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Implementation of Learning Evaluation Based on Jean Piaget's Cognitive Development Stages in Islamic Religious Education

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Abstract

Assessment in Islamic Religious Education (PAI) holds a crucial role, not only as a measure of academic achievement but also as a means for internalizing Islamic values. However, in practice, evaluations in the field often neglect to consider the stages of students' cognitive development, resulting in a mismatch between the form of evaluation and students' readiness to think. This study aims to examine the implementation of Jean Piaget's cognitive development theory in the design of PAI learning assessments, with a focus on its principles, forms, benefits, and challenges. The method employed is library research using a qualitative approach. Data were obtained from relevant literature and critically analyzed through a hermeneutic approach. The findings indicate that a Piaget-based assessment approach requires the adjustment of instruments according to students' cognitive characteristics at each stage: symbolic and intuitive for the preoperational stage, concrete and contextual for the concrete operational stage, and analytical and reflective for the formal operational stage. Cognitively appropriate evaluations have been proven to enhance learning effectiveness, increase learning motivation, and strengthen the development of students' Islamic character. Nevertheless, its implementation faces challenges in terms of teacher readiness, availability of media, and time constraints. Thus, this approach encourages the need for transformation in PAI assessment practices to become more humanistic, progressive, and aligned with children's psychological development.

Keywords: Character development, cognitive development, Islamic Religious Education, Jean Piaget, learning assessment.

Abstrak

Penilaian dalam Pendidikan Agama Islam (PAI) memegang peran penting tidak hanya sebagai pengukur capaian akademik, tetapi juga sebagai sarana internalisasi nilai-nilai keislaman. Namun, pelaksanaan evaluasi di lapangan sering kali tidak mempertimbangkan tahapan perkembangan kognitif peserta didik, sehingga menimbulkan ketidaksesuaian antara bentuk evaluasi dan

kesiapan berpikir siswa. Penelitian ini bertujuan untuk mengkaji implementasi teori perkembangan kognitif Jean Piaget dalam desain evaluasi pembelajaran PAI, dengan fokus pada prinsip, bentuk, manfaat, dan tantangan penerapannya. Metode yang digunakan adalah studi kepustakaan (library research) dengan pendekatan kualitatif. Data diperoleh dari literatur yang relevan dan dianalisis secara kritis melalui pendekatan hermeneutis. Hasil penelitian menunjukkan bahwa pendekatan evaluasi berbasis Piaget menuntut penyesuaian instrumen dengan karakter berpikir peserta didik di setiap tahap: simbolik dan intuitif untuk tahap praoperasional, konkret dan kontekstual untuk tahap operasional konkret, serta analitis dan reflektif untuk tahap operasional formal. Evaluasi yang disesuaikan secara kognitif terbukti meningkatkan efektivitas pembelajaran, motivasi belajar, serta memperkuat pembentukan karakter Islami peserta didik. Namun, implementasinya menghadapi kendala dalam hal kesiapan guru, ketersediaan media, dan waktu pelaksanaan. Dengan demikian, pendekatan ini mendorong perlunya transformasi dalam praktik evaluasi PAI agar lebih humanistik, progresif, dan sesuai perkembangan psikologis anak.

Kata kunci: Evaluasi pembelajaran, Jean Piaget, perkembangan kognitif, Pendidikan Agama Islam, pembentukan karakter.

Introduction

Islamic Religious Education (PAI) has a strategic role in shaping the personalities of students who are not only intellectually intelligent, but also spiritually, emotionally, and socially mature. As part of the national education system, PAI is aimed at building noble character based on Islamic values and equipping learners with the ability to understand and apply religious teachings contextually in daily life¹. In this educational process, learning evaluation plays an important role as a tool to measure the success of material mastery and the effectiveness of internalizing Islamic values into students. Unfortunately, the implementation of PAI evaluation in many educational institutions is still dominated by conventional approaches that do not optimally consider the cognitive development aspects of learners².

The main problem that arises is the mismatch between the form of evaluation and the stages of children's cognitive development. Most evaluations are uniform and memorization-based, without regard to the ability to think that develops gradually with age³. For example, elementary school students who are still at the concrete thinking stage are often given abstract-based evaluation questions, while secondary students who are already capable of formal operational thinking are evaluated with factual memorization questions. This condition not only has an impact on the inaccuracy of evaluation results, but also reduces learning motivation and hinders the effective formation of students' Islamic character⁴.

Various solutions have been offered in the practice of Islamic religious education. Some studies apply project-based

evaluation models, oral tests, to simple case studies to adjust the form of assessment to the abilities of learners⁵. For example, reveals that the use of project-based evaluation improves students' understanding and cooperation attitude compared to the conventional test method. On the other hand⁶, shows that reflective questions and hypothetical scenarios based on Islamic values effectively improve students' critical thinking skills at the formal operational stage. The strength of these solutions is the increased relevance between the evaluation and learners' cognitive abilities, as well as the impact on learning motivation.

However, the main weakness is the absence of a systematic and comprehensive evaluation model based on the stages of cognitive development, especially in the context of Islamic Education. Some solutions are partial and have not been integrated with scientifically proven cognitive development theories such as Jean Piaget's model⁷. As a result, the implementation of evaluation in schools still tends to be uniform, without a clear map of the most appropriate evaluation instrument according to the stage of thinking of students.

Jean Piaget's theory of cognitive development provides a systematic offer in understanding how children process information and build understanding,

ranging from sensorimotor, preoperational, concrete operational, to formal operational stages⁸. Each of these developmental stages has unique characteristics that should be used as the basis for designing learning evaluation forms. With this approach, the evaluation form not only functions as a measuring tool for learning outcomes, but also as a means of detecting the thinking process, stimulating cognitive development, and shaping Islamic character according to age level⁹.

Previous studies have examined the application of Piaget's theory in general learning and religious education. Studies by Ibda (2015) and Marinda (2020) found that cognitive development-based learning approaches are effective in improving children's understanding according to their stage of thinking¹⁰. Also proved that elementary school students who were evaluated using concrete methods were better able to solve problems and understand Islamic values in real terms compared to conventional written test methods. However, there has been no study that comprehensively designs a PAI learning evaluation model based on Jean Piaget's stages of cognitive development.

From this explanation, it can be seen that there is a *research gap* that previous studies are still limited to the learning aspect or the implementation of project-based

evaluation without a complete cognitive development framework. Studies on the systematic design of Piaget-based PAI evaluation, which integrates the forms, principles, benefits, and challenges of implementation at various age levels of learners, are still rarely found. This is the novelty of this research. The main objective of this study is to examine the implementation of Jean Piaget's cognitive development theory in PAI learning evaluation design, by formulating an evaluation model that is adaptive to the students' thinking stages and analyzing the benefits and challenges of its implementation in the process of internalizing Islamic values. This research also aims to offer a Piaget-based PAI evaluation design that is applicable, progressive, and relevant to children's psychological development.

The results of this study are expected to make a theoretical contribution to the development of cognitive development-based Islamic education evaluation theory, as well as practical benefits for PAI teachers in designing evaluations that are more humanistic, progressive, and effective. In addition, this research can be a reference for policy makers and curriculum developers to integrate the cognitive development approach into the national evaluation standards for Islamic religious education.

That way, evaluation is not only oriented to academic results, but also serves as an instrument of Islamic character development that is intact and contextual.

Method

This research uses a qualitative approach with a *library research* method. Data is obtained through searching and analyzing written sources such as books, scientific articles, journals, and academic documents that discuss Jean Piaget's cognitive development theory and its application in evaluating Islamic Religious Education learning. The literature reviewed includes Piaget's classic works such as *The Psychology of the Child* (1969), as well as contemporary references on Islamic education evaluation from authors such as Rahmat, Listiana, and Daulay. The sources were selected based on relevance, actuality and academic credibility. Data were analyzed using content analysis techniques, to identify the relationship between the stages of cognitive development and the corresponding PAI evaluation design. Validity was maintained through source triangulation and critical reading with a hermeneutical approach to Islamic education texts. This study aims to produce a conceptual synthesis that can enrich the discourse of Islamic education evaluation that is contextual, fair, and in line with the development of learners.

Results and Discussion

Concept of Learning Evaluation

Learning evaluation is a systematic, continuous, and planned process that aims to collect valid and relevant information to measure the extent to which learning objectives have been achieved¹¹. This process is not only result-oriented, but also pays attention to the dynamics and quality of the learning process that occurs¹². In educational practice, evaluation has a role as a tool for control, reflection, and decision making for teachers, students, and educational institutions¹³. In the context of Islamic education, evaluation has a broader dimension than the secular approach. It does not only rely on cognitive aspects or knowledge alone, but also includes affective (attitude) and psychomotor (behavior) dimensions rooted in the values of Islamic teachings¹⁴. Evaluation becomes a means to assess the extent to which students are able to understand, internalize, and practice Islamic values in real life¹⁵. Therefore, learning evaluation in Islamic education must be integrative, which unites intellectual aspects with spiritual and moral.

Learning evaluation is also a systematic effort to obtain accurate and objective information to determine the effectiveness of the learning process¹⁶. This includes careful planning, the use of appropriate instruments, and responsible interpretation of the results. Evaluation does

not only serve as the end of the learning process, but also as a diagnostic tool that can be used to improve the quality of ongoing learning¹⁷. Furthermore, evaluation needs to be understood as a scientific and strategic process that reflects the essence of transformative and innovative education. This approach demands the integration of information technology, the utilization of neuroscience, and authentic assessments that represent the real abilities of learners in everyday life¹⁸.

From a philosophical point of view, evaluation in Islamic education is a manifestation of the value of al-ḥisāb, which is the calculation of human deeds that will later be accounted for before Allah SWT. In this framework, evaluation is not merely technical, but also ethical and transcendental. Evaluation is a mirror of the moral responsibility between educators and students, which is not only oriented to academic success, but also to the formation of morals and spiritual awareness¹⁹. Thus, it can be concluded that the definition of learning evaluation in Islamic education includes three main aspects: technical as a process of collecting data to assess learning success, strategic as a tool for reflection and improvement of the educational process, and normative-spiritual as part of the formation of an Islamic personality who is morally and religiously responsible. The integration of these three aspects makes

evaluation in Islamic education a holistic and civilized process, in line with the purpose of Islamic education itself: to form a complete human being (*insān kāmil*) who is knowledgeable, faithful, and has noble character.

Objectives of Learning Evaluation

Learning evaluation aims to obtain an objective picture of the effectiveness of the learning process and the quality of students' learning outcomes. Evaluation does not only function as a final assessment, but also as a reflective instrument that encourages continuous improvement by teachers, students, and educational institutions²⁰. In Islamic education, evaluation covers cognitive, affective and psychomotor aspects, and is oriented towards the formation of character and spirituality of students. Evaluation aims to ensure that the education process does not only convey knowledge, but also instills Islamic values holistically²¹. More specifically, the objectives of learning evaluation in Islamic education include:

1. Knowing the mastery of teaching materials, to ensure the effectiveness of knowledge transfer to students.
2. Assessing the effectiveness of teacher teaching, as a basis for reflection and development of learning strategies.

3. Providing a basis for improving the learning process, through information obtained during and after learning takes place.
4. Measure the internalization of Islamic values, such as honesty, responsibility and discipline in learners' lives.
5. Encouraging the holistic development of learners, including intellectual, emotional, and spiritual intelligence towards the formation of a *kamil* person.

Through these objectives, evaluation plays a role in ensuring the vision of Islamic education is achieved: forming individuals who are intelligent, moral, and contributive to society.

Types and Functions of Learning Evaluation

Evaluation in Islamic learning has strategic functions in supporting the over all success of education. These functions are operational and directly related to the implementation of learning²², among others:

a. Diagnostic Function

To identify learners' readiness, background, and potential before learning begins. This evaluation helps the teacher design an appropriate approach, including

spiritual readiness in accepting Islamic values.

b. Formative Function

Conducted during the learning process to provide feedback that helps teachers dynamically improve teaching strategies. In Islamic education, this function also includes monitoring the progress of internalizing students' moral and moral values.

c. Summative Function

Used at the end of a learning period to assess final results and make decisions such as graduation or grade promotion. In the Islamic context, summative evaluation also pays attention to indicators of the achievement of students' religious and moral values.

d. Innovative Function

Evaluation plays a role in developing the quality of education in a sustainable manner. This includes the utilization of technology, learning data analysis, and neuroscience approaches to improve the quality of learning in line with Islamic values²³. Thus, the function of evaluation in Islamic learning is not only as a measurement and assessment tool, but also as an instrument of improvement, development, and character building of

students in line with the overall objectives of Islamic education.

Jean Piaget's Cognitive Development Theory

Cognitive development is a fundamental aspect in the study of developmental psychology, which explains how individuals understand and interpret the world as they age. One of the most influential theories in understanding this process was proposed by Jean Piaget, a Swiss psychologist. Piaget viewed that children are active subjects in constructing their knowledge through direct interaction with the environment, not just passive recipients of information²⁴.

According to Piaget, cognitive development occurs gradually through a series of stages that are universal, invariant, and structured²⁵. Each stage reflects a distinctive form and quality of thinking and becomes the foundation for the next stage. Piaget calls this developmental process the result of two main mechanisms, namely *assimilation* (integration of new experiences into existing cognitive structures) and *accommodation* (modification of cognitive structures due to new experiences), which dynamically form a process of *equilibration* or mental balance²⁶.

Sensorimotor Stage (Ages 0–2 Years)

The sensorimotor stage is an early period of cognitive development in which infants build a basic understanding of the world through coordination between sensory and motor activities. At this stage, the child begins to construct initial schemas through reflexive and exploratory actions²⁷.

The hallmarks of this stage include:

- a. Coordination between sensory perception and motor activity;
- b. Development of practical action schemes;
- c. Gradual emergence of understanding of causality;
- d. The emergence of the concept of *object permanence*, which is the realization that objects exist even when they are not visible²⁸.

This stage is divided into six sub-stages, ranging from reflex activities to the ability to use simple mental representations to solve problems.

Preoperational Stage (Ages 2–7 Years)

This stage is characterized by the development of symbolic functions. Children begin to use language, pictures and symbols to represent objects and experiences. Although representation abilities increase, children's thinking is still egocentric, rigid, and intuitive²⁹.

Characteristics of preoperational thinking include:

- a. Egocentrism, which is difficulty in understanding other people's point of view;
- b. Animism and artificialism in interpreting objects and events;
- c. Centration (focus on one aspect only);
- d. Difficulty understanding the principle of conservation³⁰.

This stage marks the transition to logical thinking, but is still limited to concrete and perceptual things.

Concrete Operational Stage (Ages 7–11 Years)

At this stage, children begin to be able to perform logical mental operations on real objects or events. The child's cognitive structure begins to allow for systematic and rational thinking, although it is still limited to concrete things³¹.

Developed abilities include:

- a. Conservation principle (amount, mass, volume remain even if the appearance changes);
- b. Reversibility, realizing that an action can be reversed;

- c. Classification and seriation of objects based on logical attributes;
- d. A more objective understanding of causality³².

This stage is logical, but still relies on real objects, not yet on propositions or abstractions.

Formal Operational Stage (Age 12 and Above)

This stage reflects cognitive maturity characterized by the ability to think abstractly, hypothetically, and deductively. Adolescents begin to be able to develop hypotheses, test possibilities, and draw logical conclusions from abstract premises.

Formal operational thinking is characterized:

- a. The ability to formulate propositions and think logically in a formal way;
- b. Hypothetical-deductive reasoning;
- c. Systematic and scientific thinking;
- d. Ability to evaluate ideas or arguments based on their logical structure.

This ability allows adolescents to consider possibilities that have never been experienced directly, and build idealism in assessing reality.

Implications in Education

Piaget's theory has profound implications in education. He emphasized the importance of active, explorative and contextual learning. Teachers should not only convey information, but create an environment that encourages students to build their own understanding according to their stage of development. For example, the use of concrete tools is more appropriate for students of concrete operational age, while abstract discussions and case studies are more effective at the formal operational stage.

Implementation of Jean Piaget's Theory in Learning Evaluation

Basic Principles of Implementation

The implementation of Jean Piaget's cognitive development theory in learning evaluation departs from the deep understanding that every learner experiences intellectual development in a gradual and structured manner. Each stage, whether sensorimotor, preoperational, concrete operational, or formal operational, has unique cognitive characteristics that reflect the way children process information, interpret experiences, and develop understanding. Therefore, the form and approach of evaluation must be designed differentially and contextually to be in line with the thinking capacity at that stage. Learning evaluation in the Piagetian framework is not just a tool to measure the

final achievement in the form of right or wrong answers, but more than that, it is a means to explore the thinking process, detect reasoning patterns, and understand how learners build new knowledge through assimilation and accommodation. For example, in preoperational children, evaluation is more effective if it is delivered in visual, narrative and symbolic forms because children are not yet able to think logically systematically. In contrast, learners at the formal operational stage can be given evaluations in the form of analytical questions, hypothetical scenarios, and problem-solving tasks that require abstract thinking.

With this principle, the teacher not only acts as an assessor, but also as a facilitator of cognitive development who strategizes evaluation as an integral part of constructive, individualistic and developmental learning (developmental approach). This approach makes evaluation a reflection of the dynamics of student thinking, as well as a pedagogical tool that contributes to the formation of scientific

reasoning and reflective thinking characters. Furthermore, the implementation of Piaget's theory in evaluation requires flexibility in the preparation of instruments, sensitivity to cognitive diversity, and awareness of the dynamics of learning of students as beings who continue to grow. Cognitive stage-based evaluation is not only more psychopedagogically fair, but also more effective in facilitating the achievement of educational goals that are whole and oriented towards the development of the whole person.

Example of Evaluation Design by Developmental Stage

The implementation of Piaget's theory in learning evaluation encourages design that is adaptive to the thinking characteristics of learners at each stage of development. Evaluation is not only academic, but also supports value formation, especially in the context of Islamic education. The following is an example of evaluation design that corresponds to each stage:

Table 1. Cognitive Development Stages and Appropriate Forms of Islamic Religious Education (PAI) Evaluation

Cognitive Development Stage	Age	Main Thinking Characteristics	Appropriate Forms of PAI Evaluation
Sensorimotor	0–2 years	- Relies on sensory and motor activities - No complex mental representations	- Not relevant for formal evaluation - Habituation of values through interaction and observation of basic behaviors
Preoperational	2–7 years	- Symbolic, intuitive, egocentric - Thinking based on perception	- Islamic-themed picture stories - Oral question-and-answer - Role-playing of basic moral values
Concrete Operational	7–11 years	- Logical thinking about concrete objects - Ability to classify and sequence	- Mini projects (Islamic values posters) - Story-based quizzes - Simple case studies from daily life
Formal Operational	12+ years	- Abstract, deductive, hypothetical - Propositional analysis	- Reflective essays on Islamic values - Debates and presentations on Islamic ethics - Social project-based or mini research evaluations

Pre-operational Stage (Age 2-7 Years)

At this stage, children are not yet capable of systematic logical thinking. They rely on intuition, direct experience, and simple symbols. Thinking is still egocentric and limited to visual perception.

Appropriate evaluation design:

- 1) Use of pictures, symbols, and stories:

Evaluation can be done by asking the child to explain the meaning of an Islamic-themed picture (e.g. mosque, person praying, crescent moon) or answer simple questions after hearing an Islamic story (such as the story of the Prophet or a moral example).

- 2) Oral and visual based evaluation:

Teachers can conduct light interviews or use question and answer games with visual aids to assess children's recognition of basic worship (e.g. ablution or prayer movements) and values such as honesty, courtesy and sharing.

- 3) Role simulation and expression:

Children can be asked to demonstrate good behavior in certain social situations, such as helping a friend, greeting, or waiting in line, which also serves as an affective evaluation of Islamic values.

- a. Concrete Operational Stage (Age 7-11 Years)

Children at this stage begin to be able to think logically about real objects, understand cause-and-effect relationships,

and can classify and organize information concretely.

Appropriate evaluation design:

- 1) Experiment-based or hands-on questions:

For example, students are asked to conduct a small experiment (observing the change of objects in ablutions, or comparing the results of honest and dishonest actions in a story) and then explain the results.

- 2) Simple case studies:

Teachers can present daily life scenarios related to Islamic values (e.g. losing a friend's money in class) and ask students to explain the appropriate action based on Islamic teachings.

- 3) Evaluation through educational games:

Using quizzes or card-based games that teach basic Islamic laws, manners and morals through concrete questions and action choices.

- 4) Mini-project assessment:

Such as making a poster on the value of honesty, a report on sharing with friends, or observations of worship practices at home.

- b. Formal Operational Stage (12 years old and above)

Learners at this stage have the ability to think abstractly, think hypothetically-deductively, and are able to build arguments and assess ideas logically. They can understand Islamic teachings more deeply and reflectively.

Appropriate evaluation design:

- 1) Analysis, abstraction and complex problemsolving questions:

Example: Analyze social issues such as corruption or poverty from the perspective of Islamic values, and formulate solutions based on Qur'anic verses and hadith.

- 2) Evaluation through essays and written reflections

Students write essays on themes such as "Why is justice a key principle in Islam?" or "The role of Muslim youth in protecting the environment".

- 3) Islamic debates and scientific presentations:

For example, a debate on "Technology and Ethics in Islam" or a presentation on the history of Muslim scientific thought.

- 4) Independent or group projects:

Such as compiling a school da'wah bulletin, creating an Islamic-themed social

campaign, or a small research on the application of Islamic values in the surrounding environment.

Implications of Implementing Piaget's Theory in Evaluation

The implementation of Jean Piaget's cognitive development theory in the learning evaluation system has a significant impact on the pedagogical approach, the quality of assessment, and the development of learners. Evaluation tailored to the stage of cognitive development not only strengthens the connection between students' way of thinking and teaching materials, but also creates a more humane, inclusive and effective learning system.

Benefits

One of the main benefits of applying the Piagetian approach to evaluation is the increased relevance and effectiveness of learning. As each form of evaluation is designed to reflect the thinking characteristics of learners at each stage of development³³, evaluation instruments become more targeted. For example, learners at the concrete operational stage will find it easier to understand and solve practice-based problems than abstract ones. This allows teachers to:

- a. Identify gaps in understanding more accurately,

- b. Design appropriate follow-up learning,
- c. Encourage active learning that focuses on the thinking process, not just the end result.

In the context of Islamic education, the benefits of a holistic evaluation approach become very relevant, especially when associated with the spirit of *tarbiyah* which emphasizes comprehensive development of all aspects of learners' minds, hearts and behaviors. Islamic education does not only aim to develop cognitive aspects, but also includes affective and psychomotor dimensions that are aligned with the principles of *ta'dib*, *tarbiyah*, and *ta'lim*. Evaluation in this perspective not only serves as a tool to measure academic achievement quantitatively, but also becomes an important instrument in fostering noble moral values and forming a complete Islamic personality³⁴. In line with that, evaluation that is integrated with Islamic values can encourage the internalization of religious teachings into students' daily lives, as well as strengthen their character in facing social and moral challenges in the modern era³⁵.

Challenges

Despite its many advantages, implementing this approach also presents a number of challenges. One of the main challenges is the need for teacher training.

Not all educators have a good understanding of the stages of cognitive development³⁶, so pedagogical training is needed to enable them to do so:

- a. Design evaluation forms that are appropriate to the students' stage of thinking,
- b. Interpret evaluation results as indicators of thinking processes, not just true-false,
- c. Develop rubrics that support holistic evaluation.

In addition, this approach also requires more time to implement, especially at the formative evaluation stage which emphasizes process observation. In addition, teachers also need special tools, such as visual media, concrete practice materials, or case study scenarios that are appropriate to the local context and Islamic values.

Impact on Learner Motivation and Development

Evaluation based on cognitive stages has a positive impact on learning motivation and learners' psychological development. When students feel that the form of evaluation is in accordance with their abilities, they tend to be more confident, less afraid of failure, and more enthusiastic in following the learning process³⁷. The sense

of success felt internally will strengthen *intrinsic motivation* and curiosity which is the core of the learning process according to Piaget³⁸. Lebih Furthermore, this approach also pays attention to the dimension of moral and spiritual development, especially when the evaluation integrates affective aspects and Islamic values. Thus, this approach supports the formation of learners who are not only cognitively intelligent, but also emotionally mature and have Islamic character.

Conclusion

Based on the results of the study, it can be concluded that the cognitive development of learners according to Jean Piaget is divided into four stages, namely sensorimotor (0-2 years), preoperational (2-7 years), concrete operational (7-11 years), and formal operational (12 years and over), where each stage has thinking characteristics that determine children's readiness to receive, process, and evaluate information. Therefore, the principles of effective learning evaluation must be adjusted to the thinking structure of students at each stage. In the early stages, evaluation is symbolic and visual, in the middle stage based on concrete experience, and in the final stage is reflective and analytical, with the basic.

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