

Chapter 23

Fostering Student Engagement and Higher-Order Thinking Classroom in the Age of AI

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A. THE CONTEMPORARY CHALLENGE

In contemporary classrooms, sustaining student engagement and fostering higher-order thinking has become increasingly challenging. Much classroom interaction continues to emphasize rote learning (Nuravianti et al., 2025; Luckin, 2024; Abah & Vilakazi, 2026) and surface-level participation (Khong & Tanner, 2024; Redmond & Lock, 2008), limiting opportunities for students to exercise their critical thinking, creativity, and problem-solving, which are central to meaningful learning. Evidence suggests that when students engage in higher-level cognitive processes, such as critical analysis and problem-solving, their engagement is more sustained (Rossouw & Steenkamp, 2025). Classroom interactions must therefore be deliberately structured to cultivate a positive, enduring state of engagement characterized by enthusiasm, commitment, and total immersion in tasks (Arini & Wahyudin, 2022; Loyola-Carillo et al., 2025).

In the era of Artificial Intelligence, tools such as chatbots, automated writing assistants, and translation apps have become highly accessible, offering language learners efficiency and convenience in completing classroom tasks and assignments. While these tools enhance productivity and accessibility (Harjanti et al., 2025; Ibrahim et al., 2024); Luckin, 2024), they also pose a significant threat: sacrificing deep learning for dependency and critical thinking for passive learning. Integrating AI into daily routines is increasingly inevitable; however, delegating tasks to technology must not come at the expense of human critical thinking. When students rely too heavily on AI-generated answers, they bypass critical engagement in learning, limiting opportunities for higher-order thinking such as analytical reasoning, synthesis, and evaluation of AI-provided answers.

With the integration of AI in education, it has never been more urgent than now to embed higher-order thinking in dialogic classroom interactions, where students are encouraged to question, evaluate, and co-construct meaning. Because learning is fundamentally relational (Go & Atienza, 2019) and socially mediated (Vygotsky, 1978), classroom discourse remains the central arena for cultivating engagement and nurturing reflective, critical thinkers, with AI tools serving as supports rather than substitutes. Classroom interactions thus provide rich environments that foster student engagement by offering academic learning opportunities and resources for social connection with teachers, peers (Allen, Pianta, Gregory, Mikami, & Lun, 2011; Wang & Eccles, 2012a; Wang & Hofkens, 2020), and AI (Go & Atienza, 2019).

In summary, these challenges emphasize the urgent need to reimagine classroom interactions that balance technological integration and the cultivation of higher-order thinking. Pedagogical practices must prioritize critical engagement, creativity, and collaborative meaning-making. The following section outlines practical solutions teachers can use to transform classroom interactions into spaces where student engagement and higher-order thinking are actively nurtured in the age of AI.

B. THE PRACTICAL SOLUTIONS

In the age of AI, education must shift from content delivery to designing learning experiences that nurture critical thinking, the hallmark of human intellect, which is extremely vital in the age of AI. Since AI can generate content quickly, the real value lies in how students engage in dialogue, exploration, and problem-solving. By focusing on classroom interactions that foster higher-order thinking, teachers help learners grow their potential and contribute meaningfully to their communities (Go & Atienza, 2019).

Teacher's Questioning

Teachers' questioning stimulates interaction and thinking, initiates interaction, and transforms a monologic, teacher-dominated classroom into a dialogic, learner-centered classroom, where learners' opinions, experiences, and insights become the central focus of classroom interaction. The functions of questions are ordered according to Bloom et al. (1956) and Anderson & Krathwohl (2002): low-order thinking skills (remembering, understanding, and applying) and high-order thinking skills (analyzing, evaluating, and creating).

The goal of classroom interaction is student learning, and effective teaching involves asking the right questions to support it. Teachers may use Worley's (2015) framework, which includes closed-ended types such as grammatically-closed and conceptually-closed (GC-CC) questions, *such as "Do you like the taste of durian?"*, and grammatically-open and conceptually-closed (GO-CC) questions, *such as "What facts can you tell me about Jakarta?"* to initiate interaction. Subsequently, once the interaction is underway, teachers can follow it up with more open-ended questions, such as grammatically-closed and conceptually-open (GC-CO), *such as "Is the mind the same as the brain?"* as well as grammatically-open and conceptually-open (GO-CO) questions, *such as "Why do people choose wrongly?"*

The most important thing to consider when asking questions is genuine and authentic interest rather than procedural display (Bloome et al., 1993). Authentic questions (Schaffalitzky, 2022) contain either

one or some of the following four criteria: 1) *pedagogical*, when the questions are used to stimulate dialogue, not to assess students; 2) *epistemic*, when motivated to acquire information from students; 3) *social*, when motivated to know what someone else thinks as a person; and 4) *content*, when the questions are about deep puzzles, fundamentally open and easily understood. The examples are:

- “*What connections can you make between today’s text and your own experiences?*” (pedagogical)
- “*What strategies do you use when you encounter unfamiliar vocabulary?*” (epistemic)
- “*What part of this story resonates most with you, and why?*” (social)
- “*Why do you think technology continues to evolve over time?*” (content)

Teachers can vary their questions depending on their functions (Bloom’s Taxonomy), namely:

- Factual Recall: to check prior knowledge and content-specific information, such as “*Do you know where Pangeran Diponegoro came from?*” “*Can you tell me about your experience?*”
- Language-specific (metalinguage): to teach or practice the language, such as “*Can you pronounce this word?*” “*What is ‘gengsi’ in English?*”
- Procedural/logistical: to manage classroom behaviors and expectations, such as “*Could you speak a little louder?*” “*Who is the leader of your group?*”
- Analytical/critical: to promote deeper thinking, such as “*What do you mean by saying that?*” “*Can you elaborate on the reasons why you did what you did?*”
- Reflective: Encourages self- and metacognitive awareness, such as “*Are you shocked because of it?*” “*How did you respond to the judgment from others?*”

To sum up, teachers can design their questions using these frameworks to engage students and to stimulate deeper cognitive processing in the classroom. These strategies are more effective when

teachers allow sufficient, strategic wait time, use questions to scaffold students' learning, and sequence them to build increasing complexity.

Teachers' High-Level Evaluation and Uptake

In classroom interaction, teachers often use the I-R-E (Initiation-Response-Evaluation) sequence. After a student responds, instead of giving dismissive, low-level evaluative replies such as *"Good," "Thank you,"* or *"Nice"* and moving on, teachers can provide a high-level evaluation of students' responses that pushes the conversation further. For example, they might ask students to explain their reasoning, compare ideas, connect answers to bigger concepts, and elicit students' analytical, evaluative, and creative thinking skills (Bloom, 1956; Anderson & Krathwohl, 2002). This kind of response keeps the dialogue open, encourages deeper thinking, and shows students that their contributions matter. By turning evaluation into a new question, teachers invite more voices, spark creativity, and build a classroom culture where students actively shape the learning process.

Some high-level evaluation phrases are: *"That's wonderful. Could you tell me more about it?" "Wow, did you say 'awful?' Could you elaborate?" "Ah, you ate seblak? What is that?"* In these examples, teachers evaluate students' responses by giving positive comments, repeating students' words, and then probing for more elaboration. Overall, high-level evaluation is a key mechanism for fostering richer student-driven interaction, thereby promoting deeper learning.

After giving a high-level evaluation, teachers can keep the conversation going by using uptake or picking up on something a student has just said and turning it into the next question (Collins, 1982; Nystrand & Gamoran, 1991; 2003). For example, if a student explains an idea, the teacher might ask, *"Can you give me an example of that?"* or *"How does that connect to what we discussed earlier?"* This shows students that their contributions are valued and encourages deeper thinking. Uptake helps the class stay focused, builds a natural flow of dialogue, and makes students feel like active participants in shaping the lesson. By acknowledging, repeating, or rephrasing

students' ideas, teachers can probe further, clarify meaning, and keep the discussion coherent and engaging, which can lead to students' greater achievement (Demszky et al., 2021).

Briefly, high-level evaluation and uptake help teachers keep conversations alive, show students that their ideas matter, encourage deeper thinking, initiate coherent discussion, and empower students' active role in classroom learning.

Translanguaging Practices

Translanguaging is a relatively new term, but actually people have been doing it for centuries. At its core, it simply means using all the languages students know to make sense of learning, share ideas, and communicate with each other. When students draw on their full linguistic resources, they are not merely repeating information; instead, they think, question, and create meaning together (Li, 2018). This positions them as active learners, problem-solvers, not merely passive recipients of knowledge (Garcia, 2014, p. 8).

In practice, translanguaging opens up space for students to use their languages flexibly to understand lessons, explain concepts, and collaborate with peers (Canagarajah, 2011; Cenoz & Gorter, 2021; Garcia & Wei, 2014; Martin-Bertran, 2014; Rajendram, 2021). It helps them connect new knowledge to what they already know, affirm their identities as multilingual and multicultural individuals (Daniel & Pacheco, 2016; Pacheco & Hamilton, 2020), and complete tasks more effectively (Phyak et al., 2022). Teachers can encourage students to brainstorm in their first language, use bilingual materials, or discuss ideas across languages before presenting in English. Such practices make tasks more manageable, build confidence, and prepare students to communicate effectively in diverse settings (Hasbi, 2025).

In short, translanguaging helps students use all their language resources to learn more effectively, build confidence, and connect with peers. When teachers encourage this flexibility, the classroom becomes a space where students feel empowered to share ideas and take ownership of learning.

Collaborative Learning Structure

Building on the previous solutions, another powerful way to foster engagement and higher-order thinking is through collaborative learning structures, where students work together to co-construct knowledge, solve problems, and learn from one another (Rai, 2024). For example:

- *Think-Pair-Share*

Think-Pair-Share is an effective strategy for fostering engagement and stimulating critical thinking by giving them time to think, talk with a partner, and share ideas with the class. It makes lessons more enjoyable, keeps students active, and encourages cooperation, placing them at the center of learning (Apriyanti & Ayu, 2020).

- *Jigsaw Reading/Discussion*

The Jigsaw method engages students in small groups where each learns and shares part of the material so everyone benefits. Jigsaw improves understanding, builds knowledge collaboratively, and fosters engagement, critical thinking, stronger performance, and greater satisfaction (Montazeri Khadem, Khoshkholgh, & Dolatabadi, 2022).

- *Problem-Based Learning tasks*

Problem-Based Learning (PBL) helps students build critical thinking, problem-solving, creativity, and analytical skills. These essential 21st-century skills can enrich students' personal and professional lives. In addition, PBL is a student-centered approach that can encourage active learning engagement (Lim, 2023).

Collectively, these collaborative learning structures are powerful in keeping students engaged and encouraging them to exercise higher-order thinking. These methods enable teachers to create classrooms where learning is active, cooperative, and meaningful, equipping students with the skills needed for real-world success (Nor et al., 2026).

C. THE FUTURE DIRECTION

In an AI-driven world where content can be generated instantly, education must shift its focus from *what is learned* to *how it is learned*.

The true value lies in the process of thinking, questioning, and interacting because learning is not just about acquiring answers but about building understanding through struggle, mistakes, and discovery (Fajaria et al., 2026). Skipping the cognitive struggle creates “cognitive debt”, where students lose the chance to grow their reasoning and problem-solving abilities.

Teachers therefore play a crucial role as mediators, connecting students with one another and with the wider world (Go & Atienza, 2019). Classroom interactions become the bridge where knowledge is co-constructed, meaning is negotiated, and higher-order thinking is nurtured (Hasbi, 2026). To do this, education must prioritize designing learning processes that emphasize exploration, collaboration, and reflection over rote content delivery.

Looking ahead, this shift has clear implications:

- *Implementation guidelines* must emphasize process-oriented teaching rather than content-heavy curricula.
- *Teacher training* should prepare educators to facilitate dialogue, scaffold thinking, and integrate AI tools without replacing human reasoning.
- *Assessment practices* need to move beyond memorization, focusing instead on evaluating creativity, problem-solving, and critical engagement.

By embracing these directions, education can remain a fertile ground for meaningful learning opportunities, ensuring that, even in an AI-saturated age, students continue to develop the uniquely human capacities of critical thought, creativity, and human connection.

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