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Development of an Experiential Learning Approach-Based Curriculum to Enhance Reading and Writing Literacy Competencies in Lower Primary School Students at Private Schools, Kalasin Province: Adaptation of Curriculum Design Principles

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Abstract

This study aimed to develop and implement an experiential learning-based curriculum to enhance reading and writing literacy competencies among lower primary school students in private schools in Kalasin Province, Thailand. The research employed the Educational Design Research (EDR) methodology across three iterative phases: (1) analysis and exploration, (2) design and prototyping, and (3) evaluation and reflection. In Phase 1, focus group discussions were conducted with seven stakeholder groups, including students, parents, teachers, school administrators, educational area officers, and curriculum designers (N=79). Content analysis revealed key challenges regarding teaching difficulties, lack of contextually relevant materials, and unclear family and community engagement. In Phase 2, a prototype curriculum was designed utilizing Kolb's experiential learning framework as the pedagogical foundation alongside Wongwanich's five-dimensional design framework (rationale, content focus, process focus, readiness factors, and implementation procedures) as the structural guide. The curriculum underwent rigorous expert validation and pilot testing. Implementation in Phase 3 with 84 students across Grades 1–3 yielded statistically significant improvements in both reading and writing competencies ($p < .001$). Paired-samples t-tests demonstrated substantial gains across all grade levels, with large to very large effect sizes for reading and exceptionally large effect sizes for writing,

providing compelling evidence of educational effectiveness. Qualitative data from classroom observations and post-implementation interviews revealed increased student engagement, enhanced metacognitive awareness, and improved learning motivation. This research presents a learner-centered curriculum design model incorporating stakeholder participation, supported by technology and positive psychology principles, which is suitable for small schools with limited resources and aligned with competency-based education reform.

Keywords: Experiential Learning, Literacy Competency, Curriculum Development, Educational Design Research, Private Schools, Reading and Writing Skills

1. Introduction

The development of reading and writing skills in lower primary school students is crucial for fostering lifelong learning and academic success (Connor et al., 2016; Khairi et al., 2021; Piasta, 2014). These foundational literacy competencies serve as cornerstones for all subsequent learning, yet many students in rural educational contexts continue to struggle with basic literacy acquisition. In particular, small private schools in rural areas, such as those in Kalasin Province, Thailand, face significant challenges including resource limitations, inadequate infrastructure, insufficient trained personnel, and outdated pedagogical approaches that hinder effective teaching and learning (Dorland, 2024). Many students demonstrate low literacy levels, frequent writing errors, lack of motivation, and an inability to connect their education with real-life contexts. Despite national efforts to promote literacy through various policies and programs, substantial gaps persist between policy formulation and practical implementation, significantly impacting the effectiveness of literacy programs in rural schools (Makrakis & Kostoulas-Makrakis, 2012; Poulton & Mockler, 2023).

Preliminary surveys reveal that many existing curricula in small private schools do not prioritize learner-centered approaches or adequately adapt to the local contexts and diverse needs of students (Eggiman-Ketter et al., 2024). Curricula are often centrally designed using standardized templates, failing to accommodate the cultural, linguistic, and socioeconomic diversity of learners in different regions. Moreover, these curricula frequently lack integration of experiential learning principles, despite substantial research evidence demonstrating that experiential learning strategies can effectively enhance language skills during early educational stages (Hayati, 2020; Kolb & Kolb, 2022; Nair et al., 2023). Specifically, experiential learning frameworks have been linked to the development of creativity, innovation, and collaboration skills among students, aligning with the competency demands of contemporary and future educational frameworks (Meyer et al., 2019). These frameworks, grounded in Kolb's learning cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation, create opportunities for young learners to engage with literacy tasks through meaningful, hands-on activities. When children write about their own experiences or read texts connected to familiar contexts, they develop stronger connections between abstract literacy skills and concrete understanding, thereby enhancing both reading comprehension and writing fluency (Kolb & Kolb, 2022). This approach is particularly effective in primary education, where cognitive development benefits from learning that is contextualized, sensory-rich, and emotionally engaging

Although substantial previous research has focused on applying experiential learning concepts in secondary and higher education contexts, there is a notable gap in research specifically addressing the application of these principles to primary education, particularly in rural private schools with limited resources (Aithal & Mishra, 2024; Reckermann & Ritter, 2022). This gap is significant because primary education represents a critical developmental window where literacy foundations are established, and age-appropriate pedagogical approaches differ substantially from those effective in older student populations. The absence of research-based models for implementing experiential learning in early grades leaves educators without evidence-based guidance for adapting these powerful pedagogical approaches to young learners' developmental needs, cognitive capacities, and learning characteristics. Additionally, literature examining genuine stakeholder participation in curriculum design processes remains scarce. Meaningful involvement of teachers, parents, and students in curriculum development is rarely documented, especially in the context of Thai private schools where curriculum development typically follows a top-down approach with minimal consultation of those most affected by curricular decisions (Khairi et al., 2021). This second gap matters because stakeholder participation ensures curriculum designs are contextually relevant, culturally appropriate, and practically implementable. Without systematic integration of insights from teachers who implement curricula, parents who support learning at home, and students who experience instruction directly, curriculum designs risk being theoretically sound but practically ineffective, failing to address the actual challenges and opportunities present in specific educational contexts.

This research focuses on adapting curriculum design principles by utilizing Wongwanich's (2020) five-dimensional curriculum design framework, which comprises five essential components: rationale for design, content focus, process emphasis, readiness factors, and implementation procedures. The Educational Design Research (EDR) methodology, which unfolds across three iterative phases—analysis and exploration, design and prototyping, and evaluation and reflection (McKenney & Reeves, 2012; McKenney & Reeves, 2013) is employed as the primary mechanism for designing and developing the curriculum, guided by Wongwanich's framework, to ensure the curriculum is truly aligned with the local context. Furthermore, Kolb’s (1984) experiential learning cycle is used as the basis for designing the learning activities, with experiential learning theory serving as the theoretical justification for this development to meet the stated objective.

The primary objective extends beyond merely developing a prototype curriculum addressing the unique needs of private schools in Kalasin Province. Rather, this research seeks to propose an adaptable curriculum design approach grounded in empirical data from authentic stakeholders, which can be applied and scaled to similar educational contexts at both local and national levels (Tomasella et al., 2022). By documenting the adaptation process and its outcomes, this study contributes to the broader discourse on context-responsive curriculum development and provides practical guidance for educators and policymakers working in resource-constrained educational settings. The findings aim to bridge the persistent gap between educational policy intentions and classroom realities, offering evidence-based strategies for enhancing literacy instruction in underserved communities.

2. Literature Review

The development of reading and writing skills is a critical component of literacy education, particularly in the primary education context. Research highlights the significance of addressing foundational decoding skills to enhance literacy outcomes for pupils in low- and middle-income countries. (Crawford et al., 2023) emphasize that for students to achieve global literacy goals, they must develop a robust understanding of the relationship between letters and sounds, which is essential for decoding printed words and building reading proficiency over time. This foundational skill is particularly vital as it supports students in accessing meanings of unfamiliar words and facilitates the reading practice necessary for advancing their literacy.

Furthermore, the integration of technology into literacy education has been shown to enhance student engagement and writing skills. Zakaria et al. (2016) discuss how digital storytelling tools, such as "Storybird," encourage collaboration and interaction among young writers, allowing them to participate in online writing communities, which contributes to their narrative skills. Lim and Noor (2019) argue that digital storytelling can be an effective pedagogical strategy to motivate secondary school students in improving their writing skills, thereby enhancing their overall writing performance. The potential of these tools to enhance creativity and interest in writing among students cannot be overlooked, as they provide a platform for expressing ideas in engaging ways.

In addition to technological tools, there is a pressing need to explore pedagogical approaches to writing instruction. Ganapathy et al. (2022) suggest that a genre-based pedagogical framework can significantly improve writing performance for students, particularly among those with low English proficiency, such as the Orang Asli students in Malaysia. By focusing on the genre-specific characteristics of writing, students can develop better writing skills that align with their educational needs. Additionally, Ceylan (2019) notes that students often experience significant difficulties in second language writing, which can involve issues such as organizing thoughts, grammar, and punctuation.

Moreover, the importance of metacognitive strategies in writing cannot be overstated. The research by Çer (2019) highlights that metacognitive activities, such as self-regulation and self-monitoring, play a crucial role in enhancing secondary school students' writing skills. These strategies encourage learners to reflect on their writing processes, ultimately contributing to the creation of quality texts. Similarly, Niyibizi et al. (2024) emphasize that English writing skills significantly impact learners' overall performance, revealing how various factors, including teaching methods and the use of first language interference, can hinder writing development.

The role of parental involvement in literacy development also warrants attention. Research has consistently shown a positive correlation between parental support and children's reading outcomes. Lyimo (2023) indicates that cooperation between teachers and parents is crucial for fostering early literacy acquisition skills among students. This alignment of home and school environments facilitates a supportive ecosystem for children as they develop their reading and writing competencies.

Moreover, the challenges inherent in the curriculum design for writing instruction persist. Endarwati et al. (2023) point out that time constraints and curriculum expectations often limit teachers' capacity to deliver focused writing instruction. This limitation can result in superficial coverage of writing skills, impeding students' opportunities to practice and refine their writing. Similarly, Whitehurst and Lonigan (1998) discuss the importance of foundational skills like phonological awareness and print concepts for establishing a base for more advanced literacy skills.

In summary, the literature reveals a complex interplay between various factors that influence reading and writing development among primary education students. The integration of technology, effective pedagogical frameworks, metacognitive strategies, and parental involvement are key elements necessary for enhancing literacy competencies, particularly in diverse educational contexts. Future research should continue to explore these dimensions, aiming to create holistic and supportive environments that foster literacy learning for all students.

3. Methodology

This research employed Educational Design Research (EDR) methodology following the framework proposed by McKenney and Reeves (2012), which comprises three iterative phases: Analysis and Exploration, Design and Construction, and Evaluation and Reflection. The study adopted a participatory qualitative research approach, integrating Kolb's Experiential Learning Theory and Wongwanich's Educational Design Framework (2020) to design, develop, and evaluate a contextually appropriate curriculum for small private schools in Kalasin Province.

3.1. Research Design

The research design was conducted within the framework of EDR principles, using Wongwanich's five-dimensional curriculum design framework as a structural guide and Kolb's Experiential Learning Theory (ELT) as a pedagogical basis for instructional design. Wongwanich's framework encompasses five essential components: rationale for design, content focus, process emphasis, readiness factors, and implementation procedures. The application of Wongwanich's framework and Kolb's experiential learning cycle offers methodological value beyond either framework alone, with each serving distinct but complementary functions. Wongwanich's five-dimensional framework provides comprehensive structural guidance for curriculum design and development at the macro level, ensuring systematic attention to all essential components required for a complete, implementable curriculum. This framework talks about the "what" and "why" of curriculum design, such as setting content standards, learning goals, needed resources, and overall implementation plans. In contrast, Kolb's experiential learning cycle operates at the micro level of instructional design, providing a robust, research-validated pedagogical process that guides how individual learning activities and lesson plans should be sequenced and structured for optimal experiential learning. Kolb's cycle addresses the 'how' of instruction—the specific teaching-learning processes within each lesson. Together, Wongwanich's framework ensures comprehensive, systematic curriculum design, while Kolb's cycle ensures pedagogically sound, experientially grounded lesson planning and instructional processes.

Participatory design is especially important in this Thai rural private school setting for a number of interconnected reasons. First, the cultural context emphasizes collective decision-making and community harmony (*sanuk*), making top-down curriculum imposition culturally inappropriate and less likely to succeed. Second, small private schools in rural Thailand operate with limited resources and unique constraints that only local stakeholders fully understand; their direct participation ensures designs are practically feasible given actual resource availability. Third, teachers in these contexts often lack extensive formal training in contemporary pedagogical approaches, making their involvement in design both a capacity-building opportunity and a means of ensuring implementability given current competency levels. Finally, the linguistic and cultural diversity of rural Kalasin Province requires curriculum designs that accommodate local dialects, cultural practices, and community values—knowledge that only community stakeholders possess and can authentically integrate into curriculum design.

3.2. Participants

Purposive sampling was employed to select participants across the three phases of the EDR framework. The total number and composition of participants varied according to the specific requirements of each phase.

3.2.1. Phase 1: Analysis and Exploration

This phase involved 79 stakeholders comprising 30 parents of students in grades 1-3, 30 students (10 per grade level), 4 Thai language teachers, 1 educational area office staff member, 1 educational supervisor, 9 school administrators, and 4 curriculum design experts. Data were collected through focus group discussions and content analysis.

3.2.2. Phase 2: Design and Construction

The researcher collaborated with teachers, administrators, and parents in developing the prototype curriculum. The initial prototype underwent refinement through consultation with experts in curriculum design, educational technology, Thai language content, and pedagogy to ensure theoretical soundness and practical applicability within authentic contexts.

3.2.3. Phase 3: Evaluation and Reflection

The curriculum was implemented with lower primary school students in grades 1-3 (31 first-grade students, 19 second-grade students, and 34 third-grade students) and 3 Thai language teachers in authentic classroom settings. Feedback was collected from teachers, students, and administrators following implementation. Additionally, three independent experts (2 Thai language content specialists and 1 assessment and evaluation specialist) evaluated the curriculum's appropriateness, clarity, and feasibility prior to broader implementation.

3.3. Research Instruments

The research employed qualitative instruments designed within Wongwanich's (2020) curriculum design framework, encompassing five dimensions: rationale for curriculum design, learning goals, learning processes, readiness conditions, and implementation steps. Instruments were differentiated according to each phase of the EDR framework.

3.3.1. Phase 1: Analysis and Exploration

Semi-structured interview protocols were employed to interview students, parents, teachers, and school administrators regarding problems, contexts, and needs related to reading and writing skills development. Focus group discussion protocols were designed to facilitate group discussions with stakeholders, utilizing Wongwanich's five-dimensional framework to analyze expectations, conditional factors, and essential curriculum content.

3.3.2. Phase 2: Design and Construction

Design outcome documentation forms (Wongwanich, 2020) were used to record data from collaborative curriculum design sessions with teachers, administrators, and parents, emphasizing alignment of learning units with Kolb's Experiential Learning Cycle. Curriculum validation forms were utilized to assess curriculum appropriateness in terms of objectives, content, structure, learning processes, and implementation approaches. Expert feedback records systematically captured recommendations from curriculum design, educational technology, and Thai language specialists for refining the prototype curriculum to ensure appropriateness and practical applicability.

3.3.3. Phase 3: Evaluation and Reflection

Student performance assessment forms evaluated students' reading and writing competencies following curriculum implementation. Behavioral assessment criteria were designed according to indicators for reading comprehension, structured writing, and communication through written language in authentic situations. Assessment components included reading aloud and comprehension, organizing thoughts into sentences and paragraphs, and writing to communicate intent through narrative, descriptive, and experiential writing. The assessment instrument was developed in rubric format and validated by Thai language and assessment specialists prior to implementation. Implementation reflection forms collected data from teachers and learners following curriculum piloting to capture learning outcomes, appropriateness of learning processes, and additional recommendations.

3.4. Data Collection and Analysis

The research employed EDR methodology with three main phases, each featuring distinct data collection and analysis procedures.

3.4.1. Phase 1: Analysis and Exploration

Focus group discussions were conducted separately with six stakeholder groups: grade 1-3 students, parents, Thai language teachers, school administrators, educational area office staff, and curriculum designers, totaling 79 participants. Each focus group session lasted approximately one hour, utilizing discussion recording forms and semi-structured interview protocols designed according to Wongwanich's (2020) framework.

Data Analysis. Verbatim transcriptions underwent content analysis using ATLAS.ti software to generate primary codes across three dimensions: problems, context, and needs. Subsequently, preliminary curriculum design principles were synthesized from the data, encompassing five dimensions: rationale for design, content focus, process emphasis, readiness factors, and implementation procedures.

3.4.2. Phase 2: Design and Construction

This phase addressed the second research objective of designing and constructing an experiential learning-based curriculum prototype to enhance reading and writing competencies among lower primary students in private schools within the local context of Kalasin Province. The process comprised five main steps: participatory co-design, expert content development, pilot testing in schools with similar contexts, expert critique, and pre-implementation curriculum evaluation.

Step 1: Participatory Co-design with Stakeholders. The researcher conducted a workshop with 43 stakeholders including 4 Thai language teachers, 9 school administrators and education committee members, 10 parents, 16 students from grades 1-3, and 4 curriculum designers. Wongwanich's (2020) curriculum design framework, emphasizing five components (rationale, content focus, process focus, readiness factors, and implementation steps), guided the sessions. The workshop synthesized concepts and needs from Phase 1 into an initial prototype curriculum draft, developed in alignment with Kolb's learning cycle (Concrete Experience, Reflective Observation, Abstract Conceptualization, Active Experimentation).

Step 2: Expert Development and Refinement. The co-designed prototype curriculum was submitted to experts in curriculum design, educational technology, and Thai language for in-depth development to enhance content systematization, activity structure, and alignment with targeted competencies. This resulted in a curriculum that concretely linked local contexts with theoretical concepts.

Step 3: Pilot Testing in Similar Context Schools. The prototype curriculum was piloted in a private school with similar context to the target schools in terms of teacher and student numbers, classroom structure, and limited resources. Implementation involved 15 second-grade students and 1 teacher over one semester. Activities encompassed experiential learning approaches (storytelling, reflection, situational writing), digital media utilization, and assessment tools based on learner-centered principles. Pilot results were collected through classroom observations, teacher and student interviews, and activity appropriateness assessments using behavioral reading and writing assessment forms.

Step 4: Expert Panel Critique. Following pilot testing, the researcher convened an expert panel of 5 members comprising 1 primary curriculum specialist, 2 Thai language specialists, and 2 assessment and evaluation specialists to critique the prototype curriculum through qualitative appropriateness evaluation forms. Recommendations addressed clarification of activity examples, expansion of learning media scope, and enhancement of parent communication approaches to increase curriculum application flexibility.

Step 5: Pre-implementation Curriculum Evaluation. To ensure curriculum appropriateness and readiness before proceeding to Phase 3 evaluation, the researcher developed a pre-implementation evaluation form encompassing five main dimensions: rationale and necessity for development, curriculum development concepts, curriculum vision and objectives, curriculum structure, and support systems. The evaluation instrument was validated by 3 experts: 2 primary-level Thai language specialists and 1 educational assessment and evaluation specialist.

Expert opinions were compiled and analyzed through content analysis to identify strengths, areas requiring improvement, and academic recommendations. Subsequently, data informed curriculum refinement to achieve completeness, theoretical alignment, and appropriateness for implementation in private school contexts in Kalasin Province.

3.4.3. Phase 3: Evaluation and Reflection

Following curriculum refinement, implementation occurred in lower primary classrooms with 31 first-grade students, 19 second-grade students, 34 third-grade students, and 3 Thai language teachers. Data collection employed three methods: behavioral observation using learning behavior recording forms, post-activity interviews with teachers and students, and

assessment of students' reading and writing behaviors using evaluation instruments developed according to behavioral objectives for each curriculum module.

Behavioral observation data were analyzed descriptively to summarize learning behavior trends, participation levels, and progress in reading and writing skills. Interview data were transcribed and subjected to content analysis to identify patterns in experiences, perceptions, and recommendations from teachers and students. All findings informed curriculum refinement and synthesis of recommendations for broader implementation in small private school contexts regionally. Reading and writing performance data were analyzed using paired-samples t-tests to compare pre- and post-instruction scores.

4. Results

This research employed EDR methodology across three phases: Analysis and Exploration, Design and Construction, and Evaluation and Reflection.

4.1. Analysis and Exploration

Focus group discussions with 79 stakeholders (30 students in grades 1-3, 30 parents, 4 Thai language teachers, 9 administrators, 1 educational area officer, 1 supervisor, and 4 curriculum experts) revealed three critical dimensions through ATLAS.ti content analysis: 1. Problems: Teachers face challenges developing age-appropriate materials aligned with experiential learning principles and integrating students' real-life experiences. Students demonstrate low reading fluency, frequent writing errors, poor sentence structure, lack of motivation, and inability to connect classroom learning with daily experiences. 2. Contexts: Small private schools in Kalasin Province serve limited populations with 1:12 teacher-student ratios, restricted budgets limiting instructional materials and technology, and predominantly agricultural communities with limited literacy exposure. Mixed-age classrooms require flexible, adaptable curriculum designs. 3. Needs: Teachers need practical guides demonstrating experiential learning implementation and ready-to-use adaptable activity templates. Parents desire clear involvement guidance and transparent communication about objectives and progress. Students prefer engaging activities connecting to familiar contexts and personal interests. All stakeholders emphasize systematic curriculum balancing standards alignment with local context accommodation.

4.2. Design and Construction

Based on Phase 1 findings, an experiential learning-based curriculum prototype was developed through participatory design, integrating Kolb's (1984) Experiential Learning Theory with Wongwanich's (2020) five-dimensional framework. To ensure systematic and comprehensible curriculum design, symbolic codes were strategically employed across key dimensions. These abbreviated codes—P-Q-R for rationale dimensions, A-B-C for learning goal progressions, and K-L-M for procedural emphases—serve multiple purposes: they facilitate clear communication among diverse stakeholders (teachers, parents, administrators, students), enable systematic curriculum documentation and reference, support practical implementation by condensing complex pedagogical concepts into memorable frameworks, and create a shared vocabulary for discussing curriculum components. This coding system transforms abstract curriculum theory into concrete, actionable design principles accessible to practitioners regardless of their theoretical background, thereby bridging the gap between curriculum design expertise and classroom implementation.

Dimension 1: Rationale for Curriculum Design. P: Addresses critical gaps in literacy instruction through systematic experiential learning integration, targeting persistent policy-practice gaps in resource-constrained rural contexts. Q: Promotes learner-centered instruction connecting academic literacy with students' cultural contexts and authentic communication needs R: Establishes an adaptable, scalable framework balancing core principles with local contextual flexibility for sustainable implementation. Dimension 2: Focus on Substance (Learning Goals). Three core competencies progress across grades 1-3: A: Reading Fluency develops from phonemic awareness and basic decoding (Grade 1), through sight word recognition and appropriate rate (Grade 2), to prosodic reading and advanced strategies (Grade 3). B: Structured Writing progresses from simple sentence formation (Grade 1), through coherent paragraph construction (Grade 2), to multi-paragraph composition across genres (Grade 3). C: Literacy integration emphasizes meaningful application across authentic contexts, critical evaluation, reasoned argument construction, and creative expression. Dimension 3: Focus on Procedure (Learning Processes). Kolb's four-stage cycle guides all units: K: Iterative Application of Kolb's Complete Cycle. The systematic, repeated implementation of all four stages (Concrete Experience → Reflective Observation → Abstract Conceptualization → Active Experimentation) throughout each learning unit ensured deep, cyclical learning rather than linear skill transmission. L: Integration of Digital Technology for Formative Feedback. Strategic integration of digital technologies provided immediate formative feedback and enhanced student engagement. M: Promotion of Emotional Well-being through PERMA Framework. The systematic integration of Seligman's PERMA framework (Positive emotions, Engagement, Relationships, Meaning, Accomplishment) throughout instruction addressed often-neglected affective dimensions of literacy learning. Dimension 4: Input Conditions (Readiness Factors). Implementation readiness encompasses teacher competencies, including experiential learning training, activity-based classroom management, and assessment literacy; material resources, comprising locally sourced materials, basic technology (tablets/computers), and community resources; and support systems, including administrative backing, parent engagement mechanisms, professional learning communities, and digital platforms incorporating Seligman's positive psychology principles. Dimension 5: Implementation Procedures. Comprehensive guidance includes detailed lesson plans aligned with Kolb's cycle, step-by-step activity instructions with timeframes, formative and summative assessment tools with

explicit rubrics, differentiated instruction strategies through tiered activities and flexible grouping, and systematic family-community engagement approaches including parent communication templates and home extension activities. Curriculum Structure Twelve thematic units (four per grade) span 3-4 weeks each, integrating reading and writing across all competency domains. Representative themes include family relationships (Grade 1), community contexts (Grade 2), and cultural traditions (Grade 3), all incorporating Kolb's complete learning cycle with local adaptation flexibility. Expert Validation

Five experts (1 curriculum specialist, 2 Thai language specialists, and 2 assessment specialists) validated the prototype using structured instruments assessing appropriateness, clarity, feasibility, and standards alignment across all five dimensions. Results indicated consistently high appropriateness ratings, with particular commendation for systematic experiential learning integration, contextual relevance, and comprehensive implementation guidance. Recommendations addressed enhancing activity instruction clarity through additional examples, expanding differentiation options with specific strategies, strengthening assessment rubrics with detailed descriptors and exemplars, developing parent engagement resources, and providing technology integration guidance for resource-constrained contexts. Pilot Testing: Pilot implementation with 15 second-grade students and one teacher over one semester in a contextually similar school revealed substantially increased student engagement through higher participation rates, sustained attention, enthusiastic contributions, and spontaneous literacy interactions. Teachers reported experiential approaches facilitated deeper understanding and stronger connections between learning and personal experiences. However, challenges emerged in time management, with activities requiring more time than allocated, and in developing appropriately scaffolded instruction for diverse proficiency levels. Based on findings, refinements enhanced pacing flexibility with realistic timeframes, substantially expanded differentiation strategies with concrete examples across proficiency levels, strengthened scaffolding throughout with explicit graduated support examples, and developed comprehensive guidance for managing activity-based learning environments. These evidence-based refinements resulted in a strengthened curriculum ready for full Phase 3 implementation and evaluation.

4.3. Evaluation and Reflection

4.3.1. Student Learning Outcomes: Reading Competency

The refined curriculum was implemented with 84 students across grades 1-3 (31 first-grade, 19 second-grade, and 34 third-grade students) and 3 Thai language teachers. Paired-samples t-tests revealed statistically significant improvements in reading competencies across all grade levels (Table 1).

Table 1. Comparison of Pre-test and Post-test Reading Competency Scores by Grade Level

	N	Mean	Median	SD	SE	statistic	df	p	Cohen's d
Pottest1	31	38.48	40	6.51	1.17	5.73	30.00	< .001	1.03
Pretest1	31	36.16	37	6.52	1.17				
Pottest2	19	27.32	29	10.42	2.39	2.74	18.00	< .001	0.63
Pretest2	19	24.58	25	7.64	1.75				
Pottest3	34	34.21	37.00	6.42	1.10	12.50	33.00	< .001	2.14
Pretest3	34	28.62	32.00	8.62	1.48				

Note. H_a $\mu_{\text{Measure 1 - Measure 2}} > 0$

Prior to conducting paired-samples t-tests, statistical assumptions were verified to ensure the validity of the analyses. Normality was assessed using Shapiro-Wilk tests, which indicated no significant departures from normality for pre- and post-test distributions across all grade levels (all $p > .05$). Paired data integrity was confirmed through careful matching of pre- and post-test scores for each individual student, ensuring that scores were correctly paired for within-subjects comparisons. The continuous nature and interval scale properties of the assessment instrument were verified through expert validation during the instrument development phase.

Results demonstrated statistically significant improvements in reading competencies across all grade levels. Grade 1 students ($n = 31$) showed significant gains from pretest mean of 36.16 ($SD = 6.52$) to posttest mean of 38.48 ($SD = 6.51$), $t(30) = 5.73$, $p < .001$, Cohen's $d = 1.03$. Grade 2 students ($n = 19$) achieved significant improvement from pretest mean of 24.58 ($SD = 7.64$) to posttest mean of 27.32 ($SD = 10.42$), $t(18) = 2.74$, $p < .001$, Cohen's $d = 0.63$. Grade 3 students ($n = 34$) demonstrated substantial gains from pretest mean of 28.62 ($SD = 8.62$) to posttest mean of 34.21 ($SD = 6.42$), $t(33) = 12.50$, $p < .001$, Cohen's $d = 2.14$.

Effect sizes (Cohen's d) were calculated to evaluate the practical significance of these improvements. Grade 1 demonstrated a large effect ($d = 1.03$), indicating substantial practical significance. Grade 2 showed a medium effect ($d = 0.63$), representing a moderate magnitude of improvement. Grade 3 exhibited a very large effect ($d = 2.14$), the strongest among all grade levels, suggesting particularly robust curriculum effectiveness for older primary students. These effect sizes indicate that the observed improvements were not only statistically significant but also educationally meaningful, with the increasing effect sizes across grade levels suggesting that the curriculum's effectiveness may be enhanced as students develop greater metacognitive abilities to benefit from experiential reflection and more sophisticated literacy skills to apply learned strategies.

These findings indicate that the experiential learning-based curriculum effectively enhanced reading competencies across all three grade levels. The consistent pattern of significant improvements with substantial to very large effect sizes across grades suggests the curriculum's developmental appropriateness and scalability across lower primary education, with particularly pronounced benefits for Grade 3 students who demonstrated the largest effect size.

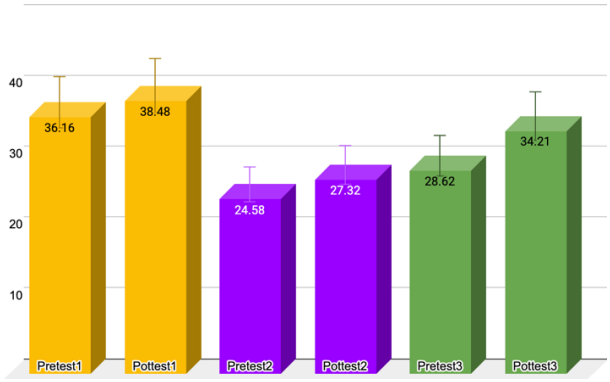

Figure 1. Comparison of Pre-test and Post-test Mean Reading Competency Scores by Grade Level

4.3.2. Student Learning Outcomes: Writing Competency

Parallel analyses of writing competency assessments revealed similar patterns of significant improvement across all grade levels (Table 2).

Table 2. Comparison of Pre-test and Post-test Writing Competency Scores by Grade Level

	N	Mean	Median	SD	SE	statistic	df	p	Cohen's d
Pottest1	31	18.77	19	1.59	0.28	16.99	30.00	< .001	3.05
Pretest1	31	14.84	15	2.13	0.38				
Pottest2	19	17.42	19	4.80	1.10	8.79	18.00	< .001	2.02
Pretest2	19	13.26	15	4.96	1.14				
Pottest3	34	17.88	18.00	1.74	0.30	18.31	33.00	< .001	3.14
Pretest3	34	14.06	14.00	1.95	0.33				

Note. H_a $\mu_{\text{Measure 1 - Measure 2}} > 0$

Statistical assumptions for writing competency paired-samples t-tests were verified following the same rigorous procedures applied to reading competency analyses. Shapiro-Wilk tests confirmed normality of distributions for both pre- and post-test scores across all grade levels (all $p > .05$). Paired data integrity was ensured through systematic matching of individual student scores, and the interval scale properties of the writing assessment rubric were validated by expert reviewers during instrument development.

Writing competency assessments demonstrated statistically significant improvements across all grade levels. Grade 1 students ($n = 31$) showed substantial gains from pretest mean of 14.84 ($SD = 2.13$) to posttest mean of 18.77 ($SD = 1.59$), $t(30) = 16.99$, $p < .001$, Cohen's $d = 3.05$. Grade 2 students ($n = 19$) achieved significant improvement from pretest mean of 13.26 ($SD = 4.96$) to posttest mean of 17.42 ($SD = 4.80$), $t(18) = 8.79$, $p < .001$, Cohen's $d = 2.02$. Grade 3 students ($n = 34$) demonstrated marked gains from pretest mean of 14.06 ($SD = 1.95$) to posttest mean of 17.88 ($SD = 1.74$), $t(33) = 18.31$, $p < .001$, Cohen's $d = 3.14$.

Effect sizes for writing competency were exceptionally large across all grade levels, substantially exceeding those observed for reading competency. Grade 1 exhibited a very large effect ($d = 3.05$), Grade 2 demonstrated a very large effect ($d = 2.02$), and Grade 3 showed a very large effect ($d = 3.14$), the highest among all grades. These remarkably large effect sizes (all $d > 2.0$) indicate that the curriculum produced profound, educationally transformative improvements in writing competencies. The uniformly very large effects across all grades suggest that the experiential learning approach, which emphasizes concrete experience and active experimentation through authentic writing tasks, may be particularly well-suited to developing writing skills in young learners. The slightly higher effect sizes in Grades 1 and 3 compared to Grade 2 may reflect developmental factors, with Grade 1 students benefiting from foundational skill establishment and Grade 3 students demonstrating enhanced capacity for complex written expression and metacognitive reflection on their writing processes.

These results parallel and exceed reading competency findings, demonstrating the curriculum's exceptional effectiveness in enhancing writing skills across all grade levels. The very large effect sizes observed across Grades 1, 2, and 3 provide compelling evidence that the experiential learning approach successfully addresses diverse developmental needs across the lower primary grade span, with particularly pronounced benefits for writing competency development. The substantially larger effect sizes for writing compared to reading suggest that the curriculum's emphasis on concrete experience, reflection, and active experimentation may be especially powerful for developing productive literacy skills that require learners to actively generate and compose text.

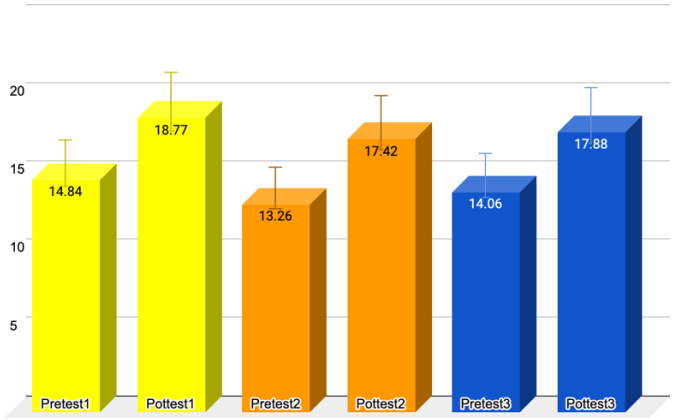

Figure 2. Comparison of Pre-test and Post-test Mean Writing Competency Scores by Grade Level

4.3.3. Qualitative Findings and Stakeholder Feedback

Post-implementation interviews and classroom observations provided rich qualitative evidence complementing quantitative findings. Students demonstrated increasing sophistication in vocabulary usage, more complex sentence structures, and greater creativity in written expression throughout implementation. Observational data revealed enhanced engagement characterized by voluntary participation, peer collaboration, and spontaneous literacy application. Students exhibited improved metacognitive awareness, increasingly articulating reading strategies and writing processes. Teachers reported that experiential approaches facilitated deeper understanding and stronger real-life connections. However, time management challenges persisted, with activities requiring more class time than traditional approaches. Parents observed increased enthusiasm and voluntary home reading, attributing gains to curriculum connections with familiar contexts. Administrators noted marked engagement improvements and measurable gains, expressing commitment to continued implementation contingent upon adequate professional development and resource support.

5. Discussion

This research successfully developed and implemented an experiential learning-based curriculum, which enhanced literacy competencies in lower primary students at private schools in Kalasin Province. The significant improvements across all grade levels ($p < .001$) demonstrate the effective application of Kolb's (1984) Experiential Learning Theory alongside Wongwanich's (2020) five-dimensional curriculum design framework, successfully addressing persistent
literacy challenges in resource-constrained rural contexts.

5.1. Effectiveness of Experiential Learning in Literacy Development

The curriculum's systematic implementation of Kolb's four-stage cycle (Concrete Experience, Reflective Observation, Abstract Conceptualization, Active Experimentation) proved highly effective for early literacy instruction. This extends Kolb and Kolb's (2022) work from higher education to primary contexts, demonstrating the framework's applicability when developmentally adapted. Concrete experiences with authentic, culturally relevant texts addressed challenges identified by Khairi et al. (2021) regarding primary literacy implementation. Reflective activities facilitated metacognitive development, aligning with Çer's (2019) findings that metacognitive strategies significantly enhance writing skills. Abstract conceptualization provided systematic foundational skills addressing Crawford et al.'s (2023) concerns about inadequate decoding skills in low- and middle-income countries, while active experimentation enabled authentic application, resonating with Hayati's (2020) work on experiential learning enhancing literacy through meaningful contexts.

The curriculum's effectiveness was enhanced through three procedural emphases (K-L-M) within Wongwanich's (2020) framework: K emphasized iterative application of Kolb's complete cycle ensuring deep, cyclical learning; L integrated digital technology for immediate formative feedback, aligning with Lim and Noor's (2019) findings on digital tools enhancing engagement and writing development; M promoted emotional well-being through positive psychology principles, addressing often-neglected affective dimensions. These emphases worked synergistically, with Kolb's cycle providing pedagogical structure, technology enhancing feedback and engagement, and positive psychology supporting motivational development.

5.2. Addressing Literacy Instruction Challenges

Results directly address persistent challenges documented in recent literature. The experiential approach provided practical solutions to teacher difficulties in developing age-appropriate materials and engaging students meaningfully (Endarwati et al., 2023). Teachers reported that connecting instruction to students' lived experiences made teaching more manageable and effective. The curriculum addressed student-level challenges including limited vocabulary, difficulty organizing ideas, and lack of motivation (Ceylan, 2019) through iterative experiential cycles allowing progressive skill development. Results align with Ganapathy et al.'s (2022) findings regarding effective approaches for underserved populations, suggesting experiential learning addresses literacy challenges across diverse resource-constrained contexts when thoughtfully adapted to local conditions.

5.3. Educational Design Research and Participatory Development

The three-phase EDR methodology (McKenney & Reeves, 2012, 2013) proved well-suited for developing contextually responsive, theoretically grounded curricula. Systematic progression through analysis, design, and evaluation enabled iterative refinement based on empirical evidence and stakeholder feedback, producing both practical innovations and theoretical contributions that bridge gaps between research and practice. Participatory design involving 43 stakeholders ensured design decisions reflected classroom realities rather than idealized assumptions. Teachers' active participation fostered ownership and investment in implementation quality, addressing Poulton and Mockler's (2023) concerns about teachers lacking genuine curriculum development opportunities. The five-dimensional framework (Wongwanich, 2020) provided comprehensive structure ensuring attention to multiple aspects of effective curriculum design.

5.4. Implications for Resource-Constrained Contexts

This research demonstrates that high-quality literacy instruction is achievable in resource-limited settings when curricula thoughtfully leverage available resources. Emphasis on locally sourced materials, community resources, and authentic contexts challenges deficit perspectives, demonstrating how contextual characteristics become instructional assets when appropriately recognized. Results address Lyimo's (2023) concerns about home conditions shaping literacy acquisition, suggesting well-designed school-based instruction can substantially enhance development even when home literacy support is limited. Strategic technology integration provided formative feedback and increased engagement while maintaining accessibility, demonstrating meaningful technology integration is possible in resource-constrained settings through purposeful, pedagogically grounded approaches (Zakaria et al., 2016; Lim & Noor, 2019).

The curriculum's success resonates with Dorland's (2024) findings that experiential approaches foster not only targeted skills but also broader competencies including creativity, collaboration, and problem-solving across educational levels. This alignment with competency-based education reform demonstrates that reform principles emphasizing learner-centered pedagogy and local contextualization can be translated into concrete practices yielding measurable improvements, reflecting Makrakis and Kostoulas-Makrakis's (2012) emphasis on balancing theoretical rigor with practical applicability.

5.5. Theoretical Contributions

The research extends Kolb's (1984) theory to early literacy instruction, demonstrating framework applicability across developmental levels when appropriately adapted. This addresses gaps identified by Reckermann and Ritter (2022) regarding primary literacy instruction, providing solutions to challenges common across language education contexts. The integration demonstrates connections between foundational skills and comprehension emphasized by Connor et al. (2016) and Piasta (2014), supporting integrated literacy development rather than isolated skill acquisition. The research contributes to experiential learning theory by articulating systematic adaptation of the four-stage cycle for young learners and literacy instruction specifically, while demonstrating how positive psychology principles can be integrated to address cognitive and affective learning dimensions simultaneously.

5.6. Limitations and Future Directions

Several limitations warrant acknowledgment. Regarding researcher positionality, the lead researcher's dual role as curriculum designer and evaluator introduces potential confirmation bias, as personal investment in demonstrating curriculum effectiveness may have influenced interpretation of ambiguous findings or emphasis on positive outcomes. The researcher's background as an educator in Thai private schools, while providing valuable insider knowledge, may have created blind spots regarding perspectives of stakeholders from different backgrounds or assumptions about "obvious" implementation practices that actually require explicit guidance. First, the specific geographic and institutional context (small private schools in Kalasin Province) potentially limits generalizability. Future research should examine implementation across diverse contexts including public schools, urban settings, and different linguistic regions to investigate framework adaptation while maintaining core principles. Second, the relatively short implementation period precludes assessment of longer-term sustainability. Longitudinal research examining outcomes over multiple years would provide insights about sustained effectiveness and whether early gains translate to continued success. Third, absence of a comparison group limits causal claims. Future quasi-experimental or experimental designs comparing experiential with traditional instruction would strengthen evidence regarding specific contributions to observed gains. Fourth, research focused primarily on literacy competencies with limited attention to broader outcomes. Niyibizi et al. (2024) emphasized writing skills' significance for overall performance across subjects, suggesting literacy instruction impacts extend beyond language arts. Future research examining curriculum effects on broader outcomes including critical thinking, creativity, and socioemotional development would provide more comprehensive understanding. Finally, research on effective professional development models supporting experiential literacy instruction implementation would address persistent challenges teachers identified regarding differentiated instruction, formative assessment, and activity-based classroom management, informing scaling efforts and supporting broader adoption.

Participatory stakeholder input, while valuable for contextual relevance, introduced potential bias through several mechanisms. Teachers and administrators with vested interests in demonstrating school effectiveness may have provided overly optimistic feedback or emphasized positive outcomes. Students' young age and power dynamics with adult researchers may have elicited socially desirable responses rather than authentic perspectives. Parents' limited familiarity with educational research may have influenced their ability to provide critical feedback on pedagogical approaches. The participatory design process itself created psychological investment in the curriculum's success, potentially biasing stakeholders toward positive evaluations. Future research should employ triangulation with independent observers and anonymous feedback mechanisms to mitigate these participation-related biases.

Measurement limitations must also be acknowledged, particularly regarding writing assessment. The rubric-based scoring of writing samples, while systematic, necessarily involves subjective judgment in distinguishing between performance levels, especially for borderline cases. Inter-rater reliability, though established through calibration sessions with the three raters, cannot eliminate all subjectivity in holistic writing evaluation. The rubric's emphasis on structural and mechanical features may have underweighted creative or expressive dimensions of writing competency. Reading assessments, while more objectively scorable through accuracy and fluency measures, did not capture all dimensions of literacy development such as critical reading or inferential comprehension. Future research should employ multiple assessment methods including standardized measures, portfolio assessment, and longitudinal tracking to provide more comprehensive and less measurement-dependent conclusions.

Despite its limitations, this research makes several important contributions. Theoretically, it extends experiential learning theory to the domain of primary literacy, provides empirical support for incorporating positive psychology within literacy instruction, and demonstrates strategic technology integration in resource-constrained settings. Practically, it offers a replicable model that combines the EDR methodology with participatory design processes, resulting in both a functioning curriculum and a set of principles for effective design and implementation. Furthermore, the systematic documentation of the development processes and implementation outcomes provides a robust model for future EDR seeking to produce both theoretical and practical knowledge, thereby contributing to bridging persistent gaps between educational research, policy, and practice.

6. Conclusion

This research successfully developed and evaluated an experiential learning-based curriculum designed to enhance literacy competencies among lower primary school students in private schools in Kalasin Province, Thailand. Conducted through the EDR methodology, and utilizing Kolb's experiential learning cycle as the pedagogical foundation alongside Wongwanich's five-dimensional framework as the structural guide, the study demonstrates that participatory, context-responsive curriculum development can produce substantial improvements in resource-constrained settings. Implementation yielded statistically significant improvements across all grade levels ($p < .001$), with large to very large effect sizes for reading (Cohen's $d = 0.63–2.14$) and exceptionally large effect sizes for writing (Cohen's $d = 2.02–3.14$), providing compelling evidence of educational effectiveness.

The research makes important theoretical contributions by extending experiential learning theory to primary literacy instruction and demonstrating particularly strong effects for writing competency, suggesting that experiential approaches may be especially powerful for developing productive literacy skills. Integration of positive psychology principles addresses affective dimensions often neglected in traditional approaches. Practically, the study offers an evidence-based, replicable model demonstrating that effective literacy instruction does not require extensive resources when pedagogical approaches are grounded in meaningful experience and structured reflection. The participatory design process provides guidance for context-responsive curriculum development that ensures both theoretical soundness and practical implementability.

For educational policy, findings underscore the importance of supporting bottom-up, participatory curriculum development that incorporates authentic stakeholder voices. Policymakers should allocate resources supporting educators in adapting evidence-based frameworks to local contexts. The curriculum's success despite resource constraints challenges assumptions requiring extensive materials or specialized training. While this study focused on literacy in lower primary grades, the integrated framework has potential applications across subjects and levels. Future research should explore adaptations to other domains, investigate long-term sustainability, and examine implementation in diverse contexts. By bridging the gap between research, policy, and practice, this research contributes to enhancing educational quality and equity, particularly for students in underserved communities.

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