Integrating ER–CALL–PBL for Primary EFL Reading Comprehension and Vocabulary Development

Thitima Maeoka[1,2*], Jira Jitsupa[2] , Navarat Techachokwiwat[2]

[1] La-orutis Demonstration School, Lampang, Thailand
[2] Suan Dusit University, Thailand
[*]Corresponding author's email: Thitima_mae@dusit.ac.th
[*] https://orcid.org/0009-0003-4440-3979
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ABSTRACT

This conceptual paper proposes an integrated instructional model combining Extensive Reading (ER), Computer-Assisted Language Learning (CALL), and Project-Based Learning (PBL) for primary English-as-a-foreign-language (EFL) classrooms. The model targets reading comprehension and English vocabulary growth. It addresses limited reading volume, discontinuity in reading routines, and vocabulary learning disconnected from meaningful language use. The paper synthesizes relevant literature to explain the integration and specify complementary roles for teachers, learners, and technology. The model is organized as a six-phase instructional cycle: (1) Preparation and Reading Agreements; (2) Access to Reading Materials and Motivation Building; (3) Sustained ER Routines Supported by CALL; (4) Strengthening Reading Comprehension and Vocabulary; (5) Project Design and Product Creation; and (6) Presentation, Reflection, and Transfer to the Next Reading Cycle. Implementation guidelines address time allocation, text selection, differentiated support, and a seven-week Grade 4 example. Classroom-based indicators link reading comprehension and receptive and productive vocabulary with evidence of reading continuity and implementation. Practical adoption requires suitable texts, protected reading time, manageable technology demands, equitable access, and implementation fidelity. The model is a conceptual proposal for classroom adaptation and further examination, not a report of empirical validation.

Keywords: extensive reading; computer-assisted language learning; project-based learning; primary education; reading comprehension; English vocabulary; EFL classroom

Introduction

Developing reading comprehension and expanding English vocabulary among primary school learners in EFL contexts are important for long-term language learning. Reading is a major channel through which learners receive language input, encounter vocabulary in meaningful contexts, and become familiar with linguistic structures. However, in many primary EFL classrooms, limited class time, large class sizes, heterogeneous proficiency levels, and few

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opportunities to use English outside school constrain instruction. Consequently, some learners lack sufficient vocabulary to support reading comprehension and may struggle to develop consistent reading fluency.

In primary EFL classrooms, these constraints are further shaped by learners' emerging literacy skills, heterogeneous proficiency, and need for visually supported, predictable, and highly scaffolded learning routines. The proposed integration is therefore intentionally age-responsive rather than additive: ER occupies the largest share of instructional time, CALL is limited to simple on-demand support, and PBL is implemented through manageable, carefully scaffolded projects. This asymmetrical design aims to preserve reading continuity while reducing the cognitive and organizational demands placed on young learners.

Findings from empirical studies suggest that vocabulary knowledge and lexical coverage—the proportion of running words known in a particular text—are associated with second-language reading comprehension (Hu & Nation, 2000; Laufer & Ravenhorst-Kalovski, 2010; Schmitt et al., 2011; Stæhr, 2008). Research has proposed approximately 95% coverage as a minimal benchmark and 98% as a more demanding benchmark for comprehension (Hu & Nation, 2000; Laufer & Ravenhorst-Kalovski, 2010). These figures should not be treated as universal cut-off points: a later replication found no statistically significant comprehension differences between its 90%, 95%, and 98% coverage conditions (Webb et al., 2025). Insufficient vocabulary knowledge can make it harder to infer meaning and sustain reading, but material selection should also be guided by text difficulty and demonstrated comprehension. Nation (2006) relates vocabulary size to the coverage needed for reading, while Schmitt et al. (2011) directly examine the relationship between known-word coverage and comprehension.

Conventional classroom practices may emphasize intensive reading of short textbook passages, vocabulary lists, and memory-based testing. Although these practices can support accuracy, relying on them alone may provide insufficient reading volume for learners to build vocabulary familiarity and reading fluency through encounters with the same words in different textual contexts. Vocabulary instruction also needs opportunities for meaningful use beyond recall of isolated meanings. Research on vocabulary learning through reading suggests that repeated encounters can yield gains in word knowledge, although outcomes vary across learners and lexical features (Horst et al., 1998; Pigada & Schmitt, 2006).

Designing an instructional approach that combines Extensive Reading (ER), Computer-Assisted Language Learning (CALL), and Project-Based Learning (PBL) may help address these constraints at both conceptual and practical levels. ER can increase reading volume through level-appropriate materials and learner choice (Day & Bamford, 2002; Sangers et al., 2025). In the proposed model, CALL provides glosses or digital dictionaries, progress tracking, and brief retrieval practice for vocabulary learning. Retrieval practice means attempting to recall previously encountered word forms or meanings from memory before checking an answer. Research on glossing and digital reading supports the vocabulary-support function of digital tools (Boers, 2022; Mahdi et al., 2024; Rassaei & Folse, 2024; Zhu et al., 2024). PBL provides a framework in which learners use information from reading to create products, communicate with an audience, and reflect on their learning. Fikria et al. (2025) review the potential of technology-enhanced PBL for learner participation and skill integration. For vocabulary, sustained input through reading can be complemented by focused attention and planned review to consolidate word knowledge and support later use (Nation, 2013; Webb & Nation, 2017).

Accordingly, this conceptual paper aims to: (1) synthesize literature on ER, CALL, and PBL in relation to reading comprehension and vocabulary development; (2) propose a phase-based

ER–CALL–PBL instructional model that specifies the roles of teachers, learners, and technology; (3) provide practical implementation guidelines for primary EFL classrooms; and (4) outline classroom-based indicators for instructional evaluation and improvement. Empirical findings from existing studies are distinguished from the authors' proposed design. The literature informs the model and its possible classroom adaptations; it does not establish the effectiveness of the integrated model.

Conceptual Foundations and Rationale

Extensive Reading (ER): Key Concepts and Principles

Extensive Reading (ER) is an approach that emphasizes quantity and continuity through relatively easy reading materials that learners can largely understand and choose according to their interests (Day & Bamford, 1998, 2002). ER prioritizes overall meaning rather than detailed, line-by-line language analysis. Day and Bamford (2002) propose that learners read as much as possible from easy materials, largely independently, while teachers provide guidance and foster a positive reading environment. Day and Bamford (1998) also offer practical guidance on material selection, teacher support, and the development of a classroom reading culture.

Regarding outcomes, a recent meta-analysis by Sangers et al. (2025) reported positive effects across multiple language domains, including reading comprehension, vocabulary, and decoding/fluency, with effect sizes ranging from small to medium. This supports the potential of sustained reading in meaningful contexts to contribute to comprehension, vocabulary growth, and reading fluency. Earlier meta-analyses also reported positive effects on reading proficiency, while noting differences across study contexts and program characteristics (Jeon & Day, 2016; Nakanishi, 2015).

For primary EFL classrooms, making ER workable in practice requires careful attention to the selection of level-appropriate reading materials, a consistent reading routine during class time and/or at home, and reduction of test-related pressure that may turn reading into a stressful task. At the same time, some form of monitoring is needed. Teachers may track learners' progress and support those who read inconsistently. In this respect, book selection relates directly to lexical coverage and learners' existing lexical readiness. In this paper, ER is operationalized as regular, protected reading routines using level-appropriate graded materials, learner choice within teacher-guided options, brief reading records, and low-stakes monitoring. CALL provides on-demand support, while PBL provides opportunities to extend reading into meaningful product creation.

ER provides the volume and continuity of meaningful input needed for reading development. However, young readers may still require selective support when unfamiliar language interrupts comprehension. This need provides the rationale for positioning CALL as an on-demand scaffold rather than as a separate replacement activity.

CALL: Roles in Supporting ER and Vocabulary Learning

In primary English reading contexts, Computer-Assisted Language Learning (CALL) can provide both reading media and learning support tools. Examples include e-readers or digital platforms with leveled texts, reading trackers, short online quizzes, digital dictionaries, and learning management systems. In this model, CALL is an on-demand scaffold rather than a replacement for reading. Optional audio, glosses, and digital dictionaries can help learners recover meaning when a key word or sentence blocks comprehension. Reading trackers help

teachers identify infrequent reading or unsuitable book choices, while brief retrieval-practice activities can support form–meaning connections after reading. Technology-supported vocabulary practice can also provide flexible opportunities for repetition and individual pacing, although findings from university learners should be transferred to primary settings cautiously (Nguyen et al., 2024).

Retrieval practice refers to the learner's attempt to recall a previously encountered word form or meaning before seeing the answer; spaced review refers to revisiting material after planned intervals. For example, a learner may see a picture, say the English word, and then check the answer. Retrieval practice has support in general learning research (Roediger & Karpicke, 2006), while Kim and Webb (2022) provide meta-analytic evidence on spaced practice in second-language learning. These are related but distinct design considerations, and neither requires frequent high-stakes testing.

Reviews and meta-analyses on glossing and digital reading provide support for the claim that glosses - brief vocabulary explanations embedded in or attached to a text - can facilitate second-language vocabulary learning, particularly when gloss design is appropriate for learners' cognitive load and proficiency. Boers (2022) synthesized key findings from a large body of research on glossing and vocabulary learning. Mahdi et al. (2024) reported meta-analytic evidence that multimedia glosses have positive effects on vocabulary learning and may be especially suitable for beginner-level learners. Additionally, Zhu et al. (2024) found that digital reading could support vocabulary learning for second/foreign language learners across diverse contexts. Evidence from experimental studies and subsequent syntheses (Chun & Plass, 1996; Hulstijn et al., 1996; Knight, 1994; Yanagisawa et al., 2020) indicated that lexical support such as glosses and dictionary consultation could facilitate vocabulary learning during reading, with effects depending on gloss type, learner proficiency, and task conditions.

Within the proposed ER–CALL–PBL model, CALL is not used to replace reading. Rather, it serves as a support structure designed to enhance reading continuity and improve the quality of vocabulary learning by providing: (1) on-demand access to meaning when needed (e.g., optional glosses or a digital dictionary), (2) structured opportunities for retrieval practice at spaced intervals, (3) progress tracking and feedback, and (4) spaces for sharing products and reflection. Importantly, technology use should be clearly structured and age-appropriate to minimize distraction and reduce unnecessary cognitive burden.

Nevertheless, access to meaning and vocabulary practice alone do not ensure that learners will use what they have read for communication. PBL therefore extends reading into collaborative, meaning-focused output through products, presentations, feedback, and reflection.

Project-Based Learning (PBL) for Primary Learners and Its Links to Reading

Project-Based Learning (PBL) is an instructional approach in which learners investigate a meaningful question through inquiry, planning, product creation, communication, collaboration, and reflection. Thomas (2000) identifies centrality as a defining criterion: projects should organize learning of core content rather than serve merely as post-instructional enrichment. PBLWorks (2019) also emphasizes sustained inquiry, learner choice, reflection, critique and revision, and a public product. Condliffe et al. (2017) highlight PBL's potential for deeper learning while noting the importance of project design and teacher support.

In language education, project-based language learning (PBLL) typically emphasizes purposeful communication, collaboration, and creation of products that are meaningful to learners and their learning communities. Fikria et al. (2025) noted that technology can expand project formats, communication tools, and product dissemination, and that theoretical

frameworks and project types shape learners' participation. PBLL scholarship also argues that projects can be structured to integrate language, content, and skills through purposeful communication and products, rather than being treated as peripheral activities (Beckett & Slater, 2005; Stoller, 2006).

At the primary level, PBL should be designed to fit developmental characteristics - often as **mini-projects** of short to moderate duration with clear steps, safe and accessible resources, and products that are feasible within classroom constraints. The examples include a small handmade book for storytelling, a vocabulary poster derived from an ER text, a short book-review video, or a digital portfolio that collects evidence of reading and vocabulary use. Linking PBL with ER helps position reading as a primary information source for projects and gives learners an authentic reason to sustain reading over time.

In the present model, mini-project refers to manageable duration and product scope, not to the removal of PBL principles. A product alone is not sufficient to establish PBL. The project question and intended audience are introduced near the beginning of the unit; learners then examine ideas and language across selected readings, discuss choices, create a product, receive feedback, revise, present, and reflect. The project therefore organizes a strand of inquiry and meaning-focused output across the unit, while ER remains the core reading routine. This is the authors' proposed application of centrality at unit level, not an empirical demonstration that every small product meets Thomas's criteria. Where sustained inquiry and these other processes are absent, the activity should be described as PBL-informed project work rather than full PBL (PBLWorks, 2019; Thomas, 2000).

Taken together, ER, CALL, and PBL perform complementary rather than overlapping functions. ER supplies sustained input and supports fluency; CALL provides selective language-focused assistance; and PBL creates a context for meaningful output. Nation's four-strands framework therefore offers a useful rationale for coordinating the three components within one instructional cycle.

The Integration Logic of ER–CALL–PBL for Reading and Vocabulary Outcomes: A Four-Strands Perspective

Nation (2007) proposes four strands for balancing language-learning opportunities: meaning-focused input, meaning-focused output, language-focused learning, and fluency development. The framework calls for broadly balanced attention across a language course. In the present reading-focused unit, it is used to identify complementary learning functions rather than to claim equal time for ER, CALL, and PBL.

From a four-strands perspective, ER can support meaning-focused input and, when texts are sufficiently easy and familiar, fluency development. CALL can assist several strands, including language-focused learning and feedback. PBL provides opportunities for meaning-focused output through purposeful communication and product creation. The proposed phase structure coordinates these functions; the three components are not treated as mutually exclusive strands.

This integration rests on three design assumptions: (1) adequate volume and continuity of level-appropriate reading are necessary conditions for improving reading comprehension and vocabulary growth; (2) appropriate technological support can reduce burdens and increase opportunities for retrieval practice; and (3) reading-based projects can strengthen motivation and make vocabulary use observable in classroom products and communication. These assumptions are examinable through the classroom-based indicators specified in the evaluation section.

Proposed Model: A Phase-Based ER–CALL–PBL Instructional Cycle

Design Principles

The proposed ER–CALL–PBL instructional model is guided by six design principles synthesized from literature on extensive reading, CALL, project-based language learning, formative assessment, and learner-centered primary pedagogy. First, reading materials should be level-appropriate, and learners should be enabled to choose the reading materials within a teacher-guided structure. Second, the model prioritizes protecting the reading time through clearly scheduled reading blocks and the use of measurable, realistic goals. Third, technology serves as on-demand support that reduces unnecessary burden while enabling brief retrieval practice for vocabulary at spaced intervals. Fourth, reading is intentionally extended into projects with authentic classroom audiences, so that learners can engage in meaningful language use through product creation and communication. Fifth, classroom-based assessment draws on multiple forms of evidence and is primarily used to support instructional adjustment (assessment for learning). Sixth, the model emphasizes equitable access to resources and provides alternative pathways when technology is not available. This assessment-for-learning orientation aligns with formative assessment research that emphasizes feedback, learner involvement, and instructional adjustment during the lesson (Black & Wiliam, 1998; Wiliam, 2011).

For young learners, the integration is deliberately asymmetrical. ER remains the core and occupies the largest proportion of instructional time; CALL is used selectively when it supports comprehension, vocabulary retrieval, or progress monitoring; and PBL is introduced as a tightly scaffolded culminating context for meaningful language use. The model therefore does not require three full programs to operate simultaneously.

Phase Structure and Key Learning Activities

The model is organized as a six-phase cycle that can be repeated across instructional units. This phase-based structure *makes* the sequencing of ER, CALL, and PBL explicit and *allows* teachers to plan formative assessment points systematically throughout the unit.

Phase 1: Preparation and Reading Agreements

In Phase 1, the teacher selects and/or levels reading materials, prepares the CALL system, clarifies unit-level reading and vocabulary goals, and establishes shared reading agreements. Brief baseline checks inform flexible grouping and book options. The teacher also introduces a reading-based project question and intended audience, so that later product creation is connected to an inquiry purpose from the start of the unit.

Phase 2: Access to Reading Materials and Motivation Building

In Phase 2, learners choose books at a suitable level from teacher-curated options. They are introduced to the reading platform or support tools - such as using glosses or a digital dictionary when necessary and recording reading time - and begin short in-class reading routines accompanied by informal comprehension reflection.

Phase 3: Sustained ER Routines Supported by CALL

Phase 3 focuses on sustained reading in class and/or at home, maintaining ER principles of reading for meaning and enjoyment. Learners use CALL tools selectively to access meaning when necessary. The teacher monitors reading behavior through reading logs/trackers and provides individualized or small-group guidance on book selection and reading habits.

Phase 4: Strengthening Reading Comprehension and Vocabulary

In Phase 4, the teacher designs brief reinforcement activities grounded in learners' reading, such as summarizing, retelling, questioning, and strategy prompts, and selects a limited set of vocabulary items from the texts. CALL supports brief retrieval practice at spaced intervals. Comprehension activities and vocabulary practice are complementary; they are not treated as the same measure. The aim is to deepen meaning-making and vocabulary knowledge without turning ER into word-by-word translation. General evidence supports retrieval practice (Roediger & Karpicke, 2006), and a second-language meta-analysis supports spaced practice (Kim & Webb, 2022).

Phase 5: Project Design and Product Creation

In Phase 5, learners work in pairs or groups to develop the project question introduced earlier, drawing on characters, themes, lessons, or information from their reading. They may consult additional age-appropriate sources, create a draft, receive feedback, revise, and plan a presentation. Learners use selected vocabulary meaningfully and identify traceable links to their reading, such as a relevant page, a paraphrased idea, or a character detail.

Phase 6: Presentation, Reflection, and Transfer to the Next Reading Cycle

In Phase 6, learners present their products to their peers, teacher, or other people at the school. They receive rubric-based feedback, reflect on their reading process and vocabulary use, and set goals for the next reading cycle to sustain continuity and support stepwise growth (PBLWorks, 2019). Rubrics can also support transparent expectations and provide specific, practical feedback for improvement when criteria are aligned with targeted comprehension and vocabulary outcomes (Brookhart, 2013).

Roles of Teachers, Learners, and Technology, and Links to Classroom Indicators

Within this model, the teacher's role is conceptualized in four interrelated dimensions: designer/curator of resources and routines, reading and vocabulary learning coach, project facilitator, and assessment-for-learning practitioner. Teachers are expected to integrate CALL-derived data (e.g., reading frequency, reading time, vocabulary practice metrics) with classroom evidence (e.g., summaries, oral retelling, project products) to adjust instruction and provide targeted support.

Learners progressively develop age-appropriate autonomy as readers. Their roles include choosing suitable books, using reading and vocabulary strategies, collaborating on projects, and communicating through products. To support learner agency within a clear structure, the model provides opportunities to select books and group roles and reflect on personal goals.

Technology functions as a support structure in five areas: (1) enabling access to reading materials and supporting level-appropriateness, (2) supporting comprehension through optional glosses or a digital dictionary, (3) supporting retrieval practice combined with spaced review, (4) supporting progress tracking and feedback, and (5) providing spaces for evidence collection and project dissemination (e.g., portfolios).

To strengthen interpretability in classroom settings, the model links learning evidence with the indicators at multiple levels. For reading comprehension, evidence is anchored in (a) primary outcome indicators (e.g., comprehension test scores; summary/retell rubrics), (b) intermediate indicators (e.g., reading continuity, simple post-reading checks), and (c) mechanism indicators (e.g., actual reading volume and time; frequency of gloss use; completion of planned practice). For vocabulary, indicators likewise include (a) receptive and productive vocabulary measures,

(b) accurate and appropriate use of target vocabulary in project products and presentations, and
(c) CALL-based practice data that document retrieval-practice completion and accuracy.

Table 1. Summary of the Phase-Based ER–CALL–PBL Model and Its Links to Reading Comprehension and Vocabulary Indicators

Phase	**Phase purpose**	**Core activities** (ER–CALL–PBL)	**Teacher role**	**Learner role**	**Technology/ tools**	**Evidence/indicators** linked to reading comprehension and vocabulary
1. Preparation and Reading Agreements	• To establish understanding of reading for meaning; and • To set feasible rules and goals.	ER orientation; brief reading records; and explanation of vocabulary goals and upcoming products	Protecting reading time; setting rules/goals; and clarifying the assessment-for-learning criteria	Clarifying the goals; trying short reading; and giving informal reflection	Goal sheet/reading log (paper or digital)	Baseline readiness/interest; first reading records; and brief reflection evidence
2. Access to Reading Materials and Motivation Building	• To enable level-appropriate selection and appropriate tool use.	Selection of curated options; learning through gloss/dictionary use; recording reading time; and making short routines.	Providing leveled materials; guiding learners in book selection; and demonstrating appropriate gloss use	Selecting a level-appropriate book; selecting the appropriate supportive tools; and starting a short routine	Library/book sets; e-reader (if available); glosses/digital dictionaries; and trackers/logs	Suitability of selected book; short-term reading continuity; and appropriateness of gloss use
3. Sustained ER Routines Supported by CALL	• To increase volume and consistency without undue pressure	In-class ER + short, regular out-of-class reading; and informal reflection linked to logs	Protecting reading time; guiding book selection and goal setting; and providing individual feedback	Reading consistently; recording time/books; making summaries	Reading trackers/logs; and dashboard (if available)	Reading minutes per week; consistency; brief summaries; and fluency trend evidence

Phase	**Phase purpose**	**Core activities** (ER–CALL–PBL)	**Teacher role**	**Learner role**	**Technology/ tools**	**Evidence/indicators** linked to reading comprehension and vocabulary
4. Strengthening Reading Comprehension and Vocabulary	• To strengthen form–meaning links; and to improve comprehension through brief activities.	Selection of target words; short, frequent reviews; retrieval practice; and brief contextual use	Selecting targeted words; designing brief retrieval-practice tasks; and providing targeted mini-lessons	Doing the practice without immediate answers; using words in short contexts; and returning to reading	Quizzes/flashcards; short tasks; and glosses/dictionaries	Accuracy and repetitions; the number of commonly missed words; contextual use evidence; and the number of reduced reading breakdowns
5. Project Design and Product Creation	• To make reading purposeful; and to make vocabulary use observable and meaningful.	Driving questions; collection of textual evidence; product development; and revision according to the feedback.	Design driving question; set text-evidence requirements; provide rubric-based feedback	Read for evidence; summarize; use target vocabulary; draft and revise	Evidence templates; creation tools; and LMS/submission (if available)	Product rubric (comprehension/vocabulary); text-evidence notes; accuracy summary; and the number of the targeted vocabulary in scripts/writing
6. Presentation, Reflection, and Transfer to the Next Reading Cycle	• To transfer learning to authentic communication; and to sustain ER through the next-cycle goals	Presentation to the audience; provision of rubric-based feedback and reflection; and establishing the next-cycle goal setting	Organize presentation; guide reflection; support next-cycle goals	Present and justify evidence; receive feedback; reflect; set next reading/vocabulary goals	Portfolio spaces; self/peer assessment; and rubrics	Presentation/product rubric scores; reflection records; productive vocabulary evidence; and the next-cycle goals and renewed continuity



Figure 1. Overall Schematic of the Phase-Based ER–CALL–PBL Model

Implementation Guidelines

To translate the proposed six-phase model into classroom practice, the implementation guidelines in this section are organized according to the same phase sequence introduced in Section 3. While Section 3 explains each phase's conceptual function, this section focuses on practical decisions about time, reading materials, teacher support, learner tasks, technology use, and classroom evidence. Although the phases are presented sequentially, some activities may overlap across lessons. In particular, protected ER time should continue throughout the instructional cycle, including during the project-development period.

Phase 1: Preparation and Reading Agreements

Before beginning an instructional cycle, teachers should determine a feasible time frame, clarify the intended outcomes for reading comprehension and vocabulary development, and prepare reading materials that accommodate a range of learner proficiency. A cycle of approximately six to ten weeks may be appropriate, although its duration should be adjusted to the school timetable, lesson frequency, and learners' readiness. The central scheduling decision is to allocate protected reading time that will not be routinely replaced by unrelated exercises or project work. For example, teachers may allocate 10–15 minutes of sustained reading during each lesson or establish two or three regular reading blocks per week.

Teachers should also conduct brief baseline checks to identify learners' general reading readiness, comprehension needs, and familiarity with key vocabulary. These checks should be low-stakes and used to inform book options, flexible grouping, and the level of teacher support rather than to rank learners. At this stage, the teacher prepares the CALL tools that will be used during the cycle, such as optional audio, glosses, a digital dictionary, or a simple reading tracker. Only tools that serve a clear instructional purpose should be introduced.

Reading agreements should then be established with learners in age-appropriate language. These agreements may include reading quietly and respectfully, choosing a manageable book, using support tools only when necessary, caring for reading materials, and recording reading briefly and honestly. Teachers should also explain that ER focuses on overall meaning, information, and enjoyment, not on translating every word or completing a test after every text. Clear agreements help create a predictable routine while preserving learner choice and reducing anxiety associated with English reading.

The teacher introduces the project question and intended audience early in the cycle. This gives a shared purpose to selected post-reading discussions without requiring every book to serve the project or every reading session to produce notes.

Phase 2: Access to Reading Materials and Motivation Building

In Phase 2, learners are introduced to a curated range of print and/or digital reading materials. Book choice should be guided by text difficulty, learner interest, and evidence of actual comprehension. Lexical coverage provides one useful consideration because texts containing too many unfamiliar words may interrupt reading continuity and place excessive processing demands on learners (Hu & Nation, 2000; Laufer & Ravenhorst-Kalovski, 2010; Nation, 2006; Schmitt et al., 2011). However, lexical indicators should not be used as the only criterion. Teachers should also observe whether learners can follow the main idea, read with reasonable continuity, and remain interested in the text.

A simple classroom heuristic, such as the five-finger rule, can support book selection. Learners sample a page and count unfamiliar words. The cited guidance treats two or three unfamiliar words as manageable, four as challenging, and five or more as too difficult (ER Foundation,

2013). These are informal screening cues, not validated cut-offs for every page length or learner. Teachers should confirm suitability through observed reading continuity, learner interest, and a brief comprehension conversation.

Motivation can be supported by offering meaningful choice within a teacher-guided structure. Rather than assigning one text to the entire class, teachers may provide several options at different levels and across topics such as animals, adventure, friendship, the environment, or everyday life. Evidence from a Grade 5 EFL context suggests that visually rich texts, teacher mediation, and structured scaffolding can support young learners' engagement and reading comprehension (Mariam et al., 2026). Such findings do not validate the proposed model as a whole, but they reinforce the importance of age-appropriate visual and teacher-supported reading experiences in primary EFL settings.

CALL onboarding should remain brief and explicit. Learners may be shown how to activate audio, open a gloss, consult a digital dictionary, or record reading time. The teacher should establish a simple rule: support tools are used when an unfamiliar word or sentence prevents understanding of an important idea, not whenever any unfamiliar word appears. Printed gloss cards, teacher-prepared word support, or audio files should be available as alternatives when devices or internet access are limited.

Phase 3: Sustained ER Routines Supported by CALL

Phase 3 establishes ER as the core classroom routine. Learners read regularly from level-appropriate graded materials during protected reading blocks and, where feasible, continue brief reading at home. The emphasis remains on overall meaning, reading continuity, and enjoyment rather than detailed linguistic analysis. Learners may read independently, in pairs, or occasionally with teacher guidance, depending on their confidence and reading proficiency.

Reading records should be deliberately light. A brief log may include the book title, reading date, approximate reading time, perceived difficulty, and one short response such as a favorite event, a new idea, or a one-sentence summary. These records provide evidence of continuity without turning ER into a writing-heavy assignment. Data from reading logs or trackers should be used to identify learners who read infrequently, repeatedly choose texts that are too difficult, or need additional encouragement. They should not be used primarily to compare learners or impose punitive grading.

During sustained reading, CALL functions as an on-demand scaffold. Optional audio may help learners follow the text or confirm pronunciation, while glosses and digital dictionaries may restore comprehension when a key word blocks meaning. CALL should not become a separate task that competes with reading time. Teachers should therefore limit the number of applications and functions used and monitor whether technology is supporting rather than fragmenting attention.

Teacher support in this phase may take the form of brief reading conferences, small-group coaching, or book-selection guidance. Questions such as "Is this book easy enough to continue reading?", "What is happening in the story?", or "Would you like another book on the same topic?" can provide useful evidence without creating test pressure. The main purpose of monitoring is to sustain the reading habit and enable learners to experience successful, meaningful reading.

Phase 4: Strengthening Reading Comprehension and Vocabulary

Phase 4 adds brief reinforcement activities grounded in texts that learners have already read. These activities should deepen comprehension and vocabulary knowledge without

transforming ER into intensive, word-by-word analysis. Comprehension support may include a short summary, oral retelling, sequencing events, identifying a main idea and supporting details, answering one or two meaning-focused questions, or responding to a simple strategy prompt. Reading-strategy prompts should be used selectively and modeled clearly so that they support, rather than interrupt, comprehension.

Vocabulary teaching should focus on a limited set of useful words selected from shared texts or from words that recur across learners' reading. The instructional sequence may involve three interconnected processes: noticing the word in context, strengthening the connection between its form and meaning, and retrieving and using it after reading. Teachers may revisit selected words through word–picture matching, oral explanation, short contextual questions, quick quizzes, or sentence frames connected to the text.

CALL can support brief retrieval practice at spaced intervals. For example, learners may meet a word during reading, recall its meaning before seeing the answer after the lesson, and try recalling it again in a later lesson. Spaced review describes the timing of these repeated opportunities, whereas retrieval practice describes the act of recall. Roediger and Karpicke (2006) support retrieval practice in general learning research; Kim and Webb (2022) synthesize evidence on spacing in second-language learning. Technology-supported vocabulary practice can also offer repetition and individual pacing, although evidence from university learners should be transferred to primary settings cautiously (Nguyen et al., 2024).

Reinforcement activities should remain brief and low-stakes. They should normally occur after the protected reading period and should not be required after every text. CALL-generated scores or completion data should be used mainly to identify words requiring additional support and to inform subsequent teaching, rather than as high-stakes achievement measures.

Phase 5: Project Design and Product Creation

Phase 5 extends learners' reading into a manageable project in which they use textual information and selected vocabulary to create, refine, and communicate a product. To ensure that project work remains genuinely connected to reading, three conditions are recommended. First, the primary source of project information should come from learners' reading. Second, the product should include identifiable evidence from the texts, such as a paraphrased idea, an important event, a character detail, or a relevant fact. Third, the product rubric should assign greater weight to meaning-making, use of textual evidence, and appropriate vocabulary than to decorative features.

As clarified in Section 2.3, the small scale of a mini-project does not by itself determine whether it constitutes PBL. The teacher revisits the question introduced at the start of the unit and helps groups use their reading to investigate it. Learners make choices, compare ideas, create and revise a product for an audience, and reflect. A poster or storybook produced only as a craft task would not meet this design intention.

Age-appropriate products may include a short group storybook inspired by ideas and language encountered in reading, a book-recommendation poster, a character profile, a story map, a short review video, or a visual storytelling presentation. For a group short-story project, learners may identify characters, setting, problem, events, and resolution on a story map; write a first draft; incorporate selected vocabulary; receive peer and teacher feedback; and revise and illustrate the final story.

Group roles should ensure that every learner participates in language use. Roles may include summarizer, evidence finder, vocabulary checker, illustrator–caption writer, pronunciation

supporter, or presenter. Roles should remain flexible and may rotate so that participation is not restricted by proficiency. Teachers should provide scaffolds such as planning templates, sentence frames, word banks, model products, and brief checkpoints.

Peer and teacher feedback should be specific, supportive, and linked to clear criteria. Feedback may address whether the product accurately represents the reading, whether ideas are organized, whether target words are used appropriately, and whether the message is understandable to the intended audience. Learners should be given time to revise after receiving feedback. Research conducted in a tertiary English course suggests that project work can support presentation performance and engagement, while also creating demands related to time and resources; these findings should be treated as contextual guidance rather than direct evidence for primary learners (Ngo & Tran, 2025).

Importantly, protected ER time continues during the project period. Project work is built on reading and should not replace the regular ER routine.

Phase 6: Presentation, Reflection, and Transfer to the Next Reading Cycle

In Phase 6, learners present their completed products to classmates, teachers, or another appropriate school audience. The audience should be authentic but manageable for the learners' age and confidence. Presentation formats may include a small-group gallery walk, pair-to-pair sharing, a class book fair, a short storytelling session, or a recorded presentation.

Feedback should be provided through a simple rubric aligned with reading comprehension, use of textual evidence, vocabulary use, organization, and communicative clarity. Rubrics can make expectations transparent and provide specific, practical feedback that learners can use to improve their work (Brookhart, 2013). Peer feedback should be carefully modeled and may use short prompts such as "One strength is…", "I understood…", or "One idea to improve is…".

Learners then complete a brief reflection on their reading and project experience. Reflection prompts may include: What did I understand from my reading? Which word or expression did I learn? What helped me when reading became difficult? How did I contribute to my group? What would I improve next time? Reflection should remain brief and age-appropriate and may be completed orally, through a checklist, or with a short written response.

Finally, each learner sets one realistic goal for the next reading cycle. Goals may focus on reading frequency, choosing a more suitable book, using support tools more independently, summarizing more clearly, or applying textual evidence more accurately. The teacher records or revisits these goals at the beginning of the next cycle. Phase 6 therefore closes one instructional cycle while renewing the continuity of ER rather than treating the project presentation as the end of reading.

Cross-Phase Differentiation and Progress Monitoring

Differentiation is treated as a cross-phase design consideration rather than as a separate instructional phase because differences in proficiency, reading pace, confidence, interests, and technology access affect learners throughout the entire cycle. The model therefore recommends choice within structure: learners receive options, but the teacher curates these options and supports learners in choosing among them.

Differentiation may involve providing books at several levels, allowing print or audio-supported reading, using picture-supported texts, varying the amount of written response required, offering sentence frames, forming flexible pairs or groups, or adapting the complexity of project roles. A learner who is developing basic reading confidence may contribute through identifying characters, selecting pictures, or orally explaining an idea, whereas a more

proficient learner may paraphrase evidence or help organize a longer presentation. Differentiation should preserve access to the same meaningful purpose without requiring identical language output from every learner.

Progress monitoring should draw on multiple light sources of evidence, including reading logs, teacher observations, short reading conferences, occasional comprehension responses, CALL-use data, project drafts, and reflection records. These data should be used to support book choice, adjust scaffolding, and identify learners who need additional reading time or guidance. Monitoring should not turn into continuous testing or public comparison.

Equitable implementation also requires alternatives when technology is unavailable. Printed glosses, shared audio stations, teacher-recorded audio, paper reading logs, and non-digital project formats can preserve the instructional function of CALL without making individual device ownership a condition of participation.

Worked Example: A Seven-Week ER–CALL–PBL Cycle for Grade 4

The following worked example illustrates a seven-week cycle for Grade 4 EFL learners. It is a proposed classroom sequence, not a report of implementation or research findings. Teachers adapt the timing, graded-reader options, and language support to their learners. At the beginning of the unit, groups are introduced to the question, "How can we use ideas from our reading to create a story that younger readers can understand and enjoy?" Learners discuss selected texts, explain useful story features, and develop a short group storybook for a class sharing session. A wider school audience may be included where feasible. The requirements below are illustrative design choices rather than validated performance thresholds.

Table 2.

Illustrative Seven-Week ER–CALL–PBL Cycle for Grade 4

Week(s)	Phase(s)	Classroom activities	Task requirements	Expected evidence/outcomes
Week 1	Phases 1–2: Preparation, access, and motivation	Brief baseline check; reading agreements; leveled-book choice; tool demonstration; introduction of the story-project question and audience	Choose a manageable book; explain the routine and the intended audience; try one support tool	Appropriate initial book choice; understanding of the reading routine; baseline evidence of comprehension and vocabulary readiness
Weeks 2–3	Phase 3: Sustained ER routines supported by CALL	Protected ER for 10–15 minutes per session; optional home reading; brief logs; selective audio/gloss use; occasional post-reading discussion of ideas for the story	Read regularly; record minimal reading information; optionally note a useful idea after reading, not after every book	Reading continuity; engagement; evidence of appropriate book choice; brief indications of overall comprehension
Week 4	Phase 4: Strengthening comprehension and vocabulary	Summarizing, retelling and sequencing; short vocabulary recall before feedback; revisiting selected words across lessons; choosing reading-based ideas for a story map	Produce a short summary or oral retelling; retrieve selected vocabulary; use one or two words in a new text-related context	Understanding of main ideas, sequence, and details; developing receptive and productive vocabulary knowledge

Week(s)	Phase(s)	Classroom activities	Task requirements	Expected evidence/outcomes
Weeks 5–6	Phase 5: Project design and product creation	Group short-story planning; story map; evidence and vocabulary notes; first draft; peer/teacher feedback; revision; illustration	Explain two traceable links to prior reading (for example, a character trait or story structure), with source titles/pages; use selected vocabulary; give every member a language-related role	A reading-based short story showing comprehension, vocabulary use, collaboration, revision, and meaningful language production
Week 7	Phase 6: Presentation, reflection, and transfer	Group storytelling or class book fair; rubric-based feedback; learner reflection; selection of a new graded reader; next-cycle goal setting	Present the story to an audience; explain one connection to prior reading; complete a brief reflection; set one realistic reading goal	Communicative presentation; reflection on reading and vocabulary use; learner ownership; continuity into the next reading cycle

Throughout the seven-week unit, protected ER time continues even when project work begins; project activities are built on reading and do not replace the ER routine. The example also shows the asymmetrical relationship among the three components: ER takes up the most time, CALL supports reading and vocabulary learning, and PBL provides a culminating context for learners to use and communicate what they have learned.

Classroom-Based Evaluation

Indicator Framework: Primary Outcomes, Intermediate Outcomes, and Mechanism Indicators

Evaluation uses evidence to guide instruction and review end-of-unit learning. Indicators address primary outcomes (reading comprehension and vocabulary growth), intermediate outcomes (reading continuity and quality), and implementation processes (such as reading volume, gloss use, and review completion). These categories help teachers consider outcomes alongside how the model was implemented.

Evidence for validity and reliability should support the intended interpretation and use of classroom assessment scores, rather than being assumed from the presence of a test or rubric (American Educational Research Association et al., 2014).

Indicators for Reading Comprehension

Reading comprehension should be assessed through a deliberately light system. A pre-unit and post-unit comprehension task may be used to document broad change, while evidence collected during the cycle should come primarily from brief summaries, retelling, teacher observation, reading conferences, project evidence, and reflection records. These checks should occur after, rather than during, the protected reading block and should not be attached to every text. When graded readers are used, assessment should prioritize meaning-making, sequencing, main ideas, supporting details, and simple inference rather than grammatical analysis.

Indicators for Vocabulary

Vocabulary evidence should be sampled rather than tested continuously. Occasional recognition checks, word–picture matching, brief oral explanations, and vocabulary use in project products

can provide receptive and productive evidence. Stand-alone gap-fill and sentence-writing tests are not routine post-reading requirements in this model. Teachers may instead examine meaningful sentences that learners already create for their project. CALL practice data inform instructional adjustment rather than high-stakes achievement scores.

Monitoring Implementation Fidelity and Using Evidence to Adjust Instruction

Teachers should monitor whether protected reading occurred, how much learners read, whether tools were used as intended, and whether projects remained grounded in reading. Relevant dimensions include adherence, dosage, delivery quality, and learner responsiveness (Carroll et al., 2007). Defining core components and monitoring adherence support cautious interpretation of classroom outcomes (Dane & Schneider, 1998; Dusenbury et al., 2003). For example, low reading volume and weak comprehension may prompt adjustments to reading time or book choice. Substantial reading without expected vocabulary progress may prompt more systematic retrieval practice and meaningful vocabulary use. Such evidence guides instructional adjustment but does not, by itself, establish the causal contribution of any component.

Table 3. Sample Classroom-Based Indicators for the ER–CALL–PBL Model

Evaluation dimension	**Functions of indicators**	**Tools/evidence**	**Timing**	**Use of results**
1) Reading Comprehension (Primary Outcomes)	Identifies main ideas; answers text-based questions; and makes meaning inferences from context	Brief level-appropriate comprehension tasks; sampled summaries or retelling; teacher observations and project evidence	Pre–post and selected checkpoints	To summarize reading outcomes and identify learners' need for additional support
2) Vocabulary (Primary Outcomes)	Understands targeted words; selects words accurately in sentences; and uses targeted words in speaking/writing	Occasional word-meaning recognition; oral explanation; contextual use in products; vocabulary-use rubric	Pre–post, occasional low-stakes sampling, and project period	To adjust the number of targeted words/review cycles; and to plan focused vocabulary support
3) Continuity and Fluency (Intermediate Outcomes)	Identifies the weekly reading time, consistency and appropriateness of chosen reading level	Reading logs/reading trackers; book-choice records; teacher observations of reading smoothness	Weekly	To coach book selection/goal-setting; and to increase the in-class reading time for low-volume readers
4) Technology Use and Review (Mechanism Indicators)	Identifies the frequency/accuracy of vocabulary practice, commonly missed words and appropriate gloss use	System analytics (quiz metrics); repeated-word lists; and vocabulary notes	Occasional review of available practice records; no additional weekly test	To adjust the difficulty, frequency, and support of retrieval practice to learners' proficiency levels
5) Project Quality (Performance/Product Outcomes)	Uses text evidence; summarizes accurately; and uses target vocabulary appropriately	Product rubric (separate comprehension/vocabulary dimensions); text-evidence notes; and drafts before/after feedback	During the project period (Weeks 5–6 in the worked example)	to provide formative feedback (AfL); and to confirm that reading remains the project's knowledge base

Remark: Assessment activities are conducted outside the protected ER block and are not required after every text.

Conditions & Pitfalls

Conditions that Support Successful Implementation

Effective classroom implementation requires at least five enabling conditions: (a) access to diverse, level-appropriate reading materials; (b) a clearly scheduled and continuous reading time within the timetable; (c) teachers' readiness to coach reading and to design vocabulary reinforcement activities; (d) a workable, age-appropriate technology system with alternatives when devices are unavailable; and (e) an appropriate classroom climate that values reading and encourages low-risk language use, with assessment to support improvement rather than to pressure learners. For scaling, ongoing teacher professional development and school-level support (e.g., policies protecting reading time, adequate instructional resources, and learning-data protection guidelines) are also important.

Risks Related to Reading Materials and Reading Behaviors

A common ER risk is that books that are too difficult or uninteresting can disrupt reading continuity and increase learners' reliance on dictionaries. Risk reduction involves leveling books, providing selection guidance and offering brief individualized coaching informed by real reading data. Another risk is excessive testing or frequent checking that turns ER into a high-pressure task. More appropriate approaches include low-stakes, brief comprehension checks (e.g., short questions, retelling, reflection records) and maintaining learner agency in book choice and goal-setting. This low-stakes approach is consistent with the evaluation framework in Section 5, which limits formal testing to selected points and relies primarily on performance and process evidence during the instructional cycle.

Risks Related to Technology and Cognitive Load

Technology introduces risks such as distraction, complexity, and cognitive load, especially for younger learners. In line with cognitive load theory and the coherence principle, digital support should minimize extraneous processing by limiting the number of apps and functions, establishing clear rules for dictionary and gloss use, and teaching tool use briefly but explicitly (Garrett-Rucks et al., 2015; Mayer, 2021; Sweller, 1994). Data privacy should also be addressed. Schools should collect only necessary learning data, avoid public exposure of individuals' data, and communicate platform use transparently to parents and guardians.

Risks Related to Projects, Language Focus and Equity Within Groups

At the primary level, projects may drift towards crafts and decoration rather than meaningful language use, and unequal task allocation may result in some learners contributing minimally to language work. Risk reduction includes rubrics that measure text evidence, communicative clarity, and target vocabulary use; assigning language-related roles to all learners; and combining individual assessment with group assessment (Condliffe et al., 2017). Where device access or digital skills are unequal, schools should prepare non-digital product options and technology pathways to avoid shifting burdens onto families.

Implications

Implications for Designing Primary EFL Instruction

The ER–CALL–PBL model highlights a shift from isolated practice towards a more systematic design of sustained language input and meaningful output. Level-appropriate reading becomes a core classroom routine while technology supports continuity and structured vocabulary practice. PBL provides learners with opportunities to communicate through products and

presentations grounded in reading. A key implication is that teachers can operationalize a clearer balance across the Nation's four strands while making evidence of learning—both reading comprehension and vocabulary—more visible in classroom routines and products.

At the curriculum level, schools may formally allocate reading time in English lesson plans, provide access to multi-level book collections, and select age-appropriate digital platforms to support sustained reading without disproportionately increasing teacher workload.

Implications for Teacher Roles and Professional Development

Implementing the model has implications for teacher roles in at least three dimensions: 1) teachers as designers of reading environments (selecting materials and establishing reading routines); 2) teachers as coaches who use authentic data from reading and vocabulary practice to support learners individually; and 3) teachers as project facilitators who enable communicative language use. Professional development should include book leveling and selection, strategic vocabulary teaching, data-informed use of platforms, and rubric design. Collaboration among grade-level English teachers can strengthen continuity in reading routines and core vocabulary and enable sharing of resources and project designs.

Directions for Future Development and Examination

Although the model is proposed conceptually, future development should be based on implementation, adaptation, and evidence from real classroom contexts. Important directions include 1) examining which model components most strongly influence reading comprehension and vocabulary growth, 2) identifying which CALL designs best fit different primary levels (e.g., word-level glosses vs. sentence-level glosses), 3) evaluating longer-term sustainability of outcomes, and 4) addressing equity in access to reading materials and technology. A systematic review of immersive technologies in K–12 English learning highlights both the potential and constraints of advanced tools, which schools should consider when selecting CALL resources (Weng et al., 2024). In addition, recent ER meta-analytic evidence suggests that the primary-level evidence base remains more limited than that for tertiary contexts (Sangers et al., 2025), indicating possible opportunities for further development and examination in primary education.

Conclusion

This conceptual paper addresses the challenge of improving primary EFL learning by targeting two key outcomes - reading comprehension and English vocabulary growth - as foundations for long-term language development. To this end, it proposes a six-phase ER–CALL–PBL instructional model that integrates sustained, extensive reading routines with technology-enabled support and extends reading into project-based learning through products and classroom communication. Rather than treating ER, CALL, and PBL as separate components, the model specifies phased coordination among teacher roles, learner roles, and technological supports to make the most use of language input, systematic vocabulary learning, and meaningful language use.

The core contribution of the model lies in enabling continuous, level-appropriate reading through protected reading time and appropriate material selection while positioning CALL as a support structure that facilitates on-demand meaning access, progress monitoring and retrieval practice for vocabulary learning without excessively disrupting reading flow. The model then enables PBL to provide opportunities for learners to communicate what they have read through products and presentations, thereby strengthening meaningful vocabulary use and supporting learning transfer. In addition, the paper provides classroom-based indicators that make it

possible to assess learning and adjust instruction formatively, covering both outcome indicators (reading comprehension and receptive/productive vocabulary) and process/mechanism indicators that help interpret how learning conditions unfold in practice.

Nevertheless, the proposed model remains a conceptual synthesis rather than an empirically validated intervention. Its classroom feasibility, the relative contribution of ER, CALL, and PBL, and its effects across different primary age groups require systematic empirical investigation. The framework should therefore be adapted cautiously to local contexts rather than treated as a fixed prescription.

At the same time, implementation should attend to some key conditions and constraints, including the availability and suitability of reading materials, protected reading time, teacher readiness to guide ER routines and provide feedback, equitable access to technology, and a manageable workload across phases. Monitoring implementation fidelity is essential for interpreting classroom outcomes credibly and determining whether the model functions as intended. Ultimately, the proposed ER–CALL–PBL model is intended to offer a practical, examinable foundation for teachers and curriculum developers to properly design classroom-level instruction and assessment while also serving as a starting point for further refinement and contextual validation in primary education settings.

References

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. American Educational Research Association.

Beckett, G. H., & Slater, T. (2005). The project framework: A tool for language, content, and skills integration. *ELT Journal, 59*(2), 108–116. https://doi.org/10.1093/eltj/cci024

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice, 5*(1), 7–74. https://doi.org/10.1080/0969595980050102

Boers, F. (2022). Glossing and vocabulary learning. *Language Teaching, 55*(1), 1–23. https://doi.org/10.1017/S0261444821000252

Brookhart, S. M. (2013). *How to create and use rubrics for formative assessment and grading*. ASCD.

Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science, 2*, Article 40. https://doi.org/10.1186/1748-5908-2-40

Chun, D. M., & Plass, J. L. (1996). Effects of multimedia annotations on vocabulary acquisition. *The Modern Language Journal, 80*(2), 183–198. https://doi.org/10.1111/j.1540-4781.1996.tb01159.x

Condliffe, B., Quint, J., Visher, M. G., Bangser, M. R., Drohojowska, S., Saco, L., & Nelson, E. (2017). *Project-based learning: A literature review*. MDRC.

Dane, A. V., & Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control? *Clinical Psychology Review, 18*(1), 23–45. https://doi.org/10.1016/S0272-7358(97)00043-3

Day, R. R., & Bamford, J. (1998). *Extensive reading in the second language classroom*. Cambridge University Press.

Day, R. R., & Bamford, J. (2002). Top ten principles for teaching extensive reading. *Reading in a Foreign Language, 14*(2), 136–141. https://doi.org/10.64152/10125/66761

Dusenbury, L., Brannigan, R., Falco, M., & Hansen, W. B. (2003). A review of research on fidelity of implementation: Implications for drug abuse prevention in school settings. *Health Education Research, 18*(2), 237–256. https://doi.org/10.1093/her/18.2.237

ER Foundation. (2013). *The five finger rule*. https://erfoundation.org/wordpress/wp-content/uploads/2013/08/5-finger-rule.pdf

Fikria, A., Setiawan, S., & Munir, A. (2025). A systematic review of technology-enhanced project-based language learning: Theoretical frameworks, project types, and implications for future research and practice. *F1000Research, 14*, Article 775. https://doi.org/10.12688/f1000research.165491.2

Garrett-Rucks, P., Howles, L., & Lake, W. M. (2015). Enhancing L2 reading comprehension with hypermedia texts: Student perceptions. *CALICO Journal, 32*(1), 26–51. https://doi.org/10.1558/calico.v32i1.26131

Horst, M., Cobb, T., & Meara, P. (1998). Beyond a Clockwork Orange: Acquiring second language vocabulary through reading. *Reading in a Foreign Language, 11*(2), 207–223. https://doi.org/10.64152/10125/66953

Hu, H.-C. M., & Nation, I. S. P. (2000). Unknown vocabulary density and reading comprehension. *Reading in a Foreign Language, 13*(1), 403–430. https://doi.org/10.64152/10125/66973

Hulstijn, J. H., Hollander, M., & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign-language students: The influence of marginal glosses, dictionary use, and reoccurrence of unknown words. *The Modern Language Journal, 80*(3), 327–339. https://doi.org/10.1111/j.1540-4781.1996.tb01614.x

Jeon, E.-Y., & Day, R. R. (2016). The effectiveness of ER on reading proficiency: A meta-analysis. *Reading in a Foreign Language, 28*(2), 246–265. https://doi.org/10.64152/10125/66901

Kim, S. K., & Webb, S. (2022). The effects of spaced practice on second language learning: A meta-analysis. *Language Learning, 72*(1), 269–319. https://doi.org/10.1111/lang.12479

Knight, S. (1994). Dictionary use while reading: The effects on comprehension and vocabulary acquisition for students of different verbal abilities. *The Modern Language Journal, 78*(3), 285–299. https://doi.org/10.1111/j.1540-4781.1994.tb02043.x

Laufer, B., & Ravenhorst-Kalovski, G. C. (2010). Lexical threshold revisited: Lexical text coverage, learners' vocabulary size and reading comprehension. *Reading in a Foreign Language, 22*(1), 15–30. https://doi.org/10.64152/10125/66648

Mahdi, H. S., Mohsen, M. A., & Almanea, M. (2024). Multimedia glosses and second language vocabulary learning: A second-round meta-analysis. *Acta Psychologica, 248*, Article 104341. https://doi.org/10.1016/j.actpsy.2024.104341

Mariam, S., Kepirianto, C., & Fadlilah, S. (2026). Utilizing the Big Book to facilitate Indonesian EFL young learners' literacy. *International Journal of TESOL & Education, 6*(2), 1–18. https://doi.org/10.54855/ijte.26621

Mayer, R. E. (2021). *Multimedia learning* (3rd ed.). Cambridge University Press.

Nakanishi, T. (2015). A meta-analysis of extensive reading research. *TESOL Quarterly, 49*(1), 6–37. https://doi.org/10.1002/tesq.157

Nation, I. S. P. (2006). How large a vocabulary is needed for reading and listening? *Canadian Modern Language Review, 63*(1), 59–82. https://doi.org/10.3138/cmlr.63.1.59

Nation, I. S. P. (2007). The four strands. *Innovation in Language Learning and Teaching, 1*(1), 2–13. https://doi.org/10.2167/illt039.0

Nation, I. S. P. (2013). *Learning vocabulary in another language* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9781139858656

Ngo, T. N. H., & Tran, V. D. T. (2025). The application of project-based learning in English for a basic marketing class to enhance oral presentation skills at Ho Chi Minh City University of Industry and Trade (HUIT). *International Journal of TESOL & Education, 5*(3), 160–181. https://doi.org/10.54855/ijte.255310

Nguyen, N. K., Tran, N. P., & Tran, T. T. H. (2024). Vocabulary acquisition based on personal learning pace. *ICTE Conference Proceedings, 5*, 180–201. https://doi.org/10.54855/ictep.24514

PBLWorks. (2019). *Gold standard PBL: Essential project design elements* [White paper]. https://www.gvsu.edu/cms4/asset/8FD27608-AF95-77B5-29623F385B8819C8/gold_standard_pbl_essential_v2019.pdf

Pigada, M., & Schmitt, N. (2006). Vocabulary acquisition from extensive reading: A case study. *Reading in a Foreign Language, 18*(1), 1–28. https://doi.org/10.64152/10125/66611

Rassaei, E., & Folse, K. (2024). Effects of L1 and L2 word-level vs. L2 sentence-level glosses on vocabulary learning. *System, 122*, Article 103273. https://doi.org/10.1016/j.system.2024.103273

Roediger, H. L., III, & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. *Psychological Science, 17*(3), 249–255. https://doi.org/10.1111/j.1467-9280.2006.01693.x

Sangers, N. L., van der Sande, L., Welie, C., Dobber, M., & van Steensel, R. (2025). Learning a language through reading: A meta-analysis of studies on the effects of extensive reading on second and foreign language learning. *Educational Psychology Review, 37*(4), Article 96. https://doi.org/10.1007/s10648-025-10068-6

Schmitt, N., Jiang, X., & Grabe, W. (2011). The percentage of words known in a text and reading comprehension. *The Modern Language Journal, 95*(1), 26–43. https://doi.org/10.1111/j.1540-4781.2011.01146.x

Stæhr, L. S. (2008). Vocabulary size and the skills of listening, reading and writing. *The Language Learning Journal, 36*(2), 139–152. https://doi.org/10.1080/09571730802389975

Stoller, F. L. (2006). Establishing a theoretical foundation for project-based learning in second and foreign language contexts. In G. H. Beckett & P. C. Miller (Eds.), *Project-based second and foreign language education: Past, present, and future* (pp. 19–40). Information Age Publishing.

Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction, 4*(4), 295–312. https://doi.org/10.1016/0959-4752(94)90003-5

Thomas, J. W. (2000). *A review of research on project-based learning*. The Autodesk Foundation.

Webb, S., & Nation, P. (2017). *How vocabulary is learned*. Oxford University Press.

Webb, S., Pellicer-Sánchez, A., & Wang, A. (2025). Lexical coverage and reading comprehension revisited. *Reading in a Foreign Language, 37*(1), 1–21. https://doi.org/10.64152/10125/67517

Weng, Y., Schmidt, M., Huang, W., & Hao, Y. (2024). The effectiveness of immersive learning technologies in K–12 English as second language learning: A systematic review. *ReCALL, 36*(2), 210–229. https://doi.org/10.1017/S0958344024000041

Wiliam, D. (2011). *Embedded formative assessment*. Solution Tree Press.

Yanagisawa, A., Webb, S., & Uchihara, T. (2020). How do different forms of glossing contribute to L2 vocabulary learning from reading? A meta-regression analysis. *Studies in Second Language Acquisition, 42*(2), 411–438. https://doi.org/10.1017/S0272263119000688

Zhu, T., Zhang, Y., & Irwin, D. (2024). Second and foreign language vocabulary learning through digital reading: A meta-analysis. *Education and Information Technologies, 29*(4), 4531–4563. https://doi.org/10.1007/s10639-023-11969-1

Biodata

Thitima Meaoka, Primary Teacher, La-orutis Demonstration School, Suan Dusit University, Lampang, Thailand. Research interests include extensive reading, technology-enhanced language learning, project-based learning, and classroom-based assessment in primary EFL contexts

Assoc. Prof. Dr. Jira Jisupa is an Associate Professor at the Faculty of Education, Suan Dusit University, Bangkok, Thailand. His primary interest has been in the area of information and communications technology for education, focusing on early childhood and primary education. He has been a member of the Professional Societies in the Thai Association for Educational Communications and Technology (Thai AECT).

Assist. Prof. Dr. Navarat Techachokwiwat is an assistant professor in English at the English for Communication Program, Faculty of Humanities and Social Sciences, Suan Dusit University, Bangkok. She obtained her doctoral degree in education (TESOL/Applied Linguistics). With her teaching and translating experience in English and German, and her educational background in both languages and instruction, her research interests include English, English literature, English Language Teaching (ELT), linguistics and translation, and German. Her publications focus on various areas of English, namely literature, linguistics, translation, and ELT.