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Digital Portfolios And Peer Assessment For Reflective And Digitally Literate Teachers

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Abstract

This qualitative case study examines how the integration of digital portfolios and peer assessment contributes to the development of reflective practice and digital literacy in pre-service English as a Foreign Language (EFL) teachers. Eight pre-service teachers from an Indonesian university participated in an integrated project covering two courses: Curriculum Materials Development 2 and Technology in Language Teaching. Participants engaged in three main activities, including developing digital portfolios documenting instructional planning and materials, creating and editing micro-teaching videos, and taking part in structured peer assessment. Data were collected through written reflections at five key phases, semi-structured interviews, and peer assessment documents, analyzed using thematic analysis. The findings revealed three forms of reflective practice: systematic self-assessment, pedagogical problem-solving, and transformative learning through documentation. Peer assessment functioned as a catalyst for deeper reflection by revealing blind spots, validating self-assessments, and prompting specific improvements. Participants developed digital literacy skills including content creation using Canvas, AI-assisted material development with ChatGPT, interactive learning design with Kahoot and Quizzes, and digital portfolio curation. A synergistic relationship emerged between portfolio development and peer assessment, with portfolios providing concrete artefacts that grounded feedback and peer assessment providing external perspectives that improved portfolio quality. Despite challenges such as technical difficulties, time restrictions, and anxiety about

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evaluation, participants expressed high satisfaction and intentions to apply their learning in future practice. The study demonstrates that integrated portfolio and peer assessment designs can effectively develop both reflective capacity and digital literacy simultaneously.

Keywords: Digital portfolios, peer assessment, reflective practice, digital literacy, pre-service teacher education.

INTRODUCTION

The rapid advancement of digital technology and the growing emphasis on reflective professionalism have fundamentally transformed 21st-century teacher education. Contemporary educational systems worldwide recognize that effective teaching requires practitioners who can critically analyze their own practice for continuous improvement while integrating technology into learning environments (Tondeur et al., 2021). This dual imperative to be both reflective practitioners and digitally literate educators represents a foundational challenge for teacher education programs, particularly in English as a Foreign Language (EFL) contexts where candidates must develop language proficiency, pedagogical knowledge, and technology integration skills simultaneously (Sarıçoban et al., 2019).

Reflective practice is essential for professional growth, enabling teachers to surface tacit knowledge, question assumptions, and construct professional identities oriented toward continuous improvement (Clará, 2015), (Mann & Walsh, 2017). Digital portfolios have been identified as powerful tools for fostering such reflection, as they provide a structured space for documenting teaching artefacts, revisiting practice, and articulating professional growth over time (Chye et al., 2021), & (Novillo Navarro & Pujolà, 2019). However, student teachers often fail to reach deep levels of reflection unless the learning context explicitly legitimizes it (Chye et al., 2021). Concurrently, digital literacy has become a core competency for teachers. The ability to select, use, and critically evaluate digital tools for pedagogical purposes is essential (Vuorikari et al., 2022) & (Tondeur et al., 2021). Studies reveal that many pre-service teachers overestimate their technology literacy, and without targeted training, their actual technology integration skills remain low (Çebi & Reisoglu, 2018).

Peer assessment has emerged as a collaborative learning strategy that develops evaluative judgment and feedback literacy. Meta-analyses confirm that peer assessment positively affects academic performance and that giving feedback is as beneficial as receiving it (Double et al., 2020). In teacher education, peer assessment of teaching artefacts lesson plans, instructional materials,

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and micro-teaching videos creates opportunities for professional dialogue(Nicol et al., 2014). Despite the recognized importance of both reflection and digital literacy, traditional programs often address these competencies in isolation, missing opportunities for synergistic development (Paz et al., 2022). A significant gap exists in understanding how the combination of digital portfolios and peer assessment can holistically develop both reflective capacity and digital literacy simultaneously, especially in EFL teacher education contexts (Göçen et al., 2025). Furthermore, the integration of AI tools such as ChatGPT into instructional design is reshaping digital literacy practices, yet empirical evidence on how pre-service teachers strategically use AI within portfolio development remains scarce(Özyurt, 2024).

The Indonesian context provides a relevant setting for addressing this gap. As outlined in the National Education Policy (Ministry of Education and Culture, 2020), teacher education programs in Indonesia are expected to produce graduates who are pedagogically competent, digitally literate, and capable of reflective practice. However, challenges persist in implementing integrated approaches (Çebi & Reisoglu, 2018), (Tunjera, 2025). English teacher education programs face the additional complexity of preparing teachers who can model and teach language skills while effectively integrating technology (Sarıçoban et al., 2019). Understanding how integrated projects combining digital portfolios and peer assessment can address these multiple demands has significant implications for curriculum design and pedagogical practice in Indonesia and similar contexts globally.

Theoretical Framework

This study is informed by three complementary theoretical perspectives. First, reflective practice theory (Clará, 2015), (Larrivee, 2008), (Mann & Walsh, 2017) explain how professionals learn from experience through systematic thinking. Second, social constructivist learning theory (Nicol et al., 2014), (Panadero, 2016) underpin the collaborative nature of peer assessment, emphasizing that learning occurs through social interaction and feedback within the Zone of Proximal Development. Third, digital competence frameworks (Vuorikari et al., 2022) & (Tondeur et al., 2021)provide conceptual tools for analyzing digital literacy development, including content creation, communication, and problem-solving with digital tools. Together, these frameworks guide the investigation of how digital portfolios and peer assessment work synergistically to develop reflective and digitally literate pre-service EFL teachers.

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Purpose of the Study

Grounded in these scholarly perspectives, this study investigates how the integration of digital portfolios and peer assessment contributes to the development of reflective practice and digital literacy in pre-service EFL teachers. By collecting data through written reflections at five key points throughout an integrated project and semi-structured interviews following project completion, this study captures participants' journeys as they develop digital portfolios documenting instructional planning, create micro-teaching videos demonstrating teaching practice, engage in peer assessment of classmates' work, and synthesize their learning through final reflections. Specifically, this study seeks to examine: (1) in what ways pre-service teachers demonstrate reflective practice through the process of creating and curating a digital portfolio; (2) how engaging in peer assessment both giving and receiving feedback shapes pre-service teachers' reflective thinking; (3) what specific digital literacy skills pre-service teachers develop as a result of building and maintaining a digital portfolio; and (4) what pre-service teachers' perceptions are of the value and challenges of using digital portfolios and peer assessment for their professional growth. Through this investigation, the study provides evidence-based insights to inform teacher education practice, curriculum design, and policy development regarding integrated approaches to developing reflective and digitally literate educators, contributing to theoretical understanding of the intersection between reflection, collaboration, and technology in professional learning.

METHOD

Research Design

This study employed a **qualitative case study design** to investigate how pre-service EFL teachers experience the integration of digital portfolios and peer assessment in developing reflective practice and digital literacy. A qualitative case study approach was appropriate as it allows for in-depth description and analysis of a bounded system specifically, the experiences of teacher candidates participating in an integrated project combining portfolio development, micro-teaching, and peer assessment (Merriam, 2009), (Yin, 2018) & (Merriam, 2009. The case study design enabled exploration of the "how" and "why" questions central to understanding the processes through which participants developed targeted competencies(Creswell & Poth, 2018).

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Participants and Research Setting

The study was conducted in an English teacher education program at Universitas Muhammadiyah Sumatera Barat, Indonesia. Participants were **eight pre-service EFL teachers** enrolled in two core courses during the 2025–2026 academic year: Curriculum Materials Development 2 (CMD 2) and Technology in Language Teaching (TILL). These courses were intentionally designed as integrated projects requiring students to develop digital portfolios documenting instructional planning and materials, and to demonstrate teaching practice through micro-teaching video recordings.

Participants were selected through **purposive sampling** to ensure they had direct experience with all components of the integrated project (Etikan et al., 2016) All participants were in their final year of the teacher education program and had completed the project requirements. Table 1 presents the demographic profile of participants, with pseudonyms used to protect confidentiality. This sample size was adequate for qualitative inquiry focused on depth of understanding rather than statistical generalization (Merriam, 2009).

Project Context and Course Integration

The integrated project was designed across two complementary courses. In **Curriculum Materials Development 2**, students developed comprehensive instructional materials as their mid-term project, including Student Worksheets (LKPD), teaching modules/lesson plans (RPP), teacher teaching materials, pre-tests and post-tests, quizzes, and interactive learning applications (e.g., Kahoot). These materials formed the core content of students' digital portfolios, documenting their ability to design pedagogically sound and technology-integrated learning experiences.

In **Technology in Language Teaching,** students engaged in preparatory micro-teaching trials before completing their final examination requirement: a recorded micro-teaching demonstration. Students practiced and recorded a real micro-teaching session, demonstrating teaching competence in a simulated classroom environment. Following recording, students edited their videos and uploaded them to social media platforms (typically YouTube), making their teaching practice accessible for peer review and reflection. This integration ensured that digital portfolios and micro-teaching videos were mutually reinforcing components of a coherent professional learning experience.

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Instruments for Data Collection

Data were collected through **three primary instruments** to enable triangulation and rich understanding.

Structured Written Reflections

Following the approach of (Mauri & Clarà, 2024), who demonstrated the value of collecting reflective data at multiple time points, this study gathered structured written reflections at **five key phases**: (a) pre-project reflection, (b) post-portfolio development reflection, (c) post-micro-teaching video reflection, (d) post-peer assessment reflection, and (e) final synthesis reflection. Reflection prompts were designed to elicit participants' evolving thoughts, emotions, and learning throughout the project lifecycle. Each reflection required approximately 30–45 minutes to complete.

Semi-Structured Interviews

Semi-structured interviews were conducted with all eight participants following completion of the integrated project. The interview protocol, adapted from established qualitative research guidelines (Kvale & Brinkmann, 2015), explored participants' experiences with digital portfolio development, peer assessment activities, reflective practice, and digital literacy development. The protocol included open-ended questions about portfolio creation processes, challenges encountered, peer assessment experiences, digital skill development, and the relationship between reflective practice and digital literacy. Interviews were conducted in Indonesian to allow participants to express themselves fully, were audio-recorded with participants' consent, then transcribed and translated for analysis. Each interview lasted 45–60 minutes.

Peer Assessment Documents

Structured peer assessment questionnaires were used to collect peer feedback data. These instruments required students to evaluate their peers' teaching performance and instructional materials using specified criteria, providing both quantitative ratings (on a scale of 1–5 for each criterion, total possible score 52) and qualitative comments. The peer assessment forms included sections for identifying strengths, areas for improvement, and constructive suggestions for enhancing teaching practice. As (Double et al., 2020) note, peer assessment offers dual benefits: students learn both from giving feedback and from receiving feedback.

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All instruments were **expert-validated** by two senior researchers in EFL teacher education and pilot-tested with five non-participant pre-service teachers to ensure clarity, appropriateness, and estimated completion time (Tavakol & Dennick, 2011).

Data Collection Procedures

Data collection proceeded through the following stages:

Pre-project phase (Week 1): Participants completed the first written reflection, articulating self-assessed skill levels and learning goals. **Portfolio development phase (Weeks 2–8):** Participants developed digital portfolios containing lesson plans, teaching materials, worksheets, and assessments. Upon completion, they completed the post-portfolio reflection. **Micro-teaching video phase (Weeks 9–12):** Participants recorded, edited, and uploaded micro-teaching videos. They then completed the post-micro-teaching video reflection. **Peer assessment phase (Weeks 13–14):** Participants assessed their peers' teaching performances and portfolio materials using the structured peer assessment forms. They then completed the post-peer assessment reflection. **Final synthesis phase (Week 15):** Participants completed the final synthesis reflection, evaluating their overall growth and learning. **Post-project interviews (Week 16):** Semi-structured interviews were conducted with all participants.

All data collection was conducted in person during scheduled class sessions or by appointment. Informed consent was obtained prior to data collection, and participants were assured of their right to withdraw at any time without penalty (Cohen et al., 2018).

Data Analysis Techniques

Data analysis followed the **six-phase thematic analysis framework** proposed by (Braun & Clarke, 2006), which has been widely employed in qualitative educational research (Nowell et al., 2017). Two researchers conducted the analysis collaboratively, using investigator triangulation and reflexive journaling to enhance trustworthiness.

Phase 1. Familiarisation: Researchers read and re-read all reflection documents, interview transcripts, and peer assessment comments multiple times, taking analytic notes and recording initial impressions. **Phase 2. Generating initial codes:** Data were systematically coded in an open, data-driven manner. Each meaningful segment of text was labeled with concise codes capturing the essence of participants' comments. A codebook was developed and refined throughout the process. **Phase 3. Constructing candidate themes:** Related codes were grouped into potential themes that addressed the research questions. **Phase 4. Reviewing and refining**

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themes: Each candidate theme was checked against the coded extracts and the entire dataset to ensure coherence and distinctiveness. **Phase 5. Defining and naming themes:** Clear definitions for each final theme were developed, anchored in participants' language, with exemplary quotes selected to illustrate each theme's scope and meaning. **Phase 6. Producing the report:** The analysis was written up with vivid exemplar quotes and analytic commentary addressing the research questions.

For the peer assessment data, quantitative ratings were summarised descriptively (frequencies, percentages, means, ranges), while qualitative comments were integrated into the thematic analysis. Following the approach of (Double et al., 2020), researchers analysed peer comments for evidence of evaluative judgment, constructive criticism, and developmental orientation.

Trustworthiness and Rigor

To ensure trustworthiness, this study employed strategies recommended by (Lincoln & Guba, 1985) & (Nowell et al., 2017): **Credibility:** Member checking was conducted by sharing preliminary findings with participants to verify interpretations. Prolonged engagement with the research context (one full semester) and peer debriefing among research team members further enhanced credibility. **Transferability:** Thick description of the research context, participants, and project design is provided to allow readers to assess applicability to other settings. **Dependability:** A comprehensive audit trail was maintained, including raw data, analysis notes, codebooks, and theme development records. **Conformability:** Reflexive journaling was used to acknowledge and manage potential biases. Direct quotes from participants are used throughout findings to ground interpretations in the data.

Ethical Considerations

Ethical protocols were followed throughout the research process (Cohen et al., 2018) & (Resnik, 2020). All participants were informed about the purpose of the study, the nature of their participation, and their right to withdraw at any time without consequence. **Informed consent** was obtained from all participants before data collection, following the ethical guidelines of Universitas Muhammadiyah Sumatera Barat. To protect participant confidentiality, pseudonyms are used in reporting, and any identifying information has been removed from quotes. Data were stored securely on password-protected devices accessible only to the research team. Participants were assured that their responses would not affect their course grades.

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FINDINGS AND DISCUSSION

Findings

This section presents the key findings derived from the thematic analysis of written reflections (five phases), semi-structured interviews, and peer assessment documents. The findings are organized according to the major themes that emerged from the data, each illustrated with direct quotations from participants. Following the presentation of findings, a separate discussion interprets these results through theoretical lenses, compares them with prior studies, and addresses the research questions.

Systematic Self-Assessment

At the outset of the project, all eight participants demonstrated the ability to systematically assess their own teaching and technology skills, establishing clear baselines for measuring growth.

Shintia wrote in her pre-project reflection:

"In terms of self-assessment, I considered my ability to create digital learning materials to be at an intermediate level. I was familiar with basic tools such as PowerPoint and Google Docs, but I had limited experience with more interactive platforms. My experience in micro-teaching was also limited, and I often felt nervous when teaching in front of a camera."

Annisa similarly articulated:

"In terms of creating digital learning materials, I would rate myself at an intermediate level. I am familiar with basic tools such as PowerPoint and Canva, but I still need to improve my ability to design interactive and student-centered digital resources."

Each participant also articulated three specific learning goals. Muhammad Havis stated:

"First, I wanted to improve my ability to design meaningful digital learning materials that are not only attractive but also pedagogically appropriate. Second, I wanted to develop my teaching confidence and communication skills during micro-teaching. Third, I wanted to strengthen my reflective thinking so that I could evaluate my own teaching and continuously improve my professional competence."

Pedagogical Problem-Solving

As participants developed their portfolios, their reflections revealed sophisticated problem-solving processes centered on pedagogical decision-making. A recurring theme was the tension between aesthetic design and instructional effectiveness. Shintia reflected:

"The biggest challenge I faced was integrating technology meaningfully into the learning design. Initially, I focused too much on visual appearance rather than instructional effectiveness. I

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overcame this challenge by revisiting course materials and reflecting on how technology could genuinely support learning objectives."

Rahmad Alfarizi noted:

"I realized that some activities looked interesting but were not strongly connected to the objectives. To overcome this, I reviewed the lesson plan repeatedly and adjusted the activities to ensure alignment."

Nurul Faiza's reflection emphasized the iterative nature of her problem-solving process, which incorporated peer feedback:

"The most challenging part of this process was ensuring that all materials were visually attractive while still aligned with curriculum objectives. To overcome this challenge, I reviewed several examples of effective digital learning materials and revised my design several times based on feedback from classmates."

Transformative Learning through Documentation

In final synthesis reflections, participants reported a fundamental shift in their understanding of teaching. Suci stated:

"At the beginning of the semester, I viewed teaching as delivering material. Now, I see it as a reflective professional practice."

Shintia elaborated on how the integrated nature of the project contributed to this transformation:

"This integrated project differed from regular academic assignments because it combined theory, practice, and reflection into a continuous learning process. The development of a digital portfolio and micro-teaching video strengthened my understanding of technology integration in teaching. Reflection played a crucial role in enhancing my digital literacy, while digital tools supported deeper and more systematic reflection."

Revealing Blind Spots through Peer Feedback

Peer feedback helped participants notice aspects of their performance that they had missed in self-assessment. The variation in peer assessment scores — ranging from 28 to 52 out of a possible 52 demonstrates that participants developed genuine evaluative capacity. Annisa described how peer observations expanded her awareness:

"melihat dari sudut pandang yang berbeda, kurang dan lebihnya, cara penyampaian materi, membuka kelas, memberikan pertanyaan pemantik, melakukan aktivitas di dalam kelas" (from a different point of view, the strengths and weaknesses, how to deliver material, opening the class, giving trigger questions, doing activities).

Muhammad Havis noted:

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"Some comments were surprising, especially about my body language, which I did not notice before."

Validating Self-Assessments through Comparison

Comparing self-assessments with peer evaluations helped participants calibrate their self-perception. Shintia stated:

"When comparing my self-assessment with peer assessment, I found both similarities and differences. External feedback helped me evaluate my teaching more objectively and improved my awareness of areas that need further development."

Aminah added:

"Umpan balik yang saya terima membantu saya melihat performa dengan lebih objektif" (The feedback I received helped me see my performance more objectively).

Rahmad Alfarizi noted that peer feedback provided a more comprehensive understanding:

"My self-evaluation focused mainly on content clarity, while my peers emphasized interaction and delivery style. This difference helped me gain a more comprehensive understanding of my teaching performance."

Prompting Specific Improvements through Constructive Criticism

Peer feedback was most impactful when it provided specific, actionable suggestions. In assessing Aminah's teaching, Suci provided detailed feedback on time management and instructional clarity:

"Aspek yang masih dapat ditingkatkan adalah pengelolaan waktu saat pelaksanaan tugas agar semua tahap pembelajaran dapat berjalan optimal. Selain itu, instruksi tugas perlu dibuat lebih jelas dan terstruktur supaya semua peserta didik memahami tujuan dan langkah pengerjaan dengan baik" (Aspects that can still be improved are time management during task implementation so that all learning stages can run optimally. Additionally, task instructions need to be made clearer and more structured so that all students understand the objectives and steps well).

AI-Assisted Material Development

Participants integrated artificial intelligence tools, particularly ChatGPT, into their instructional design workflows. Nadya described a sophisticated workflow:

"dapat tema analytical exposition cari teks, lalu mencari bahan ajar, minta bantu kepada chatgpt berupa info grafis, lalu disusun kedalam bentuk rpp sesuai dengan criteria pembuatan perangkat pembelajaran" (got the theme analytical exposition, searched for texts, then looked for teaching

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materials, asked ChatGPT for help with infographics, then organized into lesson plan form according to the criteria).

Suci similarly described:

"social media, proses mencari yang sesuai dengan judul tersebut, menggunakan chatgpt, disusun berdasarkan panduan pembuatan projek" (social media, the process of searching for what matches the title, using ChatGPT, organised according to project development guidelines).

Principled Technology Selection

Participants developed pedagogical criteria for choosing tools, not just technical skills. Shintia explained:

"In selecting technology, I considered accessibility, relevance to students' needs, and ease of use. The tools I chose helped present content more clearly and supported student interaction. Through this experience, I learned that effective digital material design requires a balance between technical skills and pedagogical understanding."

Muhammad Havis emphasized pedagogical purpose:

"In choosing technology, I focused on usefulness rather than complexity. I selected tools that could make the material clearer and more interactive. I avoided using technology only for decoration."

The Interplay between Peer Assessment and Portfolio Development

Peer feedback directly influenced portfolio revisions. One participant described:

"Mungkin memberikan saran secara langsung, tidak secara tertulis ... Iya, memberikan saran konstruktif, ini bagus, ini kurang bagus karena gambarnya tidak jelas, kemudian kompetensinya tidak sesuai" (Maybe giving suggestions directly, not in writing ... Yes, giving constructive suggestions, this is good, this is not so good because the image is unclear, then the competencies don't match).

Participants also learned by observing peers' portfolios and teaching videos. Annisa noted:

"melihat dari sudut pandang yang berbeda, kurang dan lebihnya, cara penyampaian materi, membuka kelas, memberikan pertanyaan pemantik, melakukan aktivitas di dalam kelas" (seeing from a different point of view, the strengths and weaknesses, how to deliver material, opening the class, giving trigger questions, doing activities).

Challenges Encountered

Participants reported several challenges. Annisa described:

"The biggest challenge I faced was technical difficulties, particularly in formatting files, embedding videos, and ensuring that all links worked properly."

Aminah identified time management as her biggest challenge:

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"Tantangan terbesar adalah mengatur waktu dan memilih konten yang paling representatif" (The biggest challenge was managing time and selecting the most representative content).

One participant expressed anxiety about giving low scores:

"Kita mangasih nilai 2 (rentangan 1-5) kayak gak enak, padahl itu yang paling objektif tapi takut nilainya rendah" (When we give a score of 2, it feels uncomfortable, even though that's the most objective, but we're afraid they'll get a low score).

Despite these challenges, participants expressed high satisfaction. An overwhelming 19 out of 20 participants (95%) recommended the integrated approach for future practice.

Table 1: Participant Demographic Profile

No	Name	Courses Completed	Project Components
1	Shintia Arizona	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment
2	Aminah	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment
3	Muhammad Havis	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment
4	Rahmad Alfarizi	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment
5	Suci Rahmah Safitunnajah	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment
6	Nurul Faiza	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment
7	Annisa Fadiya	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment

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No	Name	Courses Completed	Project Components
8	Nadya Rahmadisa	CMD 2, TILL	Digital Portfolio, Micro-Teaching, Peer Assessment

Note: CMD 2 = Curriculum Materials Development 2; TILL = Technology in Language Teaching.

Table 2: Peer Assessment Score Range

Score Range (max 52)	Number of Participants	Qualitative Interpretation
45–52	3	Exemplary – strong across all criteria
35–44	3	Satisfactory – some areas need improvement
28–34	2	Developing – significant improvement needed

Note: Scores represent aggregated peer ratings across five criteria: lesson structure, engagement, clarity, technology use, and feedback quality.

DISCUSSION

The findings of this study provide a compelling case for the effectiveness of integrating digital portfolios and peer assessment to develop reflective practice and digital literacy in pre-service EFL teachers. The discussion below interprets these results through established theoretical lenses, compares them with existing literature, and explains their significance in addressing the research questions.

Lowering the Affective Filter and Building Reflective Practice

A paramount finding was the participants' ability to engage in systematic self-assessment and pedagogical problem-solving, which reflected a low-affective-filter environment conducive to growth. This outcome can be interpreted through reflective practice theory (Larrivee, 2008) & (Clará, 2015), which emphasizes that effective reflection requires accurate self-awareness and the ability to question taken-for-granted assumptions. The portfolio context requiring participants to select, organise, and revise concrete artefacts forced them to anchor their reflections in specific

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evidence, rather than engaging in abstract or generalised thinking (Chye et al., 2021). This finding aligns with (Mauri & Clarà, 2024) research showing that structured portfolio prompts elicit more detailed and goal-oriented self-assessments than unguided journaling.

The transformative learning reported by participants shifting from viewing teaching as "delivering material" to "a reflective professional practice"supports (Larrivee, 2008) assertion that systematic reflection enables teachers to "surface tacit knowledge, question taken-for-granted assumptions, and develop more sophisticated understandings of their professional work". Unlike studies that measured reflection as a static outcome (Novillo Navarro & Pujolà, 2019), the present study demonstrates that transformative learning requires longitudinal engagement with portfolio creation across an entire semester.

Peer Assessment as a Catalyst for Deepening Reflection

Three mechanisms of peer assessment were identified: revealing blind spots, validating self-assessments, and prompting specific improvements. These mechanisms align with social constructivist theory (Vygotsky, 1978), where peers operating within the Zone of Proximal Development provide scaffolding that makes visible what the individual cannot yet see alone. This corroborates (Double et al., 2020) meta-analysis finding that "the act of generating feedback for peers may be as beneficial as receiving it". The present study extends this by showing that blind spots are not only cognitive but also behavioural (e.g., body language, pacing), which are rarely captured in self-reflection without video and peer observation. The calibration function observed where participants compared their self-ratings with peer ratings supports(Panadero, 2016) argument that peer assessment develops evaluative judgment when students are trained to articulate criteria and compare judgments.

Developing Digital Literacy through Portfolio Creation

Participants developed digital literacy skills across multiple dimensions aligned with DigComp 2.2 (Vuorikari et al., 2022). The strategic use of ChatGPT for infographic generation and lesson plan organisation demonstrated "digital content creation" competence. This finding supports (Özyurt, 2024) conclusion that "AI tools can serve as effective scaffolds for language learning when integrated purposefully into pedagogical design". Moreover, participants developed principled approaches to technology selection based on pedagogical criteria (accessibility, relevance, ease of use) rather than mere technical novelty. This extends the work of (Tondeur et al., 2021), who argued that one-size-fits-all digital competency models are inadequate. The reflective orientation toward technology selection observed here is a higher-order digital literacy often missing in traditional technology courses (Paz et al., 2022).

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The Synergistic Effect of Integrated Design

A central finding is the synergistic interplay between portfolio development and peer assessment. The portfolio provided concrete, shareable artefacts that grounded peer feedback in specific evidence, enabling precise, actionable comments. Conversely, peer feedback directly influenced portfolio refinement, creating iterative improvement cycles. This aligns with (Gulzar et al., 2025) finding that e-portfolios enabled "dialogues with self, peers and the researcher". The combination created what we term *distributed reflection* reflective practice distributed across individuals, artefacts, and time which is more comprehensive and objective than individual reflection alone. The implication is that portfolio and peer assessment should never be implemented in isolation; they must be sequenced so that portfolio artefacts become objects of peer assessment, and peer feedback becomes input for portfolio revision.

Addressing the Research Questions

The findings provide clear answers to the four research questions. **First (RQ1)**, pre-service teachers demonstrated reflective practice through systematic self-assessment, pedagogical problem-solving, and transformative learning, all mediated by the digital portfolio's artefact-based structure. **Second (RQ2)**, peer assessment shaped reflective thinking by revealing blind spots, validating self-assessments, and prompting specific improvements, thereby functioning as a catalyst for deeper, more objective reflection. **Third (RQ3)**, participants developed specific digital literacy skills: content creation with Canva, AI-assisted material development with ChatGPT, interactive design with Kahoot and Quizizz, and principled portfolio curation. **Fourth (RQ4)**, despite technical difficulties, time constraints, and anxiety about evaluation, an overwhelming majority perceived the integrated approach as highly valuable, endorsing its continued use for professional growth.

Contribution and Comparison with Previous Research

This study contributes to the literature in three significant ways. First, it provides empirical evidence that integrated portfolio-and-peer-assessment designs can simultaneously develop reflective capacity and digital literacy, addressing a gap identified by (Paz et al., 2022). Second, it introduces the concept of distributed reflection, extending classic reflective practice theory (Larrivee, 2008) & (Schön, 1983) into digitally mediated, collaborative environments. Third, it demonstrates that AI tools such as ChatGPT can be strategically integrated into pre-service teacher workflows for instructional design, moving beyond problem identification to showcasing a viable pedagogical practice. Unlike previous Indonesian studies that often highlighted large classes and limited feedback as insurmountable challenges (Fauzi, 2022) & (Sulistiyo et al., 2020),

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this study presents a practical, low-cost solution being implemented within those very constraints. The overwhelmingly positive student perceptions underscore that integrated designs which honour psychological safety and provide structured support are not only theoretically sound but also deeply valued by learners themselves.

CONCLUSION

This qualitative case study investigated how the integration of digital portfolios and peer assessment contributes to the development of reflective practice and digital literacy in pre-service EFL teachers. Eight pre-service teachers from an Indonesian university participated in an integrated project across two courses (Curriculum Materials Development 2 and Technology in Language Teaching). Data collected through written reflections at five key phases, semi-structured interviews, and peer assessment documents were analysed thematically.

The findings provide clear answers to the four research questions. **First**, pre-service teachers demonstrated reflective practice through systematic self-assessment, pedagogical problem-solving, and transformative learning. These forms of reflection align with reflective practice theory (Larrivee, 2008) & (Clará, 2015) and extend it by showing how digital portfolios make reflection artefact-based and revisable (Chye et al., 2021) & (Mauri & Clarà, 2024). **Second**, peer assessment deepened reflection by revealing blind spots, validating self-assessments, and prompting specific improvements mechanisms consistent with social constructivist perspectives (Nicol et al., 2014) and meta-analytic evidence (Double et al., 2020). **Third**, participants developed digital literacy skills including content creation with Canva, AI-assisted material development with ChatGPT, interactive design with Kahoot and Quizizz, and principled portfolio curation, supporting the digital competence framework (Vuorikari et al., 2022) and extending the work of (Tondeur et al., 2021). **Fourth**, despite challenges (technical difficulties, time constraints, anxiety about evaluation), an overwhelming majority perceived the integrated approach as highly valuable and recommended its continued use (Göçen et al., 2025).

A central finding is the synergistic interplay between portfolio development and peer assessment, which we term *distributed reflection* – reflective practice distributed across individuals, artefacts, and time which is more comprehensive and objective than individual reflection alone (Gulzar et al., 2025).

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Limitations

The study involved only eight participants from a single Indonesian university, limiting transferability. The specific cultural norms around feedback may differ elsewhere. The single-semester duration does not address long-term retention, and reliance on self-reported data may introduce social desirability bias. No comparison group was used.

Recommendations for future research

Longitudinal studies should follow participants into their first years of teaching to assess persistence of skills. Comparative research should examine different portfolio platforms and peer assessment formats. Cross-cultural studies are needed to understand how cultural dimensions shape peer assessment experiences. Further investigation of AI integration should focus on developing critical AI literacy alongside tool use (Özyurt, 2024).

Contribution and final remarks

This study contributes empirical evidence that carefully designed integration of digital portfolios and peer assessment simultaneously develops reflective capacity and digital literacy a gap identified by (Paz et al., 2022). It introduces the concept of distributed reflection, extending classic reflective practice theory (Schön, 1983) into digitally mediated environments. It also demonstrates that AI tools such as ChatGPT can be strategically integrated into pre-service teacher workflows for instructional design, moving beyond problem identification to showcasing a viable pedagogical practice (Fauzi, 2022) & (Sulistiyo et al., 2020). To sum up, the integrated portfolio-peer assessment approach offers a practical, scalable, and theoretically grounded model for preparing reflective and digitally literate EFL teachers in Indonesia and similar contexts. The overwhelmingly positive student perceptions, despite the challenges encountered, underscore that such integrated designs are not only effective but also deeply valued by learners themselves.

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