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IN THIS ISSUE:

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Vision and Mission of the IJODeL

Vision

To be a leading international academic journal that publishes and disseminates new knowledge and information, and innovative best practices in open and distance e-learning.

Mission

The IJODeL shall publish and disseminate new knowledge and information based on original research, book reviews, critical analyses of ODeL projects and undertakings from various researchers and experts in the Philippines, the ASEAN Region, and the world, and concept articles with the intention of presenting new ideas and innovative approaches to interpreting and implementing best practices in open and distance e-learning as alternative delivery mechanisms for quality education.

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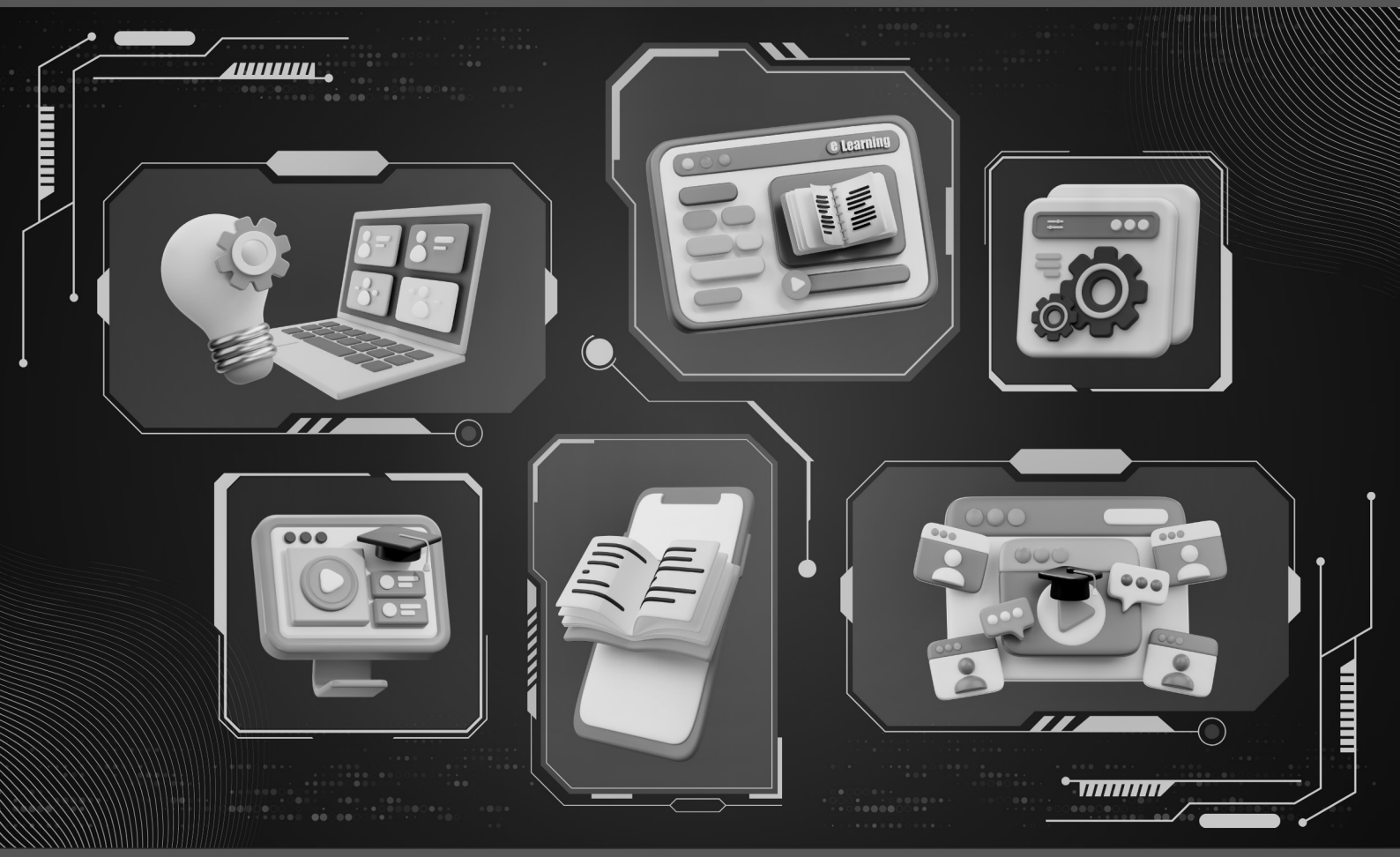

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Editorial

Innovations in Learning Design for Open and Distance e-Learning (ODeL)

This special issue of the Center for Open and Digital Teaching and Learning (CODTL) of the University of the Philippines Open University (UPOU) brings together scholarly contributions that explore how intentional instructional design, emerging technologies, and reflective practices enhance learning, engagement, and community in distributed and online environments. The articles featured in this issue, contributed by scholars from Asia, Africa, and Europe, demonstrate how educators are thoughtfully leveraging digital tools and pedagogical frameworks to create inclusive and meaningful learning experiences.

The issue opens with “A Pragmatic Discursive Culture Model for Global Teams,” which examines the intercultural dimensions of global online collaboration and highlights the importance of culturally responsive pedagogy. This is followed by “Validity Testing of the Community of Inquiry (CoI) Survey as a Tool for Student Evaluation of Teaching and Learning in a Fully Online Philippine University,” offering a validated instrument for quality assurance in online higher education.

At the institutional and program levels, “Bridging the Gap: The Institutionalization of Reflective Practices in ODL Teacher Education in Tanzania” illustrates the role of e-portfolios, online journals, and peer feedback in supporting professional growth. Student-centered perspectives are explored in “Challenges and Opportunities in an Immersive and Gamified ODeL Course for Undergraduate Students” and “Drop-Everything-And-Read-wRite-Research: Designing for Learning Presence in a Metaverse,” which examine engagement, presence, and agency in innovative learning spaces.

The issue concludes with “Developing Micro-credentials in AI for Assessment in Asia and Europe,” offering insights into the intersection of artificial intelligence and alternative credentialing. Collectively, the contributions in this special issue highlight reflective, learner-centered approaches that advance equitable, innovative, and empowering digital education practices across diverse global contexts.

Juvy Lizette Gervacio, Ph.D.
Helmi Norman, Ph.D.

A Pragmatic Discursive Culture Model for Global Teams

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Abstract

Cultural aspects affect the success of organizations as well as teams enormously. There are many well known barriers and challenges, but also mitigation strategies. This paper presents a pragmatic culture model for analyzing cultural aspects to identify differences and similarities, as well as a usage process for global teams. The model combines aspects of national and regional culture as well as contextual culture and pragmatic attributes. The model improves the weaknesses of current national culture models by extending context and pragmatic factors. These factors are essential for its practical application, in particular to facilitate global teams. The model has been used and validated in different Higher Education courses between German and Indonesian students in the field of Business Information Systems. It has shown that potential barriers can be identified in advance, leading to successfully working teams in a global work environment.

Keywords*: culture model, cross-cultural teams, global teams, global software development*

Introduction

Culture plays an important role when working in a global context. It is crucial for the success or failure of global organizations and teams. On the organizational level, culture-related challenges may occur when internationalizing a business (Pathak, 2011), building joint ventures (Al-Azad et al, 2010), or outsourcing parts of an organization (Khan & Azeem, 2014). On the level of teams, typical challenges occur when teams are distributed globally (Maznevski, 2012; Komlik, 2023). Challenges and barriers include geographical distance, establishing trust, communication breakdowns, and temporal and perceived distance (Morrison-Smith & Ruiz, 2020). A variety of solutions and interventions have been discussed in the literature (cf. Duarte & Snyder, 2011; Morrison-Smith & Ruiz, 2020). Common among organizations and teams are the challenges brought by cultural differences.

One solution to those challenges is the use of geographically-oriented culture models (cf. Maleki & de Jong, 2014) to analyze and understand different cultures. Those types of models, such as Hofstede's (2011) six dimensions model of national culture, have been both used successfully (Minkov & Kaasa, 2021) and criticized from a methodological and ethical perspective (McSweeney, 2023; Minkov & Kaasa, 2021).

Our approach, therefore, proposes to use culture models as an orientation for discourse and learning about different aspects of culture. Our model combines attributes from a variety of culture models. We integrate abstract models on national culture, such as Hofstede's model (Hofstede, 2011), with pragmatic guidance (e.g., for expatriates, Sousa et al, 2017) and context-specific culture, that helps for the energy sector (Stephenson et al, 2010).

From these starting points, we have derived the guiding research question: How to create a culture model which helps to facilitate global teams. More specifically, this research aims to answer the detailed research questions: How can culture models contribute to developing cultural competencies for global teams? How to align project work- and culture-related processes?

In this paper, we describe the current state of the art for culture models as well as the consequences for global teams. Our approach is then outlined and validated in a Higher Education setting. We conclude this paper by showing research directions.

Background

Culture Models

Culture is an ambiguous concept with different definitions and viewpoints. We understand culture as "a system of shared beliefs, values, customs, behaviors, and artifacts that the members of a population use to interact with their world and with one another and that are transmitted from generation to generation through learning." (Bates & Plog, 1991).

Culture models try to create an abstraction and represent culture by a variety of attributes. Culture models exist on different levels, such as supranational (e.g., linguistics, religion), national, organizational, or group culture (Karahanna et al, 2005). These aspects such as values, practices, norms, and attitudes have a strong impact on both individual and group behavior (Karahanna et al, 2005).

A variety of models have been developed and used, especially for **national culture**. Hofstede (2011) identified six dimensions: Power Distance Index (PDI), Individualism vs. Collectivism (IDV), Uncertainty Avoidance Index (UAI), Masculinity vs. Femininity (MA), Long-Term Orientation vs. Short-Term Orientation (LTO), and Indulgence vs. Restraint (IVR). The model has been validated in many contexts but also criticized (McSeeney, 2023). Further models have identified additional components. Hamden-Turner and Trompenaars model added dimensions, for example representing expression of emotions (neutral vs affective), status (achievement vs ascription), or time orientation (Hampden-Turner et al, 2020). Another model was developed based on the large empirical GLOBE study which assessed nine cultural dimensions: power distance, uncertainty avoidance, humane orientation, performance orientation, future orientation, institutional collectivism, in-group collectivism, gender egalitarianism, and assertiveness (House et al, 2004). It is common to those

models that they try to represent culture by a very limited number of dimensions.

A different approach is the representation of culture on a more detailed level. Richter & Pawlowski (2007) use culture metadata to create a more comprehensive view of national culture adding attributes on technical infrastructures, media user behavior and knowledge: media richness, human actors' culture, knowledge, behavior, and acceptance, demographic development, and religion.

In a working environment, other perspectives on culture are discussed as well. **Context-specific culture** shows different views on a certain domain. As an example, Stephenson et al (2010) explain behaviors in the energy sector with the dimensions material culture, cognitive norms and energy practices. Other examples for context-specific cultures are Henderson's model for the field of E-Learning (Henderson, 2007) or the discussion of an Information Systems culture (Leidner & Kayworth, 2006).

As a last category, there is more **practical-oriented** research on the behavior of expatriates in other cultural environments. This type of research provides insights into behavioral guidance as well as supporting interventions such as training, assistance, and support (Sousa et al, 2017).

As a conclusion, there are many models with different methodological approaches and focuses. There is not one model that can support individuals and groups. The choice of culture model depends strongly on the context and the purpose. In some contexts, national culture models might be sufficient; in other contexts they need to be extended by context-specific models. Also, some conclusions from abstract models (e.g., deriving communication guidelines from a certain power distance index or creating UX design) are rather speculative. Here, more practical guidance is strongly needed. Therefore, culture models can be helpful for an orientation but need to be combined and extended to create a comprehensive understanding of an organizational or regional culture.

Global Teams

Global teams face a number of challenges. Olsen & Olsen (2006) identified five motivational challenges when working in a global team: alignment of incentives and goals; trust is more difficult to establish; awareness of colleagues and their context; no motivational sense of presence of others; and the need for explicit management. Anh et al (2012) discussed the level of dispersion from a geographical and temporal perspective. They argue that the team performance strongly depends on overcoming those challenges (Anh et al, 2012). Morrison-Smith & Ruiz (2020) also classified their identified challenges as geographical distance (motivation and awareness, establishing trust, communication, and team conflicts), temporal distance and perceived distance. The last category was strongly influenced by sociocultural distance (Morrison-Smith & Ruiz, 2020). Overall, the aspects of coordination, collaboration, and communication are all culture-related and need to be addressed and facilitated (Swart et al, 2022).

A variety of studies has discussed success factors and related interventions for

global teams (Clark et al., 2019, Nguyen, 2013, Swart et al., 2022, Szewc, 2014). Common to those studies are the following factors: Creating trust, dealing with cultural diversity, providing collaboration and communication tools, facilitating knowledge sharing and communication, and providing common leadership and management. Those factors strongly depend on cultural characteristics. Thus, it is necessary to create cultural understanding (Shokef & Erez, 2006, Henderson et al, 2018) and its implication on the above mentioned success factors as well as facilitating cultural adaptation (Cramton & Hinds, 2014). Cultural competencies need to be trained and acquired (Lloyd & Härtel, 2010, Holtkamp et al, 2015).

Especially for the educational context, culture plays an important role (Gómez-Rey et al, 2016, Richter, 2012). As an example, Gómez-Rey et al (2016) relate different dimensions of Hofstede's (2011) model to different educational aspects, such as interaction, learning contents or social presence. As a key aspect, collaboration between students and teachers is strongly influenced by cultural factors (Li et al, 2023). In global virtual collaborations, i.e. in global educational teams, cultural competencies need to be developed to collaborate successfully (Li at al, 2017, Deardorff et al., 2023). Thus, it is necessary to align culture models and cultural competencies in different contexts.

As a summary, creation and facilitation of global teams is still a challenge. The challenges are well known but there is a huge variety of solutions and interventions. However, it is common to them that culture plays an important role and cultural understanding is a prerequisite to establish trust, facilitate communication, overcome conflicts and finally work successfully.

The Pragmatic Discursive Culture Model

Methodology

The development of the Pragmatic Discursive Culture Model consists of two artefacts: The development of the Culture Model and its attributes as well as the process to use it for learning and training to build cultural competencies. The artefact design was done using Action Design Research (ADR) (Sein at al, 2011), following the process of Mullarkey & Hevner (2019):

1. Problem formulation: Based on our initial literature review, we have identified culture-challenges and possible interventions. In our concrete context, we had the challenge to facilitate students' teams of Higher Education Institutions in Germany and Indonesia working on a collaborative software project. In three years, 70 students and 6 educators have participated in this case study to build cultural competencies and work in a globally distributed team.
2. Artefact Creation and Implementation: We built the culture model based on existing validated models (see above). Secondly, we created a process model for the usage of the model. The model was utilized in three case studies in Germany and Indonesia.
3. Evaluation: We follow the evaluation guidance of Venable et al (2016): The criteria of the evaluation are described in the section below.

The methodology of ADR, therefore, ensures both rigor and relevance of our artefact creation.

Conceptual Framework

In the following, we describe the design and development of our model. It consists of two parts:

- **Pragmatic Discursive Culture Model (PDCM)**: the model describes the basic attributes and characteristics representing different aspects of culture.
- **Culture-aware group work process**: We have developed a process to create cultural awareness and build cultural competencies. This process can be embedded in team building processes in international work environments.

The PDCM model creation has considered the basic models discussed above. In a first step, we selected attributes for national culture that have been evaluated regarding the influence on global teams (Hofstede, 2011, Hamden-Turner et al, 2020, House, 2004). We have selected the most common attributes of these models. As a second step, we have included context-specific attributes. In one case study on a software development project for the energy sector, we have added attributes to the views on energy (Stephenson et al., 2010). However, as this category changes depending on the project domain, the category is just open and needs to be adapted in the discursive process described below. Finally, we have added pragmatic factors for concrete work behavior (Sousa et al., 2017). In a second step, the dimensions were transformed into statements. The following table shows the initial attributes. The model has been developed in two cycles. In this paper, we focus on the final model and its implications for competence development.

Table 1

Pragmatic Discursive Culture Model

Category	Question
National / Regional Culture	
Power Distance (Hofstede, 2011, House, 2004)	Are there differences between hierarchy levels?
Individualism (Hofstede, 2011, Hampden-Turner et al, 2020)	What is more important, individual or group success?
Uncertainty (Hofstede, 2011, House, 2004)	Do you try to avoid uncertain situations?
Gender differences (Hofstede, 2011, House, 2004)	Are there gender differences?

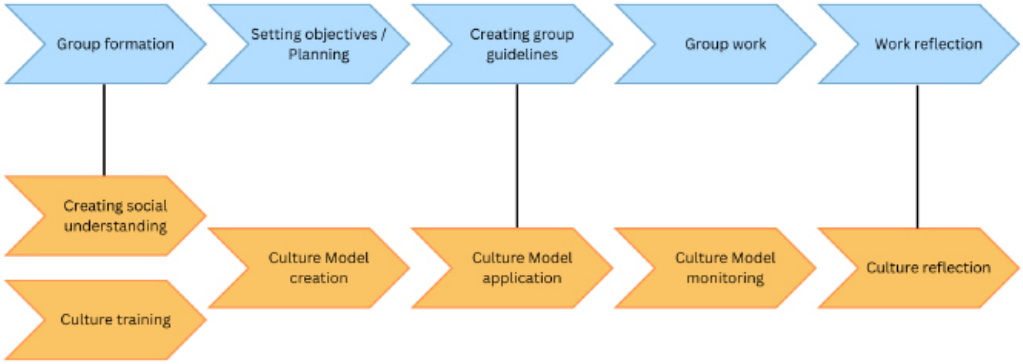
Category	Question
Length of Time (short / long term)	How long do you plan ahead?
Indulgence (Hofstede, 2011)	Can you enjoy life no matter what your preferences are?
Neutral / affective (Hampden-Turner et al, 2020, House, 2004)	How emotionally involved are you in work / studies / hobbies?
Pragmatic (Sousa et al, 2017, Richter, 2012)	
Communication – formality	How formal do you communicate in groups?
Communication – directness	How do you address tasks, problems or conflicts?
Trust	How do you develop trust? To whom is it easier to build up trust?
Conflicts	How are conflicts addressed and solved?
Willingness to change	How easy is it to change habits? How easy is it to introduce innovations?
Private vs work space	How strongly do you distinguish between work and private life?
Time and planning	How strict are you at keeping appointments or work tasks?
Agreements	How important are (work) agreements (e.g. keeping a deadline)?
Dress	How do you dress at work / events?
Vacations / holidays	How important are holidays / vacations?
Infrastructure	How advanced is the IT infrastructure (e.g. broadband)
Tools	Which collaboration and communication tools are common?
Context-specific attributes	What are different perspectives on the application domain (e.g., energy systems)?
Context	What is the specific view on the sector / domain?

The above-presented PDCM is not complete or exhaustive. It is just a starting point for the discourse of a work group. The first part of this process is the discourse on the domain, i.e. extending context-specific attributes. The group needs to discuss which views and perspectives in the domain exist. As an example, for the field of education this could be derived from the existing culture model for e-learning (Henderson, 2007), adding attributes such as pedagogical paradigms, instructional design preferences or interaction types. This discourse includes the reflection on the actors' own culture as well as the discussion of the

other culture. During the process, the model is extended, refined and discussed continuously. The full usage process is shown below.

Figure 1

Culture-aware group work process



The process consists of two process categories: project work and cultural. The upper process is the project work process, consisting of:

- Group formation: This activity consists of selecting team members, as well as the introduction to the project and work tasks.
- Setting objectives / planning: In this phase, the group work tasks are discussed, distributed, and scheduled.
- Creating group guidelines: group guidelines consist of communication and collaboration guidelines. It includes guidelines on how to deal with cultural differences
- Performing group work: This task summarizes the project / work activities.
- Work reflection: During and after the work process, the group should reflect on their performance as well as emerging conflicts / issues

The other process is the culture-related process, which includes the discourse on cultural differences and similarities. The process consists of the following steps:

- Creating social understanding: as a starting point, we recommend to not solely focus on creating a work-related understanding (e.g., work competencies) but also focus on social aspects (family, hobbies, preferences) in an informal environment
- Culture training: actors should have a basic understanding of culture models and their usage
- Culture model creation: Actors will review different culture models and pragmatic guidelines to extend the PDCM. In particular, attributes on context-specific culture should be added depending on the work domain
- Culture model application: Actors use the model to reflect their own culture, get to know the other culture, and then identify similarities and

differences. Based on this analysis, actors should create guidelines on how to deal with differences
- Culture model monitoring: Actors should continuously reflect whether their model and the corresponding guidelines were appropriate or need to be changed – as an example, when a culture-related conflict occurs (e.g., communication problems), the group needs to discuss the underlying cultural reasons and create new solutions / guidelines.
- Culture reflection: During and after the project, the group should reflect on how they handled and dealt with cultural differences.

Both processes must be interconnected and will not work in an isolated way. It is essential that the work group continuously monitors and reflects on challenges and conflicts, both work- and culture-related. Thus, the discourse on the model extension and usage is a central component.

As a summary, the model consists of the PDCM with its attributes and operationalization as well as the process showing the interconnection of work- and culture-related activities.

Case Study

The PDCM was used in three courses. The courses were held in two Higher Education Institutions in Germany and Indonesia in Master courses in Information Systems. Each course included a group assignment on creating, planning, and implementing a collaborative software project, including an Indonesian-German collaboration.

Creating social understanding / Culture training: In the first phase of the group work, all students received an initial training on different culture models (as discussed in the background section). Additionally, an informal discussion on personal preferences was launched. The following questions were provided as a starting point for the event:

- Where are you from? What is your home city like?
- Tell about your family and friends
- What are your hobbies and favorite social activities?

Each group continued to develop their own questions. These were not monitored due to the informal character of the session.

Culture model creation / Culture model application: In the second phase, students discussed the PDCM and its attributes. They also discussed which further attributes could be useful and helpful, and thus created their own extended model. For each attribute, the groups analyzed the attributes for both Indonesia and Germany and discussed differences and similarities. As a final step, they elaborated guidelines on how to deal with differences in their group work.

The following figure shows a sample of the resulting model and documentation for both national culture and pragmatic culture attributes.

Table 2

Sample results on national culture attribute

Culture Attribute	Operational Question	Sample Answer Germany	Sample Answer Indonesia	Consequences / Solutions
Power Distance	Are there differences between hierarchy levels?	Yes, there definitely are, but we usually have low differences between the hierarchy levels. But we still stay polite and respectful while talking to people in higher positions, and we are aware that they have more power than ourselves.	Yes, there is a difference about how we talk to people who are older than us or have a higher position than us.	Indonesians have more and higher differences between hierarchy levels than the Germans, but both stay polite in their own way. Maybe the Germans need to adjust their common behavior to higher positioned people.
Short / long term	How long do you plan ahead?	We usually plan long-term, but most of the time the plans need to be changed when goals can´t be achieved in the planned time.	We consider long and short-term plans, but sometimes we have a high flexibility in adjusting the plan as we do the plan.	Both Germans and Indonesians consider long-term plans, and we change the plan as needed. Therefore Indonesian and Germans can work together.

Culture Attribute	Operational Question	Sample Answer Germany	Sample Answer Indonesia	Consequences / Solutions
Indulgence	Can you enjoy life no matter what your preferences are?	Yes, we always can enjoy life with whatever we like and whatever our preferences are. There is nobody telling us what we should like or what our preferences should be.	Yes, because in Indonesia we can enjoy our life in our preferences, how we like that, and we can enjoy life because we like something that we want to do, that is our decision.	Both Germans and Indonesians agree that they can enjoy life with their own preference without being held by some social perspective. This might be a good start for both cultures.
neutral / affective	How emotionally involved are you in work / studies / hobbies?	We usually work enthusiastically if we find the perfect job, study or hobby that fits our own preference.	We can differentiate when we have to focus on work and when we can study or do hobbies. Many companies in Indonesia already showed their support to the employees for their studies or hobbies.	When we find a topic for our group work or app that we all are interested in, we can work very efficiently and enthusiastically.

Table 3

Sample results on pragmatic culture attributes

Culture Attribute	Operational Question	Sample Answer Germany	Sample Answer Indonesia	Consequences / Solutions
Communication – formality	How formal do you communicate in groups?	It depends on the hierarchy levels in the group. If we are working in an even group with almost the same hierarchies, we are less formal in our group communication than when we work in a group with many colleagues from higher levels.	If we are in a group the same age we can do informal communication, but in the group where there's the oldest or younger we must talk formally in the group.	Both Germans and Indonesians have the same and similar types of formality in communicating in the workplace, formal communication with the higher level, and can do informal communication with the same or even group position.
Communication – directness	How do you address tasks, problems or conflicts?	We usually are very direct in communicating problems or conflicts, but that also depends on the individuals. Some people really try to choose the correct words to not hurt or offend the addressed colleague, but there are always people that just write down their thoughts, even if they could offend the others.	It's hard to address the problem or conflict directly, but we usually try to address the conflict by carefully choosing the word we are going to say, so that people won't feel offended.	In terms of directness, Germans are most likely to be direct for some, while Indonesians tend to be indirect while addressing some conflict. However, both ways have their own plus and minus, depending on the groups of people and the situation to deal with.

Culture Attribute	Operational Question	Sample Answer Germany	Sample Answer Indonesia	Consequences / Solutions
Trust	How do you develop trust? To whom is it easier to build up trust?	We usually develop trust through communication and by showing our colleagues that they can trust us.	We develop trust by communication, usually people get closer by communication then get the trust through that process. It is easier to trust the person we are close with.	We can easily develop trust in each other with communication and don't need to do other special things to gain trust from our colleagues.
Willingness to change?	How easy is it to change habits? How easy is it to introduce innovations?	We usually don't like changing habits or getting along with innovations. Germans like to stick to the tried and tested. Before changing anything they will start discussions about possible risks for the time schedule or financial aspects. But when we see a high potential for improvement we will also change our beloved habits.	We have a high flexibility therefore we have a high interest for chance in order for improvement. At first it must be hard to introduce a new innovation but over time we will get used to it.	Maybe the Germans should be more open for adding new habits or for introducing new innovations in their work.

Culture Attribute	Operational Question	Sample Answer Germany	Sample Answer Indonesia	Consequences / Solutions
Private vs workspace	How strong do you distinguish between work and private life?	Usually we don't mix up our private life with our work life. But if we feel well in our company or with our colleagues we also might talk about our private life to our colleagues. But only if we have time and if we trust them enough. Mostly at lunch-breaks.	Indonesians are likely to have more people together in the workplace, sometimes we will enjoy the me-time.	We can always talk about private things if we want to, but we will not be misunderstood if we don't want to overshare private stuff with our colleagues.

Culture model monitoring / Culture reflection: In the final phase, students as well as educators reflected on problems that occurred during the group work. A variety of issues were identified – as an example, a common issue was the interruption of communication, i.e., students stopped replying to emails or disappeared in conferences without notice. Students then reflected again on communication habits and followed that the communication guidelines must be adapted towards committing strictly to absence notifications and timely replies. However, only one of 15 groups completely failed to produce complete results. As a lesson learned, we follow that it is essential to continuously reflect on culture-related differences and adapt the common solutions.

Evaluation

The evaluation is a naturalistic ex-post evaluation (Venable et al, 2016) using a mixed method approach (Venkatesh, 2013):

- Observation in three case studies: We observed the participants' usage of the model as described in the section above and gathered feedback in three case studies (Darke et al, 1998). The results of the first two case studies are already integrated into the model.
- Survey: In all three courses, we evaluated the model using a survey on the participants' opinion on the process and the culture model. This was accompanied by open questions to receive qualitative feedback.

The three courses were visited by 70 students, 33 male and 37 female students, as well as six lecturers. It was organized as a Collaborative Online International Learning (COIL, Hackett et al, 2023) format, which combined online and presence phases. In the first two courses, we examined the use of the culture models. We observed the most used attributes and extended / modified the initial culture model. The results are already reflected in the model presented above.

The second part of the evaluation was quantitative analysis. The goal of the evaluation was to find out 1) whether intercultural competencies have been developed during the course and 2) whether the model has helped to develop competencies and improve teamwork. The evaluation considers the following aspects:

The first part considers competence development: How do the participants rate their competencies before and after the course? The following competence areas have been considered: 1) Communication competence, 2) Collaboration competence, 3) Cultural competence, and 4) Teamwork competence. The following competence statements were used, based on (Holtkamp et al, 2015).

- Comm1: Ability to communicate sensitively, taking into account other personalities and cultures.
- Comm2: Foreign language skills (e.g., knowing English; speaking a "common" language).
- Cult1: Ability to identify cultural differences and similarities
- Cult2: Ability to understand other people's perspectives, needs, and

values.
- Cult3: Understanding of the influences and implications culture has in work life.
- Coll1: Ability to manage diversity in the team to enable everyone to contribute and participate.
- Coll2: Ability to share information and knowledge with the team.
- Team1: Ability to work in a multi-cultural team
- Team2: Ability to deal with team conflicts

Secondly, the contribution of the PDCM has been evaluated: How have the culture model and its components contributed to the competence development? Here, we asked for the importance of social aspects as well as the use of the model.

Besides the competence development, the contribution of the culture model was evaluated:

- Comprehensibility: Was the model understandable?
- Usefulness: Was the model overall useful in the work process
- Extensibility: Was it easy to add factors to the model?
- Applicability/transferability: Can the model be used in other contexts of global teamwork
- Team building: Did the model help to build a successful team?
- Cultural understanding: Did the model help to understand cultural differences?

We evaluated those criteria and added open questions for qualitative feedback on the process and the model.

Results

Out of the 76 participants, we received 31 evaluations (28 students, 3 lecturers, 15 female, 16 male). The students and teachers were all part of a Master study program in Information Systems. We validated both the competence development and the model criteria. Both were using a Likert scale – in the analysis, the mean values of the Likert scale were calculated to obtain a general picture of the results (Norman, 2010).

In the first part of the survey, the respondents self-assessed their competence level (between 0: no knowledge to 4: expert). The following figure shows the competence development and the average competence levels before and after the culture-awareness process.

Figure 2

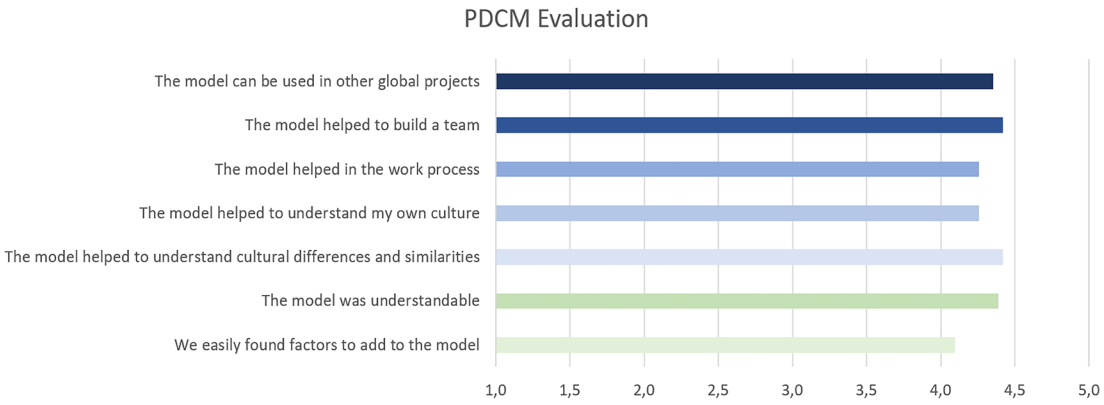
Competence level comparison

It can be seen that all competences were improved. The largest increase in the competence level was Cult3 (Understanding of the influences and implications culture has in work life), Team1 (Ability to work in a multi-cultural team), and Cult1 (Ability to identify cultural differences and similarities). These developments indicate that the focus on culture has also influenced the competence in teamwork in multicultural teams. Overall, the participants had an average increase of one to two competence levels.

The second part of the evaluation is about the contribution of the PDCM. The participants evaluated the above-described criteria between 1 (totally disagree) and 5 (fully agree).

Figure 3

PDCM Evaluation



All evaluation criteria (comprehensibility, extensibility, usefulness, applicability/transferability, team building, cultural understanding) were seen positively (agree, fully agree). The figure shows the average results. Furthermore, we analyzed the qualitative part (open questions and observations of the process). In terms of comprehensibility and extensibility, we observed that all participants had no problems using the model, identifying cultural aspects, and creating their own models. All groups extended the model with a focus on context-specific aspects. On average, about seven aspects were added to the model, both research- and practice-oriented.

The model was also seen as useful and transferable. Several participants suggested further contexts from their work life in which the model could be used (e.g., in international telecommunication projects). Last but not least, the model was seen as helpful in team building and teamwork. It was positively mentioned that the discussion of team guidelines was very productive and should be done throughout the process. It was suggested that the guidelines are continuously improved when more common experiences are made.

Additionally, we asked for the main experiences and lessons learned:

- Five participants mentioned that the created group guidelines were sometimes neglected. It was suggested that the groups should regularly review the guidelines.
- Three participants mentioned that the guidelines should be summarized in a separate document, which is always reviewed and extended.
- More than half of the participants said that the culture model should be reviewed in later phases of the process, as sometimes differences were not found in the beginning.
- Several participants mentioned that it was not clear which cultural models can be used for the extension of the model. We suggested potential sources as part of the culture model training.

Based on these suggestions, we added the phase “monitoring” to the model and provided references to both research-based and practice-oriented culture models.

Overall, the model has been seen as very positive. Based on the initial evaluations, both parts of the approach (culture model, process) have been refined towards their current status. The approach has contributed to significant competence development in all competence categories. It has been found understandable and useful.

Discussion

Our approach aims at stimulating the scientific discourse on competence development and, in particular, the use of culture models to identify and mitigate cultural differences in global teams.

The main theoretical contribution is the extension of culture models combining validated factors from existing models with pragmatic attributes for work groups.

Our approach differs from existing national culture models (Hofstede, 2011; Hamden-Turner et al, 2020; House, 2004) as we see culture models only as an orientation and a starting point for a discourse on culture. Secondly, we suggest a usage process, combining teamwork and culture-focused activities. A central part of this is the introduction of a discourse process to extend and discuss the culture model by identifying and mitigating cultural differences. Therefore, we extend current models by adding a learning and reflection perspective. Additionally, we combine three perspectives on culture, i.e., geographic, context-specific, and pragmatic dimensions. By this combination, we avoid speculative reasoning and promote a discourse-oriented model that can be used in a variety of contexts, such as education.

As a pragmatic contribution, we provide a hands-on model with operationalized questions that can be directly used for work groups, in our case, in an educational setting. For global teamwork, we have proposed a concrete process for how to include a culture awareness process to better deal with differences and find solutions within the work group.

Last but not least, our model has been used in a practical learning and working context. We were able to show that the model is usable, understandable, and contributes to competence development, in particular focusing on culture and teamwork competencies. We therefore recommend using the model when working in international learning and training contexts. As an example, the model could be used in orientation phases of international courses and programs.

As a limitation, we can state that the model has only been used for two countries and within the Higher Education context. Thus, we intend to transfer the model to new contexts, in particular for different countries and work contexts.

Conclusion and next steps

The PDCM model provides a process and a discourse-oriented culture model for the identification of cultural differences and mitigation strategies for global teams. The model has been evaluated in three Higher Education courses with a focus on global teamwork and cultural competencies. The initial validation has shown promising results. As next steps, we will extend our research towards other contexts, new countries, and user groups.

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Validity Testing of the Community of Inquiry (CoI) Survey as a Tool for Student Evaluation of Teaching and Learning in a Fully Online Philippine University

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Abstract

A Student Evaluation of Teaching (SET) is essential in any system of education. Not only does it provide vital information and feedback to enhance student learning outcomes, and thus, functioning as quality control and tool for teaching improvement (Holi Ali & Al Ajmi, 2013; Wright & Jenkins-Guarnieri, 2012), but it also serves as a platform for sharing of students' experiences in their courses (Golding & Adam, 2016) while providing empirical evidence for faculty tenure and promotion. This study examined the validity of the Community of Inquiry (COI) Survey as a SET in a fully online university in the Philippines. A questionnaire incorporating the COI Survey was pilot tested among all students in the university who were enrolled in the first term of AY 2018-2019. The pilot testing and validation methods resulted in a four-factor, 31-item COI Survey that has mediocre to acceptable goodness of fit.

***Keywords**: Community of Inquiry, Community of Inquiry Survey, Student Evaluation of Teaching, Open and Distance Learning*

Introduction

A Student Evaluation of Teaching (SET) is essential in any education system. It not only provides vital information and feedback to enhance student learning outcomes - functioning as quality control and tool for teaching improvement (Holi Ali & Al Ajmi, 2013; Wright & Jenkins-Guarnieri, 2012), but it also serves as a venue for students to share their experiences (Golding & Adam, 2016), while at the same time providing empirical evidence for faculty tenure and promotion.

However, Barrie, Ginns, and Symons (2008) noted in their review of Australian SET systems that most university-developed evaluations of teaching instruments have a weak formal theoretical and psychometric rigor, which defeats the purpose of having a SET. Nonetheless, the use of a teaching evaluation tool for students in academic institutions, whether it be on an on-site campus or online distance learning, has remained significant.

Previous studies, however, have shown that conventional face-to-face student evaluation instruments do not sufficiently capture the nuances and distinct

characteristics of online teaching and learning, which embraces a more constructivist approach (Bangert, 2008; Berk, 2013; Ravenscroft et al., 2017). Although online and face-to-face forms of education share common functional characteristics with online learning, the two may differ in their pedagogical, communication, and structural approaches (Drouin, 2012).

The advancements in information communication and digital technologies in recent years have revolutionized teaching and learning and have propelled the growth and expansion of open and distance learning (ODL). The online learning setting is expected to be an environment where "educators and learners create, shape and evolve knowledge together, deepening their skills and understanding as they go" (Open Society Institute, 2007), as emphasized in the Cape Town Open Education Declaration. Thus, educators in this educational context are impelled to transform their teaching practices into a more collaborative and constructivist approach.

Creasman (2012, p. 2) underscored the unique features of online learning that distinguish it from the traditional mode of teaching, namely: 1) asynchronous activity, where students can interact with each other and course materials anytime; 2) non-linear discussions on message boards or forums, where students can participate in multiple conversations simultaneously; 3) primarily written communication; 4) slower communication between instructor and students, mainly via e-mail; 5) greater social contact and time spent by instructor with students on course sites; 6) greater volume of information and resources available; 7) instructor's roles as a facilitator and also co-learner. These characteristics and the unique context of the university under study as a "single-mode distance institution within a conventional or campus-based university system" (Arinto, 2013a) that is fully online and adheres to the open education principle, distinguish it from the other conventional brick-and-mortar academic institutions in the Philippines.

Hence, given ODL's different pedagogical emphasis and educational construct and framework of ODL, the student evaluation instruments used in residential, face-to-face campuses may not sufficiently assess the distinct aspects of online teaching and learning that are brought by its distinct mode of instruction. It is, therefore, necessary and important that ODL institutions make use of student evaluation of teaching systems that are not only psychometrically sound, but most importantly are appropriate and aligned with their nature as distance education providers.

One of the tools being used to assess online teaching is the Community of Inquiry (COI) Survey (Arbaugh et al., 2008), which was developed using the COI theoretical framework. The COI is a model of teaching and learning in an online environment that is grounded in a collaborative-constructivist perspective (Garrison, 2012). It asserts that a community of learners and teachers in an online learning setting is comprised of three presences – cognitive presence, social presence, and teaching presence, whose synergy allows for deep learning to take place (Garrison, 2009; Garrison et al., 1999) (See Figure 1). Cognitive Presence represents the process of learning and inquiry, while Social Presence refers to the extent to which learners develop a sense of belonging

in their online community, deliberately communicate positively, and build interpersonal relationships (Garrison et al., 2010). The Teaching Presence, the third presence, ties all the presences together (Garrison et al., 2010). It involves "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson et al., 2001).

This study intends to adopt and validate the COI Survey as a tool for student evaluation of teaching and learning. If the COI is found to be valid and aligned with the context of the fully online university under study, the COI Survey may be considered as a suitable student evaluation of teaching and learning tool for the university's use.

The outcome of this research will contribute to the growing research on the Community of Inquiry framework. A perspective from the Philippine context in a fully online learning set-up could enrich the literature on COI. Moreover, validating the COI Survey in the subject's context will open the possibility of its use as SET in similar fully online universities.

Research Objectives

The main objective of this study is to determine the applicability of the COI Survey as a tool for SET in a fully online, open and distance learning university. In doing so, this study will involve validity testing of the COI Survey as a student evaluation of teaching and learning tool in the Philippine context using Exploratory and Confirmatory Factor Analyses.

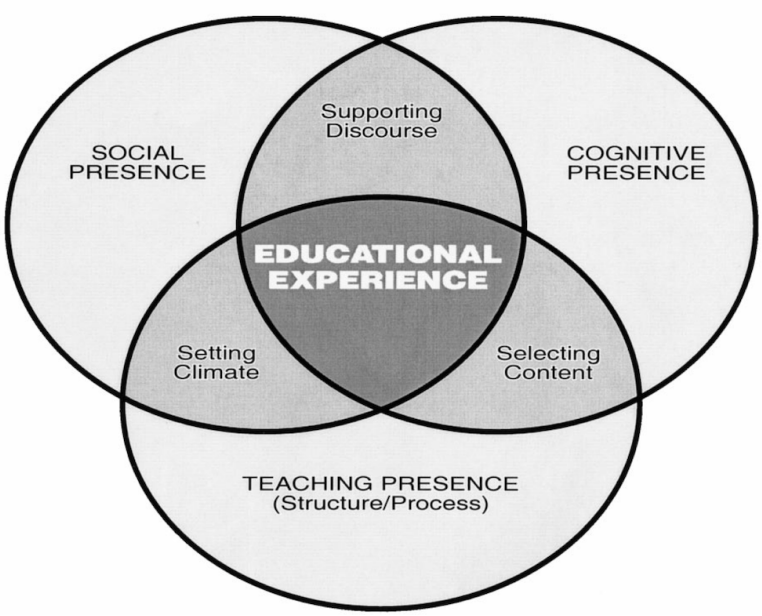
Theoretical Framework

Overview of the Community of Inquiry (COI)

The theoretical framework that will be used in this study is the Community of Inquiry (COI) (Garrison et al., 1999), which is a framework that may be used for teaching and learning in online, computer-mediated, or blended educational settings. It provides educators in the field of e-learning "the order and structural elements needed to begin the process of understanding the complexities of online learning" (Garrison et al., 2010). According to the COI framework, meaningful learning is a result of the interaction and convergence of three interrelated elements – cognitive presence, social presence, and teaching presence, that takes place within a community of learners and instructors (Garrison, 2009; Garrison et al., 1999) (See Figure 1). In a community of inquiry, learners are actively collaborating to explore, inquire, critically reflect, and create knowledge and meaning as opposed to merely receiving information from lectures or course packages (Garrison, 2009). This framework is a useful guide for effective instructional design and administration of online courses (Richardson et al., 2012).

Figure 1

The COI Framework (Garrison, Anderson, & Archer, 1999)



Impact of COI on Students' Learning

Research on COI shows a positive impact of COI on students' learning and engagement. Yidana and Aboagye's (2024) study on the relationship of COI presence with the development of 21st century skills in the Ghanaian higher education context shows that cognitive presence, social presence, and teaching presence have a significant positive relationship with the 21st century skills development. Positive learning experiences and student engagement were also observed in the study of Ang, Ng, Lee, and Yong (2024), where the COI framework was used in designing asynchronous lectures in a Singaporean polytechnic university.

The study of Alshammari and Alrehaili (2025) on the effects of the three COI presences – teaching, social, and cognitive, on the engagement of students in an online course in Saudi Arabia reveals that cognitive presence and social presence have a significant positive influence on students' active participation in their class. Their findings also show that teaching presence has no direct impact on students' engagement, which they attribute to the nature of online teaching where the bulk of the work is in the design and preparation of courses, which includes aspects and activities that foster social and cognitive presences, as well as autonomy and self-directedness. All of these take place before classes start. In addition, students, particularly those new to online learning, usually associate teachers' engagement with real-time interaction, owing to their learning experience with face-to-face teaching; thus, perceiving that the role of teachers is merely in the delivery of the course (Alshammari & Alrehaili, 2025).

Contrarily, in the study of Teng, Yin, Wang, and Yang (2024) of Chinese EFL

students' perception of COI, teaching presence is shown to have gained the most positive perception among students and had the most impact on students' learning, while social presence has the least positive perception. They ascribe the low perception of social presence to the Chinese culture of conflict avoidance in public.

The positive perception of and impact on learning of teaching presence, where discussion or discourse facilitation, timely feedback, and communication clarity are given greater importance, is also noted in Pham and Nguyen's (2025) study of teaching presence in a Vietnamese virtual learning environment. They pointed out that teaching presence may be culture-bound rather than a universal condition.

The Community of Inquiry Survey

To validate the COI framework, Arbaugh et al. (2008) developed the COI survey, which consists of 34 items that represent and assess the three presences of the COI. The instrument was administered in four higher education institutions in the United States and Canada, and yielded high internal consistencies with Cronbach's Alpha equal to 0.94 for Teaching Presence, 0.91 for Social Presence, and 0.95 for Cognitive Presence (Arbaugh et al., 2008).

The COI instrument has been further validated in different studies, such as those by Bangert (2009), Shea and Bidjerano (2009), Garrison et al. (2010), and Diaz et al. (2010). Validation of the COI survey was implemented in various contexts and cultures as well. Horzum and Uyanik (2015) reported the COI survey applied in a state university in Turkey as valid and reliable. Similarly, the Chinese version (Ma et al., 2017) and Korean version (Yu & Richardson, 2015) adaptations of the COI scales were likewise found valid and reliable. The foregoing studies were conducted using large sample sizes in various online and blended courses and universities or colleges in both undergraduate and graduate levels across disciplines, such as education, business, Math and sciences, health care disciplines, social science, architecture, library science, and humanities (Arbaugh, et al., 2008; Bangert, 2009; Diaz, et al., 2010; Garrison, et al., 2010; Ma, et al., 2017; Yu & Richardson, 2015). Although the COI Survey has already been validated in various contexts and academic disciplines and programs, examining its validity in the Philippine setting, particularly in the context of the university under study, is still useful to ensure that the assessment tool for evaluating teaching and learning is appropriate to the institution's circumstances and practices.

Method

Measure

The Student Evaluation of Teaching and Learning questionnaire was developed by adopting the COI Survey items and adapting the open-ended questions in the UP System's revised student evaluation of teaching. The thirty-four (34) CoI survey items (Arbaugh et al., 2008) were scored using a 5-point Likert scale (Strongly Disagree = 1 to Strongly Agree = 5).

Research Context and Participants

The research data were collected during the academic year 2018-2019 from both the undergraduate and graduate students of the institution's three Faculties of Study (N=3,419). A voluntary response sampling method was employed, where the evaluation form was sent to all the enrolled students during those terms. Those who responded to the survey and agreed to take part in the research were included in the sample (Khan Academy, n.d.).

Procedures

Using Google Forms, the questionnaire was administered to all students enrolled in the academic year 2018-2019. At the end of each term, the students were instructed to evaluate at least one of the courses they took using the questionnaire. No personal information or identifiable data was collected during the survey.

Data Preparation

After the administration of the questionnaire that included the items in the COI survey, a total of 883 student responses were obtained. These raw data of individual student responses to the survey were screened before running them through EFA. Individual responses from a batch with an erroneous item (161 responses) and those from participants who disagreed to take part in the study (8 students) were removed. After the screening, the final number of responses included in the data analysis was 714.

According to Fabrigar and Wegener (2012), an adequate sample size would range from 100 (when conditions are favorable) to 400 (when conditions are poor). With this rule-of-thumb, the 714 net responses for the data analysis are sufficient. This is supported by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) in the Exploratory Factor Analysis (EFA), which yielded a 0.973 MSA. This indicates that reliable factors may be generated using the obtained data or responses (Arbaugh et al., 2008).

Data Analysis Procedures

The following statistical treatments were used in this study: Exploratory and Confirmatory Factor Analyses to determine the construct validity and internal consistency of the COI survey, descriptive statistics to determine mean scores and standard deviations, and reliability analysis to determine the reliability of the scale.

The Exploratory Factor Analysis is a statistical method commonly used to determine underlying factors in a measure (Fabrigar & Wegener, 2012; Navarro & Foxcroft, 2018; Tabachnick & Fidell, 2019; Watkins, 2021), which can assess the construct validity of a scale (Worthington & Whittaker, 2006). Thus, it is a good tool to use in scale or instrument development (Fabrigar & Wegener, 2012). It is for these reasons that this statistical method was applied to validate

the COI survey in a fully online Philippine university context and determine if the same COI factors shall emerge from the data. To determine if the data is sufficient and suitable for EFA, Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) were conducted (Fein, et al., 2022; Navarro & Foxcroft, 2018).

According to Osbourne (2015), the steps in conducting EFA are as follows:

1. Data cleaning
2. Deciding on the extraction method to use
3. Deciding the number of factors to retain
4. Deciding on a method of rotation (if desired)
5. Interpretation of results

The extraction and rotation methods applied in the EFA were Principal Axis Factor (PAF) and Oblimin. PAF was chosen because it is "better able to recover weak factors" (de Winter & Dodou, 2012, p. 695) and the data are not normally distributed (Fabrigar et al., 1999). On the other hand, oblimin was used given that the common factors are expected to be correlated based on the COI theory (Arbaugh et al., 2008), and oblique rotations let factors correlate unlike orthogonal rotations (Fabrigar & Wegener, 2012; Osbourne, 2015).

After conducting EFA, the data were also subject to Confirmatory Factor Analysis (CFA) as Worthington and Whittaker (2006) suggest. "CFA is most commonly used during the scale development process to help support the validity of a scale following an EFA" (Worthington & Whittaker, 2006, p 824). Three rounds of CFA were conducted to determine the model's goodness of fit: 1) all data were run following the three-factor model of COI; 2) items 14, 15, and 28 were deleted and the remaining data were run following the three-factor model of COI; and 3) items 14, 15, and 28 were deleted and the remaining data were run following the extracted four factors in EFA. The statistical software, Jamovi and JASP, for confirmation, were used in both EFA and CFA.

Results and Discussion

The results of the EFA and CFA are as follows. Running the 714 cases through EFA yielded these results:

a. Bartlett's Test of Sphericity, $X2\ (561) = 28881$, $p < 0.001$, shows that the variables are correlated with each other (Smyth & Johnson, n.d.).
b. While Kaiser–Meyer–Olkin (KMO), KMO=.973, indicates that sampling is sufficient for the factor analysis and that the correlations among the items can generate latent factors (Watkins, 2018; Worthington & Whittaker, 2006). The KMOs of the individual items range from 0.953 to 0.986. According to Tabachnick & Fidell (2019), a good factor analysis needs to have a KMO greater than or equal to 0.6.

   The Bartlett's Test of Sphericity and KMO results both signify that the data are appropriate for EFA (Watkins, 2018).

c. Using a factor loading cutoff of 0.32, four factors emerged (see Appendix A). According to Tabachnick & Fidell (2019), variables with factor loadings of at least 0.32 are considered for interpretation in EFA; a large value of factor loading signifies that the variable is a strong measure of the factor. The communalities of the items show moderate to high levels (>0.40) (Widaman, 2018), which denote that the variables or items are explained by these four factors.

Items for Cognitive Presence (CP) (items 23-34) obtained loading scores that ranged from 0.467 to 0.902; while Teaching Presence (TP) (items 5-13) received 0.637-0.869 values, and Social Presence (SP) (items 14-22), 0.452-0.951 values. The fourth factor, Design and Organization (DO) (items 1-4), has a range of correlations from 0.525 to 0.733. All the items that loaded on Cognitive Presence, Teaching Presence, and Social Presence are consistent with the categorization in the COI survey. Likewise, the items in the fourth factor compose the Design and Organization subcategory of the instrument. Almost all items loaded on their expected factor except for item 14. Getting to know other course participants gave me, 15. I was able to form distinct impressions of some course participants, and 28. Online discussions were valuable in helping me appreciate different perspectives, which loaded under two factors. Items 14 and 15, which are items measuring Social Presence by the instrument, loaded on both Teaching Presence and Social Presence. While item 28, an item under Cognitive Presence in the battery, also loaded on Social Presence.

Both items 14 and 15 are under the Affective Expression subcategory of Social Presence in the COI Survey. Their cross-loading on Teaching Presence may indicate that the items need to be rephrased and clarified to be explicit measures of social presence in the course. Items 14 and 15 may be a function of the teacher's course design rather than a result of "the ability of learners to project themselves socially and affectively" (Rourke, et al., 1999) within the course. The conditions for interactions to take place in courses are primarily deliberately created by the faculty-in-charge of these courses. "Facilitating active learning" is among the features of Teacher Presence (Rourke et al., 1999). Hence, this may be indicative of students not being fully able to "feel affectively connected [to one] another" (Swan & Shih, 2005, p. 115).

The cross-loading of item 14 in Social Presence and Teacher Presence is also found in Yu and Richardson's (2015) study, which they posit could be attributed to the translation of the instrument and the mode of instruction in online learning in Korea where Video on Demand is primarily used, which "interacting with other peers is not a major component" (p. 51). Similarly, the main mode of learning in the university is guided independent study, where students, through a virtual learning environment (VLE), are provided with learning materials and course packages that they must study mostly independently (Arinto, 2013b, 2014, 2016; UP Open University Helpdesk, 2020).

As for the case of item 28, which cross-loaded on social presence, recasting of this item may also be needed, as online discussions can also foster social presence. Discussion forums may create a condition for building a sense of community and relationships, as they can stimulate active engagement with peers, thereby

providing an opportunity to enhance social presence. Moreover, in Ribas and Perine (2016), discussion forums were found to facilitate discussions, as well as reflections, which contributed to critical thinking. According to Martirosyan et al. (2022), some of the emerging themes of the discussion forum were perceived as both in-depth knowledge and teaching abilities.

Nonetheless, Tu and McIsaac (2002) posit that social presence is dependent on the degree to which participants feel, respond to, or perceive the connection with their peers, rather than on the frequency of participation. In a study by Swan (2003), discussion forums allow students to make use of textual verbal immediacy techniques that bridge the psychological distance among them. These verbal immediacy behaviors can develop social presence in asynchronous online discussions (Swan, 2003). According to Garrison, et al. (2000), "a true community of inquiry, [where social presence is enhanced], the tone of the messages is questioning but engaging, expressive but responsive, skeptical but respectful, and challenging but supportive" (p. 96).

These items, i.e., 14, 15, & 28, that cross-loaded on two factors were omitted from the survey because they fail to be accurate measures of either factor they loaded on (Fabrigar & Wegener, 2012; Navarro & Foxcroft, 2018), and the difference of these cross-loadings is less than 0.15 (Worthington & Whittaker, 2006). The deletion of these items aims to achieve a simple structure, which is a basis for retaining an item or factor (Tabachnick & Fidell, 2019; Watkins, 2018; Worthington & Whittaker, 2006).

After deleting items 14, 15, and 28 from the pool, a rerun of EFA was conducted "to ensure that item elimination did not result in changes to factor structure, factor intercorrelations, item communalities, factor loadings, or cross-loadings, so that all of the originally established criteria for these outcomes are still met" (Worthington & Whittaker, 2006, p 833). Based on the factor summary statistics (see Appendix B), the four factors account for 75.5% of the overall variance of the data, i.e., 27.48% by Cognitive Presence, 22.60% by Teaching Presence, 16.42% by Social Presence, and 9% by Design and Organization. Further, the four factors show positive correlations with CP, having strong correlations (Cohen, 1988; Valančius et al., 2019) with TP (r=0.734), SP (r=0.715), and DO (r=0.611). TP also shows strong correlations with SP (r=0.553) and DO (r=0.658); while SP has a moderate correlation with DO (r=0.432). These results indicate that the factors are substantially correlated (>0.3) and thus confirm the appropriateness of oblique rotation (Navarro & Foxcroft, 2018).

Further, the reliability test of the extracted factors indicates high reliability or internal consistency (see Tables 1 and 2). An internal consistency reliability of every factor that is greater than or equal to 0.70 (Watkins, 2018) would "[establish] the integrity of the factors derived from the factor analysis" (Lurie, 2021, p. 5).

Table 1

Scale Reliability Statistics

	Cronbach's α
scale	0.980

Table 2

Scale Reliability Analysis

Factor	Cronbach's α
Cognitive Presence	0.970
Teaching Presence	0.964
Social Presence	0.944
Design and Organization	0.925

The four-factor outcome, where DO emerges as a separate factor, is consistent with the study of Arbaugh et al. (2008). The bifurcation of the teaching presence into Instructional Design and Organization, and Directed Facilitation was observed in Shea et al.'s (2006) study, where Rovai's Classroom Community Index was used to examine the teaching presence and community in online courses. The separation of DO in the context of this study may be ascribed to the formal course development process in the university where the course package, which contains the course guide, study guides or modules, and the recommended assignment guides, of the course is developed by a course writer who is not necessarily the faculty that will deliver or teach the course (Arinto, 2014; Garcia, 2014).

Confirmatory Factor Analysis

Data for earlier EFAs were used for the CFA procedures. CFA was then undertaken to further validate the scale (Yang, 2005; Worthington & Whittaker, 2006). The data was passed through CFA thrice. The first run was to determine the goodness of fit of the existing three-factor COI survey. The second run was intended to also validate the three-factor COI survey, but using the data sans items 14, 15, & 28; while the third run was to validate the four factors extracted from the EFA, with items 14, 15,and 28 being deleted from the battery. Brown (2015) recommends that "at least one index from each fit class (absolute, parsimony, comparative) should be considered because each provides different information about the fit of the CFA solution" (p. 96-97). Hence, the combination of SRMR, CFI, TLI, and RMSEA model fit indexes were used (Brown, 2015; Kline, 2016; Tay & Jebb, 2017; Worthington & Whittaker, 2006). The following standards, based on the literature, were used to examine goodness of fit:

Table 3

Goodness of Fit Indicators

Goodness of Fit Measure	Model Fitness Indicator	Authors/Source
SRMR	≤ 0.08= minimum standard of good fit	Tay & Jebb (2017)
	< 0.10 = generally indicative of acceptable model fit	Worthington & Whittaker (2006)
	0.0 = perfect fit; the smaller the SRMR, the better the model fit	Brown (2015)
CFI	> 0.9 = satisfactory fit	Navarro & Foxcroft (2019)
	0.90-0.95 = acceptable model fit	Brown (2015)
	> 0.95 = good fit	Navarro & Foxcroft (2019)
	≥ 0.90 = minimum standard of good fit	Tay & Jebb (2017)
TLI	> 0.9 = satisfactory fit	Navarro & Foxcroft (2019)
	0.90-0.95 = acceptable model fit	Brown (2015)
	> 0.95 = good fit	Navarro & Foxcroft (2019)
	≥ 0.90 = minimum standard of good fit	Tay & Jebb (2017)
RMSEA	≤ 0.05 = close or good model fit	Brown (2015); Fabrigar & Wegener, 2012; Worthington & Whittaker (2006)
	<0.08 = adequate model fit	Brown (2015)
	0.05 – 0.08 = satisfactory fit	Fabrigar & Wegener, 2012; Navarro & Foxcroft (2019)
	≤ 0.08= minimum standard of good fit	Tay & Jebb (2017)
	0.08–0.10 = marginal or mediocre fit	Brown (2015); Fabrigar & Wegener, 2012
	≥0.1 = poor fit; reject model	Brown (2015); Fabrigar & Wegener, 2012

The results of the first CFA run of the items following the three factors, Teaching Presence (TcP), Cognitive Presence (CgP), and Social Presence (ScP), show that (see Table 4) the model does not fit the context of the setting.

Table 4

CFA results where the three-factor model of COI was followed

CFI	TLI	SRMR	RMSEA	RMSEA 90% CI	
				Lower	Upper
0.873	0.864	0.0517	0.0992	0.0964	0.102

Likewise, the CFA of the survey where items 14, 15, and 28 were removed and a three-factor model was applied show poor fit (see Table 5).

Table 5

CFA results where cross-loaded items were removed, and the three-factor model was followed

CFI	TLI	SRMR	RMSEA	RMSEA 90% CI	
				Lower	Upper
0.887	0.878	0.0464	0.0984	0.0954	0.102

On the other hand, the third CFA run, where the extracted four factors (Teaching Presence [TcP], Social Presence [ScP], Cognitive Presence [CgP], and Design and Organization [DaO]) were used and items 14, 15, and 28 were dropped, yielded satisfactory fit measures based on CFI, TLI, and SRMR results (see Table 6). However, a marginal fit was obtained through RMSEA. Based on these outcomes, it seems that the four-factor model is a better fit than the three-factor framework in this case.

Table 6

CFA results where cross-loaded items were removed, and the four factors were applied

CFI	TLI	SRMR	RMSEA	RMSEA 90% CI	
				Lower	Upper
0.916	0.908	0.0411	0.0853	0.0822	0.0884

Nonetheless, the average model fit could be indicative of courses not being true COIs, especially if they are designed for independent study rather than for purposeful collaboration and reflection intended to build a community of inquiry (Garrison, 2012). The mode of instruction in the university generally follows a "guided independent study of resource-based course packages and online

tutorials conducted through a Modular Object Oriented Dynamics Learning Environment (Moodle) - based virtual learning environment (VLE)... Resources are usually digital materials like webpages, PowerPoint presentations, and files in portable document format that are created outside of the VLE and uploaded or linked to the course site on Moodle. Activities include discussion forums, chat rooms, and online quizzes that are generally created directly on the Moodle system to enable interaction and dialogue among learners" (Arinto, 2014, p. 72). Some academic programs in the university incorporate a "collaborative inquiry" approach (UPOU Faculty of Education, 2018).

In the university under study, course authors or the faculty in charge of teaching the course develop the course materials or modules that specify the learning objectives to be attained; contain the content and indicate the learning resources that students should study; provide the prompts and scaffolds to help students learn the resources; and explain the activities and requirements that the students must accomplish. These materials are posted on the university's VLE, where interactions among the students and with the teacher and/or tutor also take place. Thus, a student in the university generally:

> "(i) engage in guided independent study of mostly text-based course packages;
> (ii) participate in computer-mediated discussion and collaborative learning activities conducted asynchronously through a Moodle-based VLE;
> (iii) submit assignments; and
> (iv) for most courses, [take final examination]" (Arinto, 2013a; 2016).

Kirschner, Valcke, & Sluijsmans (1999) classify guided independent study as second-generation distance education that "makes use of specially designed and developed learning materials in which the content and the pedagogy are fully integrated into the material" that are "developed in teams according to an industrial approach". (p. 82). It is more structured and incorporates more interaction with the teacher than the traditional independent study or correspondence approach of distance education (Kuskis, 2006).

Garrison (2012) explains that the COI framework is "essentially incompatible with traditional distance education approaches that value independence and autonomy over collaborative discourse in purposeful communities of inquiry" (p. 251). Thus, the general mode of instruction in the institution may not be completely aligned with the COI theoretical model as courses where students are "reliant on independent activities and tests" may have "little teaching, cognitive, or social presence" (Garrison, 2012, p. 251).

The third generation of distance education, where information, communication, and digital technologies are utilized to bridge the separation of time and space, is conducive to social-constructivist approaches to be integrated in online distance learning, and therefore suitable for the application of the COI framework (Anderson & Dron, 2011). Given the positive impact of COI on students' learning and development, as shown in various COI research works, the application and integration of COI concepts in online curriculum and instruction can be

beneficial. Yidana and Aboagye (2024) argue that designing a higher education curriculum should ensure that the three presences – cognitive, social, and teaching- are established. Likewise, they encourage members of the faculty to incorporate the three presences in their instruction. It would therefore be useful for online and distance higher education institutions to review their curriculum and instructional policies, as well as their faculty development programs, in relation to the application of COI in curriculum and instructional design and development. Should online universities decide to fully integrate COI in their pedagogy, a training program on COI for teachers may be essential for curriculum and instructional design and development.

Conclusion

This study examined the applicability of the COI Survey as a tool for SET in a fully online, open and distance learning university. By applying Exploratory and Confirmatory Factor Analysis and Confirmatory Factor Analysis, this study examined the validity of the COI Survey for student evaluations of teaching and learning within the Philippine online education context.

Based on the findings of this research, the four-factor, 31-item COI Survey (where items 14, 15, and 28 were removed) could be an acceptable tool to evaluate teaching effectiveness in the university. However, the following must be noted and considered:

a. The courses to be evaluated must be a true COI for the survey to be a valid and reliable measure thereof. Thus, the use of the COI survey as a tool for the Student Evaluation of Teaching in all courses may not be appropriate, given that some courses in the University may not be fully applying the COI framework, considering the guided independent study as the general mode of instruction in the institution. This approach may not sufficiently support the highly collaborative, reflective, and constructivist nature of COI (Garrison, 2012). Although there are opportunities for online interactions and discussions in the VLE, it must be emphasized that not all interactions and discussions can foster a COI. There should be a convergence among social, cognitive, and teaching presence for a true community of inquiry to be developed (Garrison & Cleveland-Innes, 2005).

   Garrison (2012) asserts "that it is misleading and counter-productive to critique a framework from an incompatible paradigmatic perspective that is not congruent with a context or for a purpose for which it was not intended" (p. 251). Likewise, the COI Survey will not be a fair assessment tool of teaching effectiveness if the courses are not expected to fully implement the COI framework.

b. The COI survey may be used by faculty members espousing the COI theoretical model for their own self-evaluation and reflection. As Garrison (2012) remarks, the COI "can also be used as a rubric to test for functioning communities of inquiry" (p. 251).

Thus, it would be interesting to know the extent to which the COI framework or collaborative-constructivist paradigm is being applied in courses in the university. Similarly, an examination of the compatibility and adaptability of COI across disciplines could also be explored.

A separate validation study of the COI instrument in courses that adapt the COI model may be warranted to confirm the findings in this research. If such a study yielded similar results, a rephrasing of items 14, 15, and 28 may be warranted, and further exploration of DO as a separate factor may be considered. Mixed-method research may also be conducted to triangulate results and to examine the perceptions of the teachers on COI and its application in online distance learning. Additionally, a meta-validation study could show if results will still be similar in a post-pandemic context, considering that this study was done prior to the foregoing health crisis.

Further, it would also be worthwhile investigating the impact of using the COI survey for teachers' self-evaluation and reflection. By conducting focus group discussions (FGD) with both students and faculty members, future research can examine whether the features of COI reflected in the items of the CoI survey exist in the university. Juhnus et al. (2021) examined quantitative as well as qualitative data to further understand the framework of community of inquiry. Such an approach may also be adapted in future research on COI in a fully online university.

The results of this research can contribute to institutional efforts in ensuring the quality of teaching and learning in the university. Moreover, it can also be used as a point of reflection on the epistemological stance and pedagogical approaches and practices of the institution. Further, this study can contribute to the research on COI in the Philippine context and in the cultural contingency of the COI framework.

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Appendix A

Factor loadings (Pattern Matrix)

Items	Factor				Uniqueness	Communality
	1 CP	2 TP	3 SP	4 DO		
34. I can apply the knowledge created in this course to my work or other non-class related activities.	0.902				0.255	0.745
25. I felt motivated to explore content related questions.	0.887				0.206	0.794
33. I have developed solutions to course problems that can be applied in practice.	0.878				0.206	0.794
32. I can describe ways to test and apply the knowledge created in this course.	0.843				0.221	0.779
30. Learning activities helped me construct explanations/ solutions.	0.841				0.175	0.825
31. Reflection on course content and discussions helped me understand fundamental concepts in this class.	0.814				0.192	0.808

Items	Factor				Uniqueness	Communality
	1 CP	2 TP	3 SP	4 DO		
29. Combining new information helped me answer questions raised in course activities.	0.786				0.214	0.786
26. I utilized a variety of information sources to explore problems posed in this course.	0.763				0.308	0.692
24. Course activities piqued my curiosity.	0.742				0.296	0.704
27. Brainstorming and finding relevant information helped me resolve content related questions.	0.614				0.282	0.718
23. Problems posed increased my interest in course issues.	0.598				0.279	0.721
28. Online discussions were valuable in helping me appreciate different perspectives.	0.467		0.356		0.295	0.705
12. The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives.		0.869			0.319	0.681

Items	Factor				Uniqueness	Communality
	1 CP	2 TP	3 SP	4 DO		
7. The instructor helped to keep course participants engaged and participating in productive dialogue.		0.824			0.178	0.822
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.		0.824			0.172	0.828
13. The instructor provided feedback in a timely fashion.		0.82			0.375	0.625
10. Instructor actions reinforced the development of a sense of community among course participants.		0.811			0.206	0.794
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.		0.802			0.195	0.805
8. The instructor helped keep the course participants on task in a way that helped me to learn.		0.733			0.187	0.813

Items	Factor				Uniqueness	Communality
	1 CP	2 TP	3 SP	4 DO		
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.		0.644			0.207	0.793
9. The instructor encouraged course participants to explore new concepts in this course.		0.637			0.25	0.75
15. I was able to form distinct impressions of some course participants.		0.376	0.358		0.423	0.577
19. I felt comfortable interacting with other course participants.			0.951		0.147	0.853
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.					0.36	0.64
18. I felt comfortable participating in the course discussions.			0.828		0.218	0.782
17. I felt comfortable conversing through the online medium.			0.733		0.293	0.707

Items	Factor				Uniqueness	Communality
	1 CP	2 TP	3 SP	4 DO		
21. I felt that my point of view was acknowledged by other course participants.			0.701		0.293	0.707
22. Online discussions help me to develop a sense of collaboration.			0.623		0.239	0.761
16. Online or web-based communication is an excellent medium for social interaction.			0.523		0.395	0.605
14. Getting to know other course participants gave me a sense of belonging in the course.		0.323	0.452		0.356	0.644
2. The instructor clearly communicated important course goals.				0.733	0.143	0.857
1. The instructor clearly communicated important course topics.				0.611	0.202	0.798
3. The instructor provided clear instructions on how to participate in course learning activities.				0.567	0.247	0.753

Items	Factor				Uniqueness	Communality
	1 CP	2 TP	3 SP	4 DO		
4. The instructor clearly communicated important due dates/time frames for learning activities.				0.525	0.378	0.622

Note. 'Principal axis factoring' extraction method was used in combination with an 'oblimin' rotation

Appendix B
Factor Statistics

Table B1

Summary

Factor	SS Loadings	% of Variance	Cumulative %
1	8.52	27.48	27.5
2	7.01	22.60	50.1
3	5.09	16.42	66.5
4	2.79	9.00	75.5

Table B2

Inter-Factor Correlations

	1	2	3	4
1	—	0.734	0.715	0.611
2		—	0.553	0.658
3			—	0.432
4				—

Bridging the Gap: The Institutionalization of Reflective Practices in ODL Teacher Education in Tanzania

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Abstract

This study examines how reflective practices (RPs) are integrated within open and distance learning (ODL) pre-service teacher education in Tanzania, focusing on the Institute of Adult Education (IAE) and the Open University of Tanzania (OUT). Despite strong policy endorsement of learner-centered pedagogy, little empirical evidence exists on how reflection is enacted in ODL environments characterized by asynchronous interaction, limited supervision, and uneven digital access. Using a concurrent mixed-methods design, data were collected from second-year student teachers (n = 120) and institutional tutors (n = 8) through surveys, interviews, virtual observations, and curriculum analysis. Findings reveal that while RPs such as e-portfolios, peer feedback, journaling, and action research are formally present, their implementation is structurally fragmented and weakly institutionalized. Tutor commitment and student teachers' engagement are evident; however, limited digital pedagogical training, inconsistent assessment frameworks, and inadequate institutional guidance constrain reflective depth, often reducing reflection to task completion rather than professional inquiry. The study argues that the challenge in Tanzanian ODL teacher education is not the absence of reflective practices but their under-institutionalization within curriculum, supervision, and assessment systems. These findings provide context-sensitive evidence for strengthening policy operationalization, tutor capacity, and structured reflective mechanisms in distance-based teacher preparation programs.

Keywords: *Reflective Practice, Open and Distance Learning, Pre-service Teacher Education, Digital Pedagogy, Tanzania*

Introduction

The global expansion of Open and Distance Learning (ODL) has fundamentally restructured teacher preparation, yet it has simultaneously created a "pedagogical friction" in the cultivation of reflective practice (RP) (Pitsoe and Maila, 2011). While reflection is widely recognized as a cornerstone of professional teacher identity (Cant, et al, 2013; Dewey, 1933; Artzt & Armour-Thomas, 2002), its enactment within ODL remains an under-theorized and structurally neglected domain. In many Global South contexts, including Tanzania, ODL is no longer a peripheral alternative but a primary vehicle for addressing teacher shortages.

However, shifting teacher preparation into virtual spaces does not merely change the location of learning; it fundamentally disrupts the relational and supervisory mechanisms essential for deep, transformative reflection (Dhiman, 2021).

The ODL Disruptor: Why Reflection is at Risk

Reflective practice is traditionally viewed as a disciplined inquiry that bridges the gap between theory and classroom action (Dewey, 1933; Blomberg, 2018). In conventional face-to-face programs, this process is nurtured through real-time dialogue and immediate mentorship, which acts as a catalyst for professional growth (Ellegaard et al., 2017). Conversely, ODL environments are characterized by asynchronous interactions, limited direct supervision, and a heavy reliance on digital mediation. These conditions shift the burden of reflection entirely onto the student teacher. As Delic and Becirovic (2016) note, without deliberate scaffolding, reflective practices risk becoming descriptive and superficial. In the absence of the "interpersonal mirror" provided by a physically present tutor, reflective tools such as journals and portfolios may degrade into performative, "tick-box" exercises rather than meaningful professional inquiry (Astika, 2014).

The Tanzanian Context: A Policy-Practice Paradox

Tanzania provides a critical case study for this global challenge. Through flagship institutions like the Institute of Adult Education (IAE) and the Open University of Tanzania (OUT), the nation has aggressively integrated ODL into its teacher education policy. Yet, a stark paradox exists: while national policies emphasize learner-centered, reflective pedagogy, the institutional reality reveals a "structural fragmentation." Research by Anangisye (2011) highlights that the promotion of professional ethics and reflective standards often faces significant implementation challenges in Tanzanian teacher colleges. Furthermore, Dachi (2016) argues that teacher professional development in Tanzania has historically suffered from "missing dimensions," where the depth of pedagogical reflection is sacrificed for the sake of enrollment expansion and administrative compliance.

The Research Gap and Contribution

Despite the proliferation of ODL, empirical evidence remains thin on how reflection is actually *enacted* within the specific digital constraints of the Global South. While international studies offer a comparative look at RP (Ewing et al., 2021), there is a void in understanding how reflective pedagogy survives the transition to distance modes in contexts with uneven digital access and limited tutor capacity.

This study addresses this gap by moving beyond a description of "what" tools are used to investigate "how" (and why) reflection is being integrated, or marginalized, within the ODL lifecycle at IAE and OUT. The analysis of the intersection of curriculum design, tutor facilitation, and student teachers' engagement, makes this research identify the specific institutional "bottlenecks" that constrain professional growth. In doing so, it contributes context-sensitive

evidence required to move from a fragmented model of reflection to a robust, institutionalized system of professional inquiry in distance-based teacher education.

Literature Review

Reflective practice (RP) has long been recognized as a cornerstone of teacher education, supporting professional learning through critical examination of teaching experiences, beliefs, and actions (Dewey, 1933; Schön, 1983). In traditional face-to-face teacher education, reflective activities are often embedded within classroom interaction, school-based practicum supervision, and immediate feedback from mentors. However, the rapid expansion of Open and Distance Learning (ODL) has altered the conditions under which reflection occurs, raising important questions about how reflective practices are designed, enacted, and assessed in virtual and flexible learning environments. This shift is not merely contextual but epistemic, as ODL reshapes the pedagogical, technological, and relational foundations of teacher learning.

Reflective Practice in ODL Teacher Education

In ODL contexts, reflective practice is increasingly mediated through digital technologies, asynchronous interaction, and limited physical contact between tutors and student teachers. Online journals, e-portfolios, peer discussion forums, and digital self-assessment tools have become primary mechanisms through which reflection is encouraged (Moon, 2006; Boulton & Hramiak, 2012). While these tools offer flexibility and scalability, studies suggest that reflection in ODL environments is often less structured, less dialogic, and more individualized than in campus-based programs (Kabilan & Khan, 2012; Loughran, 2019). As a result, reflective activities risk becoming procedural tasks rather than critical inquiries into professional practice.

Research from diverse ODL systems indicates that the effectiveness of reflective practices depends not only on the availability of digital tools but also on pedagogical design, tutor competence in online facilitation, and institutional assessment frameworks (Garrison, Anderson, & Archer, 2010). Without deliberate scaffolding and feedback, student teachers may engage superficially with reflective tasks, reproducing descriptive accounts rather than analytical or transformative reflection.

Why ODL Changes the Nature of Reflection

Unlike face-to-face teacher education, ODL relies heavily on asynchronous learning, mediated communication, and learner autonomy. These features fundamentally reshape reflective practice in three ways. First, the absence of real-time interaction limits opportunities for spontaneous dialogue, modelling of reflective thinking, and immediate corrective feedback. Second, digital platforms mediate reflective expression, privileging written or recorded formats that may not align with students' prior learning cultures. Third, assessment in ODL often emphasizes completion and submission over iterative reflection and professional dialogue.'

Consequently, reflective practice in ODL requires intentional design that integrates technology, pedagogy, and assessment. Studies show that when tutors actively guide reflection through structured prompts, formative feedback, and peer interaction, student teachers demonstrate deeper levels of critical reflection and professional awareness (Garrison & Vaughan, 2008; Kearney et al., 2020). Conversely, where tutors lack training in digital pedagogy or reflective assessment, reflective tools remain underutilized or inconsistently applied.

Empirical Evidence from ODL Contexts

International research consistently highlights both the potential and limitations of reflective practices in ODL teacher education. Studies from Europe, North America, and Asia report that digital reflective tools can enhance self-regulation, professional identity formation, and theory–practice integration when embedded within coherent instructional designs (Boud, Keogh, & Walker, 2013; Zeichner & Liston, 2014). However, these benefits are unevenly realized, particularly in contexts characterized by limited technological infrastructure, high tutor workloads, and weak institutional support.

Within Sub-Saharan Africa, ODL teacher education programs face additional challenges, including unequal access to digital resources, limited exposure to reflective pedagogies, and assessment cultures that prioritize summative evaluation over formative learning (Unwin, 2019). Existing studies tend to focus on access and enrollment expansion, with comparatively little empirical attention given to how reflective practices are enacted in everyday ODL teaching and supervision. This gap is particularly evident in teacher education systems where ODL serves as a primary pathway for training large numbers of teachers.

Reflective Practices in Tanzanian ODL Teacher Education

In Tanzania, institutions such as the Institute of Adult Education (IAE) and the Open University of Tanzania (OUT) play a central role in teacher preparation through ODL. National policy documents emphasize learner-centered pedagogy, professional competence, and continuous teacher development. Nevertheless, evidence suggests a disconnect between policy intentions and actual pedagogical practices within ODL programs. Reflective activities are often mentioned in curricula but remain weakly integrated into teaching, learning, and assessment processes.

Previous studies in the Tanzanian context have highlighted challenges related to tutors' preparedness for online teaching, inconsistent use of digital platforms, and limited mechanisms for monitoring reflective engagement among student teachers. Cultural norms that position tutors as authoritative knowledge providers may further constrain dialogic and critical reflection, particularly in virtual environments where interaction is already limited. At the same time, emerging practices such as online journaling, portfolio-based assessment, and virtual peer feedback indicate growing awareness of the value of reflection for professional learning in ODL teacher education.

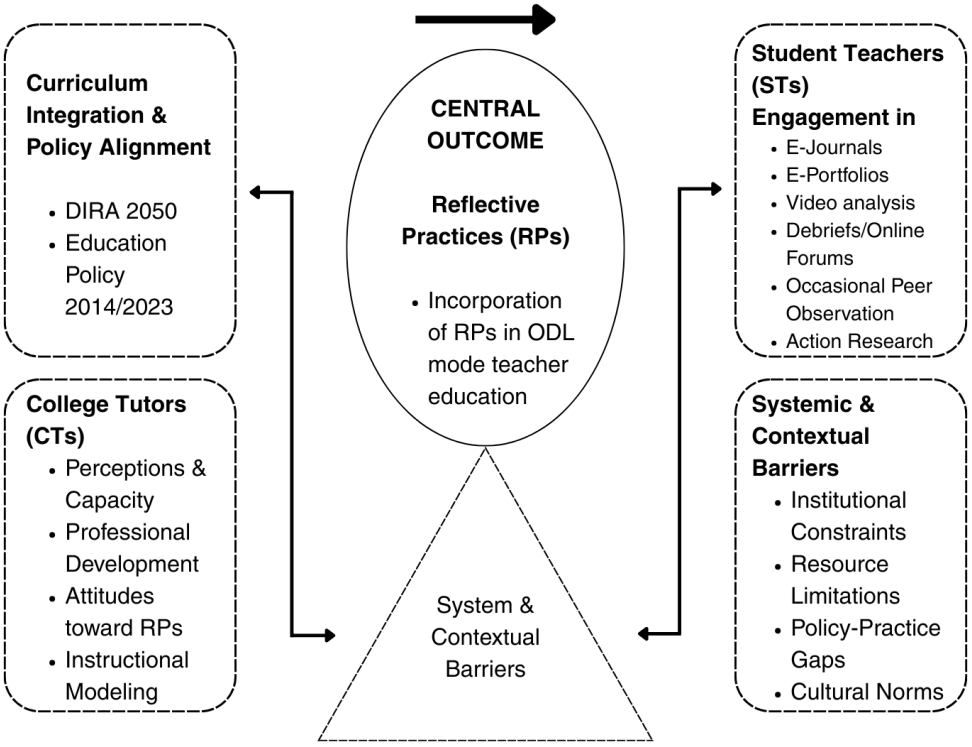
Conceptual, Theoretical and Analytical Framework

Conceptual Framework

The conceptual framework for this study (see Figure 1) posits that the successful incorporation of reflective practices (RPs) is not an isolated pedagogical event but a central outcome emergent from the dynamic interplay of four critical pillars: policy alignment, tutor capacity, student engagement, and systemic mediators.

Figure 1

Conceptual framework



Policy & Curricular Alignment: This pillar examines the "pedagogical translation" of Tanzanian mandates (DIRA 2050; Policy 2014/23) into ODL-friendly modular designs that prioritize reflective inquiry over rote learning.

Tutor Facilitative Capacity: Moving beyond traditional instruction, this component evaluates tutors as digital facilitators who bridge "transactional distance" through cognitive scaffolding and instructional modeling within virtual environments.

Autonomous Learner Engagement: Rooted in the ODL tenet of autonomy, this level analyzes how student teachers utilize self-regulation and digitally-mediated tools (e-portfolios, journals) to bridge the gap between theory and practice.

Systemic & Contextual Mediators: This "barrier interface" recognizes that

reflective competence is mediated by the digital divide, institutional constraints, and the "policy-practice gap," which collectively catalyze or stifle professional growth.

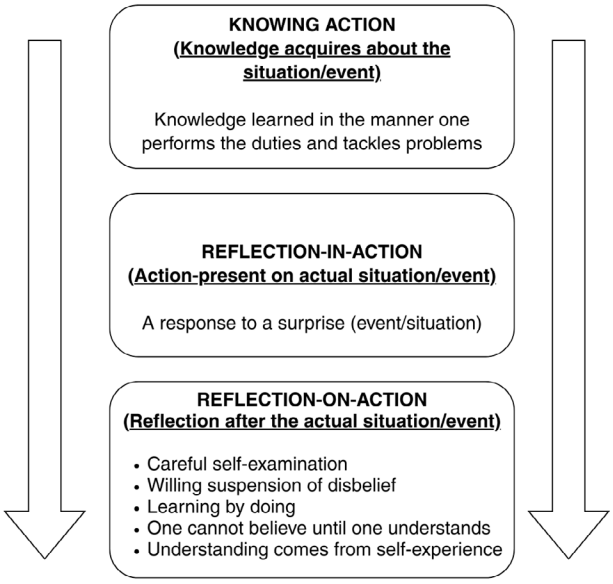
Theoretical Framework

Drawing on Dewey's (1933) disciplined inquiry and Schön's (1983) reflection-in/on-action, this study conceptualizes reflective practice in ODL as a mediated interaction between institutional structures, digital tools, and pedagogical engagement. Unlike traditional settings, ODL reflection is shaped by curriculum design, technological affordances, and online competence.

As shown in Figure 2, reflective outcomes depend on the alignment between curricular expectations, tutor facilitation, and assessment strategies. While misalignment constrains depth, coherent integration enhances professional learning. This framework identifies leverage points for strengthening reflective pedagogy at IAE and OUT.

Figure 2

Schön's (1987) reflective practicum framework



Note. Ideas of Villegas-Reimers' 2003's model of TRP in combination with modified Schon's 1983's Theory of Reflective Practicum

Analytical Framework

This study operationalizes Schön's (1983) Cyclical Reflective Practice (CRP) model, in Figure 3, to examine the ODL teaching-learning ecosystem. The framework ensures a rigorous analysis of how reflective judgments are enacted in distance environments.

Figure 3

Adapted Analytical Framework based on Schön (1983)

The analytical process followed six interrelated stages:

1. **Description**: Mapping RPs within ODL curriculum and virtual practicum structures.
2. **Feelings:** Capturing tutors' and student teachers' affective responses and motivation via online surveys.
3. **Evaluation:** Measuring the digital effectiveness of RPs by triangulating mixed-method data.
4. **Analysis:** Isolating the technological and institutional factors enabling or constraining ODL engagement.
5. **Conclusion:** Synthesizing systemic gaps, specifically regarding inconsistent implementation and tutor digital readiness.
6. **Action Planning:** Developing evidence-based strategies to formalize reflective pedagogy in ODL teacher education.

This framework shifts the focus from traditional classroom settings to knowing-in-action within virtual spaces. It provides a structured lens to identify "leverage points" for strengthening the reflective capacity of Tanzanian student teachers within mediated, asynchronous environments.

Statement of the Problem

Despite the recognized role of reflective practices (RPs) in developing professional competence in teacher education, their integration within Tanzania's open and distance learning (ODL) programs remains uneven and weakly structured. ODL environments present distinctive conditions such as asynchronous learning, limited virtual supervision, reliance on digital feedback, and unequal technological access that fundamentally shape how reflection

is enacted. At institutions such as the Institute of Adult Education (IAE) and the Open University of Tanzania (OUT), these conditions are compounded by limited tutor preparation in digital pedagogy, inconsistent institutional guidelines, and assessment practices that treat reflection as a graded task rather than a learning process. As a result, student teachers may complete programs with limited capacity for critical self-evaluation and adaptive teaching in virtual or blended classrooms. Empirical evidence on how reflective practices function within ODL teacher education in Tanzania remains limited, necessitating focused investigation.

Objectives of the Study

This study aims to examine the integration of reflective practices in ODL-based teacher education at IAE and OUT by:

1. Analyzing how reflective practices are embedded in curriculum and policy within distance and blended learning modes;
2. Examining tutors' perceptions and facilitation of reflective practices in ODL contexts; and
3. Assessing the extent and forms of student teachers' engagement with digital reflective tools.

Methods

This study employed a mixed-methods approach guided by a pragmatic paradigm to examine how reflective practices (RPs) are integrated within open and distance learning (ODL) teacher education in Tanzania. A concurrent embedded design was adopted, prioritizing qualitative data while using quantitative evidence to support and validate emerging patterns.

The study was conducted at two public ODL institutions: the Open University of Tanzania (OUT) and the Institute of Adult Education (IAE). These institutions were purposively selected to represent degree- and diploma-level teacher education delivered through distance and blended learning modes. Participants comprised 128 respondents, including eight tutors/lecturers and 120 second-year student teachers. Second-year students were targeted due to their recent engagement in online teaching practice, providing direct exposure to reflective activities in virtual contexts.

Data were collected through four complementary methods: documentary review of curricula and institutional guidelines, virtual semi-structured interviews with tutors/lecturers, online surveys administered to student teachers, and virtual classroom observations. Instruments were administered digitally and, where necessary, translated into Swahili to ensure clarity and contextual relevance. Ethical clearance was obtained, and informed consent, anonymity, and secure data handling were observed throughout.

Data analysis followed a thematic approach informed by Braun and Clarke's (2022) framework, integrating qualitative and quantitative evidence. Qualitative data were coded and organized into themes reflecting patterns of RP

implementation, facilitation, and engagement in ODL contexts. Quantitative survey data were analyzed using descriptive statistics to indicate the prevalence and forms of reflective practice. Schön's reflective practice framework (reflection-in-action and reflection-on-action) was applied as the primary analytical lens to align data interpretation with the study objectives.

This approach enabled a focused examination of how reflective practices are enacted, constrained, and supported within Tanzanian ODL teacher education.

Integration of Reflective Practices (RPs) into the Curriculum

Results

This study explored how RPs are incorporated into the ODL teacher education curriculum at the Institute of Adult Education (IAE) and the Open University of Tanzania (OUT). Key RP activities analyzed included online journaling, e-portfolio creation, digital action research, collaborative teaching, and peer feedback. Document review of syllabi, course outlines, and policy frameworks revealed partial but meaningful integration, with variations in structure, assessment, and formalization.

The study analyzed the extent and manner in which various reflective practices, such as journaling, portfolio creation, action research, collaborative teaching, peer briefing, and video analysis are integrated, taught, and assessed within the ODL teacher education curriculum. The results are presented in Table 1.

Table 1

Structured Inclusion of Reflective Practices (RPs) in the ODE Curriculum

Reflective Practice	Inclusion in Curriculum (Modules/ Courses)	Teaching Methods	Assessment	Pages Referenced
Reflective Journaling	*Integrated within the Ethics of Teaching and Curriculum and Instruction*	Individual digital writing exercises and reflections	Indirectly assessed through projects or online presentations	5–6, 14, 21
Creation of Portfolio	*Highlighted as part of the assessment tools (Work Portfolio)*	Compilation of e-portfolios including lesson plans and reflections	Assessed through continuous online evaluation (5% of professional courses)	22

Reflective Practice	Inclusion in Curriculum (Modules/ Courses)	Teaching Methods	Assessment	Pages Referenced
Action Research	*Included in Education Research*	Digital research projects exploring online classroom challenges	Assessed via coursework projects and final evaluations	6–7, 22
Collaborative/ Team Teaching	*Applied in virtual practical teaching sessions (Teaching Practice)*	Group lesson preparation, virtual teaching, and peer feedback	Performance evaluated under *Ufundishaji wa Shule Jirani* (25% of marks)	13–14, 21
Peer Briefing	*Encouraged in virtual classroom simulations (Role-Play/ Simulation)*	Students provide peer feedback during mock teaching sessions	Evaluated under *Ufundishaji Igizo/Kiduchu* (20% of marks)	13–14, 21
Video Reflective Analysis	*Not explicitly included*	Recording virtual teaching sessions for review	Potentially included in e-portfolios or assignments	Not specified

Note. Acquired from field data, 2025

Also, the study analyzed the institutional policies, support mechanisms, and course structures at IAE and OUT, highlighting how these frameworks enable or limit the promotion and systematic integration of reflective practices in ODL teacher education. The institutional policies at IAE and OUT were evaluated to examine structural support for RPs in ODE. Table 2 highlights the findings.

Table 2

Policy and Structural Support in the Promotion of RPs

Aspect	IAE	OUT
Institutional Policy	Supportive policies emphasize quality ODE and student-centered learning; limited explicit RP focus	Policies encourage competency-based online teacher training; RP mention is implicit

Aspect	IAE	OUT
Student Teacher Training	General ODE teacher preparation without dedicated RP modules	Includes digital teaching skills training but lacks structured reflective components
Support Mechanisms	Limited digital mentorship and online guidance	Virtual supervision exists but RP-specific support is minimal
Course Objectives and Content	Emphasizes academic and pedagogical excellence online; RP integration is indirect	Focus on digital lesson delivery and pedagogical competence; reflective components are implicit
Teaching Methods	Predominantly online lectures with limited interactive reflection	Online discussions and practical sessions were used; reflection is not systematically integrated
Assessment	Focus on digital lesson completion, assignments, and knowledge application	Some continuous assessment; RP-specific tasks not formally evaluated
Expected Outcomes	Competency in online teaching and adherence to ODE standards; limited reflective skill development	Student teachers acquire basic ODE competencies; reflective growth not systematically targeted

Note. Acquired from field data, 2025

In addition, the review of teaching and evaluation strategies in Table 3, indicates the integration of RPs remains limited and largely informal at IAE and OUT, with a predominant reliance on traditional online teaching methods.

Table 3

Teaching and Evaluation Strategies of RPs

Aspect	IAE	OUT
Teaching Strategies	Teacher-centered online methods dominate; minimal structured reflection	Mixed approaches; some collaborative and discussion-based sessions, reflection not formalized
Methods	Traditional online instruction with limited RP tools	Combination of lectures, discussions, and limited peer feedback
Student Engagement	Few opportunities for collaborative reflection	Engagement through virtual discussion groups; RP internalized individually

Aspect	IAE	OUT
Evaluation Strategies	Focus on assignments and lesson delivery; no direct RP assessment	Some online assessment tools are used; reflection is rarely formally evaluated
Feedback Mechanisms	Primarily academic performance	Digital notes and video calls; RP follow-up inconsistent
Reflective Tasks	No structured digital journals, self-assessment, or peer evaluation	Ad hoc reflection encouraged during virtual teaching, not systematically

These findings reveal a reliance on traditional online teaching and evaluation strategies with limited integration of RPs.

Reflective journaling is embedded in courses such as Ethics of Teaching and Curriculum and Instruction, mostly as individual digital exercises. Assessment is indirect, through projects or online presentations. Portfolio creation is formally included in professional courses, evaluated continuously, reflecting policy emphasis on competency-based ODE programs. Action research occurs in methodology courses, connecting theory to digital classroom challenges, though formal assessment is limited. Collaborative teaching and peer briefing appear in virtual practical sessions, contributing 20–25% of course marks. Video-based reflection exists informally but is not systematically implemented.

Policy review indicated general support for ODE and competency-based learning; however, explicit RP-focused guidelines, structured digital mentorship, and systematic assessment of reflective skills are lacking (Table 5). Teaching methods remain predominantly teacher-centered, with limited collaborative reflection opportunities. Evaluation emphasizes assignments and lesson completion, with RP-specific assessment minimal or ad hoc (Table 6).

Discussion

These findings show that while RPs are present in Tanzanian ODL curricula, their integration is inconsistent and often implicit, mirroring global observations that reflective learning is frequently under-structured in distance programs (Akhigbe & Monday, 2022; Mathew et al., 2021). Journaling and portfolio creation support reflection-on-action stages, fostering critical thinking and professional documentation, but indirect assessment limits the depth and transferability of learning. Action research reinforces analysis and action planning in Schön's cycle, yet the scope remains narrow. Collaborative and peer-based activities enable reflection-in-action, enhancing real-time adaptation and social learning, aligning with global best practices emphasizing peer interaction and feedback (Loughran, 2010).

Policy and institutional gaps constrain systematic RP engagement. The absence of explicit RP-focused policy, structured mentorship, and formal assessment reduces opportunities for STs to complete Schön's reflective cycle, potentially

limiting professional growth and adaptive expertise. Teacher-centered online methods and minimal collaborative platforms further restrict experiential reflection. Curricular integration of RPs can be strengthened by:

1. Formalizing video-based reflection and structured digital journaling.
2. Aligning assessment rubrics with reflective objectives to capture evidence of reflection-in-action and reflection-on-action.
3. Embedding mentorship and peer-feedback mechanisms to scaffold collaborative reflection.
4. Reviewing policies to explicitly prioritize structured RPs as core learning outcomes, ensuring that all stages of Schön's cycle are addressed.

The curriculum provides meaningful but fragmented opportunities for reflective learning. Systematic embedding of RPs is critical to preparing Tanzanian STs for adaptive, reflective teaching in contemporary ODL environments.

CTs' Perceptions of Reflective Practices in ODE Pre-Service Teacher Education

Results

Three major themes emerged from CT interviews: (1) recognition of RPs' value despite doubts about feasibility, (2) marginal and inconsistent integration of RPs into teaching and assessment, and (3) limited institutional support and resources.

CTs universally acknowledged that RPs enhance STs' professional growth, adaptability, and critical thinking. CT4 noted:

> Reflection helps students see what went well, what did not work as expected, and what needs to be improved (Jan. 16, 2025).

While CT2 emphasized:

> Reflective skills help them become more effective teachers in digital classrooms (Jan. 6, 2025).

In contrast, some CTs questioned the practicality of ODE; CT3 stated:

> Too much reflection without action doesn't help; teaching is something you must do, not only think online (Jan. 14, 2025).

and CT7 added:

> RPs seem theoretical in virtual settings (Feb. 27, 2025).

CTs reported varied integration strategies: digital questioning, online discussions, micro-teaching observation, and feedback sessions. CT3 explained:

> I ask questions online, observe virtual micro-teaching, give feedback, and hold discussions to share successes and mistakes

> (Jan. 16, 2025)

However, structured tools like digital journals, e-portfolios, or peer evaluation were inconsistently applied, and RP incorporation remained ad hoc.

CTs actively facilitated reflection despite minimal institutional support. CT5 stated:

> I remind students that reflection is not just for marks; it is an important skill for their teaching career (Jan. 14, 2025).

while CT6 noted,

> Portfolios include lesson plans, self-assessment, and peer feedback to help students grow into effective virtual teachers (Jan. 14, 2025).

Discussion

These findings indicate that tutors value RPs and engage STs proactively, but practical constraints and weak institutional guidance limit systematic implementation. Skepticism about ODE feasibility highlights the need to scaffold reflection within digital teaching. Partial integration aligns with Schön's reflective cycle, supporting description and evaluation stages but underutilizing structured reflection and feedback. The gaps in policy, training, and digital resources present opportunities to formalize RP modules, strengthen assessment and feedback mechanisms, and enhance alignment between curriculum, pedagogy, and institutional support.

CTs' perceptions reveal intrinsic commitment to RP, yet marginal incorporation and inconsistent structures constrain its full potential in Tanzanian ODE teacher education.

The Extent of Student Teachers' Engagement in Acquiring Reflective Practices

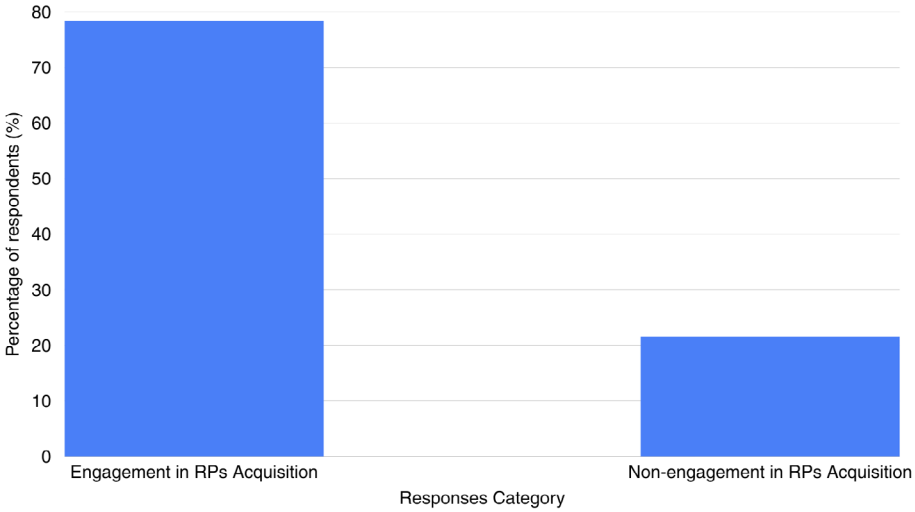
Results

Analysis of virtual classroom observations, survey responses, and structured interviews revealed three key findings regarding ST engagement with RPs.

First, overall engagement was high: 78.4% of STs reported active participation, confirmed through observation of e-portfolios, digital journals, peer debriefings, video analysis, and self-assessment (Figure 4).

Figure 4

Engagement of Student Teachers in the Acquisition of RPs



Note. Acquired from field data, 2025

Table 4 presents the distribution of ST responses regarding tutor assessment, feedback, and clarity of RP criteria.

Table 4

Assessment of RPs

Statements	SD	D	N	A	SA	Mean	STD
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
My tutors regularly assessed my progress in reflective practices.	2 (1.7)	4 (3.3)	21 (17.4)	59 (48.8)	35 (28.9)	4.0	0.86
I received constructive feedback on my reflective practice assignments.	3 (2.5)	6 (5.0)	13 (10.8)	63 (52.5)	35 (29.2)	4.0	0.91

Statements	SD	D	N	A	SA	Mean	STD
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The assessment criteria for reflective practices were clear and understandable.	4 (3.3)	10 (8.1)	15 (12.2)	57 (46.3)	37 (30.1)	3.9	1.02

Note. Acquired from field data, 2025

Most STs positively perceive RP teaching and assessment, with high agreement on regular assessment (77.7%), constructive feedback (81.7%), and clear criteria (76.4%).

Quantitative measures showed strong engagement in e-portfolio creation (Mean = 4.4, SD = 0.79), collaborative/team teaching (Mean = 4.4, SD = 0.82), and reflective journaling (Mean = 4.1, SD = 0.88) (Table 5).

Table 5

Engagement with RPs

Statements	SD	D	N	A	SA	Mean	STD
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
Reflective journaling is a regular part of my ODE program.	5 (4.0)	1 (0.8)	6 (4.8)	66 (53.2)	46 (37.1)	4.1	0.88
Action research projects are helping me develop reflective practices.	4 (3.2)	4 (3.2)	16 (12.9)	63 (50.8)	37 (29.8)	4.0	0.92
Creating an e-portfolio is enhancing my reflective thinking skills.	2 (1.7)	2 (1.7)	5 (4.1)	47 (38.8)	65 (53.7)	4.4	0.79
Collaboration and team teaching are emphasized in my virtual training to promote RPs.	4 (3.3)	0 (0.0)	2 (1.7)	50 (41.7)	64 (53.3)	4.4	0.82

Statements	SD	D	N	A	SA	Mean	STD
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
Training on virtual peer briefing sessions is contributing to my reflective development.	4 (3.3)	3 (2.5)	8 (6.6)	67 (55.4)	39 (32.2)	4.1	0.88
Video reflective analysis is a learned reflective tool for my practice.	3 (2.5)	5 (4.2)	9 (7.5)	63 (52.5)	40 (33.3)	4.1	0.89

Note. Acquired from field data, 2025

STs reported that these tools enhanced autonomy, documentation of teaching experiences, and critical reflection; one ST explained:

> Journaling and team-teaching activities make me aware of what works and what doesn't in online classrooms, but sometimes I still rely on tutor guidance to validate my reflections.

Second, engagement depth varied. Observations highlighted a tension between autonomy and tutor dependence, with some STs proactively adjusting lessons, while others strictly followed lesson plans awaiting tutor input. E-portfolios and virtual peer briefings were consistently used, but video analysis and structured online journaling were unevenly adopted, reflecting technological and institutional constraints. Independent samples t-tests showed no significant differences in RP engagement by prior education level (College Certificate vs. Secondary Education; $t = 1.11$, $df = 118$, $p = 0.269$), indicating comparable experiences across subgroups (see Table 6).

Table 6

Assessment of RPs

t-Test for Equality of Means	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.
Equal variances assumed	1.11	118.0	0.269	0.12	0.11
Equal variances not assumed (Welch's correction)	1.09	101.7	0.277	0.12	0.11

Note. Acquired from field data, 2025

Third, RP assessment was generally perceived positively: 77.7% of STs reported regular tutor assessment, 81.7% received constructive feedback, and 76.4% found assessment criteria clear (Table 6). However, qualitative data suggested

reflection was often task-oriented, with STs completing activities primarily for grades rather than authentic professional growth.

Discussion

Findings indicate that STs in Tanzanian ODL programs engage actively with structured RP tools, demonstrating emerging reflective capability consistent with Schön's cyclical reflective practice model. Variability in engagement depth highlights the influence of institutional support, tutor facilitation, and digital infrastructure on authentic reflection. Equitable engagement across educational backgrounds underscores the central role of program design rather than prior experience. Assessment practices motivate participation but risk promoting compliance over intrinsic reflective development, emphasizing the need for structured, standardized, and scaffolded RP activities. Enhancing tutor guidance, digital access, and clear evaluation criteria can strengthen STs' internalization of RPs, fostering professional competence and autonomy in ODL teacher education.

Synthesis of Findings

Across the three objectives, the findings reveal a consistent pattern of partial but promising integration of reflective practices in Tanzanian ODL pre-service teacher education, shaped by curriculum design, tutor agency, and student engagement within constrained institutional environments.

At the curriculum and policy level, RPs are present but fragmented, embedded implicitly through journaling, portfolios, action research, and collaborative activities, yet weakly supported by explicit policy directives, structured mentorship, and standardized assessment frameworks. This structural ambiguity sets the conditions under which tutors and student teachers operate.

Tutors respond to these conditions with strong professional commitment, valuing reflective practices and actively facilitating reflection through questioning, feedback, micro-teaching, and portfolio supervision, even in the absence of formal guidance or resources. However, inconsistent institutional support and skepticism about the feasibility of its implementation in ODL contexts limit the depth and systematic enactment of reflection, resulting in ad hoc implementation that addresses only selected stages of Schön's reflective cycle. Tutor beliefs thus function as a mediating force bridging curricular intentions and student experiences, but without sufficient structural reinforcement.

Student teachers, in turn, demonstrate high levels of engagement with available reflective tools, particularly e-portfolios, collaborative teaching, and journaling, indicating recognition of the professional value of reflection. Yet engagement remains uneven and often assessment-driven, with variations in reflective depth shaped by tutor scaffolding, digital access, and clarity of expectations rather than prior educational background. Taken together, the findings suggest that reflective practices in Tanzanian ODL programs are not absent but under-institutionalized: effectiveness depends less on individual motivation and more on alignment among curriculum design, tutor preparation, assessment

practices, and digital infrastructure. Strengthening this alignment is essential for transforming reflective activities from task-oriented compliance into sustained professional learning.

Conclusions

This study examined the incorporation, perception, and student engagement with reflective practices (RPs) in ODL-based pre-service teacher education at the Institute of Adult Education (IAE) and the Open University of Tanzania (OUT), guided by Schön's (1983, 1987) cyclical reflective practice framework. The conclusions are drawn directly from the three research objectives and corresponding findings.

Integration of Reflective Practices into Curriculum and Policy

The study concludes that although RPs are acknowledged within institutional curricula and policy frameworks, their integration remains partial and largely implicit. Reflective activities such as e-portfolios, action research, collaborative teaching, and peer feedback are present, but key practices, particularly structured journaling, video-based reflection, and guided reflective cycles are inconsistently embedded and weakly assessed. This reveals a clear gap between policy intentions and operational practice, where reflection is endorsed conceptually but insufficiently supported through explicit guidelines, mentorship structures, and assessment mechanisms.

College Tutors' Perceptions of Reflective Practices

Institutional tutors generally value RPs and recognize their role in enhancing professional growth, pedagogical adaptability, and critical thinking in ODL contexts. However, tutors' capacity to facilitate systematic reflection is constrained by limited professional training in digital pedagogy and reflective facilitation. As a result, tutor support often emphasizes assignment feedback rather than sustained guidance through iterative reflective cycles. This finding suggests that effective RP implementation depends not only on tutor commitment but also on institutional investment in tutor capacity and clear operational frameworks.

Student Teachers' Engagement with Reflective Practices

Student teachers demonstrate high levels of engagement with available reflective tools, particularly e-portfolios, collaborative teaching, and peer debriefings. Nevertheless, the depth and consistency of reflection vary considerably. A persistent tension emerges between autonomous reflection and reliance on tutor validation, with many student teachers engaging in reflection primarily as an assessed task rather than as a developmental process. This indicates that reflective engagement is shaped more by institutional structures, assessment practices, and tutor scaffolding than by students' prior educational background.

Overall, the study concludes that Tanzanian ODL-based teacher education has established foundational conditions for reflective practice, but full realization

is constrained by misalignment between curriculum design, tutor facilitation, assessment practices, and institutional support. Without systematic integration and coherent support structures, RPs risk remaining fragmented activities rather than functioning as sustained mechanisms for professional learning.

Recommendations

Based on the findings, the following context-sensitive recommendations are proposed:

Strengthening Policy Operationalization

National and institutional policies should articulate explicit, actionable guidelines for embedding RPs within ODL teacher education curricula. These guidelines should specify reflective tools, assessment expectations, and mentorship arrangements, while accommodating technological constraints through low-tech and mobile-friendly reflective options.

Enhancing Tutor Professional Capacity

Institutions should provide targeted professional development for college tutors in digital pedagogy, reflective facilitation, and formative feedback. Strengthening tutor competence in guiding structured reflective cycles will reduce reliance on ad hoc practices and support deeper student engagement.

Standardizing Reflective Practice Structures

ODL programs should adopt standardized yet flexible RP mechanisms, including structured e-portfolio templates, guided journaling prompts, scheduled peer debriefings, and aligned assessment rubrics. Standardization will promote consistency, equity, and transparency across courses and institutions.

Improving Technological and Pedagogical Support

Where digital infrastructure is limited, institutions should legitimize and integrate low-tech reflective alternatives such as offline journals, asynchronous discussion forums, and community-based reflection activities. This ensures continuity of reflective engagement across diverse resource contexts.

Fostering a Reflective Institutional Culture

Institutional leadership should actively promote reflective practice as a core professional competency by embedding RPs in curriculum expectations, recognizing reflective engagement in assessment practices, and supporting online communities of practice among tutors and student teachers.

Monitoring and Continuous Improvement

ODL institutions should establish mechanisms for periodic monitoring of RP implementation, including review of assessment practices, quality of feedback, and student engagement patterns. Such monitoring will support evidence-

informed refinement of curricula and professional development initiatives.

Implementing these recommendations will strengthen the systematic integration of reflective practices in Tanzanian ODL teacher education, supporting the development of autonomous, adaptive, and professionally reflective teachers capable of responding effectively to both virtual and face-to-face teaching contexts.

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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.

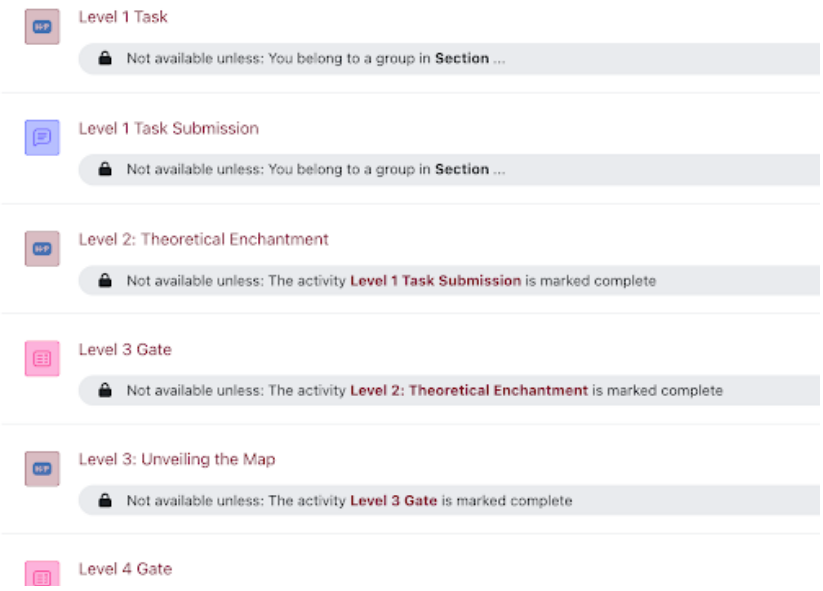
Level 1: The Call to Adventure (Module 1: An Introduction to Instructional Design)

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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Drop-Everything-And-Read-wRite-Research: Designing for Learning Presence in a Metaverse

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Abstract

This paper is a design case narrative seeking to capture, theorize and reflect on the process of redesigning a research course in which participants took part in a virtual research writing group or the Drop-Everything-And-Read-wRite-Research (D.E.A.R.) sessions within a metaverse and with learning presence in mind. Learning presence has been investigated through indications of self-regulation and co-regulation in the areas of forethought, planning and monitoring (Hayes et al., 2015). From the point of view of the co-faculty-in-charge-and-learning-designer, the design case narrative revealed a cyclical design thinking process for the course redesign process. It unfolded the D.E.A.R.'s ideation as a spin-off from the shared experiences of faculty members undertaking their dissertation writing during the pandemic, while its prototype was based on a synchronous writing group. Within a metaverse there are examples of learning presence worth sustaining to improve student research writing experiences. The paper recommends a case study to be undertaken in the future, to further investigate learning presence and its manifestations in research writing groups, capitalizing on the potential possibilities of the shared D.E.A.R. metaverse to harness learning alliance and community building among researchers in higher education. Further enhancements of the prototype are suggested to inform institutional support mechanisms for research student success. Methodologically, the design thinking cycle revealed a story pattern through which a design case narrative can be told as a form of scholarship of teaching and learning in the context of online education. The study likewise paves the way for further studies in support of a scholarship of online teaching and learning or SO²TL as research looking closely into instructional design models given that much of 'online teaching' happens through intentional design of learning content and the learning environment.

***Keywords**: metaverse, design thinking, community of inquiry, learning alliance, learning presence*

Introduction

With the evolving landscape of education in open universities comes heightened

interest and research in the application of the metaverse for online teaching and learning and towards a model development for a formal course. On the other hand, attaining success in research writing expected of higher education researchers continues to be a challenge given external factors such as academic workload, the lack of institutional support and work life balance and internal factors, namely the actual demands of research writing itself. Studies have shown links between writing and self-regulating behaviors which to some extent determine concrete outputs.

This paper presents a design case narrative that seeks to examine and improve the delivery of a research course, for participants of a virtual research writing group, and through the construct of learning presence among participants of a virtual research writing group. While undertaking the development and delivery of a research course, research students were encouraged to join the virtual research writing group called Drop-Everything-And-Read-wRite-Research (D.E.A.R.). This group consisted of sessions held in a metaverse where their learning presence may be examined through indications of self-regulation and co-regulation in the areas of forethought, planning and monitoring (Hayes et al., 2015) and its manifestations grounded on the Community of Inquiry framework (CoI) for learning alliance and community building (Villanueva & Eacersall, 2024). This design case focuses on the instructional design process of an open university's education research course from the point of view of a faculty-in-charge and course manager who is also the course developer and learning designer (Aleta) working within a team consisting of: a) a content expert-course developer (partner-faculty-in-charge, Douglas), b) the metaverse custodian (John), and c) a fellow user of the virtual space, mainly a student and academic staff (Lexter). The instructional design utilized a cyclical design thinking process with D.E.A.R. to mainly address research writing targets and time-management concerns of teacher-researchers and academic staff. The online platforms and the metaverse of the open university served as virtual spaces for a shared online time to drop everything and write on research-related activities, whether a research project or individual thesis or research proposal writing.

The metaverse affords a user interaction through the use of digital avatars in a virtual space with a multidimensional feel, mirroring an existing physical space (Dionisio et al., 2013). As an emerging technology, the metaverse offers various opportunities, particularly in distance education and online collaboration (Ng, 2022). Onu et al. (2023) refer to a specific type of metaverse used in education as the "educational Metaverse." According to Kye et al. (2021), the educational Metaverse can enhance social communication, facilitate sharing and co-creation of content, and provide a highly immersive environment. This sense of spatial presence has been identified as a factor influencing individual interest (Mangubat et al., 2024). In addition, recent empirical studies indicate that immersion and avatar-based co-presence in the metaverse can heighten engagement, increase community feeling, and foster a sense of shared learning presence (Çelik & Baturay, 2024). This growing body of research clarifies how metaverse settings extend online learning beyond transactional exchanges of information into an embodied, relational, and persistent environment that can cultivate learning presence in meaningful ways.

While online writing groups have long relied on video conferencing and shared documents, research shows that these tools provide limited support for the kinds of social, cognitive, and teaching presences required for sustained engagement. Videoconferencing environments often increase cognitive load, restrict natural interaction cues, and can even induce fatigue due to constant gaze and self-monitoring (Bailenson, 2021). These constraints reduce learners' ability to maintain attention, collaborate fluidly, and remain psychologically present over extended periods. In contrast, the CoI framework emphasizes that meaningful online learning depends on the intentional design of environments that foster interaction, trust-building, and shared commitment (Fiock, 2020). Through the interaction of its key elements, namely teaching presence, social presence and cognitive presence (Villanueva et al., 2023), collaboration and learning community building among higher degree by research students are attainable (Villanueva & Eacersall, 2024).

This paper is based on a study examining learning presence, an element rooted in self-regulated learning and proposed for addition to the CoI (Shea et al., 2012). Learning presence was investigated in language learning courses among adult learners making use of videoconferencing tools in synchronous sessions (Villanueva, 2013) but resulted in a different set of themes from that of Shea and Bidjerano (2010). A recent study on immersive virtual reality by Dunmoye et al. (2025) indicated the need for future studies on LP "to delineate the specific conditions under which learning presence functions as a mediator or moderator" (p.7). This study intends to revisit learning presence and explore its possibilities in a metaverse setting among researchers in an open university to experience protected time for research writing in an alternate space amid the competing demands of a busy life among members of an academic community.

This article also foresees a concrete contribution to emerging practices in the Scholarship of Online Teaching and Learning or SO^{2}TL given the context in which this study is situated, that is in an open university with years of experience in course design and delivery of open and distance elearning (ODeL) programs. Through the conduct of SO^{2}TL, this study purposely discusses and reflects on the application of the metaverse as a viable option for open university students and academic staff to enhance their research-related learning and other educational experiences. In addition, this study creates pathways to research writing success among teacher-researchers and academic staff in DE programs as they realize that their sense of agency, self-directed skills and learning presence will help them take on challenges in the academic world.

The next sections expound on the main objective of this article and the corresponding research questions. A review of research on learning presence, self-regulation and co-regulation and student success in research writing follows which provide the basis for the instructional design of the D.E.A.R. Metaverse. This article highlights the preliminary phase of the study, the instructional design process which is grounded on a cyclical design thinking process befitting the context, and online course in which the D.E.A.R. was crafted and pilot tested.

Objectives of the Study

While a recent panel sharing in the World Immersive Learning Labs Symposium 2024 explored the use of metaverse for research mentoring among distance education students, this study purposely utilized the metaverse for research writing related activities, namely the D.E.A.R. as the online and synchronous research writing space which targets open university Philippine researchers from different backgrounds or roles and mainly with a shared goal of attaining personal and professional research writing goals. This article aims to describe, discuss and reflect on the why-what-how-so-what-and-what's-next for the D.E.A.R sessions and in accordance with the design thinking phases of Social Studies Education 290 (SSE 290), an education research course where the D.E.A.R. Metaverse was created, prototyped and tested through the collaboration of the design team. Therefore, the objectives of this paper are to: (1) narrate the design process of the metaverse; (2) identify the learning strategies, including user engagement, employed during the implementation; (3) document initial evidence of learning presence in the metaverse. In codifying and narrating the design process, this study aims to contribute a design case narrative that concretely uses a design thinking cycle as a learning design model for a course redesign.

The next section seeks to discuss theory, pedagogy and practice within higher education research and ODeL programs. The review essentially justifies the design of the D.E.A.R. Metaverse within the education research course undergoing course improvements and through the SO^2TL as a process we can imbibe a research mindset for scholars in an open university.

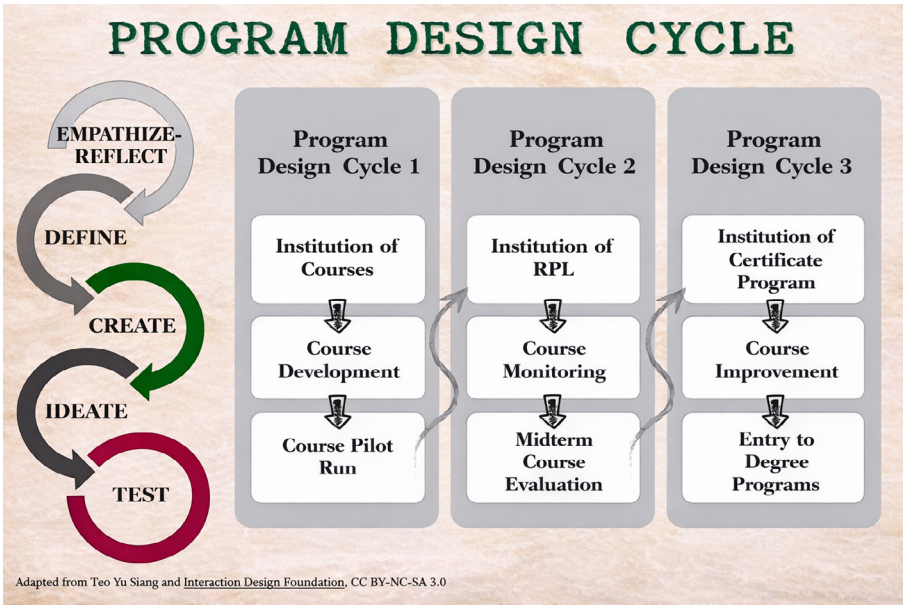
Review of Related Literature

Design Thinking in Educational Contexts

Design thinking has emerged as a significant approach in the education context, which offers a structured yet flexible process that supports creativity, collaboration, and learner-centered problem solving. Within higher education specifically, design thinking is positioned as a driver of instructional and organizational innovation, shaped by principles of empathy, collaboration, and iterative refinement, and influenced by institutional culture, leadership support, and user-centered design processes (Ajani & Rathilal, 2025). In an open university, for example, Villanueva (2024a, 2024c), noticed how faculty members have to be agile and adaptable to a diverse set of learners alongside technological innovations and changing learning environments. As such, models of design thinking were adapted to effectively redevelop and/or redesign continuing education courses and capacity-building initiatives for faculty professional development (see Figures 1A and 1B).

Figure 1A

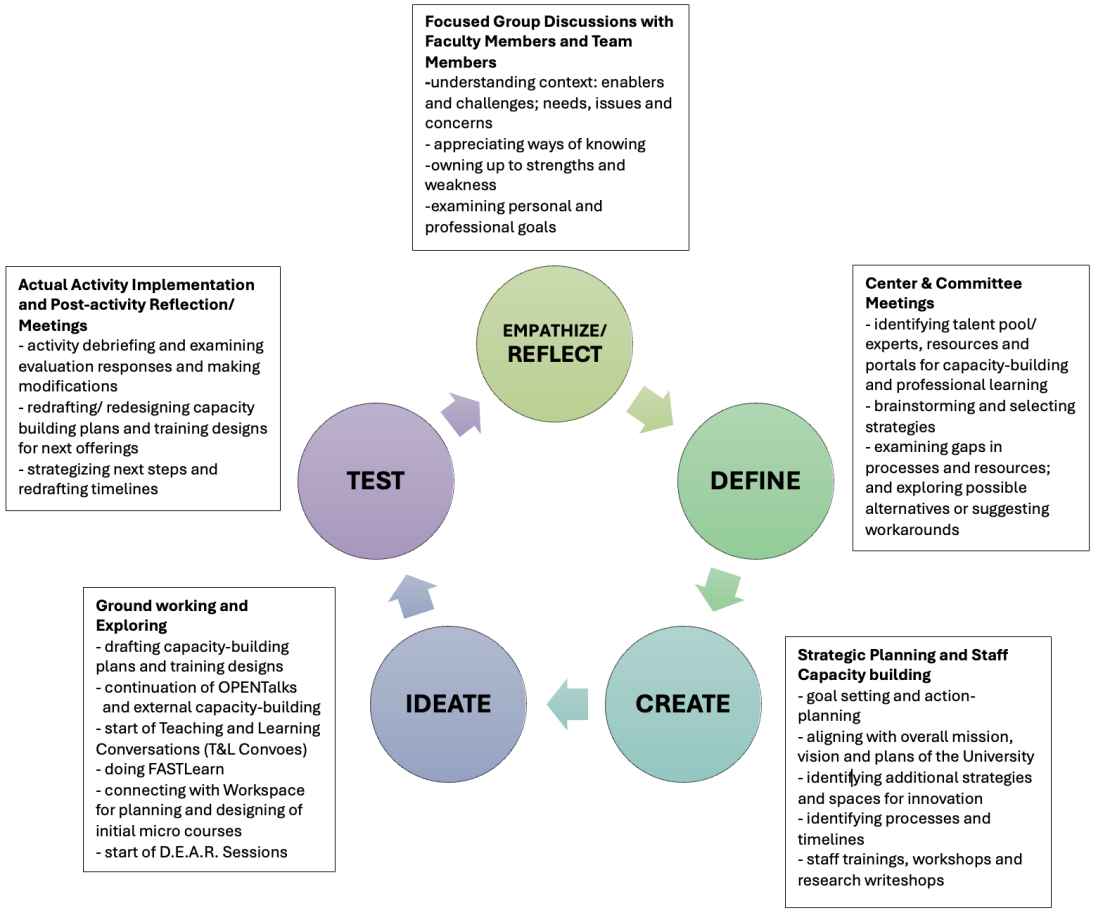
Adapting the Design Thinking Cycle for the Faculty of Education Continuing Education Program and Short Course Series



Note. With permission from J.A. Villanueva, 2023, Poster presentation, Higher Education Research and Development Society of Australasia (HERDSA) 2023 Annual Conference, Australia.

Figure 1B

The Design Thinking Cycle for the Planning and Pilot-run of Capacity-building Activities for Faculty Members at an Open University



Note. With permission from J.A. Villanueva, 2024b, Pecha Kucha presentation, Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) 2024 Conference

The design thinking process involves phases that are consistently applicable to both cases as documented in the above figures. To reiterate, the five phases by Dam & Siang (2020) are:

> **Empathize:** Research and understand the users' needs.
> **Define:** Clearly articulate the users' needs and problems.
> **Ideate:** Generate a range of ideas and potential solutions.
> **Prototype:** Create tangible representations of ideas to explore solutions.
> **Test:** Evaluate the prototypes with real users to gather feedback and refine solutions.

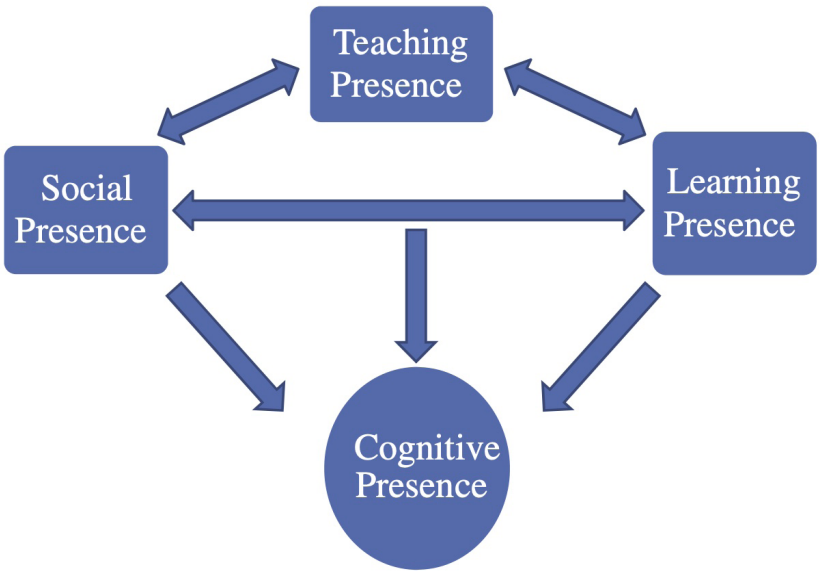
It is in this background that this study operated given that the institution of online programs and pilot testing of online professional development sit very well in this iterative process.

Learning Presence and the Role of Technology

Relationships and interactions among the elements of the COI, specifically cognitive presence, learning presence and social presence, in asynchronous learning platforms have been well documented in empirical studies within the past decades. However, recent research into elements of the COI framework for learning community building in synchronous and blended learning environments by Villanueva et al. (2024) mentioned prior research proposing other presences as an addition to the framework, namely autonomy presence (Lam, 2015), emotional presence (Cleveland-Innes & Campbell, 2015) and learning presence (Hayes et al., 2015; Shea et al., 2012; Zhang, 2018). Among these, learning presence (Figure 2) appeared to be the earliest as a proposed addition (Kozak & Casakurlu, 2020). Shea and Bidjerano (2010) hypothesized that the construct of learning presence includes online self-regulation, self-efficacy, effort and metacognition, and other earlier constructs found in research which point to effective student performance, and achievement among online learners or otherwise.

Figure 2

Revised COI Framework by Shea and Bidjerano (2010)



Note. Adapted with permission from "Learning presence: Additional research on a new conceptual element within the Community of Inquiry (CoI) framework" by P. Shea et al., 2012, p. 93., Internet and Higher Education 15. https://doi.org/10.1016/j.iheduc.2011.08.002

While looking into research findings of asynchronous student interactions using the COI framework over a span of years, it was observed that certain learner behaviors could not be accounted for within the COI framework (Shea et al., 2010; Shea et al., 2012). Certain learner contributions were observed to be suggestive of online learner self and co-regulation, hence the construct of learning presence emerged. Learning presence "represents elements such as self-efficacy as well as other cognitive, behavioral, and motivational constructs

supportive of online learner self-regulation." (Shea & Bidjerano, 2010, p.1).

A later study indicated the categories of learning presence which are forethought and planning, monitoring and strategy use (Shea et al., 2012). However, Garrison and Akyol (2015) argued that self-regulation and co-regulation of learning are found in the intersections of the presences, namely teaching presence and cognitive presence hence labelled as regulating learning. While keeping to the integrity of the three presences, they proposed these constructs to be subsumed under metacognition which are part of the collaborative learning cycle within the element of cognitive presence. Instead, a set of self-regulation items in a questionnaire was proposed (Garrison, 2017). However, another study found the regulation of learning across the three presences of the CoI framework and suggested self-direction as a category under teaching presence (Villanueva, 2021), and self- and co-regulation under cognitive presence respectively. What these studies agree on is that self-regulation and co-regulation of learning as both essential to constructivist learning environments expected in blended and online learning programs, hence applicable to research writing in distance education programs where courses on research, thesis and special problems are likewise designed and delivered online. As such, this study suggests that given the introduction of metaverse as a viable platform for higher education open and distance e-learning (ODeL) programs, the construct of learning presence may be further examined especially among users undertaking research writing.

Self-regulation and Co-regulation through Research Writing Groups

Self-regulation has been identified as key to success among online learners (Shea & Bidjerano, 2010) and studies show how it is positively related to student achievement and success in online student performance (Schunk & Zimmerman, 2012; Schunk & Greene, 2018). Other constructs often mentioned in research about student learning alongside self-regulation are metacognition (Garrison & Akyol, 2015) self- determination (Devos et al., 2015), goal orientation and motivation (McCombs, 2012; McWhaw & Abrami, 2001) and collaborative research relationship building (Villanueva & Eacersall, 2024) but not much is known about how these happen in relation to those involved in research writing groups and whether the metaverse is a good environment to nurture student success and learning community building in relation to postgraduate level research endeavors.

In most studies, writing group formats include face-to-face, online, or hybrid sessions with groups typically comprising four to eight members (Déri et al., 2021). Some groups are led by designated facilitators while others operate as peer-led communities, and engagement may range from short-term intensive sessions (lasting 8–10 weeks) to long-term or project-specific models (Allen, 2019). The literature further characterizes writing groups by their focus on mutual accountability and shared learning (Deya et al., 2021). They function as supportive spaces where disciplinary and interdisciplinary participants collaboratively construct strategies for academic writing, adopt writing conventions unique to their fields, and benefit from structured feedback sessions and timed writing exercises (Deya et al., 2021). This study, however, is situated within a research course of Masters students about to embark on

their research journey and the writing sessions are within the metaverse which makes it an interesting case for course design and testing by the design team who are likewise working remotely and online.

Given the discussions on the constructs of learning presence, self-regulation and co-regulation, coupled with the review of research on ODeL theory and practice in relation to research writing, the design team proceeded with the necessary course content development, course design and delivery, and the creation-ideation process of the synchronous research writing sessions or D.E.A.R. The next sections detail briefly the study's methodology including the design thinking cycle as the chosen instructional design process, examined and analyzed through a design case narrative.

Methodology

This study takes on a design case narrative and asserts that it is within the scope of scholarship of teaching and learning (SOTL) especially in the context of online programs. Though design cases serve varied purposes depending on the target audience (Rowland, 2007), crucial to the design case is the story or the narrative by which the context, perspectives and reasons behind course design or redesign are unfolded. Hence, as all other qualitative research methodology, a design case is constructivist in nature as it involves a search for meaning through acts of knowledge building, only that it follows a design tradition over a scientific tradition (Howard, 2011) in order to make these meanings unhidden. The design case relies heavily on detailed description and analysis as it explores the nuances and examines unique experiences in the process of redesigning a course and thus, invested as well in the teaching and learning process. These are realized through the use of scholarly content and reflections as well as artifacts (Boling, 2010). In doing so, the 'instructional design' processes are made more transparent and therefore analyzed in the light of understanding how else to improve online teaching and learning within research courses, hence very much in line with the essence and rigor expected of the SOTL.

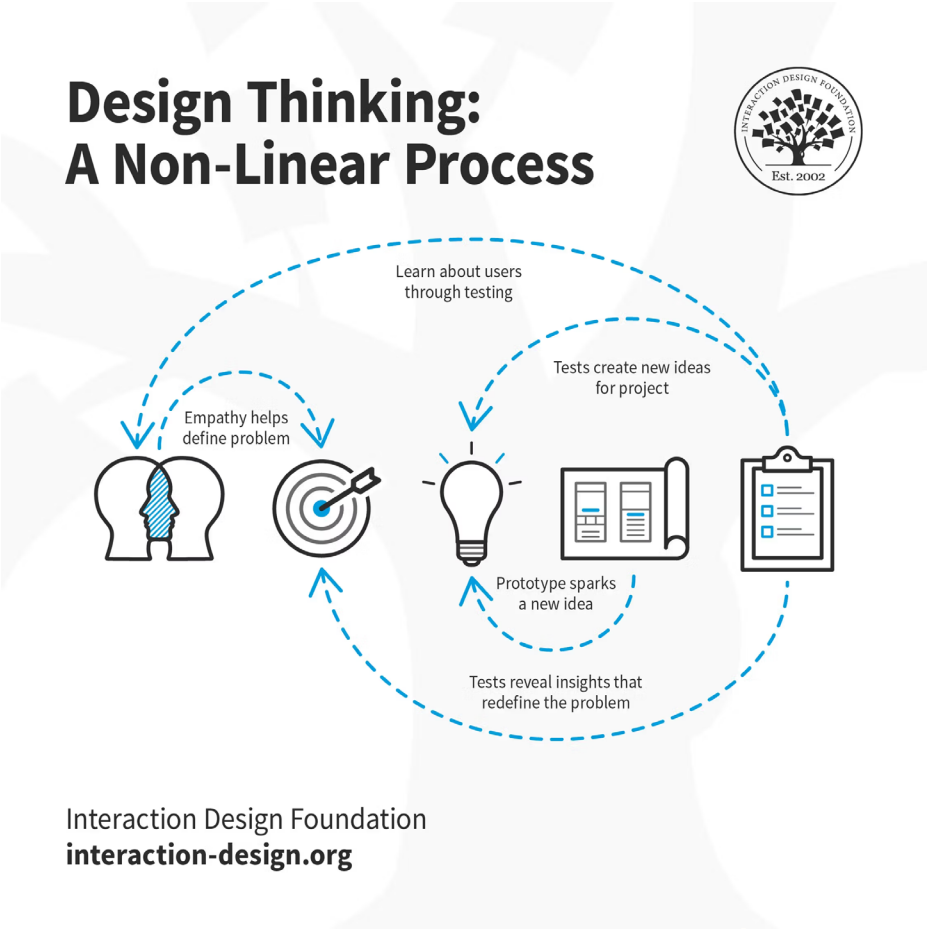
The act of weaving the narrative together was based on a review of meeting notes of the lead researcher, Aleta, with individual members of the team at different points of developing the course and the metaverse prototype. Key highlights were duly noted after which a general outline to structure the narrative into three major phases was conceptualized: course content development phase as the pre-design phase (before teaching), course design building phase (before and while teaching), and the metaverse testing and prototyping with students (while teaching). Digital artefacts were reviewed and curated as triggers to writing out sections of the narrative. Reflections after the D.E.A.R. sessions were also examined alongside student chat responses as stored data in the metaverse. Content analysis of all data collected was undertaken and included in the discussion and reflection within the narrative.

Overall, the act of narrating the learning design processes coupled with teaching and learning experiences was achieved through a design thinking cycle, one of the scholarly frameworks applied in this study. Specifically, the D.E.A.R.

Metaverse took on the cycle proposed by Dam and Siang (2020) and the Interaction Design Foundation with phases indicative of a non-linear process (Figure 3).

Figure 3

The Design Thinking Cycle by Dam and Siang (2020)



Note. From The Interaction Design Foundation, Copyright by Teo Yu Siang and the Interaction Design Foundation, www.interaction-design.org, CC BY-NC-SA 3.0. In the public domain.

Taking on the roles of a course developer and instructional designer as a Faculty-in-Charge and Program Chair in an open university, Aleta has always felt comfortable with the commonsensical thinking behind this classic design thinking cycle that sits well in an open university to effectively run online courses and achieve targeted learning outcomes. It is in this background that Aleta has tested the design thinking cycle to work while instituting a new program, or pilot testing professional learning activities as part of a capacity-building program, and now at the course-level through this study. This implies the subjective positioning of the lead researcher as well as a fellow course developer and members of the design team. In this study, the subjectivity helped shape the design case narrative. While this provided an insider's view, researcher bias in the writing was evened out in the narrative with co-authors reviewing the initial narrative and seeking further clarification to refine the work. In addition, a

selection of digital artifacts from the public domain was included as evidence in support of the narrative.

With academic freedom in hand and the university's role to innovate comes the responsibility and courage to navigate how, when and where to assert such affordances. As always, this study is bent on seeing this through as a means to affirm the design cycle as an instructional design process to facilitate course design and improvements in ODeL programs. Likewise, through the writing of a design case, this study intends to contribute to SOTL as a research method to advance studies in online education in keeping with what was recommended by Kreber and Kanuka (2006). But since this is within the context of open universities, then perhaps the term Scholarship of Online Teaching and Learning or as SO^2TL becomes befitting.

Discussions

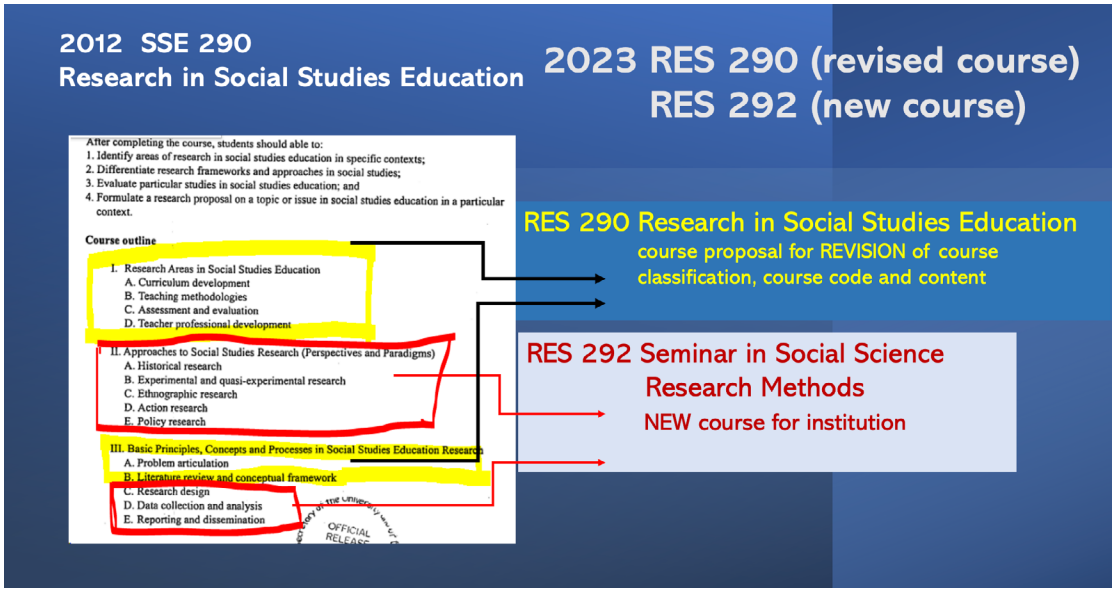
This section presents the findings and discussions through a design case narrative and is therefore structured according to the design thinking phases, as explained in the prior section.

Empathize ~ Define

With the program revision of the Master of Arts in Social Studies Education, came proposals for course revision, namely the research courses. From the sole SSE 290 Research in Social Studies Education (Figure 4), the program has introduced two more research courses where prior content in the SSE 290 have been distributed accordingly to ensure deeper knowledge and understanding of research and time required for adequate competency development and application that is from research project conceptualization to formulation of the research design with the corresponding methodology chapter (RES 292) and finally polishing and completing the research proposal for oral defense (RES 294 and 299.1) as a milestone.

Figure 4

Education Research Courses for Course Development and Design



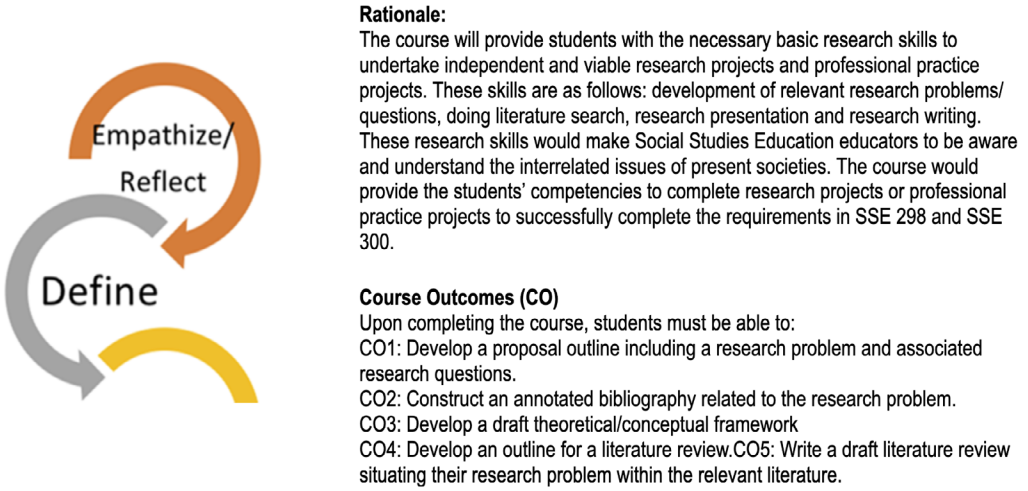
Note. A screenshot from a proposal presentation, author-owned image

These research courses are foreseen to provide sufficient time for further research skills development and enhancement alongside researcher identity development aimed at a reflective and technology-enhanced research practice.

Key to this series of research courses is the SSE 290 with its revision co-proposed by Douglas and Aleta. This first research course was foreseen as where students are initiated into the scholarly practice of undertaking their research projects, starting with the research project conceptualization where these main topics on writing problem statements, thinking about original and significant contributions, writing literature reviews, using ethical GenAIs in research and research proposal writing are subsumed, all of which have been recommended for course redevelopment. For its revised course rationale and learning outcomes (Figure 5):

Figure 5

Excerpts from the Program Revision Proposal



Note. A screenshot from a proposal presentation, author-owned image

To note, these proposed revisions were based on the outcomes of program review which utilized instruments from a self-assessment report and the review also included student experience surveys wherein students have expressed how recent efforts and actions from the Program to support researcher development have encouraged diploma students to get into the MA program where thesis and special problems are pursued to become a full-fledged graduate of the MA Social Studies Education program (Villanueva, 2024b). Students have also expressed a need for support in terms of imbibing the university's research culture, not just through the usual course readings or discussions in asynchronous formats but through live classes which tackle research-related topics offered through the Research Journeys webinars held during the pandemic and on days or time slots which fit their schedules. With these expressed needs, Diploma and Masters students have on the other hand demonstrated sustained interest and capacity to set dedicated time to participate in webinars especially when there are capsule research proposal sharing and presentations as well as open classes covering research topics and announced at least two weeks ahead. Evaluation results of these activities have been mostly positive.

Closely similar concerns have been expressed by fellow faculty members and academic staff needing the actual dedicated time to read and write in the midst of our busy schedules and weekly activities, similar to education research students who also are full-time teachers finding window time to engage in research reading and writing. Yet when face-to-face writeshops have been organized, outputs have been gradually accomplished, presented in conferences and then submitted for publication. With the problems posed are windows of opportunity to ideate and test as SSE 290 content-expert and co-faculty in-charge Douglas and Aleta decided to review the horizontal syllabus to sequence the learning activities alongside Saturday live class sessions, and alternating these with

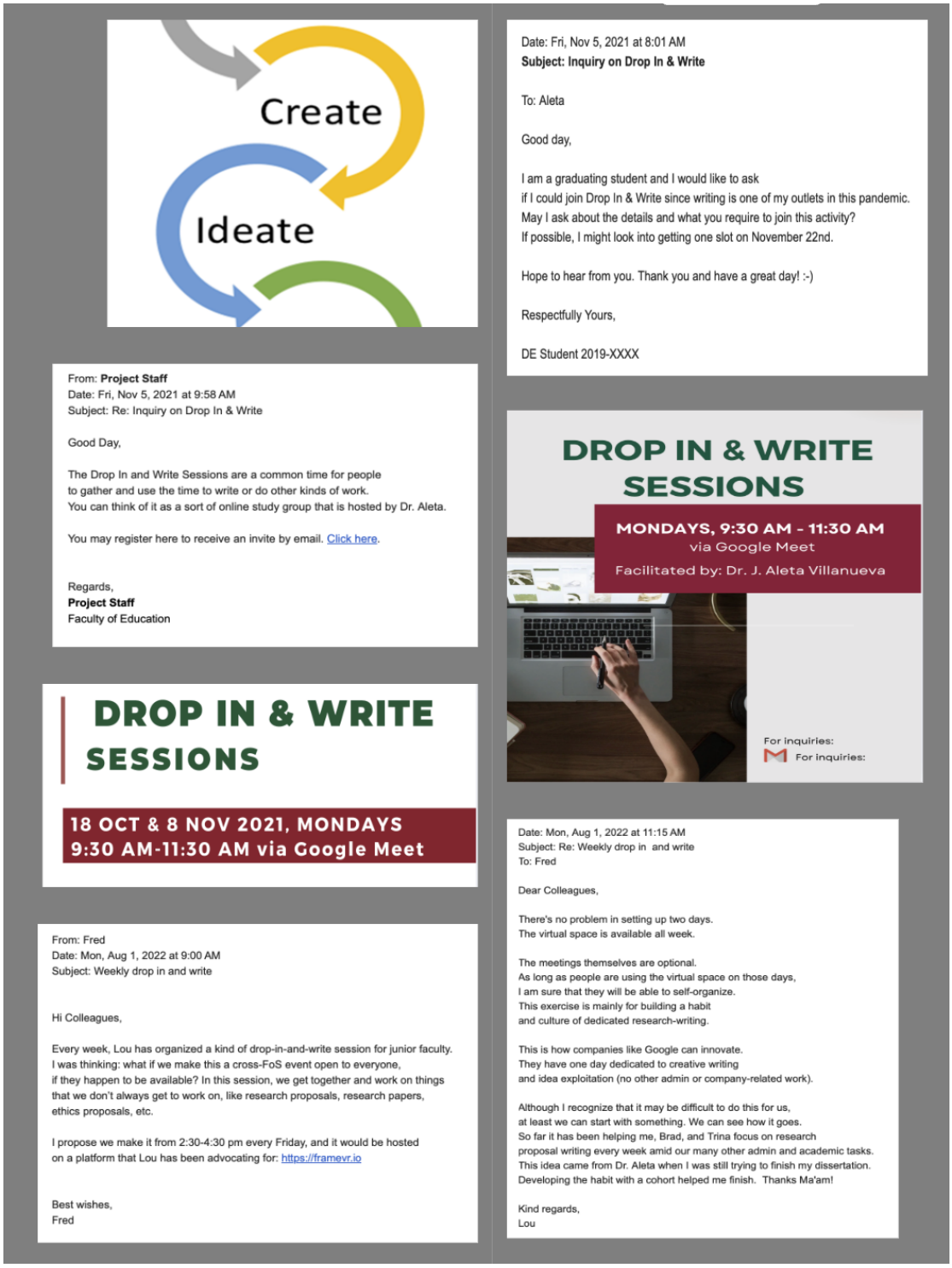
dedicated time for writing. Hence, there was the impetus to implement a possible solution in addressing similar concerns that were observed among academics and research students in selected universities, only this time, the solution was through a simple tweak in the course design coupled with a platform advocated by colleagues.

Create ~ Ideate

The simple and direct solution could be found in the idea of research writing groups which have been proven to be linked with doctoral writing and student success. During the pandemic, inspired by design team member Douglas' dedicated time and facilitation of the Research Writing League in his university, Aleta has initiated a drop-in-and-write session among colleagues undertaking dissertation writing which ran for approximately two to three months, and alternately maintained participation in the international research writing league mainly through Zoom. After completion of a doctoral program, Aleta also tried targeting other graduate-level students interested in these sessions. Surprisingly, the sessions were peopled by undergraduate students. There were a few teachers from the non-formal program and one doctoral student. The main goal however was to undertake academic writing for our coursework while academic advice was being provided to a diverse group seeking company online, like a study group of sorts (Figure 6). Hence the beginnings of the D.E.A.R. Metaverse are rooted in these earlier attempts.

Figure 6

Beginnings of Research Writing Sessions AY 2021-2022 and AY 2022-2023



Note. A montage of digital artifacts, adapted from author-owned images

After running drop-in-and-write sessions for 2-4 months, with twice-a-month sessions, or every other week, Aleta realized that commitment and dedication are required to sustain the research writing groups over time and to ensure outcomes. And if it were to be relaunched, conditions have to be ripe to ensure its sustainability.

Research writing groups have taken different forms but mostly among doctoral students as part of their informal learning and peer support. In fact, members of the design team, mainly Douglas and Aleta, have been part of an international research writing league and have published about the gains and benefits of such endeavors (Villanueva & Eacersall, 2024). In mind was the research-based practice of learning alliance building for doctoral education students (Jacobsen et al., 2021) and likewise learning community building through the intersection of teaching and social presence (Villanueva & Eacersall, 2024). The responsibility for capacity building of research competencies and mindsets is not left solely with the research supervisor once designated to a research advisee. Instead, it starts early on by tapping into other institutional human resources equally responsible for harnessing the research culture. In the case of this open university's Social Studies Education program, and this study, Aleta as a co-faculty-in-charge/ instructional designer played the role of a learning community developer tapping on talents and resources within the university to ensure the initial prototyping and testing of the D.E.A.R metaverse.

Lexter and John (as metaverse custodian and fellow users) on the other hand have experienced face-to-face research writeshops as graduate-level students immersed in their own open university coursework while also undertaking collaborative research projects within the university in their own capacity as members of the CODTL. They themselves discovered the value of protected time with peers, hence fully participating in these research write shops with other academic staff and under the guidance of the former Deputy Director for Open and Digital Learning Research and Lead of the Immersive and Open Pedagogies program.

This study hence is keen to incorporate the synchronous research writing sessions within the course SSE 290 not just as a learning activity but as a shared space with other researchers from the university willing to make use of the protected time and space to do research. As for the SSE 290, students now becoming more like teacher-researchers are encouraged to participate, not necessarily as part of the course requirement to be complied with, but aligned with the course outcomes on research mindsets and skills development. Putting the sessions within an actual course instead of a learning activity or an enriched experience of online engagement, was a more effective way to work towards its sustainability.

Prototype ~ Test

The initial D.E.A.R. sessions transpired among members of an open university, namely four to five teacher-researchers, an academic staff, and two faculty members. Some initially started with a face-to-face writeshop while the rest were in a weekly synchronous online writing group via Zoom (Figure 7) and Google Meet. Then the research writing sessions transferred to a dedicated space in the Metaverse where teacher-researchers continued to participate (Figures 8 and 9). Each session started with a short conversation on their writing targets or status updates and after an hour and a half, as the session came to a close, they indicated responses to a few guide questions to facilitate

sharing on how the session transpired. Most often, the teacher-researchers would mention their next plans or targets for the rest of the week.

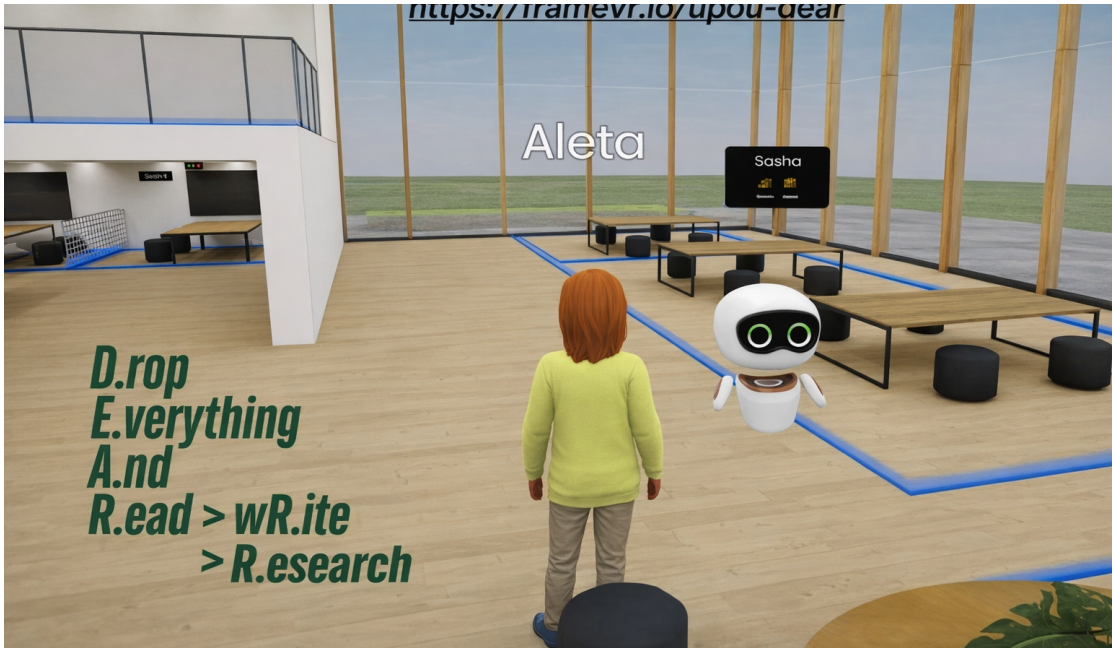
Figure 7

D.E.A.R. Session 2 – Immersive Theme within Zoom

Note. Screenshot image, author-owned

Figure 8

D.E.A.R. Metaverse Prototype with Instructional Designer and AI



Note. Screenshot image, author-owned

The D.E.A.R. sessions utilize a Frame VR platform and are for future migration to the Open-University-VC Metaverse which can virtually house up to 300

participants at a time and is currently used for meetings, virtual exhibits, and online mentoring sessions. Other platforms the researchers were aware of included Sansar, Unity, Mozilla Hubs, and Frame VR (Orbe & Figueroa, 2024). In the end, Frame VR was used due to its immersive experience, ease of use, high flexibility, customization, and ongoing online support and development, elements that are most compatible with implementing Immersive Open Pedagogies.

Figure 9

SSE 290 D.E.A.R. Chat Session on Research Writing

Note. Screenshot image, author-owned

The general schedule was announced 1 to 1.5 weeks ahead by email with a Google Form for registration. Then weekly reminders were sent thereafter and with additional tips to enter and tweak the avatar settings. As the weeks progressed, other features were explored such as the use of the color-coded zones to do consultations and the use of the whiteboard and images to add visuals as well as adding a recorded video to feature a topic/course content. Morning sessions were added for a small group of possible users, mainly new members and former members of the face-to-face research write shop group.

Emerging Examples of Learning Presence

Shea et al. (2012) delineate learning presence into three key categories: forethought and planning, monitoring, and strategy use, which are context-dependent (p.91). Forethought and planning involve learners setting goals, organizing resources, and preparing for engagement in online learning activities. Indicators include goal setting, identifying learning objectives, and planning study schedules. Monitoring refers to the learner's ability to track their progress, assess their understanding, and adjust their approaches when necessary. Indicators include self-assessment, seeking clarification, and

reflecting on learning experiences. Strategy use encompasses the cognitive and metacognitive strategies learners employ to facilitate their understanding and performance in online environments. This includes active engagement with course materials, collaboration with peers, and applying problem-solving techniques.

Preliminary findings in the Test Phase of the instructional design cycle of D.E.A.R. Metaverse reveal user chat discussion from the stored chat transcripts alluding to examples of learning presence across the indicators mentioned in research (Table 1).

Table 1

Examples of Learning Presence According to Indicators by Shea et al. (2012)

Indicators by Shea et al. (2012)	Examples of Learning Presence
Forethought and planning	*"Since I have found new documents that will help me understand digital literacy and digital competence…I plan to read these documents tonight to understand how DigComp transitioned from 2013 to 2022."*
Monitoring	*"Here's the refined version of my Research [questions] prof, from 7 research [questions] to 3…"* *"I am currently [reading] the review of MELCS that aligns with the SDGs"*
Strategy use	*"an outline is a good way to organize your thoughts, sometimes it can change depending on the themes which will arise as you cluster your readings for your RRL into different themes or topics."*

These examples were drawn from the stored chat transcript of students in one of the D.E.A.R. Metaverse sessions. Upon closer examination of the chat, the forethought and planning examples of learning presence are expected to be prompted by the faculty-in-charge or volunteer routinely given at the start of the session. However, learning presence may be further examined over time with increased usage and engagement. This means that more examples may be generated and coded for each indicator subset of learning presence which may eventually serve to validate the learning presence construct. Given the additional presences being proposed by various researchers on the CoI framework, this article poses the possibility of affirming learning presence as a separate construct but through further study as relayed in the next section.

Limitations of the Study

This preliminary study focused on the design case narrative from the point of

view of the course developers and course design team members. The data collected mainly relied on self-report but with additional stored data of SSE 290 students from the metaverse. Therefore, generalizability of findings was not yet the overall goal but rather the opportunity to explore the metaverse and find out whether learning presence may emerge from the initial but intentional course design. The study focused on documenting the design phase and including the ideation, narrative writing and reflection as enactments for the purpose of improving learner experiences and outcomes through the initial course design with learning presence in mind.

Conclusion

This article presented and discussed the development of the D.E.A.R. Metaverse through the design thinking process and as part of the instructional design of an education research course. The use of the metaverse was justified through a review of research on self- and co-regulation of learning and learning presence, research writing groups and the community of inquiry framework for learning alliance and community building among teacher researchers and academic staff in need of protected or dedicated time to do research writing. These lay the ground for the initial design of D.E.A.R. within the education research course and through the Metaverse as its actual virtual space for the facilitation of D.E.A.R. The D.E.A.R. Metaverse prototype signifies substantial pedagogical potential, specifically the consistent engagement demonstrated by users. This observed efficacy necessitates a coordinated, strategic response from the faculty oversight and the broader Faculty of Education community to ensure maximal platform utility.

This study's unique contribution lies in its use of the metaverse as a learning environment, rather than as a communication tool like video conferencing platforms. Unlike Zoom or Google Meet, which frame research learning as short, episodic meetings, the metaverse enabled a persistent, shared research space that supported focus, continuity, and intentional engagement in research writing. The metaverse afforded learning presence but this time differently through avatars and zones, allowing self-regulation and co-regulation—to be deliberately designed into the environment. Participants could plan, monitor, and sustain their research work within "protected time" while remaining aware of peers' presence, fostering accountability without constant verbal interaction. By embedding the metaverse within a formal research course, this study demonstrates how immersive environments can be intentionally designed for learning presence, and community building in ways that conventional video conferencing tools are not designed to do.

Recommendations

This article affirms the design thinking cycle as an instructional design model to develop courses and innovate learning activities and experiences targeting clear learning outcomes and within the context of online education in an open university. The implementation of the design thinking cycle coincides with classroom innovations meant by the application of the Metaverse. At the same time, the phases of the design thinking cycle served as the study's storyline

for a design case narrative. Since reflection is akin to design thinking, and undertaken through the theoretical lens of learning presence, then the natural outcome was the design case narrative as a concrete method of what can be considered as SO²TL, or the scholarship of online teaching and learning. After all, at the core of design cases is the goal of sharing design knowledge which need not be for the purposes of arriving at generalizable knowledge (Howard, 2011). As such, this study found that design case narratives' valid contribution as a research method lies in evolving a design philosophy (Boling & Smith, 2008) and in this case, it is for online teaching and learning. It is therefore recommended to expound on the use of the design case narratives to capture instructional design models borne out of ODeL program models in open universities so as to lay its claim on the use of SO²TL.

For further study however, an exploratory case study design is recommended given that this research method lends itself well to the natural setting where learning presence, the phenomenon, may be further examined. The use of thematic analysis may be further employed on the chat transcripts as well as the researcher's notes on the sessions given the emerging learning presence that has been revealed. Focused group discussions could also be undertaken to probe into participants' experiences of protected research writing time within the metaverse. Questions may highlight responses to how the participants felt about and/or thought about the virtual platform and ways they have experienced writing in the company of their peers in their digital avatars, though not exactly collaborating but simply using a shared space in time to undertake the research writing they needed and/or wanted to undertake. Likewise, it would be worthwhile to investigate participant reflections on learning alliance and community building as well as researcher identity to ascertain researcher mindsets and competency development and how these are influenced by their writing journey throughout their three research courses in their program.

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Developing Micro-credentials in AI for Assessment in Asia and Europe

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Abstract

The extreme transformation in education worldwide was driven by rapid technological advancements and an increasing demand for specialized skills. Microcredentials have emerged as smooth, skills-focused learning pathways, offering a flexible response to the evolving needs of the workforce and higher education. At the same time, Artificial Intelligence (AI) is revolutionizing educational practices, particularly in evaluation and assessment, by enabling personalized learning, enhancing efficiency, and providing data-driven insights. However, the widespread and ethical integration of AI in assessment faces significant challenges, including issues of bias, data privacy, and the need for strong quality assurance.

ASEF (Asia-Europe Foundation) for Higher Education and Innovative Laboratory is continuously conducting online training on AI for educators in Asia and Europe, focusing on two tracks: 1) Academic Paper track and 2) Developing a Micro-credential track. This paper is a documentation of the author's involvement in that training program with the intent to learn and capacitate for personal and institutional development in the future. This paper will outline the path in development micro-credential course. It will examine the factors to consider before creating a micro-credential course that will focus on the use of AI for evaluation and assessment within the Asia-Europe context. It will present the rationale for such a course, explore the characteristics and benefits of micro-credentials, detail the applications and advantages of AI in assessment, and propose a curriculum designed to address the professional development needs of educators and administrators. A critical emphasis on navigating the complex ethical considerations and policy implications unique to Asia, advocating for transparency, accountability, and human oversight, will also be included.

Keywords*: AI, educational assessment and evaluation, microcredentials, AI ethics*

AI Literacy and Readiness in Asia and Europe

The diversity of educational contexts in Asia presents obstacles and transformative potential. Cases vary from rural classrooms where connectivity remains a major problem to hyper-connected city schools already experimenting

with adaptive learning and high-tech designs; the region manifests contrast in terms of levels of technological maturity. However, if there's one thing in common for all, it is the expectation that teachers/educators not only master their expertise but also become mediators of AI's psychological and ethical dimensions. Incorporating AI into teacher preparation and training became a must, and not just an add-on or elective topic. But the question remains—are teachers in Asia ready to embrace these new and super-upgraded technologies? Maybe for some, especially those who teach in the city, but there are some who still use chalk and blackboards because of the lack of opportunities, facilities, and infrastructures. This is where developing a micro-credential course comes in. Its primary goal is to capacitate the educators/teachers without taking up so much of their time and energy to study full-time. A micro credential on Assessment in AI should not be seen as a luxury but a functional necessity for Asian institutions. It provides the agility required to update pedagogical practices in months rather than years, ensuring that the region's massive student population remains globally competitive while maintaining the highest standards of academic and professional integrity.

"AI readiness would refer to the state of preparedness a nation has in terms of adopting and leveraging AI technologies at the everyday task level" (Xu et.al., 2024). In an article written by Mansoor et al., they said: " AI literacy enables individuals to critically evaluate artificial intelligence technologies and use them effectively, ethically, and safely in educational work and personal environments as well as in various aspects of life." And how can educators or teachers achieve these AI literacies? This is where continuing education plays a big role. Depending on the situation, teachers can undergo training or short courses in universities or other training institutions to elevate their AI literacy. Trending nowadays are taking Micro-credential courses that can supplement formal teacher education, enabling professionals to earn recognition attuned to their needs or emerging job profiles. Micro-credentials are short, focused programs designed to provide specific skills or knowledge in a particular area. These programs are often offered online and are quick to complete. They cater to working professionals looking to upskill or reskill quickly without committing to a multi-year program (Plotkin, 2025). In 2024, the ASEAN Foundation launched a two-and-a-half-year project whose goal is to boost AI literacy across ASEAN's 10-member states (https://aseanfoundation.org/).

The ASEF Experience

ASEF or Asia Europe Foundation is an intergovernmental not-for-profit organization that brings together the peoples of Asia and Europe (ASEF-Innolab, 2025). One of its core values is to "incorporate mutual, continuous and lifelong learning by sharing knowledge and experiences from diverse perspectives and disciplines, encouraging interdepartmental and multi-stakeholder collaboration to tackle current global challenges." Education is one of their thematic disciplines, which is why they collaborate with students, teachers, academics, and experts to facilitate policy making and capacity building. In May 2025, ASEF's Innovative Laboratory conducted the "6th ASEF Higher Education Innovative Laboratory: University's Role in Developing Skills for AI-Powered Future." It was attended by more than a hundred participants

composed of higher education professionals, academics, and researchers from Asia and Europe who are leading AI-related teaching, learning, research, or management initiatives in their institutions. The program ran from May 14 to July 23, 2025 (Online Phase) and October – December 2025 for the onsite events to finalize and polish the team outputs. However, only the outstanding teams were invited to the on-site event. This training program was divided into two tracks: 1) Academic Papers focuses on developing insightful papers on strategic institutional responses and pedagogies to cultivate future-ready individuals, and 2) Micro-credential Programs that feature drafting of practical course frameworks and outlines to bridge AI knowledge gaps. These two tracks were conducted by the ASEF pool of trainers with expertise in AI.

The core theme of the 6th edition is "Universities' Role in Developing Skills for an AI-Powered Future." The program centers its work on two critical areas: 1) AI Skills Foresight- which anticipates the emerging AI skill needs for future workforces and develops strategic approaches for universities to address them, and 2) AI Literacy- which explores hands-on approaches to designing effective, scalable micro-credential courses on AI literacy that can be used across various disciplines.

Research Questions

To systematically examine the development of a micro-credential course addressing AI literacy gaps among educators, this study adopts a conceptual design-based research approach. The following research questions guided the design process:

1. What are the current levels of AI literacy and readiness among educators in selected Asian and European higher education contexts?
2. What are the competency gaps of educators when it comes to AI-supported assessment and evaluation?
3. How would a micro-credential course be designed to address the AI literacy and assessment competency gaps of educators?
4. What design considerations would be necessary to make an AI micro-credential course culturally relevant, ethically sound, and practically relevant to educators?

Research Methodology

This study adopts a conceptual Design-Based Research (DBR) approach to develop a proposed micro-credential course on AI-supported assessment and evaluation. According to Sayre, design-based research (DBR) is a key method in the learning sciences, which is used to simultaneously develop both learning theory and the design of instructional interventions. Conceptual DBR is appropriate for this study as it focuses on the systematic design of an educational intervention grounded in theory, empirical insights, and contextual needs analysis, prior to full implementation and evaluation. The approach allows the study to generate a theoretically informed and practice-oriented course framework addressing emerging competency requirements in AI-assisted educational assessment.

Design and Development of a Micro-credential Course for Assessment and Evaluation

The study follows the early phases of DBR, which emphasize problem identification, needs analysis, and prototype design. This design integrates theoretical frameworks on AI literacy, assessment validity, and professional development with collaborative curriculum development processes. The research aligns with the ASEF Innovative Laboratory's peer-learning and co-creation model, which promotes interdisciplinary and cross-cultural knowledge construction.

Developing a microcredential course for educators on AI is a strategic necessity for several reasons. First, it addresses the immediate need for practical skills. Educators need to understand how to use AI for tasks like personalized feedback, automated grading, and data analysis to improve learning outcomes. A microcredential, unlike a full degree, can be designed and deployed rapidly to meet this need. Second, it promotes lifelong learning. The pace of AI innovation is such that skills acquired today will need continuous updating. The modular and stackable nature of micro credentials makes them a perfect vehicle for this ongoing professional development. Third, a microcredential provides a verifiable and portable credential. It offers a clear signal to educational institutions that an individual has mastered a specific set of competencies. Finally, it allows for flexibility and accessibility. An online micro credential can be offered to many participants across different countries and time zones, making it an efficient way to disseminate knowledge across the Asian region.

In the ASEF training, a series of lectures about AI was conducted in the first few weeks. After that, the participants were divided into the AI Literacy track, the micro credential group, and the Academic Papers track. The literacy tract of the micro credential group submitted fourteen (14) titles/topics. One of those was about an introductory course on the use of AI for learning assessment and evaluation. There were four participants in this group, composed of two Filipinos, one Malaysian, and one Slovakian. These four people of different cultures worked together to create a simple microcredential introductory course on assessment and evaluation.

The development of the microcredential employs a conceptual design-based research methodology, structured as a rigorous, multi-phased process. This approach is engineered to ensure maximal cross-cultural relevance, ethical compliance, and academic quality. It is intentionally collaborative, leveraging the peer-to-peer learning model of the ASEF Innovative Laboratory to integrate different global expertise. The group had presented three steps to develop a microcredential course.

Step 1: Contextual Needs Analysis and Scoping

In this phases, the group emphasized the importance of establishing the precise learning need and context, targeting the specific application of AI in educational measurements across Asia and Europe by:

- Defining the specific, measurable competencies related to AI-powered assessment. This includes skills such as designing effective AI-supported rubrics, interpreting predictive performance analytics, and ensuring the construct validity of AI-scored assignments.
- Engaging higher education managers, testing organizations, and academics from both Asia and Europe to validate the practical skills gap in assessment and evaluation, ensuring the course output is relevant to evolving industry standards for educational data.
- Establishing the micro credential's verifiable competency as the ability to design a fair, AI-augmented assessment strategy and defend its validity and ethical governance.

Step 2: Curriculum Structure

In this phase, insights from the needs analysis that was conducted by the group to gather insights from the members of the academe and use it as a basis for designing an assessment- focused content. The following are the plans that were incorporated into the presentation of the proposed microcredential course:

- Organize the learning outcomes to build proficiency from foundational AI concepts (Module 1) through practical tool application (Module 2) to critical evaluation (Module 3), ensuring a bite-sized approach to mastering assessment technologies.
- Make the course content with authentic, regional case studies that contrast the challenges of implementing AI assessment tools—such as bias against non-native English speakers in automated essay scoring—in different Asian and European contexts.
- Design experiential learning activities. The final project involves the development of a comprehensive AI-Assessment Module with detailed tool selection, validity checks, score interpretation protocols, and a plan for responsible implementation in the participant's local institution.

Step 3: Ethical Issues and Quality Assurance

Given the sensitive nature of student assessment data, this phase focuses entirely on ethical and quality control for measurement tools by:

- Subjecting the course curriculum and content to a critical review by ethicists and legal experts familiar with cross-border data transfer and student privacy protection. This review specifically audits content on fairness in scoring and mitigating data bias in evaluation models.
- Auditing all suggested AI assessment tools and datasets used in the course for potential systemic biases (e.g., related to language, culture, socioeconomic status), ensuring that the examples promote fair and equitable application of AI in grading and feedback.
- Utilizing the ASEF InnoLab network for peer review of the draft content, focusing on the clarity and academic accuracy of the assessment principles and their alignment with global best practices in educational measurement.

Together, the three phases form a coherent logic:

- Step 1 ensures relevance and contextual legitimacy.
- Step 2 ensures pedagogical coherence and competency development.
- Step 3 ensures ethical integrity and quality sustainability.

The framework balances technical competence, pedagogical design, and ethical governance. Strengthening it further would involve deeper contextual diagnostics, structured transparency mechanisms, and long-term monitoring strategies—particularly important in a rapidly evolving AI regulatory and technological landscape.

Scope and Limitations

As a conceptual DBR study, this research focuses on the development of a course framework rather than its empirical implementation and evaluation. Future research is recommended to pilot, test, and iteratively refine the micro-credential program across diverse institutional contexts.

Conclusion

Developing a microcredential course on AI for educators in Asia is not merely an educational endeavor; it is a strategic asset in the future of humanity. By offering a flexible, skills-based, and contextually relevant learning pathway, we can empower educators to become leaders in an AI-driven educational transformation. The proposed framework, which emphasizes practical skills, human oversight, and a deep understanding of ethical and cultural nuances, provides a good foundation for the development of a full microcredential course. The path forward requires continuous collaboration among educators, technologists, and policymakers to ensure that the integration of AI is not only efficient but also equitable and socially responsible.

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Call for Papers

We call on colleagues, such as academics, researchers, technology developers, and open distance e-learning experts to submit their articles for publication in the International Journal on Open and Distance e-Learning. The IJODeL is a bi-annual journal, hence it comes out every June and December of the year.

The preferred articles are those reporting original research, articles based on critical analyses of e-learning undertakings, book reviews, evaluation studies, and original think pieces such as concept papers.

Please visit the IJODeL website to familiarize yourselves with the author's guide and submission guidelines.

Template for Quantitatively-Oriented Articles

Title of Article

Author 1[1]and Author 2[2]

[1]Position, Institutional Affiliation, Country, Email address

Abstract

Abstract in 150-250 words.

Keywords: No more than five (5) keywords.

Introduction (Center Heading 1)

This section contains a clear historical background of the study, showing why the research had to be undertaken. In this section, the author(s) shall have the opportunity to expound on what the research says about the research problem, and show clear support for the need to undertake the research, through appropriate research gap analysis.

Objectives (Center Heading 2)

This section provides a clear statement of the goals and objectives of the research.

Conceptual/Theoretical Framework (Center Heading 3)

The conceptual or theoretical framework would be expected for research studies that dealt with empirical procedures and methodologies. A framework of this nature would provide for clear interrelationships and direction of interactions of variables which the researcher expects to show by his/her data and data interpretations. It should be noted that variable interactions may be easier to understand if they were to be presented in illustrated model formats.

Methodology (Center Heading 4)

This section includes brief discussions of data collection procedures and analyses. Data must be presented in appropriate tables.

Results and Discussions (Center Heading 5)

Analytical discussions must present possible relationships of the results of the study and the findings from other studies specifically reviewed for this purpose. Post analysis data may be presented in both statistical tables and appropriate models and figures.

Include subheadings as are necessary.

Conclusions and Recommendations (Center Heading 6)

Conclusions must be according to the objectives of the study.

Recommendations must reflect the objectives and conclusions of the study.

References

General format must follow the suggestions for authors, but generally must follow the APA Style for publications. (As of writing, APA's publication manual is in its 7th edition.)

Template for Qualitatively-Oriented Articles

Title of Article

Author 1[1] and Author 2[2]

[1]Position, Institutional Affiliation, Country, Email address

Abstract

Abstract in 150-250 words.

Keywords: no more than five (5) keywords

Introduction (Center Heading 1)

This section contains the historical background of the study, including specific reports and studies that provided direct support to the research problem. Some relevant part of the literature shall be included in the discussion of the research problem to establish more strongly the need to undertake the study.

Objectives of the Study (Center Heading 2)

This section contains both the research over-all goal and the specific objectives to be attained.

Relevant Studies or Review of Related Studies (Center Heading 3)

Review of studies that are highly related to the current study. After the relevant studies have been presented, a synthesis of these may be presented and the relationship of such synthesis must be related to the study under consideration.

Subheading may be determined as necessary. In these subheadings, specific observations may be noted and statistical tables presented as well as figures and models.

Discussions (Center Heading 4)

In this section shall be inserted full discussion of results and finding, discussed

more deeply in relation to the related studies already reviewed. Subheads may be determined and included in the discussions.

Conclusions (Center Heading 5)

The conclusions of the study must reflect the objectives of the research.

Recommendations (Center Heading 6)

All recommendations must appropriately correspond to the conclusions, and therefore the objectives of the study.

References (Center Heading 7)

Follow the APA Style Guide (As of writing, APA's publication manual is in its 7th edition.)

Style Guide for Full Paper Submission

The paper should be 15-25 pages long (including tables, figures, and references) and prepared preferably in Microsoft Word format. The author(s) should provide a title, the name(s) of the author(s), position(s), institutional affiliation(s), institutional address(es), email address(es) and key words (no more than five). You may make use of the template for preparing your paper: Journal Article Template (Qualitatively-Oriented); Journal Article Template (Quantitatively-Oriented). Detailed guidelines are as follows:

1. **Font type**
   The whole text should be in Arial.

2. **Margins**
   The paper should be A4 size (21 x 29.7 cm). All margins (top, bottom, left, and right) should be 1 inch.

3. **Line Spacing**
   The whole text should be single-spaced.

4. **Title**
   The title of the paper should be 14-point, bold, in capital and lower case letters, and centered.

5. **Author Information**
   Use 12-point and centered for the author name(s). The Western naming convention, with given names preceding surnames, should be used.

   The author name(s) should appear below the title, with one blank line after the title.

   Use 10-point for author(s)' position(s), institutional affiliation(s), country, and email address(es).

   The author(s)' position(s), institutional affiliation(s), institutional address(es), and email address(es) should appear below the author name(s), with one blank line after the name(s).

6. **Headings**
   - Heading font (with the exception of the paper title and the abstract) should be 14-point Arial and in bold.
   - Headings should be centered and in capital and lower case letters [i.e. nouns, verbs, and all other words (except articles, prepositions, and conjunctions) should be set with an initial capital].
   - There should be two blank lines before each heading and one blank line after it.

7. Subthemes

- Subtheme(s) should be 14-point Arial, in bold capital and lower case letters, and flushed left.
- There should be one blank line before and after each subtheme.

8. Abstract

- The abstract heading should be 14-point Arial, bold, centered.
- The abstract should be in **150-250 words.**
- The main text of the abstract should be 12-point Arial, italicized.
- Alignment of the main text of the abstract should be justified, no indent.

9. Key Words

- Include **at most five** keywords.
- Use 12-point Arial. The keywords should appear below the abstract, with one blank line after the abstract.

10. Main Text

- In general, paragraphs should be separated by a single space.
- All paragraphs must be in block format.
- Text font should be 12-point Arial, single-spacing. Italic type may be used to emphasize words in running text. Bold type and underlining should be avoided.
- The first line of each paragraph should not be indented.

11. Tables and Figures

- Tables and figures should be numbered and have captions which appear above them.
- Graphics and pictures should not exceed the given page margins.
- Captions should be 14-point centered.
- The tables and figures of the paper should follow the APA citation style.
- There should be no space between the caption and the table/figure.

12. Footnotes

- Footnotes may be used only sparingly. A superscript numeral to refer to a footnote should be used in the text either directly after the word to be discussed or – in relation to a phrase or a sentence – following the punctuation mark (comma, semicolon, or period)
- Footnotes should appear at the bottom of the page within the normal text area, with a line about 5 cm long immediately above them.
- Footnotes should be 10-point and aligned left.

13. References

- The author-date method in-text citation should be used. Following the APA format, the author's last name and the year of publication for the source should appear in the text.

- All references that are cited in the text must be given in the reference list. The references must follow the latest edition of the APA Style

Guide (as of writing, APA's publication manual is in its 7th edition) and arranged alphabetically at the end of the paper.

Sample:

Surname, A. A. (year). Article title. *Title of Journal, volume number*(issue number), inclusive page numbers. URL/doi link

Surname, A. A. (year). *Title of book.* Publisher location: Publisher Name.

Surname, A. A., Surname, B. B., & Surname, C. C. (2000). Title of article. *Title of periodical, volume number*(issue number). URL/web address.

Surname, A.A. (Year, Month). *Title of paper.* Paper presented at name of conference, city, country.

14. Length

The paper should be **3,000-7,000 words** including tables, figures, and references.

Author Guide

The International Journal on Open and Distance e-Learning (IJODeL) welcomes original research articles, book reviews, theories, and best practices pertaining to ODeL worldwide. Articles should be 3,000-7,000 words including tables, figures, and references.

A publishable quantitatively-oriented paper should contain the following:

1. Abstract
2. Objectives
3. Conceptual/Theoretical Framework
4. Methodology
5. Results and Discussions
6. Conclusions and Recommendations
7. References

Go to: Quantitatively-Oriented Journal Article Template

A publishable qualitatively-oriented paper should contain the following:

1. Abstract (with keywords)
2. Introduction
3. Objectives of the Study
4. Relevant Studies or Review of Related Studies
5. Discussions
6. Conclusions
7. Recommendations
8. References

Go to: Qualitatively-Oriented Journal Article Template

To submit an article, the IJODeL website and follow the steps in the online submission system.