → autonomy, competence, relatedness
- **CoP** → progression from novice to expert
- **Social Constructivism** → mentor–guided scaffolding

Intervention Objectives

The *Isibani* Quest intervention was designed to address two interconnected challenges frequently encountered in IT education: (1) sustaining first-year student engagement and participation, and (2) developing employability-related skills among final-year students. The intervention therefore sought to create an authentic learning environment

in which students could engage in meaningful academic activities while simultaneously developing professional skills.

The specific objectives of the intervention were to:

1. Support first-year student engagement, participation, self-efficacy, and sense of belonging through structured, collaborative learning activities.

2. Provide final-year students with opportunities to develop leadership, communication, peer mentorship, teamwork, and problem-solving skills through peer mentorship.

3. Create authentic learning experiences that simulate professional IT practices through role-based participation, quests, sprints, and workplace-oriented challenges.

4. Foster professional identity development by positioning students as members of a learning community with clearly defined practitioner roles.

5. Evaluate the feasibility of integrating gamification, simulation-based learning, and peer mentorship within a culturally responsive IT education framework.

These intervention objectives align directly with the broader research objectives, which explore student engagement, employability-related skill development, participant experiences, and the feasibility of implementing an integrated gamified peer-mentorship model within a South African higher education context.

Intervention Design: How the Project Was Conducted

Table 1: Summary of the *Isibani* Quest Intervention

Component	Description
Duration	One academic year (two semesters)
Participants	17 students (12 first-year students and five final-year mentors)
Guild Structure	Five guilds consisting of one mentor and two to three mentees
Meeting Frequency	Weekly mentor-mentee check-ins (30–60 minutes)
Learning Activities	Weekly quests, sprints, and challenges
Simulation Format	Role-based professional simulation using first-year and final-year IT practitioner roles
Gamification Elements	XP, badges, progression levels, achievement milestones
Mentor Training	Orientation workshop covering peer mentorship principles, communication, feedback, and ethical responsibilities
Assessment Structure	Quests and challenges integrated into existing formative and summative assessments
LMS Platform	Canvas LMS System
LMS Tools Used	Assignments, modules, discussions, analytics, gradebook, progress tracking
Reflection Schedule	Bi-weekly reflective journals
Data Collection Points	Pre-intervention survey, continuous LMS data, bi-weekly reflections, post-intervention survey
Primary Outcomes Explored	Engagement, attendance, self-efficacy, belonging, leadership development, communication skills, peer mentorship, competence, and employability-related skills

The intervention was implemented over one academic year and followed a structured five-phase process comprising orientation and role allocation, quest-based learning, gamification, peer mentorship, and reflection. Table 1 summarises the intervention objectives, duration, structure, activities, peer mentorship processes, assessment approach, and technology platforms used. These details are provided to improve transparency, facilitate replication, and demonstrate alignment between the intervention design and the study objectives.

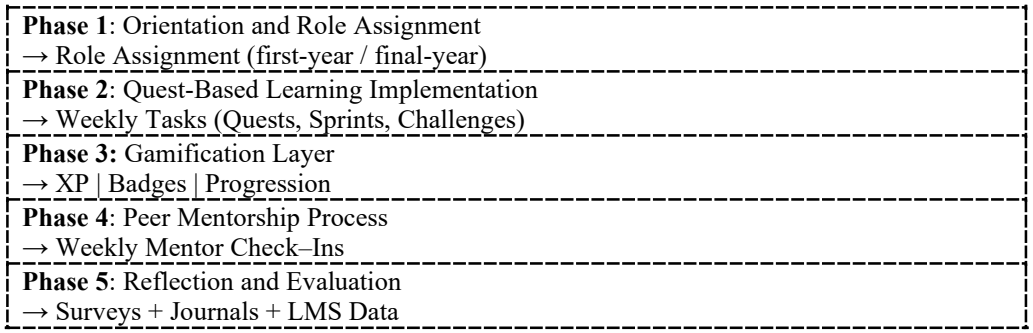

Figure 2: *Isibani* Quest Implementation Model

Figure 2 illustrates the operational workflow of the *Isibani* Quest intervention, depicting the cyclical and integrated nature of gamified simulation, peer mentorship, and experiential learning. The model is structured around a phased progression that aligns academic tasks with authentic professional practices, while simultaneously embedding motivational and social learning mechanisms.

The process begins with orientation and role allocation, where students are positioned within a structured hierarchy as first-year and final-year IT practitioners. This role–based structuring establishes a clear developmental pathway and situates learning within a professional identity framework. Following this, students engage in quest–based activities, including sprints and challenges, which are designed to mirror real–world IT workflows such as problem–solving, coding, collaboration, and iterative development.

Overlaying these activities is the gamification layer, which provides continuous feedback through XP, badges, and progression levels. This layer functions as a motivational infrastructure, reinforcing task completion, skill mastery, and sustained engagement. Importantly, gamification is not presented as an isolated reward system but is fully integrated into the learning process, supporting both intrinsic and extrinsic motivation.

Peer mentorship operates concurrently throughout the cycle, with final-year students facilitating guidance, feedback, and scaffolding. This interaction enables knowledge transfer, supports learning within the Zone of Proximal Development (ZPD), and fosters the development of communication and leadership skills among mentors. The mentorship process is structured through weekly check-ins and guided prompts, ensuring consistency and alignment with learning objectives.

The cycle concludes with reflection and feedback, where students critically evaluate their learning experiences, skill development, and role performance. These reflections inform subsequent iterations of the cycle, reinforcing a continuous improvement loop.

Overall, Figure 2 demonstrates how the integration of role-based simulation, gamification, and peer mentorship creates a dynamic and iterative learning ecosystem.

This ecosystem supports both cognitive and social development, enabling students to transition progressively from novice learners to competent practitioners within an authentic, collaborative, and culturally responsive educational environment.

The primary objective of the *Isibani* Quest intervention was to enhance first-year student engagement, participation, and self-efficacy while simultaneously providing final-year students with opportunities to develop leadership, peer mentorship, communication, and employability-related skills. The intervention was implemented over one academic year and integrated three complementary pedagogical approaches: gamification, peer mentorship, and role-based simulation. The design was informed by CoP, Self-Determination Theory, Social Constructivism, and Situated Learning, which collectively emphasise authentic participation, collaborative learning, motivation, and professional identity development.

Data Collection Methods

A convergent mixed-methods data collection strategy was employed to capture behavioural, perceptual, and reflective dimensions of student engagement and employability-related skill development. Multiple data sources were collected throughout the intervention to facilitate methodological triangulation and provide a more comprehensive understanding of participants' experiences.

Behavioural Metrics

Behavioural data were collected continuously throughout the intervention using the Canvas LMS. These measures provided objective indicators of participation and engagement and reduced reliance on self-reported perceptions.

The following behavioural indicators were collected:

- Attendance records for scheduled learning activities.
- Quest completion rates.
- Experience Point (XP) accumulation.
- Badge acquisition and progression levels.
- Participation in discussion forums and collaborative activities.

LMS analytics were exported at the end of each intervention phase and consolidated for analysis.

Survey Instruments

Pre- and post-intervention surveys were administered electronically through the LMS at the beginning and end of the academic year. The surveys consisted of closed-ended items measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The survey measured:

Construct	Purpose
Student Engagement	Behavioural, emotional, and cognitive engagement
Academic Self-Efficacy	Confidence in completing academic tasks
Sense of Belonging	Perceived social integration and connectedness
Leadership and Communication Development	Professional skill development among mentors

Survey items were adapted from previously validated instruments reported in the higher education and student engagement literature. To support content validity, constructs were aligned with the study's theoretical framework and research objectives.

Reflective Journals

Qualitative data were collected through bi-weekly reflective journals submitted through the LMS. Reflection activities were integrated into the intervention to capture participants' experiences, perceptions, and developmental trajectories.

Participants responded to structured prompts, including:

- Describe your experience working in your assigned role.
- How has the mentorship relationship influenced your learning?
- What skills have you developed through participation in the intervention?
- What challenges did you encounter and how did you address them?

The reflective journals provided insights into identity formation, engagement, peer mentorship experiences, leadership development, and perceived employability-related skill acquisition.

Data Collection Procedure

Data collection occurred across the full duration of the intervention and aligned with the implementation phases.

Data Source	Collection Schedule
Pre-Intervention Survey	Beginning of intervention
LMS Behavioural Data	Continuous
Attendance Records	Weekly
Mentor Check-In Records	Weekly
Reflective Journals	Bi-weekly
Post-Intervention Survey	End of intervention

Participation was voluntary, and informed consent was obtained from all participants prior to data collection. Survey responses and reflective journals were anonymised before analysis to protect participant confidentiality.

Validity, Reliability, and Trustworthiness

Several strategies were employed to enhance the quality of the data.

For the quantitative component, survey constructs were adapted from previously validated instruments reported in the literature. Internal consistency reliability was assessed using Cronbach's alpha, with coefficients above 0.70 considered acceptable (Taber 2017).

For the qualitative component, trustworthiness was enhanced through methodological triangulation, whereby reflective journal data were compared with survey responses and LMS behavioural metrics. This process enabled corroboration of findings across multiple sources and reduced the limitations associated with any single method.

Data Analysis

Quantitative data were analysed using descriptive statistics, including frequencies, percentages, means, and percentage change calculations. Given the exploratory pilot nature of the study and the small sample size, the analysis focused on identifying patterns and trends rather than testing for statistical significance.

Qualitative data were analysed using thematic analysis following the procedures outlined by Braun and Clarke (2022). Journal entries were coded iteratively, and recurring themes related to engagement, belonging, peer mentorship experiences, leadership development, and professional identity formation were identified and interpreted in relation to the study's theoretical framework.

The integration of behavioural, survey, and reflective data enabled a comprehensive examination of participant experiences and supported analytical rather than statistical generalisation.

Findings

The findings are presented through an integrated analysis of quantitative and qualitative data collected during the implementation of the *Isibani* Quest intervention. Quantitative data were used to identify patterns relating to student engagement, self-efficacy, belonging, leadership development, and employability-related skills, while qualitative reflections provided contextual insight into participants' experiences and perceptions. Consistent with the exploratory design of the study, the findings are interpreted analytically rather than as evidence of causal relationships. Integrating multiple data sources enabled a more comprehensive understanding of how participants experienced the intervention and how the observed outcomes relate to the study objectives and theoretical framework.

Student Engagement and Participation

This section presents quantitative indicators of participation, including attendance rates, quest completion rates, and engagement survey results, together with qualitative reflections that provide insight into students' experiences of the intervention. The findings are interpreted through the lens of Self-Determination Theory to explore how the design features of the intervention may have supported sustained participation and engagement.

Self-Efficacy, Belonging, and Mentorship Experiences

This section examines changes in students' perceptions of self-efficacy and belonging, together with qualitative evidence relating to mentorship experiences. Thematic analysis was used to identify recurring patterns within participant reflections, enabling a deeper understanding of how peer mentorship relationships may have influenced confidence, social integration, and learning experiences.

Leadership and Employability-Skills Development

This section focuses on the experiences of final-year mentors and their perceptions of leadership, communication, and employability-related skill development. Quantitative findings are integrated with qualitative themes to explore how participation in peer mentorship and role-based simulation contributed to professional identity formation and workplace readiness.

Results

Student Engagement and Participation

One of the primary objectives of the study was to explore how participation in the *Isibani* Quest intervention was associated with student engagement and participation. Quantitative findings indicated high levels of engagement throughout the intervention period. Attendance increased from 68% at the beginning of the intervention to 89% by the end of the academic year, while overall quest completion rates reached 92%. Survey

responses similarly suggested improvements in students' perceived engagement and participation within learning activities.

Qualitative reflections provided further insight into these findings. Many participants described the quest-based structure as motivating and engaging, highlighting the value of clear goals, progression pathways, and collaborative guild activities. One participant noted:

> "The quests made learning feel more interactive and gave me something to work towards every week."

Another student commented:

> "Working with my guild kept me accountable because everyone was contributing and supporting each other."

These reflections suggest that students valued both the structured progression system and the social dimensions of the intervention. Participants frequently referred to the sense of achievement associated with completing quests and earning badges, while also emphasising the importance of collaboration and peer mentorship support in maintaining their participation.

The quantitative findings indicate sustained participation throughout the intervention, as reflected in increased attendance and high quest completion rates. The qualitative data further suggest that students perceived the quest structure, progression system, and collaborative guild environment as factors that encouraged continued involvement. From a Self-Determination Theory perspective, these findings may be interpreted as reflecting support for competence through visible progress and achievement, autonomy through active participation in role-based tasks, and relatedness through collaboration and peer mentorship. The combination of clear goals, structured progression, and social interaction therefore appears to have created conditions that supported ongoing engagement throughout the intervention.

Taken together, the quantitative and qualitative findings suggest that engagement was influenced not only by participation in gamified activities but also by the broader learning community created through the integration of quests, mentorship, and collaborative problem-solving. These findings directly address the study's objective of exploring how a gamified peer-mentorship simulation may support student engagement within IT education.

Self-Efficacy, Belonging, and Mentorship Experiences

A second objective of the study was to explore how participation in the *Isibani* Quest intervention was associated with students' self-efficacy, sense of belonging, and experiences of peer mentorship. Survey findings indicated improvements in

participants' reported confidence in completing academic tasks, willingness to seek assistance, and perceived sense of connection within the learning community. Mentor interaction records further showed consistent participation in weekly peer mentorship sessions throughout the intervention.

Qualitative reflections provided deeper insight into how these outcomes were experienced by participants. Two interrelated themes emerged from the data**:** Confidence through guided participation and belonging through guild membership.

Theme 1: Confidence Through Guided Participation

Participants frequently described the peer mentorship relationship as a source of guidance, reassurance, and academic support. First-year students reported that having access to experienced peers helped them navigate unfamiliar academic and technical challenges while developing confidence in their own abilities.

One participant reflected:

> "When I got stuck, my mentor would explain the problem differently and help me work through it. After a while I felt more confident solving problems on my own."

Another student noted:

> "Knowing that someone had already been through the same challenges made me feel less overwhelmed and more capable of completing the tasks."

These reflections suggest that mentors functioned as knowledgeable peers who provided academic scaffolding during challenging learning activities. From a Social Constructivist perspective, such interactions may have enabled students to perform tasks beyond their initial capabilities while gradually developing independence and confidence. The improvement in self-efficacy scores therefore appears consistent with participants' descriptions of supported learning experiences. Rather than simply providing answers, mentors facilitated learning through guidance, feedback, and encouragement, enabling students to engage more confidently with academic tasks.

Theme 2: Belonging Through Guild Membership

Participants also highlighted the importance of guild membership in fostering social connection and a sense of belonging. Students frequently described the guild structure as creating a supportive environment where collaboration and shared responsibility were encouraged.

One participant explained:

> "The guild made me feel like I was part of a team rather than trying to get through the course on my own."

Another student commented:

> "Everyone had a role to play, and it felt like we were working towards the same goal."

These reflections suggest that belonging emerged through regular interaction, collaborative problem-solving, and shared participation in quests and challenges. The guild structure appeared to create opportunities for meaningful peer engagement, reducing feelings of isolation that are often associated with the first-year university experience.

From a CoP perspective, these findings may reflect students' increasing participation within a shared learning community. Through ongoing interaction with mentors and peers, students moved beyond individual task completion and became active participants in a collective learning environment. This process may have strengthened both social integration and identification with the broader IT community.

Taken together, the quantitative and qualitative findings suggest that mentorship and guild participation provided important social and academic support mechanisms within the intervention. The combination of guided participation, collaborative learning, and structured peer relationships appears to have contributed to participants' perceptions of increased confidence, belonging, and engagement. These findings directly address the study objective of exploring how peer mentorship and collaborative learning environments may support student development within IT Technology education.

Leadership and Employability-Related Skill Development

A key objective of the study was to explore how participation in the *Isibani* Quest intervention was associated with the development of leadership, communication, peer mentorship, and employability-related skills among final-year student mentors. Survey findings indicated positive perceptions of growth in leadership confidence, communication ability, teamwork, and peer mentorship competence following participation in the intervention. These findings were further supported by reflective journals, in which mentors described increased confidence in guiding others, providing feedback, and managing collaborative learning activities.

Qualitative analysis revealed two interconnected themes: Learning through teaching and emerging professional identity.

Theme 3: Learning Through Teaching

Mentors frequently reported that explaining concepts, providing feedback, and supporting mentees enhanced their own understanding and professional confidence. Rather than viewing mentorship solely as a support mechanism for first-year students,

mentors described the experience as an opportunity for personal and professional growth.
One mentor reflected:

> "Helping others understand concepts forced me to think more deeply about my own knowledge and how to explain it clearly."

Another participant noted:

> "I became more confident communicating with others and learned how to provide constructive feedback."

These reflections suggest that peer mentorship extended beyond academic assistance and created opportunities for mentors to engage in leadership, communication, and problem-solving activities. Through the process of supporting mentees, mentors were required to demonstrate patience, adaptability, and interpersonal skills that are frequently identified as important employability-related skills within the IT profession.

From a CoP perspective, mentors occupied more central positions within the learning community and actively contributed to the development of less experienced members. Their participation involved practices typically associated with professional roles, including coaching, knowledge sharing, collaboration, and feedback provision. These experiences may have strengthened both disciplinary expertise and professional confidence.

Theme 4: Emerging Professional Identity

A second theme concerned the development of professional identity through participation in role-based simulation activities. Mentors frequently described how assuming the role of final-year IT practitioner encouraged them to think and act more like professionals rather than students.

One participant explained:

> "The mentor role made me realise that I am capable of leading a team and supporting others in a professional environment."

Another reflected:

> "It felt less like a university project and more like working in an actual IT team."

These reflections suggest that role-based participation enabled students to engage with authentic professional practices and responsibilities. Through activities such as peer mentorship, collaboration, problem-solving, and project coordination, mentors were exposed to experiences commonly associated with workplace environments.

Situated Learning Theory provides a useful lens for interpreting these findings. By participating in authentic, contextually relevant activities, students were able to connect academic knowledge with professional practice. The intervention therefore created opportunities for participants to move beyond theoretical learning and engage in experiences that reflected the realities of professional IT work. This process appears to have supported the development of professional identity and workplace readiness.

Taken together, the quantitative and qualitative findings suggest that the intervention provided meaningful opportunities for leadership development, communication practice, peer mentorship experience, and professional identity formation. The findings indicate that role-based peer mentorship may offer a valuable mechanism for supporting employability-related skills development while simultaneously contributing to the broader learning community. These findings directly address the study objective of exploring how participation in a gamified peer-mentorship simulation may support the development of leadership and employability-related skills within IT education.

Integration of Quantitative and Qualitative Findings

The integration of behavioural metrics, survey data, and reflective journals revealed a consistent pattern across the findings. Quantitative indicators demonstrated high levels of participation, engagement, and perceived skill development, while qualitative reflections provided insight into the mechanisms through which these outcomes may have emerged.

The findings suggest that gamification primarily supported motivation and sustained participation, peer mentorship facilitated confidence, belonging, and knowledge sharing, and role-based simulation provided authentic opportunities for professional practice. Together, these components appeared to function as complementary elements within a broader learning ecosystem. This integrated pattern aligns with the study's conceptual framework, which positions motivation, social learning, and authentic participation as interconnected contributors to engagement and employability-related skill development.

Discussion

Engagement, Participation, and Professional Development

The findings suggest that the *Isibani* Quest model may provide a useful framework for supporting both student engagement and employability-related skill development within IT education. Rather than viewing these objectives as separate educational priorities, the intervention created opportunities for first-year and final-year students to participate within a shared learning environment where learning, peer mentorship, and professional development occurred concurrently.

The observed increase in attendance and high quest completion rates suggest sustained participation throughout the intervention. While these outcomes cannot be attributed

solely to the intervention, several design features may have contributed to increased engagement. The combination of clearly defined goals, regular feedback, structured progression, and social accountability through guild membership may have encouraged students to remain actively involved. Previous research indicates that engagement is strengthened when students perceive learning activities as relevant, achievable, and socially meaningful, characteristics that were intentionally incorporated into the intervention design.

Interpreting Engagement through Integrated Learning Design

The findings suggest that student engagement may be better understood as an outcome of the interaction between motivational, social, and experiential learning processes rather than the result of any single intervention component. While gamification is frequently associated with increased participation, recent systematic reviews indicate that reward-based approaches alone often produce inconsistent or short-term effects (Huang et al. 2024). In contrast, the findings of this study suggest that engagement may have emerged from the integration of gamified progression systems, peer mentorship structures, and authentic role-based activities.

From a Self-Determination Theory perspective, the intervention created opportunities for students to experience competence through visible progress, relatedness through guild participation, and autonomy through active role engagement. Rather than functioning as isolated motivational tools, quests, badges, and progression pathways were embedded within meaningful social and professional learning experiences. This finding extends current gamification research by suggesting that motivational mechanisms may be more sustainable when integrated with authentic participation and collaborative learning.

Understanding Engagement through Communities of Practice

Communities of Practice (CoP) provides the primary theoretical lens for interpreting the findings of this study (Lave and Wenger 1991; Wenger 1998). According to this perspective, learning occurs through participation in a community where first-year students gradually move from peripheral participation towards greater competence, responsibility, and membership. Within *Isibani* Quest, first-year students participated as first-year IT practitioners, while final-year students assumed more experienced peer mentorship roles. This structure created opportunities for students to engage in authentic professional practices within a supportive learning environment.

The findings suggest that engagement may be better understood as participation in a professional learning community rather than merely attendance or task completion. While increased attendance and quest completion rates indicate sustained participation, CoP highlights the importance of social engagement and identity development in the learning process. Students were not simply completing academic activities; they were participating in shared practices, collaborating with peers, and engaging with challenges

framed around authentic IT workflows. This positioning may have increased the perceived relevance of learning and strengthened students' connection to the programme.

A key concept within CoP is legitimate peripheral participation, whereby novice learners gradually develop expertise through participation alongside more experienced members of a community. The guild structure provided opportunities for first-year students to observe, interact with, and learn from final-year mentors while progressively assuming greater responsibility within quests and collaborative activities. This progression reflects a movement from novice participation towards more active engagement within the learning community. The findings therefore suggest that engagement may have emerged not only from motivational features but also from opportunities to participate meaningfully in professional practices.

The mentor-mentee relationship further supported this developmental process. Through regular interaction, feedback, and collaborative problem-solving, mentors facilitated knowledge sharing and guided participation. These interactions created opportunities for students to learn through observation, dialogue, and practice, reinforcing the social nature of learning emphasised by CoP. For mentors, participation involved occupying more central positions within the community and modelling professional behaviours associated with leadership, communication, and collaboration.

The findings also extend existing applications of CoP within higher education by demonstrating how the framework can be operationalised within a gamified and technology-enhanced learning environment. While CoP has traditionally been applied to workplace learning and professional development, the *Isibani* Quest model illustrates how gamified progression systems, role-based simulation, and peer mentorship can be integrated to support participation within an emerging professional community. Rather than functioning as isolated instructional strategies, these components collectively created a learning ecosystem that encouraged progression, collaboration, and identity development.

Consequently, the findings suggest that CoP provides a valuable explanatory framework for understanding how engagement and employability-related skill development may emerge simultaneously within IT education. Engagement appears to have been shaped not only by motivation or participation alone but by students' increasing involvement in a community where learning, peer mentorship, and professional identity formation occurred concurrently.

Peer Mentorship and Self-Efficacy Development

One of the notable findings of the study was the improvement in students' reported self-efficacy and sense of belonging. From a Social Constructivist perspective, these outcomes may be understood through the social and relational processes embedded within the peer mentorship experience. Rather than learning independently, first-year

students engaged with more experienced peers who provided academic guidance, feedback, encouragement, and practical support throughout the intervention.

The findings suggest that mentors functioned not only as sources of academic assistance but also as role models who demonstrated successful participation within the IT programme. Because mentors had previously navigated similar academic challenges, they occupied a position that was both credible and accessible to mentees. This relatability may have reduced uncertainty and increased students' confidence in their ability to complete academic tasks successfully. Recent research suggests that peer mentorship contributes to self-efficacy not merely through knowledge transfer but through role modelling, reassurance, and the normalisation of academic challenges (Nuis et al. 2023).

The peer mentorship process also appeared to provide an important source of emotional support. Participants frequently described receiving encouragement, reassurance, and constructive feedback from mentors, particularly when encountering difficult tasks. Such support may have contributed to students' willingness to persist through challenges and engage more confidently with learning activities. Consequently, improvements in self-efficacy may be interpreted as emerging from supported participation within a collaborative learning environment rather than from individual achievement alone.

Beyond confidence development, the findings suggest that mentorship contributed to social integration and belonging. Participation in guilds created opportunities for regular interaction, collaboration, and shared responsibility, enabling students to become active members of a learning community. Belonging therefore appeared to emerge not simply from social interaction but from participation in a structured community where students shared common goals, experiences, and professional aspirations. This interpretation aligns with CoP theory, which emphasises that learning and identity development occur through participation in meaningful social practices.

For mentors, the process of supporting others may have reinforced their own learning and professional development. Explaining concepts, providing feedback, and modelling professional behaviours required mentors to engage in reflection, communication, leadership, and problem-solving activities commonly associated with employability-related skills development. Through these interactions, mentors occupied more central positions within the learning community and participated in practices resembling those expected within professional IT environments.

Taken together, these findings suggest that peer mentorship may support self-efficacy, belonging, and employability-related skill development through interconnected academic, social, and emotional mechanisms. Rather than functioning solely as a support intervention, mentorship appears to have contributed to the creation of a collaborative learning community in which both mentors and mentees benefited from shared participation and professional growth.

Identity Formation Through Role-Based Participation

A distinguishing feature of the *Isibani* Quest intervention was its use of role-based participation, whereby students assumed identities aligned with professional IT practice. Rather than engaging solely as students completing academic tasks, participants operated as first-year and final-year IT practitioners within a simulated professional environment. This role-based structure appears to have created opportunities for students to engage with both the technical and social dimensions of professional practice.

From a Situated Learning perspective, learning occurs through participation in authentic contexts where individuals gradually acquire the knowledge, behaviours, and identities associated with a particular community of practice. The findings suggest that role-based participation may have contributed to identity development by enabling students to engage in activities that mirrored workplace practices, including collaboration, peer mentorship, problem-solving, project coordination, and feedback processes. These experiences extended learning beyond content acquisition and encouraged students to participate in ways that resembled professional engagement.

Recent research in computing and STEM education highlights the importance of professional identity development as a factor influencing student persistence, engagement, and career readiness (Große-Bölting et al. 2023). Students who develop a stronger sense of belonging within their discipline are more likely to remain engaged, persist through challenges, and envision themselves as future professionals. The reflective journals suggest that participants increasingly viewed themselves as members of an emerging professional community rather than passive recipients of knowledge. Several students described feeling responsible for team outcomes, contributing to collaborative problem-solving, and engaging in activities that resembled real-world IT work.

The findings further suggest that identity formation may represent an important mechanism linking engagement and employability-related skill development. As students began to perceive themselves as practitioners rather than solely as learners, academic activities appeared to acquire greater relevance and meaning. This shift may help explain why participants reported sustained engagement and positive perceptions of skill development throughout the intervention. The professional roles embedded within the simulation provided opportunities for students to connect academic learning with future career aspirations, thereby strengthening both motivation and professional self-concept.

For final-year mentors, identity development appeared to extend beyond technical competence towards leadership and professional responsibility. By guiding mentees, providing feedback, and facilitating learning activities, mentors engaged in practices commonly associated with workplace leadership and team coordination. These

experiences may have supported the development of a more mature professional identity and enhanced perceptions of career preparedness.

Consequently, the findings suggest that role-based simulation contributes not only to skill development but also to the formation of professional identity. Through participation in authentic and socially situated learning activities, students may begin to view themselves as legitimate members of the IT profession. This identity-oriented interpretation provides a deeper theoretical explanation for the engagement, belonging, and employability-related skills outcomes observed in the study.

Relevance for African Higher Education Contexts

The findings also highlight the potential relevance of the intervention within African higher education contexts. While gamification, simulation-based learning, and peer mentorship have received considerable attention internationally, much of the existing evidence originates from North American, European, and Asian institutions. Consequently, there remains a limited evidence base regarding how these approaches function within African higher education environments characterised by diverse student populations, resource constraints, unequal access to educational opportunities, and unique socio-cultural contexts. This contextual gap has resulted in growing calls for educational innovations that are both theoretically informed and responsive to local realities.

The *Isibani* Quest model contributes to this discussion by demonstrating the feasibility of a culturally responsive approach that integrates engagement, retention, and employability-related skills objectives within a single learning framework. Unlike many gamification models developed in Western contexts, the intervention was grounded in the concept of *Isibani* (guiding light), which symbolises guidance, growth, and collective advancement. This narrative framework provided a culturally meaningful context through which students could engage with learning activities, mentorship, and professional development.

The intervention also reflects principles associated with Ubuntu, an African philosophy that emphasises interconnectedness, mutual support, collective responsibility, and learning through community participation. These values were evident in the guild structure, collaborative challenges, and peer mentorship relationships that encouraged students to support one another's development. Rather than positioning learning as an individual achievement, the intervention emphasised shared success and collective growth, aligning closely with community-oriented approaches to education frequently associated with African knowledge traditions.

Importantly, the findings suggest that culturally responsive educational design may represent an important but often overlooked factor influencing engagement and belonging. While gamification research frequently focuses on technological features and reward systems, the present study indicates that cultural relevance and social

connectedness may also contribute to meaningful participation. The integration of locally relevant narratives, mentorship structures, and collaborative learning practices therefore extends current understanding of how educational innovations can be adapted to diverse higher education contexts.

Although the exploratory nature of the study and small sample size limit broad generalisation, the findings provide preliminary evidence that culturally grounded and resource-conscious interventions may offer a promising approach for supporting student success within African higher education. The study therefore contributes to the emerging literature on contextually responsive educational design and highlights the importance of developing engagement and employability-related skills initiatives that reflect the cultural values, institutional realities, and learning needs of African students.

Implications for Theory and Practice

From a theoretical perspective, the study illustrates how CoP can be operationalised through the integration of simulation, gamification, and peer mentorship. The findings suggest that engagement may be strengthened when students participate within authentic learning communities that provide opportunities for collaboration, progression, and professional identity development.

The study also demonstrates how Self-Determination Theory, Social Constructivism, and Situated Learning complement CoP by explaining the motivational, social, and experiential dimensions of participation. Together, these theories provide a coherent framework for understanding how engagement and employability-related skill development may emerge through structured educational experiences.

From a practical perspective, the findings provide preliminary evidence that higher education institutions may be able to leverage existing LMS and peer mentorship structures to create authentic learning environments that support both engagement and professional skill development. Future research involving larger and more diverse samples is required to further evaluate the effectiveness, transferability, and scalability of this approach across different educational contexts.

Contribution To Knowledge

This study contributes to the literature in four important ways. First, it proposes and evaluates an integrated educational model that combines gamification, peer mentorship, and role-based simulation within a single learning framework. While these approaches have been widely studied independently, limited research has examined how motivational, social, and experiential learning mechanisms interact to support both student engagement and employability-related skill development.

Second, the study extends CoP theory into gamified IT learning environments by demonstrating how role-based participation, peer mentorship relationships, and

progression systems can support movement from peripheral to more central forms of participation within an emerging professional community.

Third, the study contributes to the growing body of research on culturally responsive educational design by introducing the *Isibani* framework, which incorporates locally meaningful concepts of guidance, collaboration, and collective growth. This provides an example of how educational innovations can be adapted to African higher education contexts rather than relying exclusively on models developed elsewhere.

Finally, the study provides exploratory pilot evidence regarding the feasibility of implementing an integrated gamified peer-mentorship simulation within a resource-constrained higher education environment. Although the findings are not statistically generalisable, they offer analytical insights that may inform future large-scale studies, design-based research initiatives, and curriculum innovation in IT education.

Limitations

Despite promising outcomes, several limitations must be acknowledged:

Sample Size and Context: The small sample (17 students) and single-institution setting limit generalisability. While justified for in-depth exploratory analysis, findings may differ in larger, more heterogeneous cohorts.

1. **Short-Term Measurement:** Outcomes were assessed over one academic year. Long-term effects on retention, graduation, and professional success remain unknown.

2. **Self-Reported Measures:** Engagement and self-efficacy relied on self-reporting, introducing potential bias. Future research should incorporate objective metrics (e.g., employer evaluations, project performance).

3. **Mentor Variability:** Differences in final-year student skill, motivation, and availability could influence mentee outcomes. Standardised mentor training and calibration may reduce variability.

4. **Simulation Fidelity:** While efforts were made to create authentic IT workflows, simulations cannot fully replicate real–world workplace complexity, limiting external validity.

A limitation of the study is the relatively small sample size, which restricts the ability to conduct inferential statistical analyses or generalise findings beyond the study context. Consequently, the findings should be viewed as preliminary and exploratory. Future research should evaluate the intervention across multiple cohorts and institutions using larger samples to further examine its effectiveness, transferability, and scalability.

Future Suggestions

Building on the findings, several avenues for future research emerge:

1. **Longitudinal Studies:** Examine whether engagement gains translate into improved retention, graduation, and employment outcomes over multiple years.

2. **Expanded Cohorts:** Test scalability and cultural adaptability in larger, multi–institution cohorts, including public universities and rural campuses.

3. **Advanced Gamification Features:** Incorporate adaptive learning, branching narratives, collaborative problem-solving, and AI-driven feedback to enhance engagement and professional skill acquisition.

4. **Industry Integration:** Partner with IT organisations to provide authentic projects, mentorship feedback, and real-world validation of professional competencies.

5. **Comparative Analysis:** Conduct controlled studies comparing traditional instruction, gamified simulation, and peer mentorship individually and in combination to isolate causal effects.

Study Significance

This study contributes to IT education by:

- Demonstrating a dual-impact model (engagement + employability-related skills)

- Providing a low–cost, LMS-integrated solution

- Introducing a culturally grounded gamification framework

- Offering a replicable pilot model for scaling

Conclusion

This exploratory pilot study suggests that a gamified peer-mentorship simulation may support student engagement, self-efficacy, and employability-related skill development in IT education. While findings are promising, larger studies are required before broader conclusions can be drawn regarding effectiveness or long-term impact. Further research involving larger and more diverse samples is required to evaluate the effectiveness and scalability of the model.

The *Isibani* Quest intervention successfully increased first-year attendance (+21%), engagement (+0.9 Likert), and academic self-efficacy (+1.0 Likert), while fostering

belonging, motivation, and authentic professional experiences. Final-year students gained leadership, communication, and peer mentorship skills (+0.8 Likert), bridging the gap between academic preparation and workplace readiness.

By integrating culturally resonant gamification, role-based peer mentorship, and authentic professional simulations, the programme offers a scalable, cost-effective strategy for resource-constrained and diverse educational settings. The findings underscore the pedagogical value of embedding indigenous values of collaboration, shared responsibility, and social upliftment in IT curricula.

While limitations regarding sample size, context, and short-term measurement exist, this study provides a robust framework for implementing simulation-based interventions that address both early-stage engagement and late-stage employability-related skills. Future research could explore longitudinal impacts, larger cohorts, advanced gamification, and industry partnerships, further bridging academic and professional learning. Ultimately, *Isibani* Quest illustrates the transformative potential of combining gamification, simulation, and peer mentorship to create immersive, motivating, and skill-enhancing learning experiences in IT education.

This study positions gamified peer-mentorship simulation not merely as a pedagogical innovation, but as a transformative framework for inclusive, scalable, and practice-oriented IT education, particularly within resource-constrained and culturally diverse contexts.

Final Reflection

Beyond its immediate outcomes, *Isibani* Quest represents a shift in how learning environments can be conceptualised in higher education. Rather than viewing students as isolated learners progressing through standardised curricula, the model positions them as active participants in a dynamic, collaborative, and evolving professional ecosystem.

This reconceptualisation is particularly important in IT education, where rapid technological change demands not only technical proficiency but also adaptability, collaboration, and lifelong learning. By simulating professional roles and embedding mentorship within the learning process, the intervention prepares students not just to enter the workforce, but to thrive within it.

Closing Statement

Ultimately, the significance of this study lies not only in its empirical findings but in its demonstration of what is pedagogically possible. Gamified peer-mentorship simulations offer a powerful, scalable, and contextually adaptable approach to addressing some of the most persistent challenges in higher education. As institutions continue to seek

innovative solutions for engagement and employability-related skills, models such as *Isibani* Quest provide a compelling blueprint for the future of teaching and learning.

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Ethical Considerations

This study was conducted in accordance with ethical standards for research involving human participants. Ethical approval was obtained from the relevant institutional Ethics Committee, and permission to conduct the research was granted by the appropriate gatekeeper. Participants took part voluntarily.

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