# Challenges and Opportunities in an Immersive and Gamified ODeL Course for Undergraduate Students

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## Abstract

*This study examined how a quest-based and immersive learning design shaped students' experiences in an open and distance e-learning course. The intervention transformed one unit of an undergraduate instructional design course into a three-level Quest Mode that combined narrative framing, structured mechanics, and a Metaversal Quest built in FrameVR. Using a qualitative design that analyzed student reflection papers and a focus group discussion, the study explored how learners interpreted the opportunities and constraints of the quest-based environment. Participants reported that Quest Mode support engagement by organising learning into smaller scaffolded segments and by offering playful opportunities for exploration and paced progression. Several participants described reduced cognitive overload and sustained interest. Some learners also reported moments of social presence and peer collaboration within the immersive spaces. At the same time, technical instability, motion sickness, and interface complexity constrained participation for some students, and several indicated that reproducing regular course materials inside the metaverse limited the environment's pedagogical affordances. These findings suggest conditions under which quest-based and metaversal elements can support persistence in ODeL, while highlighting the need to align mechanics, aesthetics, and content to the medium rather than rely on novelty alone.*

***Keywords**: Quest-Based Learning, Gamification, Metaverse-Based Learning, Immersive Learning*

## Introduction

Sustaining motivation and engagement is a persistent challenge in open and distance e-learning (ODeL), where students navigate coursework independently and manage varying levels of interaction. Engagement in higher education is multidimensional, involving affective, behavioural, and cognitive components that respond to the learning environment (Kahu, 2013). Limited opportunities for interaction in ODeL environments can heighten feelings of isolation and weaken persistence, reinforcing the need for intentional design strategies that support presence, structure, and learner involvement (Martin and Bolliger, 2018). Research on online learning further emphasizes that interaction and presence are central to fostering meaningful learning experiences (Martin et al., 2022).

These concerns have encouraged experimentation with gamified and immersive approaches that reorganize learning activity and deepen engagement.

Gamification introduces mechanics that guide progression, provide feedback, and support pacing, features that are particularly valuable for independently paced learners. Immersive environments such as virtual reality or metaverse spaces enable spatial exploration, shared activity, and new forms of co-presence not typically found in standard online interfaces. Studies note that these environments can heighten immersion and learner involvement by offering novel, high-presence learning contexts (Kye et al., 2021). Meta-analytic evidence further shows that virtual worlds, games, and simulations improve learning outcomes, especially when instructional goals are embedded within the tasks (Merchant et al., 2014). Local work likewise reports that spatial presence is positively associated with situational interest and exploration within a metaversal exhibit (Mangubat et al., 2024).

Despite this growing literature, little is known about how quest-structured gamified pathways and metaversal tasks interact within ODeL course sequences to shape students' interpretation of content, pacing, and social presence. This gap is particularly important because ODeL learners must manage heavy reading loads and self-regulated pacing, making it necessary to examine how mechanics and immersive cues jointly redistribute cognitive load and support engagement.

Within this context, the present study examines a quest-based and immersive design implemented in Unit 1 of an undergraduate instructional design course at an ODeL institution in Southeast Asia. Foundational content was reorganized into three guided levels supported by mechanics, progression tasks, narrative cues, and a Metaversal Quest. The intention was not to create a full game but to explore how selected mechanics and immersive cues could support engagement with conceptual content in a text-heavy, independently paced ODeL environment.

This study investigates how students experienced this quest-based and immersive approach, how they interpreted its opportunities and constraints, and how such a design might contribute to efforts to strengthen engagement and presence in ODeL.

## Objectives of the Study

The study examines undergraduate students' perceptions of a Quest-Based Learning (QBL) approach implemented in an open and distance e-learning environment. It addresses the following research questions:

> **RQ1:** How is the Quest-Based Learning approach viewed by undergraduate students?
>
> **RQ2:** What are the perceptions of undergraduate students regarding their engagement and satisfaction with the quest-based course?
>
> **RQ3:** What challenges and opportunities do the participants experience and identify in the QBL and Metaversal Quest?

## Review of Related Literature

### Gamification in Education

Gamification is commonly described as the use of game design elements in non-game contexts (Deterding et al., 2011). Kapp (2012) explains how points, badges, challenges, and narrative features can motivate learners when meaningfully embedded in instructional design. Together, these works show how game structures guide behavior and support learner engagement.

Empirical studies report generally positive but varied outcomes. Huang et al. (2019) found that a gamified online environment strengthened peer interaction and deepened feedback exchanges. Bouchrika et al. (2021) reported increased behavioral and cognitive engagement when progress indicators and rewards were integrated. Rahayu et al. (2022) noted that points, leaderboards, badges, and gamified tests influenced motivation, although effects differed across students due to goals, prior experience, and novelty. Domínguez et al. (2013) observed performance gains in practical tasks but reduced participation in optional written activities.

Most existing studies focus on isolated elements such as points or leaderboards. Much less attention has been given to structured progression systems such as quest pathways, especially within open and distance e-learning environments.

### Gamification through the MDA Lens

The Mechanics, Dynamics, Aesthetics framework conceptualizes games through the relationship between implemented mechanics, the system dynamics they produce, and the aesthetic or experiential outcomes that follow (Kim, 2015). Although originally a design model, MDA has been used analytically in education. Gulzar and Ansari (2025) applied MDA to evaluate platform usability and identify gaps between intended mechanics and user experience. Limantara et al. (2020) showed how points and rewards shape the dynamics of progression and competition that contribute to feelings of challenge and satisfaction. Bakke and Lewis (2025) used MDA to design and analyze a medical escape room, demonstrating how mechanics intentionally support learner experience.

While Quest Mode was not designed with MDA, the framework remains useful for interpreting how its mechanics influenced learner experience, consistent with how other studies have used MDA analytically.

### Immersion, Presence, and the Metaverse in Online Learning

Immersive virtual environments have been explored for their ability to enhance presence, interaction, and engagement. Kye et al. (2021) identify immersion, multimodal communication, and persistent virtual spaces as core characteristics that support meaningful interaction in metaverse environments. Merchant et al. (2014) found that virtual reality-based instruction improves learning outcomes across educational levels.

Metaverse spaces also support exploratory and playful engagement. Onu et al. (2023) highlight the potential of open navigation and experimentation, while Mangubat et al. (2024) show that spatial presence in a virtual exhibit can heighten situational interest and sustain exploration.

Despite these benefits, most studies examine standalone virtual activities or conceptual discussions. Few investigate how immersive components integrate into broader course pathways or how they interact with gamified structures in ODeL settings.

## Transactional Distance, Presence, and Engagement in ODeL

Theories of interaction and presence provide additional grounding for understanding ODeL contexts. Moore's (1993) Theory of Transactional Distance explains that limited dialogue and rigid structure increase the psychological distance between teacher and learner, which can reduce clarity and connection in independent study. The Community of Inquiry framework (Garrison et al., 1999) identifies cognitive, teaching, and social presence as central to meaningful online learning. Martin et al. (2022) show that these presences relate differently to learning outcomes and emphasize that the quality of interaction matters more than the mere availability of communication channels. Kahu (2013) frames engagement as affective, behavioural, and cognitive, shaped by institutional and sociocultural contexts.

For this study, three frameworks guided the interpretation of learner experience. MDA helped trace how mechanics produced dynamics and experiential outcomes. Transactional Distance provided a lens for understanding how structure, dialogue, and autonomy shape clarity and connection. The Community of Inquiry framework supported the analysis of how immersive cues and shared metaverse rooms contributed to presence and collaborative meaning-making. Using these perspectives together made it possible to link Quest Mode mechanics and spatial features with reported experiences of pacing, cognitive load, and interaction.

## Gap in the Literature and Rationale of the Study

Despite the growing literature on gamification and immersive environments, several gaps remain. Many gamification studies examine individual game elements such as points, badges, or leaderboards rather than structured quest-based pathways. Research on immersive learning often focuses on single virtual activities or conceptual analyses rather than integrating immersive components across a full course pathway. Across the uploaded studies, very few explore the combined use of gamified progression systems and metaverse-based tasks in an open and distance e-learning context where pacing, workload, and interaction patterns affect engagement.

This study responds to these gaps by examining how undergraduate students experienced a quest-based and metaverse-supported approach within an instructional design course in an ODeL institution in Southeast Asia. It explores

how students perceived the Quest Mode, how they understood their engagement and satisfaction, and how they recognized opportunities and constraints while navigating the quest.

## Methodology

### Research Design and Context

This study used a qualitative research design to examine how undergraduate students experienced a quest-based and immersive learning environment implemented in Unit 1 of an instructional design course at an ODeL institution in Southeast Asia. Unit 1 consists of three modules, and only this unit was redesigned into a gamified Quest Mode. Unit 1 is typically designed to be completed over one week in the course schedule, with an estimated workload of approximately 1–2 hours of focused engagement, consistent with standard ODeL pacing for a single unit. The Quest Mode reorganized this unit without increasing the expected workload. The succeeding units remained in the regular ODeL format and did not include gamified or immersive features.

### Course Pathways: Regular Mode and Quest Mode

Students were offered two pathways for accessing the materials in Unit 1: a regular mode and a quest-based mode.

In the regular mode, students completed the module readings and activities using the study guide and followed the usual sequence and pacing of ODeL learning, which is weekly tasking. This pathway did not include game elements, immersive tasks, or narrative framing.

In the quest-based mode, the same set of materials was reorganized into three sequential quest levels. Progression required the completion of specific tasks and the earning of keys that opened the next level. The design incorporated mechanics such as embedded codes, conceptual checkpoints, elixirs for rewards, and narrative cues delivered by Pixel, a non-playable character (NPC) who guided learners through the quest. Level 2 included a Metaversal Quest built on FrameVR. All checkpoints and tasks in the quest are replayable. This allows students to redo the activities until they complete them successfully. Only students who selected Quest Mode were included in the analysis.

### Course Intervention

The Quest Mode transposed each of the three modules of Unit 1 into a corresponding level. Although the core instructional content remained the same, the quest introduced narrative framing, quest-inspired mechanics, and scaffolded tasks intended to support comprehension and engagement.

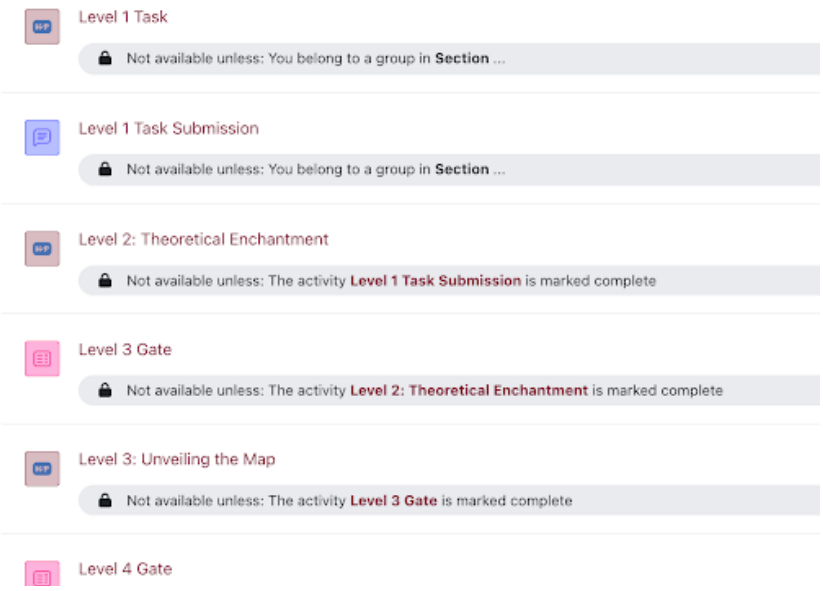
### Level 1: The Call to Adventure (Module 1: An Introduction to Instructional Design)

Level 1 drew directly from Module 1, which introduces the definition, foundations,

and significance of instructional design. Pixel, the NPC, oriented students to the level and explained the required tasks. Students answered scaffolded study guide questions, posted their responses, and interacted with peers by rating or commenting on classmates' outputs. Completion of these activities unlocked Level 2.

**Figure 1**

*Screen Capture View of the Quest Mode of Instruction in the Course*




*Note.* Screenshot image, author-owned

**Figure 2**

*Screen Capture View of Level 1 of the Metaversal Quest*


*Note.* Screenshot image, author-owned

### Level 2: Theoretical Enchantment (Module 2: Instructional Design as Theoretically Grounded Practice)

Level 2 served as the Metaversal Quest and was implemented in FrameVR. All Module 2 readings were placed in separate virtual rooms arranged in an escape room-style sequence. Each room contained one resource. Students entered a room, accessed the material, and answered a pop-up question displayed inside the space. A correct answer unlocked the next room. This continued until the final room, where students located a hidden key and identified a code written on the wall. The code served as the mechanism for unlocking Level 3.

### Level 3: Unveiling the Map (Module 3: Instructional Design Models and Approaches)

Level 3 retained the content of Module 3 and introduced the elixir mechanic. Students earned elixirs by reading the assigned materials and passing several checkpoints (questions) placed throughout the level. These checkpoints assessed comprehension and functioned as gates requiring correct responses before progression. Collecting the required number of elixirs opened the final gate and completed the level.

Across all levels, the quest structure aligned with the learning objectives of Unit 1:

1. To explain instructional design and its role in teaching and learning; and
2. To differentiate models and approaches to instructional design.

The quest structure preserved the instructional materials while embedding them in a guided sequence that used game mechanics, aesthetic cues, and paced progression to support cognitive engagement in an ODeL environment.

**Figure 3**

*Screen Capture View of Level 3 Elixirs*


*Note.* Screenshot image, author-owned

### Participants

The participants were undergraduate students enrolled in a core instructional design course delivered through open and distance e-learning at an institution in Southeast Asia during the 2024–2025 academic year. The course formed

part of the students' regular program of study, and participation in Quest Mode was embedded within normal course activities. All participant references in the paper are anonymized to preserve confidentiality.

## Data Collection

The study drew on 38 written student reflection papers and one focus group discussion with five volunteer participants. All participants were undergraduate students enrolled in a core instructional design course delivered through open and distance e-learning at an institution in Southeast Asia. Reflection papers were coded as Student (S1–S38), while FGD participants were coded as Participant (P1–P5).

Basic participant characteristics such as enrollment status and course context were documented, but detailed demographic variables (e.g., age, gender, program specialization) were not linked to quotations to preserve confidentiality and because these variables were not analytically central to the study's focus on learning experience and interpretation.

Two qualitative data sources were utilized: (1) student reflection papers, which captured personal accounts of the learning experience, and (2) a focus group discussion with volunteers, which allowed for collective dialogue and elaboration of shared perspectives. The FGD was audio-recorded and transcribed verbatim.

Some of the reflection paper prompts included: "Describe your experience in Quest Mode. What aspects of the quest supported or hindered your learning of the module topics?" Students were informed that anonymized reflections may be used for research and quality improvement, and their reflections did not affect grading beyond normal course requirements.

## Data Analysis

The data were examined using reflexive thematic analysis following Clarke and Braun's (2006) six-phase framework. First, familiarization was achieved through repeated readings of the transcripts and reflections. Second, initial codes were generated to identify meaningful patterns related to engagement, satisfaction, challenges, and opportunities. Third, related codes were organized into potential themes. Fourth, themes were reviewed and refined to ensure alignment with the research questions. Fifth, themes were defined and named for clarity. Finally, the findings were reported with supporting verbatim quotations, while reflexivity was maintained throughout to acknowledge my interpretive role as the researcher.

## Ethical Considerations

The study followed institutional guidelines for research involving student work. Students were informed at the start of the course that anonymized outputs may be used for research, evaluation, and quality improvement. Participation in the

FGD conducted after the course ended was voluntary and limited to individuals who provided their consent. All identifying information was removed to preserve confidentiality.

## Results and Discussion

The analysis identified several key themes related to students' experiences with the QBL approach and the Metaversal Quest. Findings are presented according to the three research questions.

### RQ1: How is the Quest-Based Learning approach viewed by undergraduate students?

**Table 1.1**

*Analytical Table for RQ 1*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 1: Desire for Gamified and Engaging Learning** | |
| "I chose to take the course in quest mode, thinking that a game-like setup would help me stay motivated and interested in the coursework." (S21) | Students anticipated a different, game-like structure. |
| "*Nag-quest mode po ako kasi…* I find that learning while having fun really works for me." (I chose quest mode because… I find that learning while having fun really works for me.) (P5) | Learners preferred playful or enjoyable formats. |
| "Quest mode has a lot of potential for students who like to interact with virtual spaces and explore learning with other users." (P4) | Virtual spatial interaction increased appeal. |

### Subtheme 1. Desire for Gamified and Engaging Learning

Students described Quest Mode as visually distinct from their usual ODeL experience. Their accounts point to the importance of aesthetic cues such as playful framing and navigable virtual spaces in shaping early expectations. This is consistent with Kim's (2015) explanation that the aesthetic layer in gamified design often influences how users interpret an activity at first contact, and with findings that clear visual cues can help students feel more oriented in online environments (Bouchrika et al., 2021). In this study, aesthetic familiarity appeared to support students' initial sense-making of the redesigned unit.

**Table 1.2**

*Analytical Table for RQ 1*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 2: Reducing Burnout from Heavy Readings** | |
| "The features of the quest mode were a game-changer… they aided me to not be overwhelmed in studying by focusing on certain parts of the lessons." (S31) | Students anticipated a different, game-like structure. |
| "*Medyo tumatak po talaga sa akin yung ginamit nating quest mode… yun lang yung naging way ko na natuto ako nang hindi ko nape-pressure yung sarili ko na magbasa ng 30 pages pataas na puro academic texts.*" (Quest mode really stood out for me… it was the only way I learned without pressuring myself to read 30+ pages of academic texts.) (P2) | Learners preferred playful or enjoyable formats. |
| "I have felt so much pressure… several readings have been put in my study and… I experienced cognitive overload." (P3) | Virtual spatial interaction increased appeal. |

**Subtheme 2: Reducing Burnout from Heavy Readings**

Students reported that Quest Mode helped them manage the volume of readings by breaking content into checkpoints, and pop-up questions helped them focus on one idea at a time. They described being able to concentrate on one idea at a time, making dense material feel less overwhelming. While the study did not measure cognitive load, these perceptions align with principles noting that chunking and guided sequencing can assist learners working with complex materials (Sweller, 1988). Students framed these mechanics as organizational aids that made the Modules 1-3 readings feel more manageable.

**Table 1.3**

*Analytical Table for RQ 1*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 3: Curiosity and Novelty of Gamified Learning** | |
| "I chose quest mode… because it's the first time that I can experience it, out of curiosity on how our FIC will facilitate our learning using this mode." (S24) | Curiosity and novelty motivated the choice. |

| Excerpt | Interpretation |
|---|---|
| "I think it's also the reason why I chose the quest mode because it is interesting and at the same time it teaches me… how I can approach instruction in an interactive way." (S25) | Novelty intersected with professional relevance. |
| "I pressed this one (quest mode) at first… what I think that I will be encountering here is something game-based, more like Genshin thing or VR." (S28) | Students anticipated a fully game-like experience. |
| "I find gamified learning as one of the more effective ways of learning… I learn best when I am actively engaged." (P1) | Students saw gamification as a legitimate pedagogical tool. |
| "*Parang Roblox or Minecraft for me… kasi ang cute din po ng mga… nagco-custom ng hair, dress.*" (It felt like Roblox or Minecraft for me… because it was also cute with avatar customization.) (P5) | Aesthetic familiarity increased appeal. |

**Subtheme 3: Curiosity and Novelty of Gamified Learning**

Curiosity was a key reason students selected Quest Mode. Several anticipated a more game-like or VR-like experience, drawing comparisons to commercial titles or familiar virtual platforms. This pattern reflects how learners rely on past experiences with virtual environments to orient themselves and anticipate flow in new settings (Onu et al., 2023). In this case, novelty served as an interpretive starting point that shaped how students approached the early stages of the module. Rather than functioning as a superficial appeal, curiosity acted as a way for learners to position themselves within an unfamiliar format.

**Table 1.4**

*Analytical Table for RQ 1*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 4: Alignment with Learner Needs and Engagement Strategies** | |
| "The fact that I can learn while playing motivated me to choose the quest mode." (S26) | Play-based learning aligned with personal preferences. |
| "Having the quest mode was a blessing in disguise since there's an AI accompaniment named Pixel who's the star of the show." (S33) | AI-guided narration supported engagement. |

| Excerpt | Interpretation |
|---|---|
| "I'm a kind of learner that doesn't want too much academic text… I think quest mode has a lot of potential for students like me." (P4) | Mode suited learners who prefer less text-heavy formats. |
| "Perspective lang mismo… may sinusundan ka na parang libro talaga compared dun sa traditional… sufficient enough yun para maging distinction sa motivation." (Even just the perspective—having an iBook like a real book compared to traditional mode—was sufficient distinction to motivate me.) (P2) | Structured pathways matched learning preferences. |

**Subtheme 4: Alignment with Learner Needs and Engagement Strategies**

Students viewed Quest Mode as aligned with their learning preferences. Narrative prompts from Pixel, the level sequence, and the checkpoint flow provided a coherent structure for approaching the module concepts. These perceptions are consistent with literature showing that structured gamified pathways can help learners track progress and navigate tasks more clearly (Huang et al., 2019; Bouchrika et al., 2021). In this context, aesthetic and mechanical cues supported students who preferred guided pathways in an independent study setting.

**Discussion (RQ1)**

To answer RQ1, students described Quest Mode as an approachable format because its visual layout, narrative cues, and interactive components helped them make sense of how to begin and move through the unit. Their reflections showed that they initially engaged with the quest through its aesthetic and exploratory elements, which aligns with literature noting that visual and interface cues shape how learners interpret gamified environments at first contact (Limantara et al., 2020; Bouchrika et al., 2021). These features seemed to give students orientation points for navigating the required tasks, which contrasted with their personal challenges when dealing with dense readings in other courses. In this sense, the cues embedded in Quest Mode supported students' attempts to organize their study and manage their initial approach to the material.

Students also viewed the quest structure as compatible with their preferred ways of learning. Several described how checkpoints, pop-up questions, and sequenced tasks helped them break down the readings into smaller portions, which they interpreted as reducing feelings of overload. This aligns with cognitive load principles, showing that guidance and task segmentation can assist learners in approaching complex content (Sweller, 1988), although the study did not measure such effects directly. Curiosity and novelty likewise emerged as entry points that made the experience feel more inviting. Taken together, these accounts suggest that students perceived QBL as a structured pathway

that supported how they wanted to study in an ODeL context, particularly by helping them pace their work and remain oriented while navigating demanding materials.

**RQ2: What are the perceptions of undergraduate students regarding their engagement and satisfaction with the quest-based course?**

Four interconnected subthemes describe how students perceived their engagement and satisfaction while navigating Quest Mode and the Metaversal Quest. Their accounts show how interactivity, social connection, rewards, and constraints shaped their experience.

**Table 2.1**

*Analytical Table for RQ 2*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 1: Increased Engagement Through Interactivity** | |
| "The game-like elements encouraged me to think differently about challenges and kept me interested even when dealing with hard concepts." (S21) | Interactivity sustained interest despite difficulty. |
| "In the metaverse… the immersive environment really helped me learn… everything felt more motivating." (S27) | Immersion increased motivation and attention. |
| "*Nag-quest mode po ako kasi…* I find that learning while having fun really works for me." (I chose quest mode because… I find that learning while having fun really works for me.) (P5) | Enjoyable activities supported focus and engagement. |
| "*Sa quest mode… at least parang kapag hindi mo natapos yung isang level, nauulit…* like in games. That's what I liked." (In quest mode… at least when you don't finish a level, you can repeat it… like in games. That's what I liked.) (P4) | Repeatable tasks promoted persistence. |

**Subtheme 1: Increased Engagement through Interactivity**

Several students pointed to the interactive structure of Quest Mode as something that made the learning tasks feel more workable. Engagement was often described in relation to being able to explore, move around, and revisit levels when needed, which contrasted with the static formats they encountered in other ODeL courses. These reflections show how being active inside the environment shaped their sense of involvement. Similar observations appear in the literature, noting that immersive and interactive cues can help maintain learners' attention in digital spaces (Kye et al., 2021). In this study, interactivity operated as a practical support rather than a purely playful feature.

**Table 2.2**

*Analytical Table for RQ 2*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 2: Social Connection and Collaboration** | |
| "This activity didn't only open me to meeting new friends especially my group mates but… improved my communication and social skills." (S22) | Group work fostered engagement and belonging. |
| "*Nagulat na lang po ako. Ay, may kasama pala ako dito [sa metaverse]… natatawa po kami kasi nagchichikahan po kami mismo doon po sa game*." (I was surprised. Oh, I actually had peers with me inside the metaverse… we ended up laughing and chatting inside the game.) (P5) | Virtual presence appeared to enable spontaneous peer interaction. |
| "Aside from the materials, I learned a lot from my colleagues. This course made me realize how important teamwork is." (S27) | Collaboration enriched learning. |
| "Working in groups helped us connect and encourage one another to do better… we supported one another during the process." (S37) | Peer support strengthened engagement. |

**Subtheme 2: Social Connection and Collaboration**

Moments of connection emerged as students encountered peers inside the metaverse or worked together on required tasks. Participants described unplanned conversations and shared problem-solving as features that made the course feel more social than their usual online experiences. These accounts highlight how the virtual spaces created opportunities for informal interaction, even though this was not the primary design intention. Research similarly notes that social presence contributes to how learners experience engagement in online environments (Martin and Bolliger, 2018; Kahu, 2013). Here, collaboration seemed to arise from the shared spatial environment itself rather than from intentional game-based collaboration cues.

**Table 2.3**

*Analytical Table for RQ 2*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 3: Satisfaction from Gamified Rewards and Progress** | |
| "Elixirs… instead of feeling pressured like a quiz, *mas uulit-ulitin ko hanggang ma-master ko."* (Elixirs… instead of feeling pressured like a quiz, I would just repeat until I mastered it.) (P2) | Rewards encouraged low-pressure mastery. |
| "*Mas maganda po if may ranking system… parang leadership board. Mas nakaka-engganyo*." (It would be better if there were a ranking system… like a leaderboard. It would make it more motivating.) (P4) | Competitive mechanics could enhance motivation. |
| "To think about it, I really had to learn and read the sources in order to proceed with the next rounds, which forced me to take the learning seriously." (S34) | Progression required mastery of content. |
| "The gates also made learning more motivating and piqued my curiosity for the following learning adventures." (S31) | Milestones sustained anticipation. |

**Subtheme 3: Satisfaction from Gamified Rewards and Progress**

Students highlighted the value of having visible indicators of progress, such as elixirs, gates, and checkpoints. These cues helped them track where they were in the sequence and clarified what remained, which made the workload feel more manageable. The desire for additional reward features, like leaderboards, reflected personal preferences rather than a common need. Prior studies have shown that structured progression and clear feedback can support navigation in gamified online tasks (Domínguez et al., 2013; Bouchrika et al., 2021).

**Table 2.4**

*Analytical Table for RQ 2*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 4: Challenges Tempering Engagement** | |
| "The biggest problem with the metaverse was that the website or app didn't work very well. I spent a lot of time trying to use it and waiting to load." (S23) | Technical instability hindered engagement. |

| Excerpt | Interpretation |
|---|---|
| "*Hindi ko po alam kung skill issue… pero nahihilo po ako dun sa mismong ginamit natin [metaverse].*" (I don't know if it was a skill issue… but I felt dizzy using the metaverse platform.) (P2) | Motion sickness limited immersion. |
| "*Medyo naging overwhelmed ako sa interface… baka magkaroon ng mali yung pagpindot ko.*" (I felt overwhelmed with the interface… I might click something wrong.) (P3) | Interface complexity triggered cognitive overload. |
| "I literally cried because I couldn't get [the VR system] to work and I managed to get myself stuck outside the map." (S30) | Severe navigation issues reduced satisfaction. |

### Subtheme 4: Challenges Tempering Engagement

Students also described difficulties that affected their engagement, including lag, dizziness, navigation errors, and becoming stuck within the virtual environment. These issues interrupted their ability to complete tasks smoothly and sometimes caused frustration or withdrawal. The pattern aligns with research documenting how technical fragility can limit the benefits of immersive systems (Kirollos and Merchant, 2023; Lampropoulos and Kinshuk, 2024). In this study, several students associated their engagement with how smoothly the platform operated during their use of it.

### Discussion (RQ2)

To answer RQ2, students understood their engagement and satisfaction in relation to interactivity, collaboration, rewards, and the constraints of the platform. Exploratory tasks, repeatable checkpoints, and spatial movement shaped how they approached the activities, while informal peer encounters contributed to a sense of connection. These patterns are consistent with studies showing that interactive structures and social presence can support engagement in online settings (Huang et al., 2019; Bouchrika et al., 2021). Students also noted that rewards signaled progress and allowed repetition until they felt confident in their understanding.

Students emphasized that engagement was affected by the stability and usability of the platform. Lag, motion discomfort, and navigation issues discouraged continued participation. This aligns with the Technology Acceptance Model, which highlights perceived ease of use as influential in how users interpret their interactions with technology (Davis, 1989), and with findings that technical fragility can limit the benefits of immersive tools (Kye et al., 2021; Onu et al., 2023). In this study, satisfaction depended on both the interactive features and the conditions that allowed these features to function reliably.

**RQ3: What challenges and opportunities do the participants experience and identify in the Quest-Based Learning and Metaversal Quest?**

Students identified both opportunities and constraints in their experience of the Metaversal Quest. Their reflections were organized into four subthemes.

**Table 3.1**

*Analytical Table for RQ 3*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 1: Opportunities for Engagement and Motivation** | |
| "The metaverse experience was able to generate real-life situations where you are tasked to study and solve problems like in a traditional classroom." (S25) | Student associated the activity with problem-solving tasks that felt classroom-like. |
| "It was a fun way to learn, it felt like my group mates and I were inside of a video game." (S29) | Student experienced the activity as enjoyable and game-like. |
| "*Nagustuhan ko po yung part na naghahanap ng code… natatawa kami kasi nagchichikahan po kami mismo doon sa game*." (I liked the part where we searched for the code… we were laughing and chatting inside the game.) (P5) | Searching for clues encouraged playful interaction. |
| "*Mas interactive po siya… may NPCs para may nagdi-discuss ng concepts or theories*." (It would be more interactive if there were NPCs explaining concepts or theories.) (P4) | Student perceived potential for more interactive elements. |

**Subtheme 1: Opportunities for Engagement and Motivation**

Students described the metaverse as a playful environment that made the activities feel more social and less monotonous compared to their usual ODeL experience. Their accounts centered on searching for clues, moving through rooms, and sharing the experience with peers. These responses highlight how aesthetic and spatial cues shaped their initial involvement, consistent with studies showing that visually rich virtual spaces can prompt exploration and informal interaction (Kye et al., 2021; Onu et al., 2023). In this study, enjoyment and shared discovery stemmed from how the environment allowed movement and co-presence, not from changes in instructional content.

**Table 3.2**

*Analytical Table for RQ 3*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 2: Simulation of Real-World Scenarios** | |
| "The virtual environment simulated real-world scenarios by allowing me to encounter challenges I may also encounter in real life." (S26) | Student perceived the tasks as similar to real-life challenges. |
| "I enjoyed the Metaverse so much… my learning improved because I feel like I am part of the simulation." (S38) | Feeling immersed contributed to involvement. |
| "It was set up like an escape room… but I felt it relied too much on context instead of having the lessons integrated." (P1) | Student noted limited integration of module content. |
| "The opportunity of metaverse is… it can measure time management, helping students manage study time." (P3) | Student associated the environment with pacing. |

**Subtheme 2: Simulation of Real-World Scenarios**

Students interpreted some tasks as resembling real-life challenges because the environment required them to navigate tasks or search for information. Others emphasized that immersion helped them feel more involved. At the same time, one participant noted that most module content remained unchanged inside the virtual spaces. P1's account indicates that the escape-room format relied on contextual puzzles rather than redesigned content, which aligns with observations that aesthetics can dominate when learning materials are not adapted for new environments (Gulzar & Ansari, 2025; Bakke & Lewis, 2025). In this study, students' sense of "simulation" came more from spatial immersion than from task-based authenticity.

**Table 3.3**

*Analytical Table for RQ 3*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 3: Technical and Navigation Challenges** | |
| "The biggest problem with the metaverse was that the website or app didn't work very well. I spent a lot of time trying to use it and waiting for it to load." (S23) | Technical instability disrupted learning. |
| "At first… I couldn't access some materials, and I was also confused how to use FrameVR." (S27) | Steep learning curve affected engagement. |

| Excerpt | Interpretation |
|---|---|
| "*May times… medyo nahihilo po ako dun sa mismong ginamit natin.*" (There were times… I felt dizzy using the platform.) (P2) | Motion sickness was a barrier. |
| "*Nagla-lag po siya kahit na nasa mobile po or sa laptop… masyadong wordy pa rin siya*." (It lagged whether on mobile or laptop… and it was still too wordy.) (P4) | Lag and dense content reduced usability. |

**Subtheme 3: Technical and Navigation Challenges**

Students repeatedly pointed to technical difficulties such as lag, loading delays, difficulty accessing rooms, and discomfort from movement as barriers that disrupted their experience. These challenges match established concerns that usability and stability strongly influence learners' willingness to persist in immersive environments (Kirollos & Merchant, 2023; Lampropoulos & Kinshuk, 2024). In this study, students' engagement was shaped as much by the platform's fragility as by its design features.

**Table 3.4**

*Analytical Table for RQ 3*

| Excerpt | Interpretation |
|---|---|
| **Subtheme 4: Design Suggestions and Future Potential** | |
| "A guide to navigate through metaversal quests can be helpful… incorporating badges and achievements could make it more engaging." (S31) | Students requested scaffolds and rewards. |
| "Personally, I would like the game to have an option where we can choose environments like a museum, mall, or haunted house." (S33) | Customizable settings seen as motivational. |
| "*Kung familiar po kayo sa Duolingo… may streaks. Sa tingin ko mas ma-encourage po yung students.*" (If you're familiar with Duolingo… there are streaks. I think students would be more encouraged with this.) (P5) | Streak-based rewards could support motivation. |
| "In the future, it would be more effective… if there's a role-playing aspect… like you're already practicing what you're learning." (P1) | Role-play suggested for stronger authenticity. |

### Subtheme 4: Design Suggestions and Future Potential

Students proposed ways to strengthen the design, including clearer navigational guidance, additional reward systems, customizable environments, and the option for role-playing. These suggestions reflect how they made sense of the existing mechanics and aesthetics and are consistent with findings that learners use prior experiences with digital platforms when imagining improvements to gamified activities (Domínguez et al., 2013; Kim, 2015). In this study, students' ideas centered on features that supported clarity, reward visibility, and deeper involvement.

### Discussion (RQ3)

To answer RQ3, students described opportunities and constraints across both Quest Mode and the Metaversal Quest. In Quest Mode, checkpoints and pop-up questions provided a structure that supported pacing and helped students approach heavy readings in smaller segments, a pattern consistent with findings that structured gamified pathways can assist learners in managing online workloads (Huang et al., 2019; Bouchrika et al., 2021). In the metaverse, students interpreted spatial exploration and shared presence as sources of involvement, which aligns with work noting that immersive visual environments can prompt curiosity and informal peer interaction (Kye et al., 2021; Onu et al., 2023).

Students also identified design limitations that shaped their experience. Several noted that the metaverse rooms largely preserved the original readings instead of adapting tasks to the medium, a tension highlighted in studies showing that strong aesthetics may dominate when content is not redesigned for immersive environments (Gulzar and Ansari, 2025; Bakke and Lewis, 2025). Technical fragility, such as lag, navigation difficulties, and physical discomfort, further restricted the potential of the metaverse and influenced students' evaluations of the activity. These reflections suggest that the value students found in both QBL and the metaverse depended not only on novelty or interactivity but also on how effectively the mechanics, content, and platform stability aligned with the cognitive demands of the course.

## Conclusion

This study examined how undergraduate students experienced a quest-based and metaversal learning environment within an ODeL course. Three insights emerge. First, students considered Quest Mode a structure that helped them organise effort; segmentation, scaffolds, and narrative cues appeared to reduce the felt burden of heavy readings for many participants. Second, immersion was associated with moments of exploration and social contact that some students reported as reducing isolation. These occurrences were intermittent and contingent on platform usability and familiarity. Third, significant constraints, such as technical fragility, motion sickness, and navigation difficulties, limited participation for a subset of learners, and the decision to keep content unchanged in many rooms appeared to underuse medium-specific affordances. Gamified

and immersive formats were therefore valued not as ends in themselves but as design choices that can redistribute cognitive load and scaffold engagement when accessibility, pedagogical alignment, and iterative testing are prioritised.

## Recommendation

The findings point to several design and pedagogical recommendations for strengthening gamified and immersive approaches in ODeL.

First, gamified elements should be used to structure learning rather than to simply add novelty. Students valued levels, checkpoints, and elixirs because these features clarified pacing, reduced overload, and supported persistence. Future designs can reinforce this by aligning mechanics with specific learning tasks and using them to guide, sequence, and scaffold study rather than merely decorating it.

Second, immersive environments should be leveraged to support interaction and connection among learners. Students described peer encounters, shared exploration, and collaborative problem-solving as unexpected but meaningful parts of the Metaversal Quest. Designers can build on this by intentionally integrating spaces and tasks that prompt cooperative activity and social presence, especially given the isolating nature of ODeL.

Third, technical stability and accessibility must be treated as foundational. Lag, motion sickness, and interface complexity limited participation and shaped how students interpreted the experience. Developers and instructors should pilot immersive tools, simplify navigation, and provide alternative pathways for students who experience discomfort or access constraints.

Fourth, immersion should extend beyond aesthetic replication of course content. Students engaged with the metaverse but also recognized when the environment reproduced the same materials without deeper integration. Future iterations should embed learning objectives directly into puzzles, tasks, and interactions so that the environment supports application rather than duplication. Finally, students offered thoughtful suggestions that can inform iterative improvement. Customizable settings, streaks or progress trackers, non-playable characters, and role-play scenarios can enhance engagement when they are aligned with the instructional purpose of the course. Their feedback underscores the value of co-design, where learners' experiences shape the refinement of gamified and immersive approaches.

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