Teaching-Learning-Assessment Consistency of the 5E Teaching Model and Its Application of English Picture Book Teaching in Elementary School*

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The 5E model includes Engagement, Exploration, Explanation, Elaboration, and Evaluation, with "Evaluation" at the end, conflicting with teaching-learning-evaluation consistency. Thus, formative evaluation is integrated into the first four stages, and a summative evaluation table is designed for the fifth, enabling students to self-evaluate and reflect. Elementary school English picture book teaching is used as an example to demonstrate the optimized model's application.

Keywords: teaching and evaluation consistency, 5E teaching model, elementary English, picture book teaching

Introduction

Teaching-Learning-Assessment (TLA) integration uses assessment continuously to improve English teaching and learning (MOE of PRC, 2022, p. 3). From Bourdieu's (1998) field theory, the classroom is a "field" with distinct roles (teachers, students) and activities (teaching, learning, assessment). Teachers hold cultural capital (knowledge, experience) and social capital (status); students have varying degrees of both. Their interactions, shaped by habits, need dynamic adjustments for TLA consistency. Ongoing assessment and feedback help both refine behaviors to meet classroom needs, fostering students' core competencies.

The 5E model, based on Constructivist and Inquiry Learning Theories, includes five stages: Engagement, Exploration, Explanation, Elaboration, and Evaluation (Ruiz-Martń & Bybee, 2022, p. 21). Widely used in China, it is student-centered with coherent progression and practicality (Chang, 2018, pp. 59-61; HE & LIN, 2022, pp .60-65). Each stage has distinct functions, but assessment is isolated in the final stage, conflicting with TLA integration. Optimizing to embed assessment across all stages is vital for holistic teaching.

The Evaluation Optimization of 5E Model under the Perspective of Teaching-Learning-Assessment Consistency

In the traditional 5E model, evaluation occurs only at the final stage, often causing a "lag effect" that delays feedback and limits timely instructional adjustments. From a Teaching-Learning-Assessment (TLA) consistency standpoint, optimizing the model involves embedding formative assessment into the first four stages—Engagement, Exploration, Explanation, and Elaboration—while reinforcing summative assessment in the Evaluation stage. Formative assessment fosters real-time feedback and deeper engagement, while summative assessment should prioritize student self-assessment and reflection rather than rely solely on teacher judgment.

Formative Assessment in the 5E Model

Formative assessment, focusing on timely, process-oriented feedback (Stiggins, 2007, pp. 22-26) to boost learning, is analogous to users evaluating AI via context and experience (Tian & Fussell, 2024)—students interpret feedback through cognitive habits and prior knowledge. Integrating it into early 5E stages forms a dynamic feedback loop aligned with TLA. Stiggins (2007, pp. 22-26) identifies four types for 5E: (1) *Selective assessment* (multiple-choice/true-false): Ideal for Engagement (activating prior knowledge) and Explanation (checking comprehension); (2) *Communicative assessment* (group discussions/presentations): Suits Exploration (dialogue-driven inquiry) and Elaboration (flexible application); (3) *Expository assessment* (summaries/reflective writings): Useful in Explanation and Elaboration to evaluate understanding depth and writing; (4) *Performance-based assessment* (projects/role-plays): Fits Exploration and Elaboration, encouraging authentic application (e.g., recreating picture book stories).

It is important to note that these formative assessment methods are not fixed. Teachers can adapt and select appropriate strategies based on the instructional content and learners' needs.

Summative Assessment in the 5E Model

Summative assessment refers to the comprehensive evaluation conducted at the end of a teaching cycle, which may span a full or half semester (e.g., midterm/final exams) or a single lesson (Qiao, Sun & Cai, 2020, pp. 751-756). In shorter cycles, summative assessment often involves student- or teacher-led reflections on lesson effectiveness.

Student self-assessment, key to 5E summative assessment, fosters recognition of strengths/weaknesses and reflection. Perceptions of author identity influence evaluations (Tian et al., 2025, pp. 76-82), highlighting subjectivity in peer/self-assessment. Under TLA, teachers design goal-aligned self-assessment scales covering: (1) Knowledge Acquisition: Grasp of key concepts, language skills, and disciplinary knowledge; (2) Class Participation: Engagement in activities (discussions, tasks, question responses); (3) Learning Methods: Use of effective approaches (note-taking, critical thinking, planning); (4) Task Completion: Timely, high-quality completion of assignments (independently or collaboratively); (5) Reflection and Improvement: Ability to identify weaknesses, develop improvement strategies, and enhance self-regulation.

Through this process, students assess their own learning performance and adjust their approaches, while teachers gain insights to fine-tune future instruction. This reflective element fosters autonomy and promotes a student-centered learning environment.

The 5E model, under a TLA-integrated lens, is especially strengthened by its enhanced evaluation dimension, characterized by purposeful, multidimensional, and flexible assessment methods. Formative assessment is embedded throughout the Engagement, Exploration, Explanation, and Elaboration stages, adapting to teaching dynamics and emphasizing real-time feedback. The final Evaluation stage provides a summative assessment focused on holistic review of students' learning outcomes. This structured yet adaptable approach supports both continuous development and end-point reflection in the learning process. (Table 1)

Table 1

Evaluation of the 5E Teaching Model under the Perspective of Teaching-Learning-Evaluation Integration

5E Teaching model	Purpose of evaluation	Evaluation mode	Evaluation Subject
Engagement	Stimulate students' interest and introduce the subject	Communicative assessment: Stimulate students' thinking through short discussions and guide them to express their initial ideas. Selective assessment: checking students' initial understanding of core concepts and themes through multiple-choice and judgment questions.	Teacher
Exploration	Students explore independently and collect information	Expressive evaluation: assesses the accomplishment of learning tasks through students' completion of tasks in group work. Communicative assessment: assessing students' communication and collaboration skills through verbal interaction.	Teacher Students
Explanation	Teacher explains and students summarize to deepen understanding	Expository Evaluation: Assess students' ability to learn in depth through short-answer questions or group debriefings; Multiple-choice assessment: Quickly test students' mastery of core knowledge points by designing multiple-choice questions.	Teacher Students
Elaboration	Extending knowledge and applying it to real-world situations	Expressive evaluation: assessing students' ability to transfer innovations through role-playing, etc; Expository evaluation: assessing students' ability to synthesize practice through micro-presentations, etc.	Teachers Students
Evaluation	Overall evaluation to test students' learning outcomes	Students are asked to self-evaluate the learning outcomes of the lesson by designing an evaluation scale.	Students

In the optimized 5E model, evaluation occurs throughout teaching, helping teachers adjust strategies, providing timely feedback on students' progress, and maximizing learning effects. The paper uses teaching evaluation consistency to explain the model's application in elementary school picture book reading teaching.

The Application of the 5E Teaching Model and Teaching-Learning-Assessment Consistency in Elementary School English Picture Book Teaching

This case study uses *A House for Hedgehog* from the *Lisheng Creative English Picture Books* (Level 3) series (Foreign Language Teaching and Research Press). Narrated in third person, the story follows a small hedgehog who, seeking warmth, explores several animals' homes—none of which suit him. Eventually, he accidentally rolls into a pile of leaves that becomes his ideal home. The story delivers the theme: "*What suits you*

best is the best choice." With its vivid plot, colorful illustrations, and clear structure, the book effectively supports language comprehension and cognitive growth, making it suitable for upper primary English classes.

Within the 5E model, TLA alignment structures all phases around clear objectives. Teachers use strategies like group discussions and language tasks for mastery, with formative assessments (observation, performance evaluation) providing real-time feedback to refine instruction. This lesson adopts a task-based approach: students do descriptive/reflective activities linked to the picture book, using new language contextually. Assessments (oral presentations, group sharing) check internalization and application of target language, ensuring assessment reflects true outcomes and coherence across teaching, learning, and evaluation. It shows how 5E integrated with TLA enhances effectiveness and supports student-centered elementary English learning.

Based on the content of the picture book *A House for Hedgehog* and the principles of *the Activity-Based Approach to English Learning*, the learning objectives for this lesson are as follows:

By the end of this lesson, students can:

(1). identify and describe the characteristics of the homes of different animals—such as the otter, rabbit, and squirrel, and explain why these homes are not suitable for the hedgehog, using the sentence pattern: "*The _____'s house is _____, but _____.*"

(2). apply learned language to describe the features of each animal's home, and analyze and interpret the underlying theme of the picture book "*What suits you most is the best*".

(3). connect the theme with real-life or learning experiences by expressing and sharing personal events that reflect the principle *What suits you most is the best*, while also reflecting on their learning process and personal attitudes.

Teaching-Learning-Assessment Consistency in the Engagement Stage

[Teacher Activity] To introduce the topic, the teacher displays images of various animal homes (e.g., rabbit burrow, bird nest, otter den) and poses guiding questions such as: "*What do you see in these pictures?*" and "*Why do you think the hedgehog needs a new house?*"

[Student Activity] Students observe and describe the images using simple English (e.g., "*I can see a rabbit*") and attempt to speculate on the hedgehog's need for a new home, with the teacher offering language support.

[Evaluation Activity] The teacher conducts communicative assessment through open-ended questions (e.g., "*What do you think about the hedgehog's new house?*"), providing immediate verbal feedback to encourage engagement. Selective assessment methods, like quick multiple-choice or true/false questions, are also used to assess students' grasp of key concepts and the story's main theme.

[TLA Consistency] In the Engagement stage, the teacher uses visual aids and guided questions to spark interest, with formative assessment ensuring students grasp basics (addressing Objective 1). Selective and communicative assessments help gauge comprehension depth, guide instructional adjustments, and lay a foundation for subsequent learning.

Teaching-Learning-Assessment Consistency in the Exploration Stage

[Teacher Activity] After reading the picture book page by page, the teacher groups students to discuss, guiding them to describe the features of the animal homes the hedgehog visits and analyze why these homes are unsuitable for it.

[Student Activity] Students observe images of different animal habitats, analyze their features, and discuss in simple English why each home is unsuitable for the hedgehog.

[Evaluation Activity] The teacher evaluates students' engagement, accuracy of language use, and collaborative abilities by observing their performance during group discussions. For instance, students may respond to questions such as "*Why can't the squirrel's house work for the hedgehog?*" The teacher records responses and assesses the depth of students' understanding and the degree to which they complete the task—this constitutes performance-based assessment. Additionally, through verbal interactions such as "*Can you explain your idea more clearly?*" the teacher assesses students' communication and collaboration skills, which reflects communicative assessment.

[TLA Consistency] In the Exploration phase, teachers use group tasks to evaluate students' comprehension of the picture book and language application (targeting Objectives 1 and 2). Performance-based assessments check group task completion; communicative assessments gauge interaction and cooperation. Teachers adjust instruction accordingly.

Teaching-Learning-Assessment Consistency in the Explanation Stage

[Teacher Activity] After reading the picture book aloud, the teacher organizes students into small groups to discuss the animal homes the hedgehog visits and analyze why they are unsuitable.

[Student Activities] Students observe the illustrations, describe habitat features, and explain in simple English why each home does not meet the hedgehog's needs.

[Evaluation Activity] The teacher uses performance-based assessment by observing how students analyze and discuss the story during group work (e.g., answering "*Why can't the squirrel's house work for the hedgehog?*"). Communicative assessment is also applied through teacher-student interactions, such as prompts like "*Can you explain your idea more clearly?*" to evaluate clarity, engagement, and collaboration.

[TLA Consistency] In the Exploration stage, group tasks help students investigate animal habitats and describe them with target language, focusing on Objectives 1 and 2. Formative assessments gauge comprehension and language use; interaction-based evaluation captures collaboration. Teachers adjust instruction based on performance to support ongoing understanding and language development.

Teaching-Learning-Assessment Consistency in the Elaboration Stage

[Teacher Activity] The teacher prompts students to connect the picture book's theme—"*What suits you most is the best*"—to their personal experiences, asking reflective questions like, "*Can you think of a time when something was just right for you?*"

[Student Activity] Students share personal stories that align with the theme, using learned sentence patterns in group discussions. They actively listen and provide feedback to peers, fostering mutual understanding and communication.

[Evaluation activity] Performance-based assessments, such as role-plays, are used to evaluate students' ability to transfer knowledge and apply the theme creatively. In addition, expository assessments—like short presentations or "micro-speeches"—gauge whether students can clearly express the theme and relate it to real-life experiences.

[TLA Consistency] In this Elaboration stage, students move from comprehension to personalization, using language meaningfully while deepening their grasp of the story's message. This phase targets Objective 3. Through a mix of performance and expository assessments, teachers evaluate both language fluency and conceptual understanding, ensuring students apply their learning in context.

Teaching-Learning-Assessment Consistency in the Evaluation Stage

[Teacher activity] The teacher concludes the lesson by guiding students to reflect on their learning journey with questions such as, "*What have we learned from the story of the Hedgehog?*" Emphasis is placed on the theme: "*What suits you best is the best.*" Students then complete a structured self-evaluation form to assess their learning outcomes.

[Student Activity] Students retell the story in English using learned vocabulary and sentence patterns (with optional illustration support), then self-assess via a rubric with clear criteria.

[Evaluation Activity] The teacher conducts summative evaluation based on students' language use, participation, and grasp of the story's theme. Meanwhile, students self-assess via a rubric (Table 2) covering comprehension, language performance, collaboration, and reflection.

[TLA Consistency] The Evaluation stage synthesizes learning by combining teacher-led summative assessment with student self-reflection. This dual approach reinforces the TLA-integrated design of the lesson, ensuring that both cognitive understanding and learner autonomy are meaningfully assessed.

Table 2
A House for Hedgehog Self-evaluation Form

	Self-reflection	Stars
Knowledge Acquisition	I can describe the homes of different animals in the pictures, and express them using the sentence pattern "The ____'s house is ____, but ____".	★ ★ ★ ★ ★
Class Engagement	I actively participated in group discussions, answered questions, and voluntarily shared my own ideas.	★ ★ ★ ★ ★
Learning Methods and Strategies	I used effective methods (e.g., note-taking, questioning, task planning) to help me learn.	★ ★ ★ ★ ★
Tasks Completion	I completed the classroom activities and was able to solve problems independently or cooperatively.	★ ★ ★ ★ ★
Reflection and Improvement	I was able to summarize my learning, find deficiencies, and make improvement plans (e.g. strengthening vocabulary memory, participating in group activities, etc.). I was able to summarize my learning, find deficiencies, and make improvement plans (e.g. strengthening vocabulary memory, participating in group activities, etc.).	★ ★ ★ ★ ★

The self-assessment scale aligns each dimension with instructional goals: (1) Knowledge Acquisition checks mastery and creative use of language structures (consistency of comprehension and use); (2) Class Engagement reflects on content understanding and participation (alignment with objectives); (3) Learning Methods and Strategies encourages evaluating approaches (linking effective learning to goals); (4) Task

Completion measures application, collaboration, and problem-solving (consistency of performance and outcomes); (5) Reflection and Improvement assesses self-evaluation ability (promoting goal-oriented learning).

[TLA Consistency] In the Evaluation phase, the teacher uses the self-assessment rubric to guide students' reflective assessment, helping them clearly recognize achievements and weaknesses. This encourages goal-setting and supports Objective 3: fostering students' ability to self-reflect, understand their learning progress, and pursue continual improvement.

Conclusion

The 5E model is popular among K-12 English teachers for its clear sequence, but its traditional "Evaluation" stage, disconnected from other phases, conflicts with Teaching-Learning-Assessment integration. This study optimizes it by embedding formative and summative assessments across all phases, demonstrated via primary English picture book teaching. The optimized model better enhances language proficiency, autonomous learning, and critical thinking, while enabling targeted teacher feedback and improved instruction.

References

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice, 5*(1), 47.

Chang, W. L. (2018). 5E English reading teaching pointing to the development of thinking quality. *Teaching and Management,* (34), 59-61.

HE, A. J., & LIN, M. M. (2022). Problem-oriented 5E reading teaching. *Foreign Language Teaching in Elementary and Middle Schools(Secondary), 45*(05), 60-65.

Ministry of Education of the People's Republic of China. (2022). *English curriculum standards for compulsory education*. City: Beijing Normal University Press.

Qiao, W. L., Sun, H., & Cai, H. S. (2020). Strengthening the connotation of summative evaluation to comprehensively test the achievement of medical training objectives. *City: Journal of Physiology, 72*(06), 751-756.

Ruiz-Mart ń, H., & Bybee, R. W. (2022) The cognitive principles of learning underlying the 5E Model of Instruction. *IJ STEM Ed, 9*, 21.

Stiggins, R. (2007). Assessment through the student's eyes. *City: Educational Leadership, 64*(8), 22-26.

Tian, X., & Fussell, S. R. (2024). Could Chinese users recognize social bots? Exploratory research based on Twitter Data. In C. Stephanidis, M. Antona, S. Ntoa, and G. Salvendy (Eds.), *HCI International 2024 Posters. HCII 2024. Communications in Computer and Information Science* (Vol. 2119). City: Cham, Springer.

Tian, X., Hahn, H. M., Leon Carangui, M. K., Si, Y., Chen, J., Li, X., & Fussell, S. R. (2025). Assessing human evaluations of cover letters written or edited by AI and non-native English speakers. Companion *Proceedings of the 2025 ACM International Conference on Supporting Group Work (GROUP 25)* (pp. 76-82). City: Association for Computing Machinery.

Wang, F., Wu, Y.(2023). Research Status and Evolution of the 5E Model of Instruction in China: A Visual Analysis Based on CiteSpace Knowledge Mapping Software. *City: Yunnan Chemical Industry, 50*(12), 9-15.