

UNCOVERING CRITICAL THINKING DISPOSITIONS THROUGH REFLECTIVE JOURNALING: A QUALITATIVE STUDY OF MALAYSIAN UNDERGRADUATES

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ABSTRACT

Background and Purpose: This study examines how reflective journaling can enhance critical thinking skills among undergraduate students enrolled in an Educational Testing and Assessment course. It explores students' reflective experiences through qualitative analysis, focusing on how structured journaling supports the development of critical thinking dispositions.

Methodology: A qualitative research design was employed involving 45 undergraduate students who completed reflective journals at three intervals throughout the semester. Each journal entry responded to guided questions related to specific course topics. In total, 135 reflective journals were analysed using thematic analysis to identify recurring patterns, themes, and indicators of critical thinking dispositions.

Findings: The analysis revealed seven critical thinking dispositions reflected in students' writing: cognitive maturity, analyticity, self-confidence, systematicity, open-mindedness, truth-seeking, and inquisitiveness. Students demonstrated increasingly meaningful and analytical reflections across the three journaling cycles, indicating deeper engagement with course concepts and enhanced metacognitive awareness.

Contribution: This study highlights reflective journaling as an effective assessment strategy for fostering critical thinking in higher education. The identified themes provide insight into how reflective practices shape students' cognitive development and reveal their underlying dispositions. The study also acknowledges limitations and proposes directions for future research to further examine the role of reflective journaling across diverse educational contexts.

Keywords: Reflective journals, critical thinking, undergraduate students, qualitative research, thematic analysis, educational testing and assessment.

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1.0 INTRODUCTION

Reflective journals have gained increasing prominence in Malaysian higher education as a powerful tool for fostering critical thinking, metacognitive awareness, and transformative learning (Fung & Liu, 2018). They function not only as an assessment method within classroom settings (Nambiar & Krishnan, 2017) but also as an integral component of teaching practicum experiences (Somekh et al., 2011). By encouraging students to connect course content with personal experiences, reflective journals deepen conceptual understanding and promote greater self-awareness (Hampton & Morrow, 2003; Mills, 2023; Hussein, 2018). This reflective engagement supports the development of a growth mindset and enhances students' capacity to make meaning from their learning (Hussein, 2018).

Reflective journaling not only boosts cognitive skills but also supports students' emotional growth. Regular writing helps students' express thoughts, process feelings, and enhance writing abilities (Ramadhanti et al., 2020; Ahmed, 2019, 2020). In language learning, it improves grammar, coherence, and quality (Tahmasbi et al., 2022). Reflective journals offer a space to address uncertainty, reduce stress, and build resilience, making them an effective tool for both learning and emotional well-being (Mills, 2023; Tammu, 2024).

Reflective journals give educators key insights into students' learning, helping them offer focused feedback and adapt teaching approaches (Hubbs & Brand, 2010; Kim, 2013). This enhances the teaching–learning cycle and leads to more effective pedagogy. Reflective journaling also builds metacognitive skills as students assess and regulate their thinking (Arter et al., 2016; Ramadhanti et al., 2020), with benefits in cognitively demanding fields like philosophy, science, and professional training (Mills, 2023).

A growing body of research highlights the role of reflective journaling in cultivating critical thinking. By prompting individuals to engage in self-analysis and reflective thought, journaling strengthens essential components of critical thinking, including comprehension, attentiveness, discernment, and the ability to evaluate experiences from multiple perspectives (Chirema, 2007; Sudirman et al., 2021). However, despite the recognised importance of critical thinking in higher education, fostering and assessing these skills remains a pedagogical challenge in Malaysia. Cultural norms that position educators as authoritative knowledge transmitters (Tan, 2017) and the prevalence of exam-oriented curricula often limit opportunities for students to engage in reflective and analytical learning (Ralston & Bays, 2015).

Reflective journals offer a promising avenue to address these challenges. They provide a structured space for students to connect theoretical knowledge with personal experience, engage in metacognitive reflection, and develop higher-order thinking skills (Fung & Liu, 2018; Chulan et al., 2025). In Malaysian higher education, reflective journaling has been shown to support holistic learning and enhance students' expressive and critical faculties (Chulan et al., 2025). Yet, its application remains underutilised and under-researched, particularly in non-clinical disciplines such as educational assessment.

While studies in nursing and teacher education have demonstrated the benefits of reflective writing for fostering critical thinking and self-awareness (Azmi et al., 2024; Chirema, 2007; Pieper et al., 2021), there is a notable lack of empirical research examining how reflective journals function as an assessment tool to surface and support critical thinking dispositions among Malaysian undergraduates in social science courses. Furthermore, little is known about how repeated reflective writing over time contributes to the development of these dispositions.

This study addresses this gap by exploring how undergraduate students enrolled in an Educational Testing and Assessment course demonstrate critical thinking dispositions through reflective journaling. By analysing students' reflections across three journaling cycles, the study investigates how reflective journals can serve both as a pedagogical strategy and an assessment tool for critical thinking in Malaysian higher education.

1.1 Research Purpose

This study investigates how undergraduate students show critical thinking dispositions through reflective journaling in an Educational Testing and Assessment course. Using Facione et al.'s (1995) framework, it examines how ongoing reflective writing influences cognitive development, analytical reasoning, and metacognitive awareness. By reviewing three cycles of journals, the research identifies which dispositions emerge, how they change over time, and the role of reflective journals as tools for teaching and assessing critical thinking in Malaysian universities.

1.2 Research Objectives

1. To identify the critical thinking dispositions demonstrated in undergraduates' reflective journals based on Facione et al.'s (1995) disposition framework.
2. To examine how writing three reflective journals over a ten-week period supports the development and evolution of critical thinking dispositions among undergraduate students.
3. To explore the potential of reflective journals as an assessment tool for evaluating critical thinking dispositions within a Malaysian higher education context, particularly in a social science course.

1.3 Significance of Study

This study contributes to higher education research by examining how reflective journaling supports the development of critical thinking dispositions among Malaysian undergraduates in the social sciences—an area that remains underexplored outside clinical disciplines. The study offers a theoretical contribution by integrating reflective practice, metacognition, and Facione et al.'s (1995) framework to explain how structured reflection activates higher-order thinking. Methodologically, the use of three journaling cycles, deductive thematic analysis, member checking, and follow-up interviews demonstrates a rigorous and replicable approach for examining reflective learning over time. Practically, the findings identify specific dispositions evident in students' reflections and show how these dispositions evolve across repeated journaling. These insights provide evidence-based guidance for curriculum design, instructional strategies, and assessment practices aimed at strengthening critical thinking in Malaysian higher education.

2.0 LITERATURE REVIEW

2.1 Reflective Journal in Education

Reflective journaling is widely recognised as a meaningful educational practice that strengthens students' self-awareness by encouraging them to examine their beliefs, assumptions, and emotional responses (Oliver et al., 2021). Through writing, learners confront their perspectives and consider how these shape their academic and professional behaviours. Studies show that reflective journaling can help students identify biases, develop ethical awareness, and cultivate a stronger sense of professional identity.

Reflective journals also support emotional development by providing a safe space to process complex experiences. During the COVID-19 pandemic, for example, students used multimodal journals to manage uncertainty and build emotional resilience (Léon-Henri, 2024). Reflective writing further enhances metacognitive awareness by helping learners monitor and evaluate their learning strategies, promoting greater independence and self-regulation (Ramadhanti et al., 2020).

Beyond self-awareness, reflective journaling deepens learning by helping students connect theoretical concepts with real-world experiences (Cottrell, 2006). When supported by structured prompts, reflective writing encourages movement from descriptive accounts to more analytical and evaluative thinking. Research also shows that reflective journals can foster higher-order thinking and progression through increasingly complex levels of reflection (Arter et al., 2016). As a formative assessment tool, reflective journaling provides educators with insight into students' reasoning processes and areas for improvement (Kim, 2013; Essa, 2024).

Reflective journals are increasingly used in higher education because they offer authentic evidence of students' cognitive, emotional, and professional development. They support the formation of professional identity, promote self-directed learning, and allow educators to assess critical thinking, clinical reasoning, and reflective depth (Padden-Denmead et al., 2016; Carter et al., 2017). Although challenges such as linguistic barriers and inconsistent definitions of reflection exist (Luştreă et al., 2024), reflective journals remain a versatile assessment method across disciplines, fostering inquiry, deeper learning, and reflective practice (Edwards, 2019; Towndrow et al., 2008).

Given these benefits, understanding how reflective journaling cultivates deeper intellectual habits—particularly critical thinking dispositions—requires closer examination of the frameworks used to define and measure them.

2.2 Critical Thinking Dispositions

Critical thinking disposition (CTD) is widely understood as the set of internal qualities, attitudes, and tendencies that shape an individual's willingness to engage in reflective, analytical, and reasoned thinking (Wu et al., 2023). It represents a foundational aspect of cognitive behaviour, influencing how individuals approach problems, evaluate information, and make decisions across educational, professional, and real-world contexts (Wu et al., 2023; Zhao et al., 2025; Zin & Eng, 2014; Alper, 2010). Strong critical thinking dispositions have been linked to enhanced problem-solving, decision-making, creativity, and reflective judgment, making CTD an essential component of effective performance in fields such as education and healthcare (Koçoğlu & Kanadlı, 2025; Salsali et al., 2013). One of the most widely used tools for assessing CTD is the California Critical Thinking Disposition Inventory (CCTDI), which evaluates key dispositional attributes including truth-seeking, open-mindedness, analyticity, systematicity, confidence, maturity of judgment, and inquisitiveness (Zin & Eng, 2014; Alper, 2010). These dispositions reflect the extent to which individuals habitually apply critical thinking in their daily reasoning.

Research shows that CTD is shaped by a range of educational, demographic, and cultural factors. Instructional approaches such as problem-based learning have been found to significantly enhance CTD, particularly among nursing students who benefit from inquiry-driven and experiential learning environments (Wu et al., 2023). Demographic influences also play a role; for instance, students from higher-income families tend to demonstrate stronger CTD, suggesting that socioeconomic conditions may influence opportunities for cognitive development (Liu & Pásztor, 2023). Cultural differences further contribute to variation in CTD, with studies reporting that Asian nursing students often score lower on CTD measures than their non-Asian peers, possibly due to differences in educational traditions, classroom expectations, and cultural norms surrounding questioning and critique (Salsali et al., 2013). Foundational work by Facione and colleagues identified seven core dispositions—open-mindedness, analyticity, systematicity, truth-seeking, inquisitiveness, critical thinking self-confidence, and cognitive maturity—forming the basis of the CCTDI (Zhao et al., 2025). Later scholars expanded this conceptualisation by incorporating qualities such as scepticism and introspection, emphasising the reflective and evaluative dimensions of critical thinking (Boran & Karakuş, 2022; Papathanasiou et al., 2014).

To strengthen the accuracy and relevance of CTD assessment, researchers have developed and validated additional instruments beyond the CCTDI. Tools such as the Critical Thinking Dispositions (CTD) scale and the Student-Educator Negotiated Critical Thinking Dispositions Scale (SENCTDS) demonstrate strong psychometric properties and have been tested across diverse populations (Khil et al., 2024; Quinn et al., 2020). Confirmatory factor analysis and reliability testing further support the validity of these instruments, ensuring that CTD can be measured consistently across cultural and educational contexts (Redhana & Wahyuni, 2021; Martínez-Huamán et al., 2025). The practical implications of CTD are substantial. Educational interventions designed to cultivate positive critical thinking habits have been shown to improve students' creative thinking, problem-solving abilities, and performance in critical reading tasks (Zin & Eng, 2014; Koçoğlu & Kanadlı, 2025). In professional fields such as healthcare, strong CTD is essential for sound clinical judgment, effective patient care, and ethical decision-making, prompting the development of training programmes aimed at strengthening CTD among new graduates and practitioners (Wu et al., 2023; Serna et al., 2021). Collectively, the literature affirms that CTD is a vital component of critical thinking, shaping cognitive, academic, and professional outcomes. A clear understanding of CTD—and the ability to measure it accurately—enables educators and practitioners to design targeted interventions that foster deeper thinking, better decision-making, and more effective problem-solving across a wide range of contexts.

Building on the role of reflective journaling in fostering metacognition and deeper learning, it is also important to consider how this practice aligns with established critical thinking dispositions. These dispositions represent enduring tendencies that shape how individuals approach reasoning, evidence, and problem-solving.

Open-mindedness enables learners to consider alternative viewpoints without being constrained by personal biases. Individuals who demonstrate this disposition are more willing to revise their beliefs when confronted with new evidence, supporting both intellectual growth and emotional flexibility (Rose, 2020). Closely related is inquisitiveness, which reflects a genuine desire to explore ideas, ask questions, and embrace uncertainty. Curiosity fosters resilience and adaptability, encouraging learners to engage with challenges as opportunities for growth (Suhirman & Ghazali, 2022).

Scepticism is another essential disposition, involving the habit of questioning assumptions and evaluating claims rather than accepting information at face value. Effective scepticism requires withholding judgment, gathering evidence, and remaining open to revising one's views (Ennis, 2011; Papathanasiou et al., 2014). When balanced with respect for deeply held beliefs, scepticism helps individuals navigate misinformation and form well-reasoned conclusions (Álvarez-Huerta et al., 2022).

Analytical thinking underpins many aspects of critical thinking, involving the ability to examine assumptions, evaluate evidence, and draw logical conclusions. It reflects a consistent tendency to use reasoning and evidence when solving problems and to remain open to modifying one's views in light of new information (Paul & Elder, 2012). Cognitive maturity complements this by recognising the complexity of real-world problems and the need to make judgments based on context, standards, and evidence rather than certainty (Zhao et al., 2025). Reflection itself is also considered a critical thinking disposition, as it involves examining one's beliefs, values, and experiences to make more informed judgments. Studies show that reflective activities—such as journaling, critical reading, and perspective-taking—can strengthen dispositions like open-mindedness, analyticity, and inquisitiveness.

Systematicity, the tendency to approach problems in an organised and methodical manner, further supports effective reasoning. Research indicates that systematicity is a key dimension of critical thinking disposition among university students and new graduates, though often an area needing development (Wu et al., 2023).

Truth-seeking, a core element of critical thinking, reflects a sincere commitment to pursuing accurate and reliable knowledge. It involves questioning assumptions, seeking evidence, and remaining open to new ideas—qualities essential for personal and societal progress (Arth et al., 2019; Dow, 2020). Self-confidence in one's reasoning abilities also plays a role, enabling individuals to articulate their ideas, make decisions, and engage constructively in problem-solving (Hoffman & Elwin, 2004).

Together, these dispositions provide a theoretical foundation for understanding how individuals approach reasoning and judgment. Reflective journaling offers a promising avenue for nurturing these tendencies, as it requires students to articulate their thinking, evaluate their assumptions, and engage in metacognitive monitoring—behaviours that mirror the very dispositions central to critical thinking.

2.3 Reflective Journal and Critical Thinking

Reflective journaling is widely recognised as an effective pedagogical tool for fostering critical thinking across diverse educational disciplines. Research consistently demonstrates that reflective writing encourages students to question assumptions, analyse information, evaluate evidence, and draw reasoned conclusions—skills central to the development of critical thinking (Arter et al., 2016; Garrity, 2013). By prompting learners to articulate their understanding of experiences and theoretical concepts, reflective journals support deeper cognitive processing and promote higher levels of synthesis and evaluation, aligning with the upper tiers of Bloom's taxonomy (Arter et al., 2016; Draissi et al., 2021). In clinical fields such as nursing, reflective journaling has been shown to enhance clinical reasoning, decision-making, and the ability to manage complex patient care situations, making it a valuable component of professional preparation (Garrity, 2013; Lepianka, 2014; Guynn, 2025; Raterink, 2016). Structured prompts grounded in educational frameworks further strengthen the reflective process by guiding students toward purposeful contemplation and the application of critical thinking skills. The effectiveness of reflective journaling is also enhanced when educators provide consistent, constructive feedback through rubrics or scoring systems, helping students recognise their progress and refine their reflective abilities (Raterink, 2016). Technological integration, such as online reflective journals, has expanded opportunities for reflection in distance education and created accessible records of learning development (Kessler & Lund, 2004). Despite these benefits, reflective journaling requires sustained engagement and timely feedback to be effective, as inconsistent guidance or overly subjective evaluation can hinder reflective growth. Tailoring reflective tasks to specific learning contexts—such as addressing weight bias in nursing or supporting mental health clinical training—further enhances their relevance and impact (Oliver et al., 2021). Across disciplines including nursing, engineering, and doctoral education, reflective journaling has been shown to strengthen critical thinking, deepen learning, and support the practical application of knowledge, underscoring its value as a transformative educational practice.

A reflective journal functions as a personal record of a student's learning journey, allowing them to document significant learning experiences either during or immediately after the learning process (Northern Illinois University, 2014). Journal entries may be guided by prompts that encourage students to reflect on their cognitive processes, classroom experiences, assessments, or course content. These journals are typically submitted to instructors for evaluation, forming part of an ongoing dialogue between student and educator (University of Sussex, 2022). Reflective writing enables students to demonstrate complex learning outcomes such as critical thinking, analysis, creativity, and originality (Epp, 2008). It encourages metacognitive awareness by prompting students to examine their own thinking, evaluate their strengths and weaknesses, and develop a more nuanced understanding of the material (Bouanani, 2015). Through this process, students learn to connect their experiences with

theoretical knowledge, engage in critical self-reflection, and articulate their learning in meaningful ways.

Reflective journaling has been shown to foster critical thinking, self-understanding, and reflective capacity across various educational contexts (Schuessler et al., 2012). By reviewing their own journal entries, students can identify areas for improvement, monitor their progress, and develop strategies to enhance their learning (Pieper et al., 2021). This iterative process helps students become more effective learners and thinkers, enabling them to develop the skills necessary to analyse experiences critically and reflect on their learning (Apsari, 2018). Guided reflective journaling activities have also been shown to improve students' understanding and application of concepts, as well as their overall achievement and attitudes toward learning (Dunlap, 2006). As such, reflective journaling serves as a valuable educational tool that promotes critical thinking, self-awareness, and academic growth.

The significance of reflective journaling in fostering reflective thought has been emphasised in numerous studies. Epp (2008) highlights its role in developing critical thinking and self-awareness, while research in nursing education demonstrates that reflective journaling enhances critical thinking, listening, and observational abilities (Chirema, 2007). In teacher education, reflective journals have been used to nurture critical thinking by encouraging student teachers to engage in reflective thought and develop higher-order thinking skills such as analysis, synthesis, and evaluation (Pieper et al., 2021). Through reflective writing, student teachers learn to consider multiple perspectives, evaluate their own learning, and cultivate the cognitive skills they will later model for their own students.

Despite the extensive international literature, research in Malaysia on the use of reflective journals to enhance critical thinking among undergraduate students remains limited. Existing studies in Malaysian nursing education report positive student experiences with reflective journaling (Azmi et al., 2024; Fatemeh et al., 2019), yet they do not examine its potential to develop critical thinking among students in the social sciences. This study seeks to address this gap by exploring how reflective journaling may support the development of critical thinking skills among Malaysian undergraduates.

2.4 Theoretical Integration: Linking Reflective Journaling to Critical Thinking Disposition

The relationship between reflective journaling and the development of critical thinking dispositions (CTD) can be understood through a clear theoretical pathway that connects reflective practice, metacognition, and critical thinking. Reflective journaling is grounded in reflective practice theory, which posits that individuals deepen their understanding by systematically examining their experiences, assumptions, and decision-making processes. Through this reflective engagement, learners activate metacognitive processes, monitoring, evaluating, and regulating their thinking, which are essential precursors to the development of critical thinking dispositions. In this way, reflective journaling functions as a cognitive scaffold: it prompts students to articulate their reasoning, question their assumptions, and consider alternative perspectives, thereby strengthening dispositions such as open-mindedness, truth-seeking, analyticity, and cognitive maturity. Over time, repeated reflective writing reinforces these habits of mind, gradually shaping students' willingness and inclination to think critically. Thus, the theoretical progression can be conceptualised as: reflective practice → metacognitive awareness → critical thinking dispositions → critical thinking skills.

Facione et al.'s (1995) framework provides the most appropriate lens for analysing this developmental process because it conceptualises critical thinking not only as a set of cognitive skills but also as a constellation of dispositions that influence how individuals approach problems and make judgments. The seven dispositions identified in the California Critical Thinking Disposition Inventory—truth-seeking, open-mindedness, analyticity, systematicity,

inquisitiveness, critical thinking self-confidence, and cognitive maturity—align closely with the types of reflective behaviours typically elicited through journaling. For example, reflective writing encourages students to question assumptions (truth-seeking), consider multiple viewpoints (open-mindedness), analyse their reasoning (analyticity), and evaluate the complexity of learning situations (cognitive maturity). Because reflective journals naturally reveal these internal tendencies, Facione's framework offers a theoretically coherent and empirically validated structure for interpreting students' reflective expressions. Its widespread use across disciplines further strengthens its suitability, allowing the present study to situate its findings within a robust body of international research on critical thinking.

By integrating reflective practice theory with Facione's disposition framework, this study establishes a strong conceptual foundation for understanding how reflective journaling can serve both as a pedagogical tool and an assessment mechanism for critical thinking. This theoretical alignment clarifies the mechanisms through which reflective writing supports cognitive development and provides a rigorous basis for analysing students' reflective journals in the Malaysian higher education context.

2.5 Novelty and Original Contribution of the Study

Although reflective journaling has been widely examined in nursing, teacher education, and clinical training, its role in developing and assessing critical thinking dispositions among Malaysian social science undergraduates remains underexplored. This study addresses that gap by offering several original contributions. First, it is the first known Malaysian study to investigate critical thinking dispositions through reflective journaling in a non-clinical, social science context. Second, it introduces a longitudinal design involving three cycles of reflective writing over ten weeks, providing a more dynamic understanding of how dispositions emerge and evolve compared to single-entry studies. Third, the study triangulates reflective journals with follow-up interviews to validate thematic findings, strengthening analytical credibility. Finally, it positions reflective journaling as both a pedagogical and assessment tool for evaluating critical thinking dispositions, demonstrating its dual value for supporting learning and informing instructional decision-making. Collectively, these contributions advance scholarship on reflective practice, critical thinking, and authentic assessment in Malaysian higher education.

3.0 RESEARCH DESIGN

Data collection involved a structured reflective journaling process. Participants were required to write three reflective journals at intervals of three weeks, resulting in a total of 135 journal entries. Each journal prompted students to respond to three guiding questions: (1) What is the most difficult part of the topic? (2) What is the least difficult part of the topic? and (3) How can you benefit from the lessons learned in the topics? These reflections were based on seven course topics: Introduction to Testing and Assessment, Measurement and Assessment, Validity, Reliability, Planning for Classroom Tests, Objective Tests, and Measuring Complex Achievement. This structured approach enabled a comprehensive exploration of students' perceptions, challenges, and the potential applications of their learning—elements closely tied to the development of critical thinking dispositions. The 10-week data collection period allowed the researchers to capture changes and growth in students' reflections over time.

The data obtained from the reflective journals were analysed using a deductive thematic approach. This method was chosen because deductive thematic analysis is explicitly researcher-driven, allowing the analysis to be guided by predetermined concepts and the researchers' theoretical interest in the phenomenon under investigation. As outlined by Braun and Clarke (2023), a deductive orientation ensures that the coding and interpretation remain

closely aligned with the study's conceptual framework. In this study, the approach enabled the systematic identification of recurring patterns, meanings, and reflections within the students' journal entries, consistent with the view that thematic analysis supports the discovery of patterned responses across qualitative datasets (Ugwu & Eze Val, 2023).

The analysis began with repeated readings of the journals to develop familiarity with the content, followed by the creation of an initial coding framework based on the study's theoretical focus. Each journal entry was coded line-by-line, with segments of text organised according to predetermined categories while still allowing space for unexpected insights to emerge. Codes were then refined and grouped into broader themes that captured students perceived difficulties, areas of ease, and the potential benefits they associated with reflective journaling. These themes were reviewed iteratively to ensure coherence, internal consistency, and alignment with the research objectives.

To further enhance the trustworthiness of the findings, the preliminary themes were presented to participants for confirmation. This member-checking process ensured that the interpretations accurately reflected the students' intended meanings and experiences, thereby strengthening the credibility of the analysis (Bazeley, 2009). In addition to member checking, several participants were invited to participate in brief follow-up interview sessions. These interviews served to clarify ambiguous reflections, validate the emerging themes, and provide deeper insight into students' thought processes. The triangulation of journal data with interview responses added another layer of verification, reinforcing the robustness and authenticity of the thematic findings.

4.0 ANALYSIS AND DISCUSSION

Three reflective journals were collected from a total of 45 undergraduate participants from the Educational Testing and Assessment course, comprising 35 females and 10 males, all of whom were Year 3, Semester 1 students. The cohort represented four academic programmes: 10 students from Teaching English as a Second Language (TESL), 16 from Islamic Studies and Education (ISED), 14 from Teaching Arabic as a Second Language (TASL), and 5 from the Guidance and Counselling programme. In total, 135 reflective journal entries were gathered and analysed. Through this analysis, several salient themes emerged, offering insights into the students' critical thinking dispositions and reflective learning processes.

4.1 Cognitive Maturity

The first theme is cognitive maturity which refers to the development of intellectual abilities and skills that contribute to effective learning and problem-solving. In this context, students' reflections provide valuable insights into their cognitive maturity as they navigate the challenges and opportunities presented by their academic experiences. Here are three key subthemes, supported by excerpts from reflective journals:

i. Recognising improved facilitation skills

In this subtheme, students express an awareness of their enhanced ability to write and facilitate classes through active engagement in activities and homework. This signifies a cognitive maturity that goes beyond mere content comprehension. Students recognise the importance of clear objectives and learning outcomes in achieving academic success. For instance, one student notes,

"Moreover, the activities and the homework that you gave certainly can improve on how I can write and facilitate the class and among the students so that I can see what I have to know, and so that my objectives and learning outcomes can be achieved clearly." [RJ1/3]

ii. Navigating time constraints and deadlines

In subtheme 2, students demonstrate cognitive maturity in their perception of time management and task accomplishment. While extended deadlines are perceived positively, making tasks feel achievable, challenges arise in coordinating consultation schedules. This reflects an understanding of the importance of effective time utilization and the impact of external commitments on their cognitive efforts. A student notes,

"The extended deadline made it feel achievable even with a busy schedule. I appreciate that the lecturer made herself available for consultations regarding the assignment. However, the consultation schedule itself was difficult for some students."

Indicative of their cognitive maturity, these subthemes collectively underscore the way students' reflections on their academic experiences unveil not only comprehension of subject matter but also the cultivation of cognitive abilities that are indispensable for proficient learning and knowledge application. Cognitive maturity is a characteristic of critical thinking that entails considering the inherent complexity of certain issues, the possibility of multiple solutions, and the necessity to base judgments on standards, contexts, and evidence without absolute certainty when confronting problems and making decisions (Facione et al., 2000 as cited in Zhao et al., 2025).

4.2 Analyticity

Analyticity in the context of student reflections refers to the development of analytical skills, particularly in understanding the nuances of creating a positive learning environment and the challenges associated with crafting assessments. The following subthemes, supported by excerpts from reflective journals, provide insights into students' analytic abilities:

i. Emphasising a positive learning environment

In this subtheme, students underscore the significance of creating a positive learning environment, recognising it as a pivotal aspect of effective teaching. The ability of a teacher to carefully prepare exams and assessments is highlighted as crucial for fostering such an environment. A student emphasizes this perspective, stating,

"When one considers the importance of these abilities, it is clear that creating a positive learning environment primarily depends on a teacher's capacity to carefully prepare exams and assessments." [RJ1/5]

ii. Recognising challenges in HOTS questions

In this subtheme, students identify challenges associated with creating Higher Order Thinking Skills (HOTS) questions based on the taught format. The acknowledgment of the significant time and effort required for both formulating and answering such questions indicates an analytical understanding of the complexities involved (Draissi et al., 2021). A student articulates this challenge, stating,

"The HOTS questions need to be made based on the format taught by my lecturer, which is recognising inferences, assumptions, relevance of information, and applying principles. All these formats need to be applied in HOTS questions, and it takes a long time to make it." [RJ3/7]

These subthemes collectively reveal how students' reflections demonstrate an analytical approach in understanding the essential elements of effective teaching, the importance of well-

crafted learning objectives, and the challenges associated with designing advanced cognitive tasks. This aligns with previous research showing that reflective writing encourages learners to analyse their thought processes and evaluate evidence more critically (Arter et al., 2016). The structured prompts used in this study appear to have guided students toward analytical engagement, supporting the argument that scaffolding enhances the depth of reflection. Analytical thinking is an important component of critical thinking disposition, which refers to an individual's recurring patterns of intellectual behaviour. It entails the tendency to use reasoning and evidence to solve problems, as well as being open to new ideas and willing to change one's mind considering evidence (Alvarez-Huerta et al., 2022).

4.3 Critical Thinking Self-confidence

Critical thinking self-confidence emerges as a theme in students' reflective journals, showcasing their trust and they utilized own reasoning to support decision-making. The following subthemes, supported by excerpts, shed light on how students' express confidence in their critical thinking abilities:

i. Essential role of time allocation and self-study

In this subtheme, students demonstrate critical thinking by recognizing the essential role of time allocation and self-study in mastering subjects. They acknowledge personal strategies, such as note-taking, as contributing factors to effective learning. A student articulates this understanding, saying,

"To master a certain subject, I need to allocate my time well for the subject to enhance my level of understanding. Self-study is crucial and vital in maintaining good grades in classes." [RJ2/7]

ii. Envisioning future roles and application of skills

This subtheme reflects students' critical thinking about the practical application of skills learned from the assignment to future roles. Envisioning themselves as test developers, students demonstrate confidence in their ability to apply the acquired skills in real-world scenarios. A student envisions this future role, stating,

"I could become a test developer or someone who works for the examination department in The Ministry of Education. With the skills I learned from this assignment, I can apply them in the future." [RJ3/3]

These themes show how confident students are in their critical thinking by showing how well they can analyse problems, use effective study strategies, and picture how they will use the skills they have learned in their future professional roles. The presence of critical thinking self-confidence in students' reflections suggests that journaling also contributed to their sense of competence in reasoning and problem-solving. Students expressed increased assurance in their ability to analyse assessment concepts, justify their decisions, and articulate their learning. This finding resonates with studies showing that reflective writing can strengthen learners' confidence by providing opportunities to practise reasoning in a supportive environment (Noone & Seery, 2018).

4.4 Systematicity

Systematicity comes to the forefront as students reflect on their academic experiences, emphasizing the organized and methodical approaches they adopt in understanding topics and

facing challenges. Here are the subthemes, supported by excerpts, that provide insights into students' systematic thinking:

i. Recognising the usefulness of all topics

In this subtheme, students display systematic thinking by recognising the utility of all the topics covered. There is a particular emphasis on their applicability to the role of a teacher in creating assessments. Students demonstrate a comprehensive view, acknowledging the usefulness of diverse topics. One student reflects on this, stating,

"I think all the topics learned have their own use. Everything that we learned was constructed for a reason. However, the topic that interests me the most I think would be really extremely useful for me. In becoming a teacher, I will need to create assessments and test questions."[RJ1/20]

ii. Outlining Challenges in Table of Specifications

In Subtheme 2, students highlight systematic thinking by outlining challenges encountered in creating a table of specifications. Emphasis is placed on the technicality and rigidity involved in the process, underscoring an organized approach to the task. A student articulates the challenges, stating,

"In my opinion, the table of specifications requires a lot of effort because of the technicality and rigidity."[RJ2/16]

iii. Systematic selection of SDGs for questions

This subtheme showcases students' systematic approach in the selection of Sustainable Development Goals (SDGs) for questions. The consideration of familiarity and relevance to students underscores an organized decision-making process. A student reflects on this, saying,

"I list out the SDGs and pick out the ones that are easiest and most suitable for them. At first, I suggested either SDG 4 or SDG 11, whether to focus on education, natural disasters, or nature, since teenagers are already exposed to these and probably it would make it easier to develop the questions later."[RJ3/12]

As a result of employing systematic thought in identifying the usefulness of topics, overcoming obstacles, and reaching well-informed conclusions, these subthemes demonstrate that students approach their academic experiences in a structured and organized manner. Systematicity is a disposition of critical thinking characterized by the capacity to analyse and solve problems in a methodical and organized fashion (Wu et al., 2023).

4.5 Open-Mindedness

Open-mindedness emerges as a key theme in students' reflections, showcasing their ability to consider various viewpoints, acknowledge challenges, and adapt to new ideas. The following subthemes, supported by excerpts, provide insights into how students demonstrate open-mindedness in their academic reflections:

i. Recognizing the importance of assessments in lesson plans

In this subtheme, students exhibit open-mindedness by recognizing the importance of assessing appropriateness, differentiation, and validity in lesson plans. They emphasize the role of

assessments in meeting curricular standards, showcasing a willingness to consider the multifaceted aspects of effective teaching. A student articulates this perspective, stating,

"As teachers, we were taught to have assessments in our lessons and to be incorporated in lesson plans. However, most of the time we do not know the degree or appropriateness of the assessments for the students or how to differentiate the levels. The validity of the assessments also plays an important role in ensuring the assessments fit into the curricular standard."[RJ1/17]

ii. Acknowledging difficulty in remembering categorizations

In Subtheme 2, students openly acknowledge difficulties they encounter, showcasing open-mindedness in their reflections. The challenges in remembering categorizations of assessments are noted, and the recognition that even the seemingly easiest parts can pose challenges due to the need for precision demonstrates an acceptance of the learning process. A student reflects on this, stating,

"To remember each categorization of assessment, for example, there are several so I might get confused about which is which. Although the questions can be answered spontaneously or logically, I think it is important to be precise. I think the easiest part can be the hardest one."[RJ2/14]

iii. Overcoming initial difficulty in identifying SDG topics

This subtheme reflects students' open-mindedness in their journey of understanding Sustainable Development Goals (SDGs). The initial difficulty in identifying topics related to SDGs is openly acknowledged. However, their ultimate success in relating topics to SDGs demonstrates an open-minded approach to learning and adapting to new concepts. A student highlights this progression, saying,

"At first, maybe it looks a bit difficult as I need to search for the topic that relates to SDGs as not all topics related to it. I need to identify the topic first before I can decide on its SDGs. Eventually, I found the topic related to SDG, which is SDG 1, No Poverty."[RJ3/11]

These subthemes collectively illustrate how students exhibit open-mindedness in their reflections by acknowledging challenges, considering diverse perspectives, and adapting their understanding as they navigate through complex academic topics. Student open-mindedness was evident as students acknowledged uncertainties, questioned their assumptions, and expressed willingness to revise their understanding. This is particularly significant in the Malaysian context, where exam-oriented learning and hierarchical classroom norms may limit students' inclination to question or critique (Tan, 2017; Ralston & Bays, 2015). Open-mindedness, denoting the readiness to contemplate diverse viewpoints and concepts devoid of prejudice or bias, is one of the dispositions that comprise critical thinking. An individual with an open mind, according to Rose (2020), is self-assured enough to consider contradictory and novel information that is at odds with their existing convictions.

4.6 Truth Seeking

Truth seeking is evident in students' reflections as they actively seek knowledge, confront challenges, and overcome obstacles in their academic endeavours. The following subthemes, supported by excerpts, illuminate how students demonstrate a commitment to truth seeking in their reflections:

i. Benefiting from validity knowledge for question construction

In this subtheme, students exhibit truth-seeking behaviour by recognizing the benefits of understanding content through the validity topic. They acknowledge that this knowledge is valuable for constructing high-quality questions for future students. A student reflects on this, stating,

"Knowing the content that we know through the validity topic helps me in creating the idea of having good quality in constructing questions for my students in the future." [RJ1/2]

ii. Acknowledging challenges in understanding the Table of Specification

In subtheme 2, students demonstrate truth-seeking by openly acknowledging challenges in understanding the Table of Specification. Their willingness to confront difficulties is evident, and they actively seek solutions through suggestions for more practice and homework to enhance comprehension. A student articulates this, saying,

"However, it did not work and I ended up with an incorrect Table of Specification. My fault in this matter was, I did not do much practice before the test and only looked through the only example given by Dr as a note. It would also be nicer to have a lot more questions given by Dr as homework to cover on this topic." [RJ2/20]

iii. Overcoming intimidation through dedication and guidance

Undertaking tasks that initially frighten them, students demonstrate truth-seeking behaviour in this subtheme. By devoting time to reviewing course materials and seeking guidance from the lecturer, they proactively pursue comprehension. While recounting this ordeal, a student declares,

"When I first saw that task, I was intimidated because I did not grasp the full concept right away. However, after dedicating ample time reviewing course materials regarding tables of specifications, plus consulting my lecturer for further guidance, I gained a solid comprehension of them." [RJ3/1]

The subthemes presented collectively illustrate how students actively pursue knowledge, confront challenges directly, and seek guidance to improve their understanding within the academic sphere, thereby engaging in truth-seeking behaviours. Incorporating the quest for precise and dependable information, truth-seeking is an essential component of critical thinking. Active knowledge acquisition, critical thinking, and receptiveness to novel concepts are all components of this process. Raising truth-seekers is considered essential for both personal development and societal advancement within the realm of education (Arth et al., 2019; Dow, 2020). The reflective journal provided a safe, low-stakes environment for students to explore alternative viewpoints and confront misconceptions, echoing findings from international studies that highlight the role of reflective writing in fostering intellectual humility and receptiveness to new ideas (Oliver et al., 2021; Sudirman et al., 2021).

4.7 Inquisitiveness

Inquisitiveness shines through in students' reflections as they express curiosity, explore new perspectives, and actively engage in the learning process. The following subthemes, supported by excerpts, illuminate how students demonstrate inquisitiveness in their academic reflections:

i. Creating assessments aligned with learning goals

In this subtheme, students showcase inquisitiveness by recognizing their ability to create assessments aligned with personal goals. They emphasize the importance of understanding students' needs, demonstrating a curious exploration into tailoring assessments to meet individual learning objectives. A student reflects on this, stating,

"I can create any assessments and measurements that can support my own goals when I knew what my own students need to accomplish. And because of this, I can certainly have the ability to measure the desired learning outcomes and how to evaluate those in a more relevant way."[RJ/3]

ii. Proximity to lecturer for focus and questioning

In subtheme 2, students exhibit inquisitiveness by valuing proximity to the lecturer during lectures. They recognize the benefits of being close for enhanced focus and the ability to actively engage by asking questions. A student emphasizes this perspective, stating,

"The next part might look unimportant, but sitting near the lecturer when a lecture is going on could help me be better. Because in that situation, I would be forced to focus and pay attention. And it is easier to ask questions in that situation."[RJ2/16]

iii. Recognizing the importance of creating good questions

This subtheme reflects students' inquisitive mindset as they acknowledge the significance of creating good questions in assessment development. They actively engage with the concept, avoiding hints and negative forms, showcasing a keen interest in refining their skills. A student articulates this, saying,

"Another thing that I will learn is not only how to make questions but how to make good questions. For example, in an MCQ, it is important that we make sure the answer is not hinted and cannot be found in other questions. We need to also make sure to try to avoid using negative forms in the question as to not confuse the students."[RJ3/5]

Inquisitiveness enhances resilience and adaptability in the face of adversity. These subthemes collectively illustrate how students embody inquisitiveness in their reflections, actively exploring ways to align assessments with goals, seeking proximity for better engagement, and recognizing the importance of creating thought-provoking questions in the learning process. By embracing uncertainty and exploring new possibilities, individuals develop the flexibility to navigate life's challenges with grace and resilience (Rimiene, 2002). Curious exploration fosters a growth mindset, empowering individuals to learn from setbacks, cultivate adaptive coping strategies, and emerge stronger and more resilient in the process (Suhirman & Ghazali, 2022).

Overall, the findings demonstrate that reflective journaling serves not only as a pedagogical tool but also as an effective assessment mechanism for surfacing critical thinking dispositions. In a context where critical thinking is emphasised in the Malaysian Education Blueprint but challenging to assess in practice, reflective journals offer educators a practical, authentic, and student-centred method for evaluating cognitive growth. The study contributes to the limited Malaysian literature by showing that reflective journaling can support the development of critical thinking dispositions among social science undergraduates, a group that has received little attention in prior research.

5.0 CONCLUSION

In conclusion, this study has explored into the potential of reflective journals as an assessment tool to enhance critical thinking skills among undergraduate students, particularly in the context of an Educational Testing and Assessment course. Through qualitative analysis of 135 reflective journals from 45 participants, several key themes emerged, shedding light on the critical thinking dispositions fostered by reflective practices.

The themes emerged from this study correspond to the seven scales comprising the California Critical Thinking Disposition Inventory (CCTDI), a quantitative research instrument to assess the dispositions of critical thinking (Facione et al., 2000 as cited in Zhao et al., 2025). The seven scales are inquisitiveness, open-mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence, and cognitive maturity which are found from the participants' reflective journals. Participants demonstrated enhanced comprehension of the course material and showed greater analytical reasoning abilities, attributable to their extensive self-reflection fostered by consistent reflective journaling over the course of the semester. Reflective journaling has the capacity to foster various dimensions of critical thinking, as demonstrated by these findings.

To develop critical thinking in students, educators can employ various strategies that foster a willingness to consider diverse viewpoints and adapt to new ideas including encouraging exposure to diverse perspectives. Educators should provide students with opportunities to engage with materials, discussions, and viewpoints that challenge their existing beliefs and assumptions. This exposure can help broaden students' perspectives and cultivate open-mindedness. Another strategy is to encourage students to reflect on their own biases, assumptions, and preconceptions. By engaging in critical self-reflection or journaling, students can become more aware of their perspectives and be more open to considering alternative viewpoints. It can help cultivate critical thinking in students, enabling them to approach learning with a willingness to consider diverse perspectives, adapt their understanding, and engage thoughtfully with complex academic topics.

Nevertheless, it is crucial to recognise potential limitations, such as the subjective nature of reflective journals, which may introduce participant bias. Self-reported reflections may not always accurately reflect thoughts and experiences. Furthermore, it is imperative to recognise the study's generalisability, as the specificity of the academic course, educational testing, and assessment may restrict the generalisability of the findings to other disciplines. In addition, the utilisation of convenience sampling may introduce selection bias, as participants who are inclined towards reflective practices may have distinct predispositions towards critical thinking.

Moving forward, recommendations for future research include adopting a mixed-methods approach to triangulate findings, conducting comparative analyses with control groups, and employing longitudinal research designs to explore the sustained impact of reflective practices. Exploring the effectiveness of reflective journaling across diverse cultural contexts and educational settings is essential to understand its broad applicability. Investigating the role of instructor guidance and feedback in shaping the quality and effectiveness of reflective journals can inform instructional practices that maximize critical thinking development. Furthermore, incorporating advanced analytics, such as natural language processing, can provide a more nuanced exploration of critical thinking dispositions within reflective journal content.

In summary, while this study offers valuable insights into the potential benefits of reflective journaling for enhancing critical thinking, additional research is necessary to further clarify its application across various academic disciplines and cultural contexts.

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