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IMPLEMENTATION OF THE ASICC LEARNING MODEL BASED ON LESSON STUDY TO IMPROVE CRITICAL THINKING SKILLS OF STUDENT

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Abstract

Critical thinking skills involve logical and reasonable thinking activities that focus on making informed decisions regarding problems faced. Based on the results of observations carried out in class XI-8 SMA Negeri 2 Kediri, the data obtained indicate that the level of critical thinking skills among students is 50.7%. To overcome the problem, an effective learning model is needed to improve students' critical thinking skills, namely the ASICC learning model (Adapting, Searching, Interpreting, Creating & Communicating) which guides students to be able to reflect on themselves to achieve learning objectives, collect key information, solve contextual problems, share ideas, and produce a certain product. The purpose of this study is to determine the improvement of critical thinking skills of class XI-8 students of SMAN 2 Kediri on biology material through the ASICC learning model based on Lesson Study. This study employed a classroom action research (CAR) method, combined with lesson study, as described by Kemmis and McTaggart, and was conducted at SMAN 2 Kediri from February 2025 to March 2025. The data processed shows an increase in students' critical thinking. Data were collected through observations, interviews, post-test questions, and an assessment rubric. This research was analyzed using Zubaidah's Essential Skills of Thinking rubric. This study revealed an increase in students' critical thinking skills, from 62.4% in cycle 1 to 76.8% in cycle 2.

Keywords: ASICC, Critical thinking skills

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Abstract. Keterampilan berpikir kritis mencakup aktivitas berpikir yang logis dan rasional yang berfokus pada pengambilan keputusan secara tepat terhadap permasalahan yang dihadapi. Berdasarkan hasil observasi yang dilakukan di kelas XI-8 SMA Negeri 2 Kediri, diperoleh data bahwa tingkat keterampilan berpikir kritis siswa berada pada angka 50,7%. Untuk mengatasi masalah tersebut, diperlukan model pembelajaran yang efektif guna meningkatkan keterampilan berpikir kritis siswa, yaitu model pembelajaran ASICC (Adapting, Searching, Interpreting, Creating & Communicating). Model ini membimbing siswa untuk mampu melakukan refleksi diri dalam mencapai tujuan pembelajaran, mengumpulkan informasi penting, menyelesaikan masalah kontekstual, berbagi gagasan, dan menghasilkan suatu produk. Tujuan penelitian ini adalah untuk mengetahui peningkatan keterampilan berpikir kritis siswa kelas XI-8 SMAN 2 Kediri pada materi biologi melalui penerapan model pembelajaran ASICC berbasis Lesson Study. Penelitian ini menggunakan metode Penelitian Tindakan Kelas (PTK) yang dipadukan dengan pendekatan lesson study sebagaimana dijelaskan oleh Kemmis dan McTaggart, dan dilaksanakan di SMAN 2 Kediri pada Februari 2025 hingga Maret 2025. Data yang diperoleh menunjukkan adanya peningkatan keterampilan berpikir kritis siswa. Pengumpulan data dilakukan melalui observasi, wawancara, soal post-test, dan rubrik penilaian. Analisis penelitian menggunakan rubrik Essential Skills of Thinking dari Zubaidah. Hasil penelitian menunjukkan peningkatan keterampilan berpikir kritis siswa, dari 62,4% pada siklus 1 menjadi 76,8% pada siklus 2.

Kata-kata Kunci: ASICC, kemampuan berpikir kritis

Introduction

Education in the twenty-first century is shaped by rapid technological advancement, complex social change, and an increasingly interconnected flow of information. In this climate, classrooms are expected not merely to transmit facts but to cultivate learners who can search, select, weigh, and synthesize evidence to make prudent decisions. Global and national policy discourses alike converge on a common refrain: students must be prepared with competencies that enable them to navigate uncertainty, collaborate across differences, and solve ill-structured, real-world problems. In the Indonesian context, this orientation has been articulated in curricular guidance that emphasizes exploration, problem identification, analytical reasoning, and cooperative work as core pillars of learning. The cluster of competencies typically referred to as “21st-century skills” is often summarized as the 4Cs—critical thinking, creativity, communication, and collaboration—which together signal a shift from rote reception to active knowledge construction (Kemdikbud, 2013; Trilling & Fadel, 2009).

Among these, critical thinking functions as a keystone capability that both supports and is reinforced by the other three Cs. In broad terms, critical thinking entails logical and reasonable processes focused on arriving at well-founded judgments in response to concrete issues or questions. Classic formulations emphasize purposeful, self-regulatory judgment that relies on analysis, inference, evaluation, and explanation, while contemporary classroom-oriented definitions highlight the integration of information and communication skills with the appraisal of evidence and arguments (Ennis, 1993; Zubaidah, 2020). In practical terms, the goal is not only to teach students what to think about scientific or social phenomena, but to equip them with how to think—how to interrogate claims, weigh

alternatives, justify positions, and revise conclusions in light of new reasons and data. These orientations imply corresponding demands on curriculum, pedagogy, and assessment: tasks must be open enough to invite reasoning, lessons must structure space for inquiry and dialogue, and evaluative tools must make reasoning processes visible so that targeted feedback can be provided (Ennis, 1993; Zubaidah, 2020).

Yet, translating that vision into everyday classroom practice is difficult. Observational findings from Class XI-8 at SMA Negeri 2 Kediri illustrate several familiar challenges that impede the development of critical thinking during instruction. While students engaged in group work, a subset continued to use their mobile phones for non-academic purposes (e.g., online shopping and gaming), and a few others showed signs of disengagement or drowsiness. These behavioral indicators co-occurred with muted participation in small-group discussion—precisely the arena in which ideas are ordinarily tested, elaborated, and contested. In line with these behavioral patterns, the measured baseline of students' critical thinking stood at 50.7%, pointing to a need for both motivational and structural supports. Importantly, interviews with the biology teacher revealed that written communication and critical thinking had not been systematically assessed with explicit rubrics; feedback processes were predominantly informal and observational. Together, these findings suggest two intertwined gaps: a pedagogical gap (how learning activities are designed and facilitated) and an assessment gap (how reasoning processes are captured and fed back to learners). Addressing both is essential for sustainable gains in critical thinking.

One promising route is to adopt an instructional model that explicitly sequences inquiry, sense-making, creation, and communication while centering collaboration. The ASICC learning model—Adapting, Searching, Interpreting, Creating, and Communicating—offers such a scaffold. Conceptually, ASICC situates students as active agents who adapt prior conceptions to new tasks, search strategically for relevant information, interpret findings in relation to disciplinary ideas, create products or solutions that embody their understanding, and communicate their reasoning to others. Each phase is designed to stimulate particular facets of critical thinking: "adapting" surfaces and challenges initial assumptions; "searching" exercises information literacy and relevance judgments; "interpreting" demands analysis and evaluation; "creating" consolidates synthesis and application; and "communicating" requires explanation, justification, and responsiveness to critique. Because these phases are enacted in social settings, the model also cultivates collaboration and academic discourse, thereby aligning with the 4Cs agenda. In short, ASICC makes the processes of thinking visible and improvable by structuring classroom time around iterative cycles of inquiry and expression (Santoso et al., 2021).

In addition to its theoretical fit, the ASICC model responds directly to the local needs identified at SMAN 2 Kediri. First, by foregrounding purposeful searching and interpreting, the model redirects device use toward academically productive behaviors; students' attention is channeled from distraction to evidence gathering and analysis. Second, the emphasis on collaborative creation and communication provides structured prompts for each student to contribute, thereby countering passive participation. Third, because the model's phases map naturally to analytic rubrics, it supports the introduction of transparent assessment criteria that can guide both teaching and learning. In particular, rubrics derived from established frameworks—such as Zubaidah's Essential Skills of Thinking—offer a language for describing, evaluating, and coaching the component moves of critical reasoning in essays and discussions alike. Consequently, the ASICC model serves as both a pedagogical and an assessment scaffold, linking what happens during group work to what is measured and fed back to learners (Zubaidah, 2020; Zubaidah et al., 2015).

The alignment between ASICC and biology learning goals is especially notable. Biology classes often require students to connect observable phenomena with abstract models (e.g., cellular processes, ecological interactions), to evaluate explanations, and to apply principles to novel contexts. The "searching" and "interpreting" phases, for instance, can be oriented toward analyzing data sets, diagrams, and experimental results; the "creating" phase can involve designing investigations, building explanatory models, or composing evidence-based arguments; and the "communicating" phase can be realized as short position papers, poster sessions, or structured peer instruction. When students cycle through these activities with adequate scaffolding and feedback, they practice the procedural aspects of science as well as the epistemic virtues that characterize scientific reasoning (e.g., coherence, parsimony, responsiveness to anomalies). In this way, the ASICC model supports not only better outcomes in immediate tasks but also the gradual formation of disciplinary habits of mind.

Embedding ASICC within a Lesson Study (LS) frame further strengthens implementation. Lesson Study offers a disciplined, collaborative process for planning, enacting, observing, and reflecting on a research lesson. By tying the ASICC sequence to LS cycles—Plan (design and anticipate student thinking), Do (teach the lesson and collect evidence), and See (analyze student responses and refine the lesson)—teachers collectively examine how specific instructional moves elicit specific forms of student reasoning. This continuous improvement loop helps the teaching team tune prompts, materials, and facilitation strategies so that each ASICC phase reliably evokes the intended thinking processes. It also institutionalizes the use of shared rubrics and observation protocols, ensuring that assessment practices coevolve with pedagogy. In the present context,

combining Classroom Action Research (CAR) with LS enables iterative testing and refinement across two cycles, with descriptive analysis of rubric-based essay responses providing the primary evidence of change. The tight coupling of model, method, and measurement is what makes the approach both pedagogically plausible and empirically informative.

Crucially, the rationale for this study is not only to raise performance indicators but to reconfigure the ecology of the classroom so that critical thinking can thrive. The baseline portrait—off-task device use, low discussion intensity, and limited formal assessment—reflects systemic patterns seen in many secondary settings where time pressures, content coverage demands, and assessment traditions can tilt practice toward transmissive lessons. The ASICC-LS approach seeks to alter that equilibrium by creating predictable routines of inquiry that make space for students' ideas and by aligning evaluation with the reasoning that underwrites quality work. When students know that their analysis, evidence selection, and explanation will be attended to and discussed, they have reason to invest in those processes; when teachers have a shared rubric language and an observation lens, they can offer targeted prompts and feedback in the moment. Over time, these micro-interventions accumulate into a classroom culture where claiming, reasoning, and revising become normal.

Finally, the choice to focus on Class XI-8 biology content reflects a pragmatic opportunity to study critical thinking in a domain where evidence, models, and explanations are central. The observed starting point—a critical thinking level of 50.7%—offers a concrete benchmark for monitoring change across interventions, while the integration of essay-based assessment provides a window into students' reasoning beyond correct-answer metrics. The anticipated benefits are twofold: (1) improved student outcomes as measured by rubric-aligned indicators of analysis, evaluation, and synthesis, and (2) an instructional "through-line" that teachers can continue to use beyond the study period. By documenting not just scores but also the lesson structures and artifacts that produced them, this work contributes to a practical knowledge base for colleagues who face similar constraints and aims in their own classrooms. In sum, grounding the intervention in an articulated model (ASICC), embedding it within a disciplined improvement methodology (Lesson Study), and assessing it with an established thinking rubric (Zubaidah) together constitute a coherent strategy for advancing critical thinking aligned with national and international expectations for 21st-century learning (Kemdikbud, 2013; Trilling & Fadel, 2009; Zubaidah, 2020).

Building on this background, the study proceeds to examine whether, and to what extent, implementing the ASICC model within biology lessons at SMAN 2 Kediri can measurably elevate students' critical thinking performance across iterative cycles of planning,

instruction, observation, and reflection. By closely tying instructional design to assessment and by deliberately structuring opportunities for students to adapt, search, interpret, create, and communicate, the intervention seeks not merely to produce higher scores but to precipitate durable shifts in how students approach problems, engage with peers, and justify their conclusions. If successful, the approach offers a template that can be adapted across subjects and grade levels to cultivate the forms of reasoning that twenty-first-century education demands.

Method

This research is a classroom action research that refers to Kemmis and McTaggart (1988) combined with Lesson Study (LS) consisting of 2 cycles. The stages of PTK-LS begin with (1) planning, which falls under the plan stage in LS, (2) treatment and observation, which fall under the do stage in LS, and (3) reflection, which falls under the see stage in LS. In this research, 2 cycles are planned. The PTK-LS cycles can be seen in Image 1.

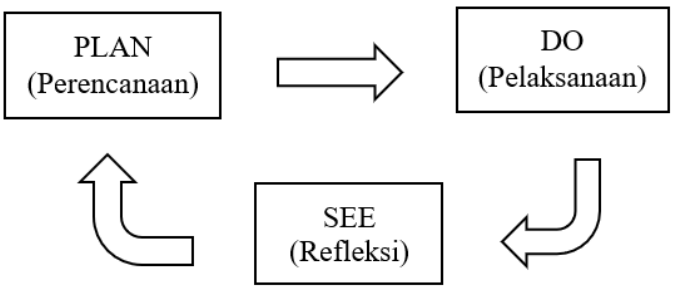

Image 1. Kemmis and Mc Taggart Models (1988)

This research was conducted at SMAN 2 Kediri. The subjects of this study were 38 students. The research was carried out in February – March 2025. The research instrument to assess critical thinking skills was an essay question analyzed using the critical thinking skills rubric from (Zubaidah et al., 2015). The data obtained were analyzed using descriptive analysis. The level of students' critical thinking skills was analyzed using intervals. The data intervals can be seen in Table 1.

Table 1. Interval Scale

No.	Category	Value
1.	Very good	80-100
2.	Good	66-79
3.	Enough	56-65
4.	Lacking	40-55
5.	Failed	0-39

(Arikunto, 2009)

The data obtained is then grouped based on critical thinking criteria according to (Zubaidah et al., 2015) as shown in the following Table 2:

Table 2. Criteria for Critical Thinking Skills

Criteria	Score
The critical thinking skills of the students have not developed	1-3
The critical thinking skills of the students are developing	4-5

(Zubaidah *et al*., 2015)

Result and Discussion

Result

The results of the research conducted in class XI-8 of SMAN 2 Kediri on the subject of biology, specifically on the digestive and respiratory systems, showed an improvement in critical thinking skills using the ASICC learning model. The results of the critical thinking skills can be seen in Table 3.

Table 3. The average critical thinking skills of students

Stages	Average	Category
Cycle 1	62,4%	Enough
Cycle 2	76,8%	Good

Table 4 shows that the percentage of critical thinking skill scores obtained from the evaluation questions given to students at the end of each cycle. In cycle 1, it falls into the sufficient category, and in cycle II, it falls into the good category using the ASICC learning model. This is evidenced by the average critical thinking skills of students in cycle 1 being 62.4% and in cycle 2 being 76.8%, which means there was an increase of 14.4% in the transition from the sufficient category to the good category.

The following are the results of the criteria for students' critical thinking skills based on the scoring according to (Zubaidah, 2018) found in Table 4.

Table 4. criteria of student skills

Criteria	Cycle 1	Cycle 2
Not developed	18	7
Developed	20	31

Based on Table 4, the criteria for critical thinking skills in cycle 1 show that there are 18 students whose critical thinking skills have not developed, while 20 students have developed their critical thinking skills. In cycle 2, there are 7 students whose critical thinking skills have not developed, and 31 students whose critical thinking skills have developed.

Discussion

During the learning process, students are presented with problems or cases, while the teacher acts as a facilitator, providing guidance and direction to students in responding to the issues presented. This aligns with the research by Ariyani & Prasetyo (2021), which

reveals that critical thinking skills can be strengthened when teachers provide guidance to solve the problems faced by students.

In the adapting stage, students' critical thinking skills are honed through relevant prompting questions. This is manifested by presenting real problems or cases in the form of news texts and educational videos. As students respond to the prompting questions, their critical reasoning skills are directly sharpened and become evident. Prompting questions are also used to develop cognitive abilities in exploring students' critical thinking related to the material to be studied, providing space for students to freely answer and express their opinions (Pandu et al., 2023). This stage allows them to analyze, articulate arguments, and respond to current issues with deep and structured thinking.

In the searching stage, in cycle 1, students are assigned to find important information from various sources, and in cycle 2, students are asked to identify key sentences in a scientific article and write them down in the student worksheets. This aligns with the opinion of Manurung et al. (2023) that the ability to analyze obtained information and explore relationships between new findings, accompanied by clear arguments, data, and facts, can enhance students' critical thinking skills. At this stage, they will sharpen their critical thinking skills through the discovery of facts and new information from various sources, including scientific articles. This process will directly strengthen their ability to evaluate information and build a deep understanding of a given information.

In the interpreting stage, students are presented with a current problem, followed by 4 questions and 3 jumping tasks, which are higher-level questions aimed at enabling students to articulate their critical thoughts on how to solve and face the problem when answering questions in the interpreting stage. This aligns with the opinion of Samad et al. (2018) that providing jumping tasks can motivate students to seek more diverse solutions and think broadly. Jumping tasks can enhance students' discussion activities in problem investigation, thereby training critical thinking skills, namely analyzing information (Putri et al., 2020). In this stage, students are also organized into groups, as text-based and problem-based discussions are effective ways to train students to think critically (Cynthia & Sihotang, 2023).

In the creating & communicating stage, students are guided to create a poster and a simple slogan containing disturbances in the digestive and respiratory systems and prevention efforts. This can train students to think critically and analytically in solving everyday problems. They will learn to address relevant issues in daily life creatively and understandably while communicating important information to the public. This aligns with the opinion of Santoso et al. (2022) that it can train students to think critically and analytically in solving everyday problems with relevant evidence. The creation of products in learning helps students express and integrate their understanding of the lessons (Suharyati & Putu, 2023).

According to Setiani (2024), the ASICC learning model is effective in improving students' critical thinking skills in science subjects, particularly biology. Critical thinking skills are necessary for students to solve problems encountered in daily life using the science concepts they have learned, such as being able to make decisions and having a scientific attitude in the process of solving problems (Wulandari et al., 2021).

Conclusion

Based on the research results, the ASICC learning model can enhance students' critical thinking skills. This is evidenced by an increase in the average scores on the post-test of students with critical thinking questions based on the ASICC learning model, which were 62.4% in cycle 1 and 76.8% in cycle 2. In cycle 1, there were 18 students whose critical thinking skills had not yet developed and 20 students whose critical thinking skills had developed. In cycle 2, there were 31 students whose critical thinking skills had developed and 7 students whose critical thinking skills had not developed.

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