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BRIDGING THE GAP BETWEEN THEORY AND PRACTICE: A DIFFERENTIATED EXPERIENTIAL LEARNING APPROACH TO GRADUATE ATTRIBUTES IN PRE-SERVICE TEACHERS

UNINDO A TEORIA E A PRÁTICA: UMA ABORDAGEM DE APRENDIZAGEM EXPERIENCIAL DIFERENCIADA PARA O DESENVOLVIMENTO DE ATRIBUTOS DE PÓS-GRADUAÇÃO EM PROFESSORES EM FORMAÇÃO.

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Abstract
Graduate attributes have become a critical indicator of higher education quality, particularly in teacher education programs where graduates' competencies directly influence the future of schooling. However, a persistent challenge in pre-service teacher education is the gap between theoretical knowledge and professional practice. This study aims to bridge this gap through the development and evaluation of a Differentiated Experiential Learning (DEL) model designed to strengthen classroom management competence and graduate attributes among pre-service teachers. Employing a Research and Development (R&D) approach guided by the ADDIE framework, this study integrated qualitative and quantitative methods. Data were collected through interviews, observations, document analysis, and pre-test–post-test measures involving pre-service teachers enrolled in a Classroom Management course. The DEL model integrates Kolb's experiential learning cycle with Tomlinson's differentiated instruction principles, enabling learning pathways adapted

Resumo
Os atributos dos graduados tornaram-se um indicador crítico da qualidade do ensino superior, particularmente em programas de formação de professores, onde as competências dos graduados influenciam diretamente o futuro da educação. No entanto, um desafio persistente na formação inicial de professores é a lacuna entre o conhecimento teórico e a prática profissional. Este estudo visa preencher essa lacuna por meio do desenvolvimento e avaliação de um modelo de Aprendizagem Experiencial Diferenciada (AED) projetado para fortalecer a competência em gestão de sala de aula e os atributos dos graduados entre os futuros professores. Empregando uma abordagem de Pesquisa e Desenvolvimento (P&D) guiada pela estrutura ADDIE, este estudo integrou métodos qualitativos e quantitativos. Os dados foram coletados por meio de entrevistas, observações, análise documental e medidas pré e pós-teste envolvendo futuros professores matriculados em um curso de Gestão de Sala de Aula. O modelo AED integra o ciclo de aprendizagem

to students' readiness levels. The findings indicate that the DEL model significantly improved pre-service teachers' classroom management competence, with substantial learning gains observed across low-, moderate-, and high-readiness groups. Moreover, the reduction in score dispersion suggests that the model promotes more equitable learning outcomes. Qualitative results further reveal positive impacts on key graduate attributes, including reflective thinking, collaboration, professional autonomy, and contextual sensitivity. Pre-service teachers demonstrated greater confidence and ability to apply theoretical concepts in authentic teaching scenarios. In conclusion, the DEL model is empirically valid, practical, and effective in bridging theory and practice in pre-service teacher education. By integrating differentiated instruction with experiential learning, the model supports both professional competence and holistic graduate attribute development. This study contributes to teacher education scholarship by offering a pedagogically robust framework for preparing adaptive and professionally competent future teachers.

Keywords: Differentiated Instruction. Experiential Learning. Classroom Management. Graduate Attributes. Teacher Education.

experiencial de Kolb com os princípios de instrução diferenciada de Tomlinson, possibilitando trajetórias de aprendizagem adaptadas aos níveis de prontidão dos alunos. Os resultados indicam que o modelo AED melhorou significativamente a competência em gestão de sala de aula dos futuros professores, com ganhos substanciais de aprendizagem observados em grupos de baixa, média e alta prontidão. Além disso, a redução na dispersão das pontuações sugere que o modelo promove resultados de aprendizagem mais equitativos. Os resultados qualitativos revelam ainda impactos positivos em atributos-chave dos graduados, incluindo pensamento reflexivo, colaboração, autonomia profissional e sensibilidade contextual. Os futuros professores demonstraram maior confiança e capacidade de aplicar conceitos teóricos em cenários de ensino autênticos. Em conclusão, o modelo DEL é empiricamente válido, prático e eficaz na integração da teoria e da prática na formação inicial de professores. Ao integrar o ensino diferenciado com a aprendizagem experiencial, o modelo apoia tanto a competência profissional quanto o desenvolvimento holístico dos atributos dos graduados. Este estudo contribui para a área de formação de professores, oferecendo uma estrutura pedagogicamente robusta para preparar futuros professores adaptáveis e profissionalmente competentes.

Palavras-chave: *Ensino Diferenciado. Aprendizagem Experiencial. Gestão de Sala de Aula. Atributos do Graduado. Formação de Professores.*

1 INTRODUCION

Graduate attributes have emerged as a central benchmark for evaluating the quality of higher education and graduates' readiness to engage in an increasingly competitive and dynamic global workforce. In contemporary higher education discourse, graduate attributes extend beyond academic knowledge to include professional attitudes, soft skills, adaptability, ethical awareness, and social responsibility. These competencies are considered essential for enabling graduates to navigate complex professional environments and respond effectively to rapid societal and technological changes. However, in the Indonesian higher education context, a persistent challenge remains in

bridging the gap between theoretical knowledge acquired in universities and the practical competencies required in professional settings. Many higher education institutions continue to face difficulties in aligning intended learning outcomes with teaching strategies and assessment practices, raising concerns that graduate competencies have not yet fully met international standards (Fielder *et al*., 2025).

As globalization intensifies the demand for flexible and competent human resources, higher education institutions are required to move beyond content transmission and actively cultivate transferable skills and professional dispositions. Bassah *et al*. (2025) emphasize that the systematic development of graduate attributes can only be achieved through an integrated alignment of curriculum design, pedagogical approaches, and assessment systems. In parallel, Fikri, Syahza, and Putra (2023) argue that the integration of learning content with appropriate educational technology strengthens contextual understanding and competency development, particularly when curriculum structures coherently connect knowledge, skills, and technological adaptation. These perspectives suggest that graduate attribute development must be intentionally embedded within instructional design rather than treated as an implicit outcome of academic learning.

Universities, as the primary engines of human resource development, bear substantial responsibility for producing graduates who are not only academically competent but also socially responsible and professionally prepared. Recent studies indicate a growing shift in how institutional quality is assessed, with increasing emphasis placed on non-academic outcomes such as personal integrity, social competence, and professional character, alongside traditional indicators such as Grade Point Average (Hermita *et al*., 2025; Rahmaningtyas *et al*., 2025). This responsibility is particularly critical in teacher education, where the quality of pre-service teachers directly shapes the future of primary education. Consequently, the development of graduate attributes among pre-service elementary teachers should aim to foster educators who demonstrate strong subject-matter mastery, pedagogical competence, ethical professionalism, social sensitivity, and well-grounded character. Widiastuti *et al*. (2024) further reinforce this view by highlighting that the integration of local wisdom into learning processes plays a significant role in strengthening character formation and contextual competence, both of which are essential for shaping holistic and socially responsible educators.

Primary School Teacher Education (PSTE) programs serve as a foundational gateway for preparing competent and adaptive future teachers. Among the core professional competencies required, classroom management stands out as a fundamental skill for establishing supportive and effective learning environments (Marensi *et al*., 2023; Putri *et al*., 2025). Effective classroom management requires more than pedagogical knowledge; it demands the ability to manage interpersonal relationships, respond to diverse learner needs, and navigate complex classroom dynamics (Prasetyo *et al*., 2025). Nevertheless, pre-service teachers frequently experience difficulties in translating theoretical understanding into practical teaching skills due to limited exposure to authentic classroom situations (Widayanti *et al*., 2024). This theory–practice gap highlights the need for instructional approaches that provide meaningful, contextualized, and practice-oriented learning experiences reflective of real classroom challenges.

Experiential learning offers a promising pedagogical foundation for addressing this gap. Grounded in Kolb's experiential learning cycle comprising concrete experience, reflective observation, abstract conceptualization, and active experimentation this approach positions learning as an active and transformative process rather than passive knowledge acquisition. Empirical evidence demonstrates that experiential learning significantly enhances students' conceptual understanding, self-confidence, and motivation to apply knowledge in real-world professional contexts (Hermita *et al*., 2025; Mertayasa *et al*., 2024). At the same time, pre-service teachers enter teacher education programs with diverse backgrounds, learning styles, readiness levels, and interests. This diversity necessitates differentiated instruction that adapts content, learning processes, and learning products to students' learning profiles (Widayanti *et al*., 2024; Rahmaningtyas *et al*., 2025; Putri *et al*., 2025). Rahmi *et al*. (2025) further report that differentiated learning supported by interactive digital modules enhances student engagement and instructional responsiveness, indicating that adaptive instructional design plays a crucial role in improving learning effectiveness.

Integrating experiential learning with differentiated instruction therefore emerges as a strategic pedagogical solution in teacher education. Differentiated Experiential Learning (DEL) combines authentic learning experiences with adaptive instructional strategies to support the development of professional competencies and graduate attributes simultaneously. By engaging pre-service teachers in reflective and practice-

oriented learning tailored to their individual learning needs, DEL has the potential to transform abstract theoretical concepts into actionable professional expertise (Prasetyo *et al*., 2025).

At Universitas Pahlawan Tuanku Tambusai, preliminary observations reveal a persistent gap between theoretical knowledge and practical classroom management competencies among PSTE students. Many students demonstrate limited confidence in managing diverse classroom dynamics, while lecturers encounter challenges in implementing differentiated instruction within existing curricular structures. These conditions indicate an urgent need for an instructional model that systematically bridges conceptual understanding and professional practice. To address this gap, this study proposes the development of a Differentiated Experiential Learning (DEL) model aimed at strengthening classroom management skills and fostering core graduate attributes among pre-service teachers.

To ensure a systematic and rigorous development process, this study employs the ADDIE instructional design framework comprising Analysis, Design, Development, Implementation, and Evaluation (Fielder, Morrison, & Ledger, 2025; Halik Bassah, Mohd Noor, & Ahmad, 2025). The ADDIE model provides a structured pathway for developing, implementing, and evaluating an instructional model that is theoretically grounded, practically applicable, and empirically effective. Overall, this research positions Differentiated Experiential Learning as a strategic response to the demands of graduate attributes in the global era, preparing pre-service teachers not only to teach effectively but also to adapt, contribute, and lead within diverse educational contexts.

1.1 Research objectives

This study aims to bridge the gap between theoretical knowledge and professional practice in teacher education through the development and implementation of a Differentiated Experiential Learning (DEL) model. Specifically, the objectives of this research are to:

1) Design and develop a Differentiated Experiential Learning (DEL) instructional model that integrates experiential learning principles and differentiated instruction to support the development of graduate attributes among pre-service teachers;

2) Examine the effectiveness of the DEL model in enhancing pre-service teachers' classroom management competencies as a critical component of professional teaching practice;
3) Analyze the impact of the DEL model on the development of key graduate attributes, including professional attitudes, soft skills, adaptability, and character-related competencies in pre-service teachers;
4) Identify challenges, enabling factors, and implementation strategies associated with the application of the DEL model in real classroom and teacher education contexts.

1.2 Research questions

To achieve the stated research objectives, this study is guided by the following research questions:

1) How is a Differentiated Experiential Learning (DEL) model designed and developed to effectively integrate theory and practice in pre-service teacher education?
2) To what extent does the implementation of the DEL model improve pre-service teachers' classroom management skills?
3) How does the DEL model contribute to the development of graduate attributes among pre-service teachers?
4) What factors influence the successful implementation of the Differentiated Experiential Learning (DEL) model in teacher education programs?

2 METHOD

This study employed a Research and Development (R&D) approach using a mixed-methods design to bridge the gap between theoretical knowledge and professional practice in pre-service teacher education. The research focused on the systematic development, implementation, and empirical validation of a Differentiated Experiential Learning (DEL) model aimed at strengthening graduate attributes among pre-service teachers. The instructional design process was guided by the ADDIE framework

Analysis, Design, Development, Implementation, and Evaluation—which enables iterative refinement and evidence-based validation of educational innovations (Cahyadi, 2019; Sahaat *et al*., 2020).

The DEL model was theoretically grounded in Kolb's experiential learning theory, which emphasizes knowledge construction through cyclical processes of concrete experience, reflective observation, abstract conceptualization, and active experimentation. This framework was adopted to facilitate the transformation of theoretical understanding into professional competencies and graduate attributes relevant to real classroom contexts (Kolb & Kolb, 2005). Accordingly, the methodological focus shifted beyond product development to evaluating the DEL model's effectiveness in integrating theory and practice within pre-service teacher education.

2.1 Implementation phases and impact assessment

The development and evaluation of the DEL model followed four structured phases aligned with the ADDIE framework:

a. Analysis and Design

A comprehensive needs analysis was conducted to examine curriculum demands, classroom management learning outcomes, and students' academic readiness. This phase informed the design of a DEL framework tailored to the practical challenges faced by pre-service teachers, ensuring contextual relevance and alignment with graduate attribute development goals (Brown, 2016; Molenda, 2003).

b. Development and Expert Validation

The DEL model and its supporting instructional tools were developed and subjected to expert validation to ensure pedagogical coherence and theoretical rigor. Validation focused on the integration of differentiated instruction principles with experiential learning processes to support the development of professional competencies and graduate attributes (Tennyson & Rasch, 1988).

c. Field Implementation

The validated DEL model was implemented in authentic instructional settings to examine its practicality and instructional effectiveness. This phase emphasized the transition from conceptual mastery to the application of classroom management skills,

enabling pre-service teachers to demonstrate professional behaviors and graduate attributes in real learning environments (Reeves, 2006).

d. Summative Evaluation

A summative evaluation assessed both the instructional process and learning outcomes. The evaluation focused on improvements in classroom management competence and the development of graduate attributes, as well as the model's effectiveness in reducing achievement gaps among learners with diverse academic readiness (Black & Wiliam, 1998; Guskey, 2003).

Through iterative field testing and empirical evaluation, this methodological design ensured that the final DEL model functioned as a validated instructional bridge between academic theory and professional teaching practice.

2.2 Sampling and participants

Participants were selected using purposive sampling (Patton, 2002). The study involved fifth-semester students enrolled in the Primary School Teacher Education (PSTE) program at Universitas Pahlawan Tuanku Tambusai, selected based on their participation in the Classroom Management course and their diverse levels of academic readiness.

A small-group trial (n = 5) was conducted to evaluate model clarity and usability across high-, medium-, and low-achieving students (Creswell, 2014). Subsequently, a large-group trial (n = 30–35) was implemented to assess the DEL model's impact on classroom management competence and graduate attribute development in an authentic instructional setting.

2.3 Data collection and instruments

Data were collected using a triangulation approach to capture the integration of theory and practice comprehensively (Creswell, 2018). First, structured observations were conducted to document implementation fidelity, focusing on students' engagement in experiential learning cycles and the enactment of differentiated instruction (Kawulich, 2005).

Second, questionnaires and semi-structured interviews were administered to assess student and lecturer perceptions of the DEL model, including its practicality, clarity, and pedagogical relevance in supporting graduate attribute development (Artino *et al*., 2014; Kallio *et al*., 2016).

Finally, pre-tests and post-tests assessed through analytic rubrics were used to measure gains in classroom management competence. These instruments were specifically designed to evaluate students' ability to translate conceptual understanding into professional classroom practices, reflecting the successful integration of theory and practice (Dimitrov & Rumrill, 2003; Reddy & Andrade, 2010).

2.4 Data analysis

Data analysis followed a balanced mixed-methods approach. Qualitative data obtained from observations and interviews were analyzed using the Miles and Huberman (1994) framework, involving data reduction, data display, and conclusion drawing. This process facilitated the identification of key themes related to professional skill development, graduate attributes, and implementation challenges.

Quantitative data were analyzed using descriptive statistics to determine practicality levels and user acceptance of the DEL model. To evaluate instructional effectiveness, inferential statistical tests specifically ANOVA or the Kruskal–Wallis test were employed to examine significant improvements in classroom management competence and to assess the model's effectiveness in narrowing achievement gaps among students with diverse learning profiles (Field, 2013).

3 RESULTS

3.1 Analysis stage: learning needs and theory practice gaps

This section presents the findings from the Analysis stage, which served as the foundation for developing a differentiated experiential learning model aimed at bridging the gap between theory and practice in pre-service teacher education. Following qualitative data analysis procedures proposed by John W. Creswell (2014), data were

collected through in-depth interviews, classroom observations, and document analysis to identify pre-service teachers' learning needs, readiness levels, and discrepancies between existing instructional practices and ideal learning conditions.

The analysis provided a comprehensive overview of the initial conditions of the Classroom Management course, including lecturers' instructional needs, pre-service teachers' learning characteristics, and institutional readiness to implement differentiated and experiential learning approaches. Consistent with needs analysis principles in instructional design research articulated by Robert Maribe Branch (2009) these findings informed the direction of the model design by emphasizing the necessity of aligning instructional strategies with learner diversity and professional learning outcomes.

3.2 Lecturers' interview findings

Interviews with course lecturers revealed clear variations in pre-service teachers' learning readiness, reflecting the differentiated instruction framework proposed by Carol Ann Tomlinson (2014). Lecturers identified three distinct groups of learners: pre-service teachers with low readiness who demonstrated limited understanding of classroom management concepts and required repeated explanations and concrete examples; those with moderate readiness who understood theoretical concepts but struggled to apply them in authentic classroom contexts; and high-readiness pre-service teachers who exhibited critical thinking and creative problem-solving abilities.

Lecturers further acknowledged that previous instructional practices were largely uniform and insufficiently responsive to this diversity. As a result, pre-service teachers' ability to connect theory with practice remained weak, primarily due to limited experiential learning opportunities such as simulations, classroom observations, and microteaching. These findings align with Jerome Bruner's (1996) constructivist learning perspective, which emphasizes that meaningful learning occurs when learners actively construct knowledge through experience and reflection rather than through passive reception of information.

3.3 Pre-service teachers' interview findings

Interviews with pre-service teachers confirmed substantial variation in learning readiness and instructional needs. Pre-service teachers with low readiness reported difficulty understanding foundational concepts and expressed the need for structured guidance and concrete learning materials, a condition explained by John Sweller's (1988) cognitive load theory, which highlights the importance of simplified instructional design for novice learners.

Pre-service teachers with moderate readiness demonstrated adequate theoretical understanding but required experiential and case-based learning activities to apply concepts effectively, supporting David A. Kolb's (1984) experiential learning theory. In contrast, high-readiness pre-service teachers preferred complex tasks requiring analysis, synthesis, and innovation, reflecting higher-order cognitive processes described in Benjamin S. Bloom's (1956) taxonomy. Collectively, these findings underscore the inadequacy of uniform instruction and highlight the urgency of implementing differentiated learning pathways supported by authentic experiential activities, as advocated by Tomlinson (2014).

3.4 Curriculum and concept analysis

Curriculum analysis revealed that Classroom Management is a compulsory course with a central role in developing professional competence. However, the existing Semester Learning Plan emphasized theoretical mastery and provided limited experiential and differentiated learning opportunities, which contrasts with outcome-based and competency-based curriculum principles proposed by William G. Spady (1994).

Accordingly, the curriculum was reconstructed to integrate differentiated instruction based on Tomlinson (2014) and experiential learning principles articulated by Kolb (1984). Concept analysis resulted in a hierarchical concept map organizing classroom management content progressively from foundational understanding to advanced professional decision-making. Preventive and corrective classroom management strategies were explicitly aligned with experiential learning stages—experience, reflection, conceptualization, and experimentation—while differentiated

tasks were embedded according to readiness levels. This structure supports reflective professional practice, consistent with Donald A. Schön's (1983) theory of reflective practice.

3.5 Impact of the DEL model: implementation results

3.5.1 Small-group trial results

The small-group trial involved five pre-service teachers representing low, moderate, and high initial understanding levels. This phase examined the initial impact and practicality of the Differentiated Experiential Learning (DEL) model.

Observational data indicated that all participants were able to follow the experiential learning flow effectively. Pre-service teachers demonstrated increased engagement during simulations, case analysis, and reflective activities. Importantly, pre-service teachers with low initial understanding who had previously tended to be passive became more active participants when learning activities were differentiated and experience-based. This pattern supports Tomlinson's (2001) assertion that adapting learning activities to students' readiness levels enhances engagement and participation.

Quantitative results further demonstrated the model's impact on classroom management concept mastery.

Table 1

Pre-Test and Post-Test Results of the Small-Group Trial

Student Category	Pre-Test	Post-Test	Improvement
Low Understanding	70	80	10
Medium Understanding 1	78	96	18
Medium Understanding 2	72	90	18
High Understanding 1	68	88	20
High Understanding 2	65	82	17
Average	70.6	87.2	+16.6

The average gain of +16.6 points indicates that the DEL model produced a meaningful early impact by enabling pre-service teachers to connect theoretical knowledge with experiential classroom scenarios. This finding strongly supports Kolb's (1984) experiential learning theory and aligns with Lev Vygotsky's (1978) social

constructivist view that knowledge is constructed through interaction, experience, and contextual engagement.

3.5.2 Large-group trial results

The large-group trial involved 38 pre-service teachers over one instructional cycle (6–8 weeks). Differentiation was applied to content, process, and product within the experiential learning cycle as conceptualized by Kolb (1984).

Low-readiness pre-service teachers received concrete instruction and intensive scaffolding; moderate-readiness pre-service teachers engaged in guided discussions and case analysis; and high-readiness pre-service teachers completed synthesis tasks and microteaching activities. This instructional differentiation reflects the principles articulated by Tomlinson (2001), which emphasize adjusting instruction based on learners' readiness, interests, and learning profiles.

Table 2

Descriptive Statistics of the Large-Group Pre-Test and Post-Test

Statistic	Pre-Test (n = 32)	Post-Test (n = 32)
Mean	63.20	83.10
Median	63.0	84.0
Standard Deviation	8.10	6.40
Highest Score	78	95
Lowest Score	48	70

An average gain of +19.9 points, accompanied by a reduced standard deviation, indicates not only improved achievement but also reduced performance gaps. These findings demonstrate that the DEL model effectively enhances classroom management competence while promoting more equitable learning outcomes across diverse readiness levels, consistent with differentiated instruction theory (Tomlinson, 2001) and experiential learning principles (Kolb, 1984).

3.6 Evaluation results: model impact

3.6.1 Quantitative impact

Quantitative evaluation confirmed that the DEL model significantly improved classroom management competence across all readiness levels. To determine the statistical significance of the observed improvements, a paired-sample statistical test was conducted comparing pre-test and post-test scores. Prior to inferential analysis, the normality of the score distribution was examined using the Shapiro–Wilk test. The results indicated that the data met the assumption of normality ($p > .05$), allowing the use of a paired-sample t-test to assess learning gains.

The paired-sample t-test revealed a statistically significant improvement in classroom management competence after the implementation of the DEL model ($t = 12.84$, $p < .001$). The effect size calculated using Cohen's d indicated a large practical impact ($d = 1.45$), suggesting that the DEL model not only produced statistically significant gains but also meaningful educational improvements.

Learning gains were distributed more evenly across students with different readiness levels, indicating that differentiated experiential learning supports both low- and high-performing pre-service teachers without suppressing individual growth trajectories. This pattern reflects the inclusive learning principles emphasized by Tomlinson (2014).

3.6.2 Observational impact on learning engagement

Classroom observations yielded an average instructional implementation score of 4.4 out of 5, indicating very high implementation quality. Pre-service teachers demonstrated strong engagement in discussions, collaborative problem solving, and reflective activities. The lecturer's role as a facilitator who adapted instruction to students' needs reflects student-centered learning principles proposed by Bruner (1996). Although questioning behaviors among low-readiness pre-service teachers require further support, overall participation and confidence improved substantially.

3.7 Summary of results

Overall, the results demonstrate that the Differentiated Experiential Learning (DEL) model:

a. Bridges the gap between theory and practice by transforming abstract concepts into experiential professional learning, as emphasized by Kolb (1984);
b. Improves classroom management competence significantly across diverse readiness levels, consistent with Tomlinson's (2001; 2014) differentiated instruction framework;
c. Reduces achievement gaps, supporting inclusive and equitable learning as advocated in constructivist and social learning theories (Vygotsky, 1978; Bruner, 1996);
d. Enhances graduate attributes, including reflective thinking, collaboration, autonomy, and contextual sensitivity, aligning with Schön's (1983) reflective practice theory.

These findings provide strong empirical evidence that differentiated experiential learning is an effective approach for strengthening professional readiness and graduate attributes among pre-service teachers.

4 DISCUSSION

This discussion interprets the findings of the study through three interrelated dimensions validity, practicality, and effectiveness with a primary emphasis on how the Differentiated Experiential Learning (DEL) model bridges the gap between theory and practice and strengthens graduate attributes among pre-service teachers. Drawing on empirical evidence from all stages of the ADDIE framework, the discussion moves beyond technical validation to critically reflect on pedagogical implications, theoretical alignment, and the transformative potential of the model in teacher education.

4.1 Validity of the model and theoretical coherence

The validity of the DEL model was established through expert judgment of the

Model Book, Lecturer's Guide, and Student Book, which achieved high validity and reliability scores (M = 3.65 out of 4; Cronbach's Alpha = 0.786). From a construct validity perspective, these results indicate strong alignment between the model's design and established pedagogical theories.

The model demonstrates theoretical coherence through the integration of Differentiated Instruction, as articulated by Carol Ann Tomlinson and Moon (2013), and Experiential Learning, as conceptualized by David A. Kolb and further elaborated by Morris (2020) and Pujaningtyas *et al*. (2019). Differentiation enables responsiveness to learners' readiness, interests, and learning profiles through adjustments in content, process, and product, while experiential learning situates concrete experience as the foundation for reflection, abstraction, and active experimentation. Empirical support for this integration is reinforced by findings from Dista, Hernita, and Triani (2024), who report that differentiated learning enhances engagement and accommodates learner diversity in primary education contexts.

However, the integration of these two frameworks also reveals a pedagogical tension. While differentiation emphasizes flexibility and learner responsiveness, Kolb's experiential cycle is inherently structured and sequential. When applied rigidly, this structure risks producing what may be described as standardized differentiation, where variation is constrained within predefined instructional boundaries. This tension reflects a broader instructional design dilemma balancing pedagogical structure with learner autonomy and suggests that the effectiveness of the DEL model depends on lecturers' capacity to exercise adaptive professional judgment rather than strict procedural compliance.

4.2 Practicality and instructional feasibility

The practicality of the DEL model is supported by empirical data from both small-group and large-group trials. The clarity and usability of the instructional products enabled lecturers to facilitate learning effectively, while pre-service teachers were able to follow learning activities without major difficulty. The high implementation score (M = 4.4 out of 5) indicates that the model is feasible and functional in real instructional settings.

High levels of student engagement, particularly during experience-based problem solving and group discussions, reflect learning as an active process of knowledge construction, consistent with constructivist perspectives advanced by Sugrah (2020) and Hanafy (2014). Differentiation was evident in the variation of tasks and scaffolding provided according to readiness levels, supporting Tomlinson's view that instructional adaptation enhances learner participation and motivation.

Nevertheless, the findings also highlight structural constraints, including limited facilities, internet access, and time availability. These challenges align with observations by Nawawi (1998) and Afifah (2022) regarding institutional pressures in higher education, and are consistent with Vebrianto *et al*. (2024) who demonstrate that pedagogical innovation in programs such as sekolah penggerak requires systemic support beyond individual instructional competence. These findings suggest that while the DEL model is practically viable, its sustainability depends on broader institutional alignment and resource support.

4.3 Effectiveness: bridging theory and practice and developing graduate attributes

The effectiveness of the DEL model is most clearly demonstrated through its impact on classroom management competence and graduate attributes. Quantitative findings indicate a statistically significant improvement in learning outcomes (pre-test M = 66.5; post-test M = 85.2; $p < .001$). The largest gains were observed among medium-ability pre-service teachers, followed by those with low initial ability, suggesting that the model effectively supports learners operating within their Zone of Proximal Development, as theorized by Lev Vygotsky and discussed by Slavin (2013).

The reduction in score dispersion indicates that the DEL model contributed to narrowing achievement gaps, supporting inclusive and equitable learning outcomes. However, as noted by Minasari and Susanti (2023), convergence in achievement also raises a critical question within differentiated instruction: whether uniform performance gains risk constraining individual learning trajectories. The findings of this study suggest that the DEL model mitigates this risk by maintaining differentiated task complexity, allowing high-ability pre-service teachers to engage in advanced synthesis and microteaching activities while supporting peers with lower readiness.

Beyond cognitive outcomes, qualitative findings demonstrate substantial growth in graduate attributes, including collaboration, critical thinking, contextual sensitivity, and professional autonomy. These attributes reflect the core strength of experiential learning as a process of transforming experience into knowledge, as emphasized by Kolb and elaborated by Morris (2020). Through reflective activities, simulations, and collaborative tasks, pre-service teachers developed greater confidence and professional judgment. However, as cautioned by Yakin (2019), without sustained and structured reflection, such attributes risk becoming performative rather than deeply internalized. This highlights the importance of embedding reflective practice as an ongoing component of teacher education.

These findings are also consistent with international research on experiential learning in teacher education. Studies conducted in the United States and Europe indicate that experiential and practice-based learning environments significantly enhance pre-service teachers' professional competence and reflective capacity. For instance, Morris (2020) reports that experiential learning frameworks improve students' ability to connect theoretical pedagogical knowledge with classroom practice through structured reflection and iterative experimentation. Similarly, Girvan, Conneely, and Tangney (2016) demonstrate that experiential pedagogies supported by collaborative learning environments strengthen professional decision-making and adaptability among future teachers.

In Asian higher education contexts, research by Halik Bassah *et al*. (2025) and Fielder *et al*. (2025) further emphasizes the importance of integrating experiential learning with curriculum alignment and assessment systems to ensure the development of graduate attributes. Compared with these international studies, the DEL model contributes a unique pedagogical approach by explicitly integrating differentiated instruction within the experiential learning cycle. This integration ensures that experiential activities remain responsive to learner diversity while maintaining a structured process for transforming experience into professional knowledge.

Therefore, the DEL model not only confirms the effectiveness of experiential learning identified in global research but also extends it by demonstrating how differentiation can enhance inclusivity and instructional responsiveness in teacher education programs.

4.4 Pedagogical implications and theoretical contribution

Overall, the DEL model is empirically valid, practically feasible, and educationally effective. More importantly, its contribution lies not merely in improving learning outcomes, but in bridging theory and practice by enabling pre-service teachers to experience, reflect upon, and apply classroom management concepts in meaningful contexts. The model positions graduate attributes not as abstract institutional targets, but as lived competencies developed through experiential and differentiated learning processes.

The tensions identified between differentiation and standardization, structure and flexibility, and competence and transformation suggest that the DEL model should not be viewed as a fixed instructional product. Instead, consistent with the perspectives of Girvan *et al*. (2016) and Mavidou and Kakana (2019) it should be understood as a catalyst for continuous pedagogical reflection and innovation in teacher education. In this sense, the DEL model contributes both practically and theoretically to ongoing discourse on how higher education can prepare pre-service teachers to navigate complex professional realities while embodying the graduate attributes demanded in the contemporary global context.

5 CONCLUSION

This study demonstrates that the Differentiated Experiential Learning (DEL) model is an effective instructional approach for bridging the gap between theory and practice in pre-service teacher education. Grounded in experiential learning and differentiated instruction, the model enables pre-service teachers to translate abstract theoretical concepts into practical classroom management competencies through concrete experiences, reflection, conceptualization, and active experimentation.

Empirical findings indicate that the DEL model significantly improves classroom management competence across diverse readiness levels while simultaneously reducing achievement gaps. Importantly, the model does not homogenize learning outcomes; instead, it provides differentiated pathways that support low-readiness learners through structured experiential support while allowing high-readiness learners to engage in

advanced professional tasks.

Beyond cognitive gains, the DEL model contributes meaningfully to the development of graduate attributes, including reflective thinking, collaboration, professional autonomy, and contextual sensitivity competencies essential for effective and adaptive teaching practice.

From a theoretical perspective, this study contributes to the literature on teacher education by proposing an integrated framework that combines differentiated instruction with experiential learning within a systematic instructional design process. While previous studies have examined these approaches separately, the DEL model demonstrates how their integration can function as a pedagogical bridge between conceptual knowledge and professional practice. In doing so, the model advances contemporary discussions on graduate attribute development by positioning experiential and differentiated learning not merely as instructional strategies but as complementary mechanisms for cultivating professional competence in diverse learning environments.

While the model proved valid, practical, and effective, its implementation also highlighted the importance of institutional support, adequate resources, and sustained reflective practice. Therefore, the DEL model should be viewed not as a fixed instructional product, but as a flexible pedagogical framework that encourages continuous reflection and innovation in teacher education.

Overall, the study provides both empirical and theoretical contributions by demonstrating how Differentiated Experiential Learning can strengthen professional readiness, support inclusive learning, and foster graduate attributes required in contemporary teacher education. Future research is recommended to examine the long-term impact of the DEL model across broader educational contexts and to explore its scalability within different teacher education systems internationally.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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