Crafting Comprehension: A Systematic Guide to Designing and Developing an Inquiry-Based Reciprocal Teaching (IBRT) Module

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.905000492

Received: 14 May 2025; Accepted: 21 May 2025; Published: 25 June 2025

ABSTRACT

This paper presents a systematic eight-step framework for designing and developing a contextually appropriate reading module, integrating three key pedagogical frameworks: a modified DDR within the ADDIE instructional design model, the BSCS 5E instructional model and the reciprocal teaching strategies. Inquiry-Based Reciprocal Teaching (IBRT) module was developed based on the needs analysis involved 282 Form Four ESL learners and 12 ESL educators from Penampang, Sabah, identifying key challenges in reading comprehension. Designed in alignment with the CEFR and the Malaysian Standard-Based English Language Curriculum (SBELC), this module aims to close the gap between curriculum expectations and learners' reading proficiency by integrating reciprocal teaching strategies into 5E inquiry-based learning cycle to foster deeper engagement, scaffolding, and metacognitive growth. The design and developmental phase obtained the views and decisions of seven experts on the overall design, strategies, and activities in the module. Insights gathered informed the module's development, which was refined through expert reviews and validated using structured checklists and the content validity index. With a content validation of 0.89 and suitability of sessions and activities that achieved a value of 0.90, the module demonstrated strong content validity and instructional relevance. This paper addresses the persistent lack of explicit reading strategy instruction in ESL classrooms and offers a replicable, context-sensitive framework for instructional design. By detailing each developmental step, the paper contributes a transparent and transferable model that supports both scholarly inquiry and practical implementation in ESL pedagogy.

Keywords: reading module, reciprocal teaching, inquiry-based learning, eight-step framework, ESL learners.

INTRODUCTION

Reading comprehension is viewed as a fusion of complex, dynamic, and multifaceted process as it requires the interplay of readers' linguistics knowledge and prior experiences, effective application of reading strategies and correct navigation through the intricacy of the textual evidence (Grabe & Stoller, 2020; Elleman & Oslund, 2019; Sheorey & Mokhtari, 2001). Despite prevalent efforts have been put in improving reading comprehension, the decoding ability of ESL learners in primary education does not substantiate successful attainment of reading skills and strategies among them in secondary education (UNESCO, 2017; Hazita, 2016; Normazidah et al., 2012) or in tertiary education (Mackay et al., 2019). Many learners continue to exhibit deficiencies in identifying, organizing and synthesizing contextual details (Phantharakphong & Pothitha, 2014) due to the heightened linguistic and discursive complexity characteristics of texts as learners progress academically. Learners' incomprehensiveness of texts impedes their learning progression as insufficient reading proficiency obstructs both the accurate decoding and meaningful interpretation of information (Wanzek et al., 2018; Cooper et al., 2014; Woolley, 2011).

Scholars in reading comprehension consistently assert that a formidable approach to this challenge lies in the systematic representation of textual information (Cain, 2010) through the implementation of metacognitive reading strategies (Sheorey & Mokhtari, 2001). The efficacy of the reading comprehension process is contingent upon the dynamic interplay wherein readers integrate prior knowledge with textual content through the strategic

application of reading techniques (Grabe & Stoller, 2002). Empirical studies have demonstrated that structured guidance, pedagogical expertise, methodological approaches, and targeted reading strategies constitute fundamental elements in augmenting learners' reading comprehension proficiency (Mokhtari & Reichard, 2002).

However, studies consistently indicates that explicit reading strategy instruction is infrequently implemented in classroom settings (Klapwijk, 2016), despite its recognized benefits for enhancing comprehension (Brown, 2017; Pearson & Cervetti, 2017; Brevik, 2019). Magnusson (2019) revealed that in lower secondary classrooms, only 14.4% of observed instructional segments provide direct instruction on reading comprehension strategies. This trend persists across decades, as Pressley et al. (1998) have reported similar lacking engagement in explicit teaching of reading strategies, thus suggesting a systemic gap in strategy instruction.

Without systematic strategy instruction, learners may struggle to cultivate the metacognitive skills essential for comprehending complex and academic texts. This challenge is particularly pronounced for ESL learners, who greatly benefit from structured pedagogical approaches that clarify the reading process and equip them with strategies for autonomous learning. Given these circumstances, contemplative modification of teaching approaches that include a repertoire of comprehension strategies (Mokhtari & Reichard, 2002; Pressley, 2000) is an essential component in enhancing reading comprehension in learners.

Cultivating robust reading comprehension skills necessitates innovative pedagogical approaches that transcend traditional methodologies. The confluence of inquiry-based learning and reciprocal teaching strategies presents a promising avenue for fostering deeper engagement and metacognitive awareness in ESL reading instruction (Guccione, 2011). Inquiry-based learning centres on student-driven exploration, encouraging learners to formulate questions, investigate resources, and construct meaning through active participation (Bybee, 1997) whereas reciprocal teaching strategies empower learners to take an active role by predicting, questioning, clarifying, and summarizing texts (Palincsar & Brown, 1984). The convergence of these two frameworks offers a robust and adaptive structure for module development that promotes active learning, scaffolding, and metacognitive engagement.

Given the complexity of integrating 5E instructional model and reciprocal teaching strategies within a modified DDR-ADDIE framework, a detailed procedural account ensures that each developmental decision is transparent, theory-informed, and adaptable to various instructional contexts. This paper, therefore, not only enhances methodological transparency but also enables theoretical and pedagogical rigor in instructional design. A systematic, step-by-step account allows for replicability, scalability, and critical examination of each design decision. Such procedural transparency strengthens the module’s practical utility while contributing to a more systematic and evidence-based culture in instructional design for literacy education. Importantly, such a guide provides a valuable reference for future researchers and educators seeking to develop or adapt similar modules, thus contributing to the body of knowledge in ESL pedagogy and module design. Considering the increasing demand for empirically grounded and pedagogically sound instructional materials, especially in literacy education for diverse learner populations, a procedural framework offers a practical yet scholarly pathway for sustainable innovation and informed practice.

In ensuring both theoretical soundness and practical feasibility, the module underwent a rigorous validation process involving expert reviews, a structured checklist, and the Content Validity Index (CVI). Designed with Malaysian Form Four ESL learners in mind and to complement the curriculum and the Common European Framework Reference (CEFR), the learning outcomes in the module were aligned with the content standards and learning standards as stipulated in Standard-Based English Language Curriculum for Secondary Schools (SBELC), reinforcing its instructional relevance and easing the implementation of the method into the reading classrooms. The module also went through a validation process to ensure its content quality, pedagogical integrity, and practical relevance before full implementation. As a result, the developed module might rectify the predicaments regarding the scarcity of appropriate guidelines in teaching reading comprehension and the inadequacy of reading texts to meet the compelling needs of Malaysian ESL learners, particularly the Sabahan ESL learners.

Conclusively, this guide, therefore, serves as both a scholarly contribution to instructional design research and a practitioner-oriented resource for enhancing reading pedagogy. Subsequent sections detail the theoretical

frameworks underpinning the module, review relevant literature, outline the methodological design, and explicate each of the eight developmental steps. The paper concludes with a discussion on implementation feedback, validation outcomes, and directions for future research and scalability.

LITERATURE REVIEW

Biological Sciences Curriculum Study (BSCS) 5E Model

The foundational theories of the Biological Sciences Curriculum Study (BSCS) 5E model are constructivist-learning theory, cognitive psychology, directive inquiry, and best practices in science teaching. It includes five learning cycle stages; Engage, Explore, Explain, Elaborate, and Evaluate (Bybee et al., 2006). Figure 1 illustrates the BSCS 5E model.

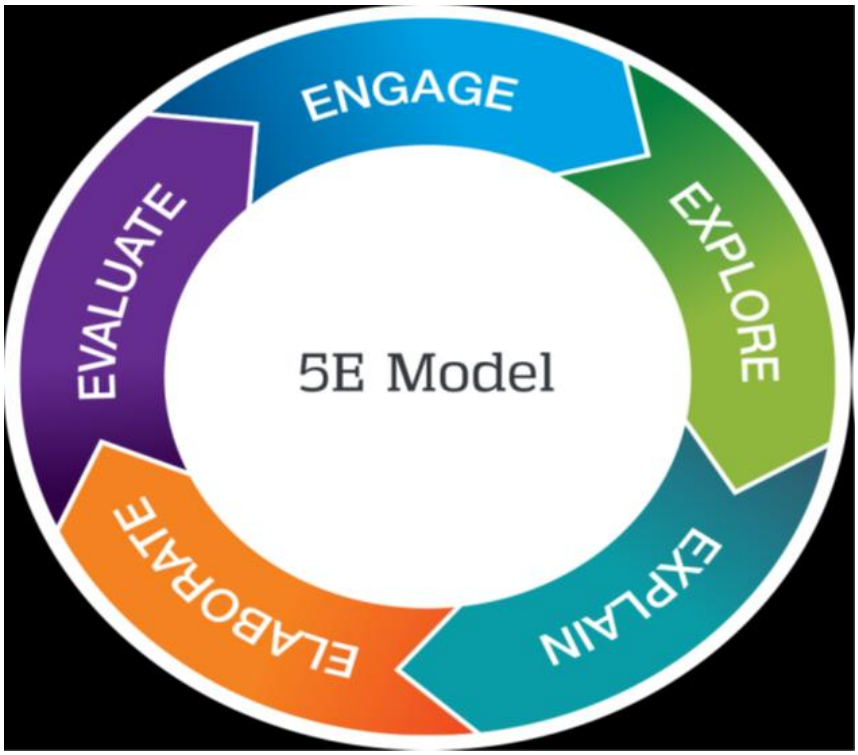

Figure 1: BSCS 5E Model (Bybee et al., 2006)

The first phase of the 5E cycle starts with engaging the learners by capturing their interest and attention to focus on the concept (Bybee, 2018; Duran & Duran, 2004). Engagement can take the form of brainstorming, problem-posing, questioning, or using graphic organisers to elicit and assess prior knowledge and determine possible misconceptions (Duran & Duran, 2004). This phase, however, does not serve as a preassessment phase but concentrates more on helping the learners make connections between their previous knowledge and the new concepts or ideas (Bybee, 2019).

Exploration comes as the second phase in the learning cycle. This phase enables the learners to express their existing knowledge on the topic and ample time to organise new information (Duran & Duran, 2004). Known as a phase that provides learners with concrete experiences, the practical activities expedite the establishment of relationships and understanding. A learner-centred phase, active exploration without prior explanation from the educator is carried out in this phase (Duran & Duran, 2004). Processing skills such as questioning, observing, investigating, hypothesising, and drawing conclusions are applied in this phase (Bybee, 2019).

The third phase; explanation, is an essential, minds-on part of the 5E lesson as this is the phase where learners draw on experiences to offer ideas and explanations in their own words, use evidence to support ideas, critically appraise explanations, listen critically and respectfully to others, reflect on and assess their own understanding, produce multiple representations of concepts to improve understanding (Duran & Duran, 2004). Clarification of learners' misconceptions in the form of definitions and notes is performed by the educator after obtaining learners'

views. Educators' interference is limited only to encouraging learners to clarify their understanding through probing questions to redirect the learners when needed (Bybee, 2018; Duran & Duran, 2004).

The following phase is elaboration. It aims at developing deeper and more elaborated understandings of the concepts. In order to facilitate concept transfer and application of the newly learned concepts into new situations, the elaboration phase encourages the learners to use previous information to ask questions, apply their new understanding of concepts to new contexts, propose solutions, make decisions and draw reasonable conclusions from the evidence as to reinforce new skills, through discussion among them or using available sources (Bybee, 2018; Duran & Duran, 2004).

The final phase in BSCS 5E model is evaluation. Assessment in an inquiry-based setting is viewed as an ongoing process, with educators making observations of their learners as they apply new concepts and skills and looking for evidence that the learners have changed or modified their thinking (Bybee, 2018; Duran & Duran, 2004). In this stage, the demonstration of learners' understanding of the ideas and concepts is performed through questions answering, evaluation of own progress, and peer assessment. However, summative evaluations such as a quiz, examinations, or writing assignments should be included as well (Duran & Duran, 2004).

Although the BSCS 5E Model has just been explained in serial order, the cycle is flexible and dynamic (Bybee, 2019). It is often necessary for the educator to move back and forth several times within the cycle. Numerous explore or explain rotations may need to occur before the learners are ready to move into the elaboration phase (Duran & Duran, 2004). In facilitating inquiry-based learning of this study, the application of effective reading strategies is crucial in minimising reading comprehension obstruction. The reading comprehension strategies such as establishing purposes for reading, locating information, questioning, investigating, predicting, hypothesising, inferring the meanings of new words from context, discussing, clarifying, sharing of information, summarising and reflecting are among the reading strategies that are included in this study. The 5E model organises the reading comprehension process and its strategies more systematically, thus necessitating a dire need for its adoption into the study.

Reciprocal Teaching

Reciprocal teaching, coined by Palincsar and Brown (1984), is a collaborative comprehension instructional procedure in which small groups of learners learn to improve their reading comprehension through scaffolded instruction of comprehension-monitoring strategies. Originally aimed at improving reading comprehension for poor comprehenders by influencing how they interact with the text, the four concrete strategies suggested by Palincsar and Brown (1984) are predicting, clarifying, questioning, and summarising.

Predicting is attempted when the learners recognise any cues that herald forthcoming material. Learners are to pause to draw and test inferences from the text about future content at critical points in the reading. In attempting to predict the subsequent paragraph of a text, learners are encouraged to read the earlier paragraph searching for hints of the overall structure of the passage. Their prediction represents their hypothesis about the author's intention in writing the text.

Clarifying occurs only if there are confusions either in the text or in the learners' interpretation of the text. While the text is being read, learners must draw upon the team members' collective knowledge to figure out the meaning of unfamiliar words and phrases. In addition, they are to seek the essence of ideas, main ideas, and themes contained in the text. Palincsar (1986) views that when the learners are asked to clarify, their attention is called to the fact that there may be many reasons why the text is difficult to understand, such as new vocabulary, unclear reference words, and unfamiliar or complex concepts.

During questioning, the goal is for learners to ask questions about the text that help explicate the main ideas of the passage. In requesting that learners compose questions on the content, one also asks for a concentration on main ideas and checks their immediate level of understanding. The text is read, and questions are posed about the content.

Summarising in reciprocal teaching strategies is modelled as an activity of self-review. Summarisation shifts

learners' attention to the significant content and checks to see if they have understood it. It is used to state to the educator or the other group members what has just happened in the text and functions as a self-test that the content has been understood. If a good synopsis could not be reached, it is not an indication of a failure to perform a particular decontextualised skill, but an essential source of information that comprehension was not proceeding as it should, and remedial action such as rereading was needed. In short, all the activities were undertaken in the context of reading with the goal of understanding and remembering the text content.

Reciprocal teaching is adopted in this study due to its effectiveness in improving reading comprehension. This procedure allows the educators to model and provides the learners with enough practice on those four main strategies to construct the meaning of a text in a social setting (Palincsar & Brown, 1984). It also provides educators with a useful tool for engaging learners, individually and socially, in exploring and critically evaluating the texts. The modelling, explanation, and relinquishing of attainable tasks to the learners have increasingly produced more competent learners. The educators then can increase their expectations and demands, requiring participation at a slightly more challenging level, that is, one stage further into the zone of proximal development. As a result, reciprocal teaching is defined in the context of this study, as a modelled and scaffolded active discussion of reading comprehension strategies and text in a small group of peers.

ADDIE Framework

Abbreviated for Analyse, Design, Develop, Implement and Evaluate, the ADDIE framework was adopted in this study to facilitate the construction of knowledge and skills, and ensure having a systematic step guideline in establishing and validating (Branch, 2009; Molenda, 2003) the development of an Inquiry-Based Reciprocal Teaching Module. The methodical analysis of each stage that focused on rumination and reiteration, the sequential outcomes and feedback from the formative evaluation of each stage ensured continuous improvement in the process of developing this module. Figure 2 illustrates the ADDIE framework:

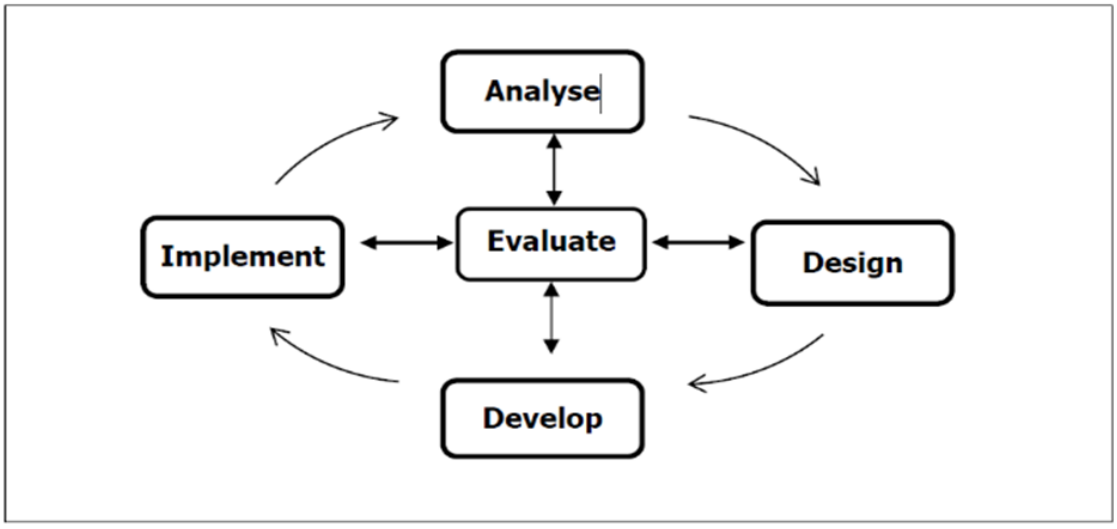

Figure 2: ADDIE Framework (Branch, 2009)

The five stages of ADDIE are:

Analyse: The analyse stage was put in the first phase of this study as it laid the foundation for all other stages in this model (Branch, 2009). This stage utilised needs analysis to identify the problems faced by ESL learners in reading comprehension through sourcing for the causes of problems in the learners' existing knowledge and use of reading comprehension strategies. The feedback gathered from both ESL learners and educators was used as the input for the second stage.

Design: The design and develop stages of ADDIE were combined and put under the second phase of this study. Based on the outputs from the first phase, a strategy for developing the instruction was outlined. This includes establishing instructional goals, learning objectives and content that adhere to the curriculum. The drafted detailed storyboard functioned as the input for the next stage.

Development: The development stage builds on both the analyse and design stages. The development stage in this study involved constructing the lesson plans and selecting reading materials based on the sequence of events identified in the design phase (Dick et al., 2009). Lesson plans, teaching notes, worksheets, and self-assessments were all produced in this stage. The completed draft module was validated and pilot tested before it could proceed to the third and final phase of this study.

Implement: Both the implement and evaluate stages were put into the last phase of this study. The actual delivery of the reading comprehension module happened here through a quasi-experiment. Aimed at establishing effective and efficient delivery of the developed module, the implement stage promotes learners' understanding of the material, supports the learners' mastery of objectives, and ensures the transfer of knowledge from the instructional setting to the learners. The developed module was distributed to the learners during implementation and put into action by the trained educator who carried out the experiment. The effectiveness of the module was evaluated after the ten-week delivery process.

Evaluate: The last stage of ADDIE measures the effectiveness of the instruction. According to Branch (2009), evaluation should occur throughout the entire process, within stages, between stages, and after implementation. Thus, evaluation may be formative or summative. Both types of evaluation were adopted in this study. Formative evaluation that aimed at improving the module was performed at the end of analyse, design, develop stage and even during the implementation. In contrast, summative evaluation was performed to assess the overall effectiveness of the module, and the data obtained from this evaluation is often used to make an informed decision regarding the module.

The Eight-Step Framework of Inquiry-Based Reciprocal Teaching (Ibrt) Module

Step 1: Conduct a Comprehensive Needs Analysia (ADDIE: Analysis)

The foundation of effective instructional design lies in a thorough understanding of learners' needs, abilities, and the educational context in which instruction will occur. In this initial phase, a comprehensive needs analysis was conducted to gather empirical data that would inform the design and development of IBRT module. This step ensured that instructional decisions were data-driven, contextually appropriate, and learner-centred.

A key component of the analysis involved surveying 282 Form 4 ESL learners using the Revised Metacognitive Awareness of Reading Strategies Inventory (MARSI-R), developed by Mokhtari et al. (2018). To ensure linguistic and cultural appropriateness, the instrument underwent a full translation process involving four language experts. The translated version was subjected to both face and content validation by nine English language and educational experts. A pilot test was conducted with a separate group of 30 students to evaluate the reliability and clarity of the instrument.

To complement the quantitative data, semi-structured interviews were conducted with 12 English language educators within the same district to gain deeper insights into instructional challenges, observed learner difficulties, and perceived gaps in existing reading practices. The interview protocol was piloted with two educators to enhance clarity and appropriateness before full implementation.

Data collection was followed by a systematic analysis of both quantitative and qualitative findings. The quantitative survey data were analysed descriptively to identify learners' self-perceived use of cognitive and metacognitive reading strategies, while thematic analysis was applied to the interview transcripts to extract recurring instructional concerns and contextual issues. The resulting needs analysis report provided a detailed learner profile, identified key areas of difficulty in reading comprehension, and articulated the pedagogical rationale for the proposed module. This evidence-based foundation ensured that the module design was targeted, relevant, and aligned with learners' real-world reading challenges.

Step 2: Define Clear and Measurable Outcomes (ADDIE: Design)

Defining precise and measurable learning outcomes is a foundational step that informs all subsequent decisions in module design—from content selection to instructional strategies and assessments. Learning outcomes must be skill-specific, observable, and aligned with Bloom's Taxonomy (Anderson & Krathwohl, 2001) to ensure

cognitive clarity and instructional focus.

The IBRT module aims to provide foundational ideas of reciprocal teaching strategies and the BSCS 5E model by outlining the implementation of reciprocal teaching strategies in inquiry-based reading activities. It also allows the educators and learners to scaffold and construct meaning in a social setting through modelling, think-aloud and discussion, thus resulting in the active engagement of the learners in the process of reading comprehension.

Therefore, the objectives of IBRT module are:

- To improve students' reading comprehension through reciprocal teaching strategies
- To scaffold the use of reciprocal teaching strategies through expert modelling and gradually releasing the learning responsibility to learners,
- To help students monitor their reading comprehension using the four comprehension strategies,
- To guide learners to become critical and reflective readers through inquiry-based and reciprocal teaching reading strategies,
- To encourage collaborative efforts to construct the meaning of a text,
- provide opportunities for the students to use the social nature of learning to improve and scaffold reading comprehension, and,
- To guide learners to become critical and reflective readers through inquiry-based and reciprocal teaching reading activities.

Step 3: Create Storyboard and Map the Curriculum (ADDIE: Design)

In the design phase of the ADDIE model, it is critical to translate learning outcomes into a coherent instructional sequence. Step 3 involves two interrelated components: storyboarding and curriculum mapping. These tools established a strong design foundation for IBRT module, providing a clear instructional blueprint that guided subsequent content development, material production, and classroom implementation. They serve to bridge curriculum standards with pedagogical strategies, ensuring that each module component aligns with the learning goals and contributes meaningfully to reading comprehension development.

Storyboarding illustrates important sequences in which the contents and activities of the envisioned module are laid out. As it visually conceptualises each element within the module, allowing designers to plot instructional flow, resource integration, assessment points, and strategy application. In the design phase of the ADDIE model, it is critical to translate learning outcomes into a coherent instructional sequence. For IBRT module, storyboard includes the following elements: the curriculum, theoretical foundation, module overview, module content and unit content.

This visual planning focuses on how reciprocal teaching strategies—predicting, clarifying, questioning, and summarising—are scaffolded across the 5E instructional phases. This process enhanced coherence across lessons and ensured that instructional strategies were purposefully sequenced. Each unit is mapped to targeted skills and CEFR-aligned descriptors, with reciprocal teaching strategies systematically embedded across the instructional flow. The mapping process ensures constructive alignment, where every instructional decision directly supports the intended learning outcomes.

The alignment of the reading syllabus in SBELC with the theoretical foundation that merged reciprocal teaching into the 5E model, the overview of the module, the content of the module and the unit content were illustrated in the storyboard are presented in Figure 3.

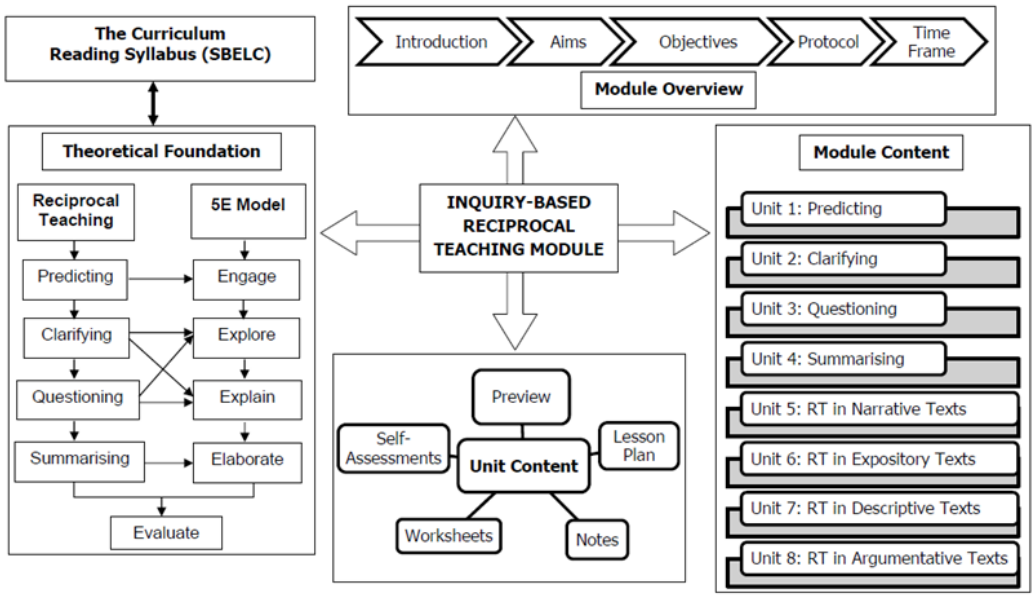

Figure 3: Storyboard of the Module (Ting et al., 2021)

Curriculum mapping ensures vertical alignment between content, teaching strategies, learner activities, and assessments. Curriculum mapping aligns module content with curriculum standards. Specifically, the module was mapped to *Dokumen Standard Kurikulum dan Pentaksiran* (DSKP) Form Four English Language and cross-referenced with Common European Framework of Reference for Languages (CEFR). The mapping process ensured that learning outcomes were measurable and directly linked to assessment criteria.

In reading, Form Four ESL learners are expected to reach the level of independent user (B1) in the Common European Framework of Reference for Language (CEFR). This indicates that Form Four ESL learners need to understand a variety of texts by using a range of appropriate reading strategies to construct meaning and be able to read independently to explore and expand ideas for personal development.

Specifically, these learners should be able to identify main ideas and specific details in a wide range of texts of familiar topics, use contextual clues to guess the meaning of difficult words, or use supporting materials to locate the meaning, as well as be able to comprehend the intended message of the author in their texts. The reading skills as established in SBELC are presented in Table 1 and the elaboration on the alignment is discussed in the following section.

Content Standards	Learning Standards
3.1 Understand a variety of texts by using a range of appropriate reading strategies to construct meaning	3.1.1 Understand the main points in extended texts on a wide range of familiar topics 3.1.2Understand specific details and information in extended texts on a wide range of familiar topics 3.1.3 Guess the meaning of unfamiliar words from clues provided by other words and by context on a wide range of familiar topics 3.1.4 Use independently familiar and some unfamiliar prints and digital resources to check meaning and extend understanding 3.1.5 Recognise with little and no support the attitude or opinion of the writer in extended texts on a wide range of familiar topics 3.1.6 Recognise with support typical features at words, sentence and text levels of an increased range of genres
3.2 Explore and expand ideas of personal development by reading independently and widely	3.2.1 Read a variety of suitable print and digital texts to investigate and analyse national issues

Table 1: Content Standards and Learning Standards (Ministry of Education Malaysia. 2018)

As the module was designed with the Form Four ESL learners in mind, thus learning outcomes in IBRT module need to be aligned with the content standards and learning standards as stipulated in SBELC. The details of the learning standards and the learning outcomes are tabulated in Table 2.

Unit	Learning Outcomes (IBRT Module)	Learning Standards (SBELC)
1 Predicting	1.1 To skim and scan the information in the text 1.2 To complete the KWHL charts based on the text 1.3 To predicting what might happen next in the text 1.4 To self-assess their predicting strategy	3.1.6 Recognise with support typical features at words, sentence and text levels of an increased range of genres
2 Clarifying	2.1 To infer meaning of unfamiliar words in the text 2.2 To familiarise with the organisational pattern of a text 2.3 To self-assess their clarifying strategy	3.1.3 Guess the meaning of unfamiliar words from clues provided by other words and by context on a wide range of familiar topics 3.1.4 Use independently familiar and some unfamiliar prints and digital resources to check meaning and extend understanding
3 Questioning	3.1 To use 5W1H questions based on the text 3.2 To use SQ3R graphic organiser based on the text 3.3 To self-assess their questioning strategy	3.1.4 Use independently familiar and some unfamiliar prints and digital resources to check meaning and extend understanding 3.1.5 Recognise with little and no support the attitude or opinion of the writer in extended texts on a wide range of familiar topics
4 Summarising	4.1 To distinguish between main ideas and supporting details in the text 4.2 To summarise the text 4.3 To self-assess their summarising strategy	3.1.1 Understand the main points in extended texts on a wide range of familiar topics 3.1.2 Understand specific details and information in extended texts on a wide range of familiar topics
5 Reciprocal Teaching on Narrative Texts	5.1 To use KWHL chart to predict the content of the text 5.2 To guess the meaning of unknown words in the text 5.3 To ask text-dependent questions based on the text 5.4 To use 5-fingers to retell the story 5.5 To self-assess text comprehension	3.1.1 Understand the main points in extended texts on a wide range of familiar topics 3.1.2Understand specific details and information in extended texts on a wide range of familiar topics
6 Reciprocal Teaching on Expository Texts	6.1 To guess the meaning of the highlighted words on the text 6.2 To ask text-dependent questions based on the text 6.3 To identify main ideas and supporting details in text 6.4 To complete the mind-map based on the text 6.5 To self-assess text comprehension	3.1.3 Guess the meaning of unfamiliar words from clues provided by other words and by context on a wide range of familiar topics 3.1.4 Use independently familiar and some unfamiliar prints and digital resources to check meaning and extend understanding
7 Reciprocal Teaching on Descriptive Texts	7.1 To use KWHL chart to predict the content of the text 7.2 To match the descriptions in the text with picture 7.3 To self-assess text comprehension	3.1.5 Recognise with little and no support the attitude or opinion of the writer in extended texts on a wide range of familiar topics
8 Reciprocal Teaching on Argumentative Texts	8.1 To use KWHL chart to predict the content of the text 8.2 To guess the meaning of the highlighted words 8.3 To ask text-dependent questions based on the text 8.4 To identify main ideas and supporting details of the text 8.5 To self-assess text comprehension	

Table 2: Curriculum Mapping (Ting et al., 2021)

Step 4: Design Instructional Strategies and Learning Activities (ADDIE: Design)

This step involves crafting pedagogical approaches that are evidence-based, learner-centred, and contextually appropriate, ensuring that all students are actively engaged in the reading process. Reading comprehension activities in the IBRT module were designed to adhere to the four main themes allocated in SBELC: (i) people and culture, (ii) health and environment, (iii) science and technology, and (iv) consumerism and financial awareness. These themes were incorporated into instructional scaffolding and collaborative learning that aim at promoting interaction and deepen understanding as well as engaging learners through question posing, opinion sharing, problem-solving, as well as application and reflection of the new learning (MOE, 2018).

Adhering to the inquiry-based learning as stipulated in the syllabus, the 5E model (Bybee et al., 2006) was adopted fully into the activities in the module to complement the use of reciprocal teaching strategies. There are five learning stages in the 5E model (Bybee et al., 2006): engage, explore, explain, elaborate and evaluate. The focus of each stage in the inquiry-based reading comprehension lessons is presented in Table 3.

5E	Suggested Focus
Engage	• To capture learners' interest • To uncover prior knowledge • To predict the content
Explore	• To encourage investigation of new concepts • To discover new skills • To probe, inquire and clarify
Explain	• To connect new discoveries with previous knowledge • To justify new understanding • To further question for understanding
Elaborate	• To apply new understanding in real situation • To extend the new understanding in everyday lives • To summarise the understanding
Evaluate	• To assess understanding • To demonstrate the understanding of the new concept • To show evidence of accomplishment

Table 3: Suggested Focus of 5E Model

Central to this module is the reciprocal teaching strategy, which focuses on four key comprehension techniques—predicting, clarifying, questioning, and summarising—executed through dialogic, scaffolded interaction between teacher and learners. This approach fosters metacognitive awareness and equips learners with tools to independently monitor their understanding of texts. These four reading strategies of reciprocal teaching: predicting, clarifying, questioning, and summarising, were adopted to be merged into the five stages of the 5E model to maximise the benefits of inquiry-based learning. While the 5E model guides the sequence of learning, reciprocal teaching guides the strategies to be used in each stage of the learning cycle.

The introduction of reciprocal teaching strategies starts with predicting in the engage stage. Although the clarifying strategy is suggested to be used during explore stage and the questioning strategy is used during explain stage, both strategies can be used interchangeably during these two stages. A questioning strategy can probe new inquiries, and a clarifying strategy helps to further understand the new inquiries. A summarising strategy is used in the elaborate stage to apply the new inquiries in real situations. The merging of the 5E model (Bybee et al., 2006) and reciprocal teaching strategies in the module is presented in Figure 4.

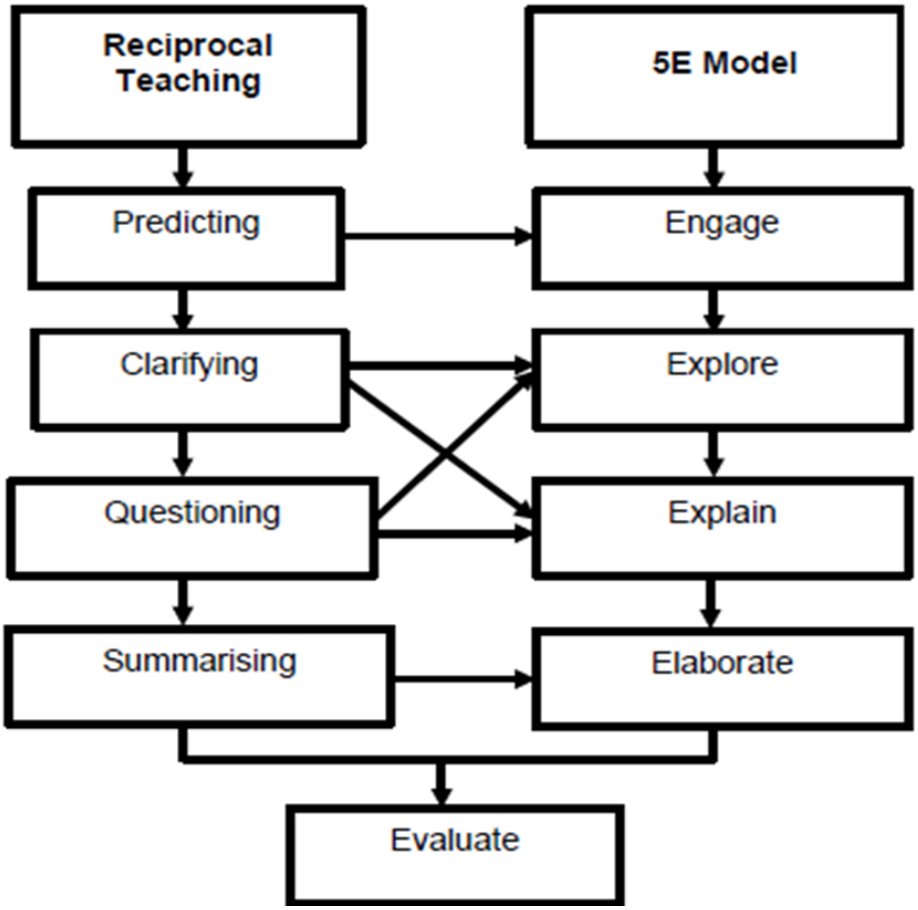

Figure 4: The Merging of Reciprocal Teaching and 5E Model (Ting et al., 2021)

Step 5: Create the Teaching and Learning Materials (ADDIE: Develop)

Teaching and learning materials lie at the heart of effective module design. This phase involves curating and sequencing instructional materials that align with the module's overall aims, learning objectives, and curricular standards. The content must not only meet academic expectations but also resonate with learners' linguistic proficiency, cognitive readiness, and sociocultural context. The layout and structure of each unit must follow a consistent instructional flow, ensuring pedagogical coherence.

IBRT module begins with a clear articulation of its overall aim, which communicates the broad educational intention. This is followed by specific objectives that are measurable, skill-focused, and mapped to curriculum. Content is then organised into instructional units, each accompanied by a unit preview outlining the focus skills, targeted reading strategies, genre of the text, and expected learning outcomes. Each unit includes teaching

manuals or lesson plans that model and scaffold each strategy, notes and worksheets that provide guidance on the use of reading comprehension strategies as well as self-assessment that provides evaluation and feedback on each strategy learned.

Teaching manual or lesson plans in IBRT module incorporate theme, topic, content standards, learning standards, learning outcomes, procedures, activities, teaching aids, resources, language or grammar focus, differentiation strategies, moral values, and reflection. There are 8 units in IBRT module and are organised into two parts: (i) Unit 1 to Unit 4 discuss in detail each of the four strategies: predicting, clarifying, questioning and summarising, and (ii) Unit 5 to Unit 8 offer suggested lesson plans that outline the modelling and scaffolding involved in using reciprocal teaching strategies in different genres. The first four units introduce reciprocal teaching in isolation as to prepare the learners to learn how each strategy fits into the larger framework. The second part contains interesting and challenging activities in attempting a variety of texts such as narrative, descriptive, expository and argumentative. These units are aimed at assisting ESL learners in internalising reciprocal teaching strategies for eventual independent use.

The suggested lesson plans in IBRT module follow this format:

Background:	Brief description of the lessons
Content Standards:	Specific statements of educational goals
Learning Standards:	Concise educational objectives
Learning Outcomes:	Behavioural outcomes
Procedures:	5E: Engage, Explore, Explain, Elaborate, Evaluate
Activities:	Focuses on the 21stcentury learning activities
Other Elements:	Language and Grammar Focus
	Cross-Curricular Elements
	Differentiation Strategies
	Moral Values
Materials / Reference:	Supplies needed for the lesson

Reading texts are selected based on relevance, linguistic appropriateness, and pedagogical value. Texts should cover diverse genres, are authentic and thematically engaging, sequenced from simple to complex to scaffold skill development, and most importantly are aligned with reciprocal strategies. In ensuring the texts used in the Inquiry-Based Reciprocal Teaching Module are suitable for Malaysian Form Four ESL learners, all the texts used in the module were measured in terms of the complexity in sentence length and word length using the Lexile Analyser for lexile text measures and the Flesch-Kincaid calculator for FRE index. Ranging from 145 words to 827 words, all the texts in the Inquiry-Based Reciprocal Teaching Module are correlated with B1 and B2 CEFR levels. The lexile ranged from 610L to 1200L and the FRE index was recorded at 55.6 to 86.8.

The outcome is a structured collection of level-appropriate readings mapped to specific learning outcomes. A balanced integration of text types and formats (e.g., print, visual, digital) is essential to promote multimodal literacy. Where possible, content should be localised and culturally relevant to enhance engagement and authenticity, thus fostering learners' connection with the material and improve comprehension.

Step 6: Pilot the Module and Collect Feedback (ADDIE: Implement)

A pilot study was carried out to see whether the implementation of the intervention would achieve its objectives as planned, observe the participants' learning progress during and after the pre-testing, and investigate the factors

and conditions affecting the performance. Some parts of the module were pilot tested among 30 Form Four students who represented the target population. The pilot study took four sessions of two hours each to complete the procedures. The total of eight hours focused on the four reciprocal strategies and two types of texts: narrative and expository texts. The first two sessions focused on introducing and modelling the four strategies: predicting, questioning, clarifying and summarising (Unit One to Unit Four). The third session focused on the use of reciprocal teaching on narrative (Unit Five) and the last session focused on expository texts (Unit Six).

During the pilot study, reading passages were distributed to each group and the use of each strategy was explicitly modelled by the teacher using the first passage. The participants in their respective groups practised the strategy using the second passage. At this point, the teacher became a mediator who scaffolded the learning process by providing guidance and feedback to the participants.

At the end of the third session, comments and feedback from the participants regarding the implementation of the module were gathered for further amendments. An 18-item questionnaire for module assessment was distributed to the 30 participants upon completion of the fourth session. The finding indicated that the internal reliability of IBRT module was .75, indicating the module was fit to be implemented in actual classrooms.

The conduct of this pilot study resulted in the production of valuable information regarding the implementation of the intervention using the draft materials. It minimised unnecessary efforts by both the researcher and the participants as the comments and feedback gathered from the pilot study enabled the researcher to refine the activities for the betterment of the module. It also provides information on the feasibility of the study.

Step 7: Revise and Refine the Module (ADDIE: Evaluation)

Following implementation, a systematic review and refinement phase is essential to enhance the IBRT module's effectiveness and contextual responsiveness. This step involves analysing feedback gathered during the pilot implementation, including teacher observations, student reflections, and performance data. Insights from the pilot are used to identify areas requiring improvement, such as the clarity of task instructions, appropriateness of text difficulty, effectiveness of scaffolding, and student engagement during specific phases of instruction. Materials, tasks, and instructional strategies are then refined based on empirical data, ensuring that each component aligns with intended learning outcomes and responds to real classroom dynamics.

Where necessary, adjustments are made to the pacing of lessons, the sequencing of instructional elements, and the degree of scaffolding provided to support diverse learners. These revisions are made without compromising the module's core structure, maintaining pedagogical coherence and design integrity. Additionally, the module is revised with a view towards flexibility and adaptability, allowing for future customisation across different cohorts, school settings, or proficiency levels. This iterative refinement process ensures the module is not only research-informed but also field-tested and contextually viable.

Step 8: Validate the Module (ADDIE: Evaluation)

Validation is an essential process to ensure the credibility, usability, and instructional soundness of the developed module. This step involves obtaining expert feedback to confirm that the module aligns with pedagogical standards, meets learners' needs, and supports curriculum objectives. A multi-tiered validation process was employed, beginning with face and content validation conducted by subject matter experts and instructional design professionals. These experts assessed the module's clarity, appropriateness, coherence, cultural relevance, and alignment with learning outcomes.

Content validation for IBRT module was performed by seven experts: two TESL educators, two module developer and three subject matter experts. The validity of the content was calculated using the percentage calculation method by Tuckman and Waheed (1981), using a questionnaire constructed based on Russell's (1974) model. The five items in the questionnaire were: (i) the content of the module meets the target population, (ii) the content of the module can be implemented smoothly, (iii) the time allocated for the content of the module is appropriate, (iv) the content of the module can improve learners' performance, and (v) the content of the module can improve learners' attitude toward excellence. A good content validation percentage was set at 70%, IBRT

module has achieved a content validity of 88.6% with a coefficient value at .89. Based on the result, the contents of this module are considered to have good validity.

The second part of the validation that focuses on the suitability of sessions and activities was performed to make sure the activities developed met the objectives and learning outcomes (Mohammad Aziz et al., 2015) as specified in the SBELC. The validation of the suitability of sessions and activities was performed by the same seven experts. The calculation of percentage from the score given indicated the suitability of session and activities in the IBRT module have achieved the valid measurement of 90.0% with a coefficient value at .90. This indicates that the activities developed in IBRT module have achieved a good validity measurement.

All validation outcomes including expert comments, checklist ratings, and CVI scores were thoroughly documented. These data informed iterative revisions to enhance the instructional flow, clarity of directions, and alignment of assessments with learning outcomes. By embedding a rigorous validation process, this step ensures that the module is pedagogically robust, contextually appropriate, and ready for broader classroom implementation.

DISCUSSION AND CONCLUSION

The implementation of the IBRT module revealed promising outcomes for enhancing ESL learners' reading comprehension, particularly in contexts with limited access to strategy-based instruction. Learners exhibited improved abilities in decoding, synthesising, and engaging with texts through the structured integration of inquiry and reciprocal strategies. Feedback from educators highlighted the module's adaptability and clarity, especially in scaffolding learners' metacognitive skills.

Importantly, the module addresses a critical gap in Malaysian ESL classrooms—namely, the lack of explicit and systematic strategy instruction. By embedding the reciprocal teaching strategies within the 5E model and ADDIE framework, the module supports differentiated instruction and fosters autonomous learning, which are essential for preparing learners to meet higher academic literacy demands.

Furthermore, as the determination of text readability ensures that the texts suit learners' levels of proficiency, the learners' interests are sustained. Accurate matching of text readability to learners' levels of reading proficiency ensures a more intuitive and relaxed reading experience. The importance of text readability precedes other elements of reading in the module. The optimisation of text readability considered the contents and sentence structure that best suited the differing needs and levels of proficiency of Form Four ESL learners. This warrants for the ease of reading, which results in sufficient attention focus and successful comprehension.

The study's rigorous validation process further affirms the module's instructional integrity. The combination of pilot testing, expert evaluations, and CVI analysis ensures that the design is not only pedagogically sound but also feasible for classroom implementation. While the study was conducted in a specific regional context, its systematic framework provides a transferable model that can be adapted across varied ESL settings.

In conclusion, this paper contributes to the field of instructional design by offering a clear, evidence-based, and theory-driven guide for developing reading comprehension modules. It reinforces the call for more structured and contextually relevant interventions in literacy education. Future research could expand on the module's impact through longitudinal studies or adaptation for digital platforms, ensuring continued relevance and scalability in an evolving educational landscape.

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