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IMPLEMENTATION OF JEAN PEAGET'S THEORY OF CONTRUCTIVISM IN LEARNING: A LITERATURE REVIEW

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Abstract. The theory of constructivism, developed by Jean Piaget, emphasizes that knowledge is constructed through direct experience and social interaction. The implementation of constructivist principles in learning aims to create an environment that supports students' active exploration and deep understanding. This article examines various methods of applying Jean Piaget's theory in educational contexts, including problem-based learning, projects, hands-on experiments, and group discussions. The method used in this research is a literature review by reviewing several relevant literature studies related to constructivist learning. Where this learning was initially teacher-centered, constructivism has become student-centered to help them better understand abstract concepts. Although there are challenges in implementation such as teacher readiness and limited resources, the application of constructivism theory provides an opportunity to create a more meaningful and effective learning experience. The result of the literature review is that Jean Piaget's theory of constructivism in learning provides a strong framework for enhancing the learning experience, so by applying these principles, educators can create a more effective learning environment and holistically support students' cognitive development.

INTRODUCTION

Learning is a process of interaction between students and teachers and the process of transferring knowledge as part of learning. The process of changing behaviors and attitudes is the result of experience and practice, which, of course, cannot be separated from the role of the teacher. This is because the teacher is a facilitator and protagonist in organizing the desired learning pattern (Sunanik, 2014). The learning process is very effective when students can communicate directly with the objects being studied. This is also very helpful in improving the students' understanding by using the current technological developments (N.K. Masgumelar et al., 2019). Technology greatly supports the learning process, the learning materials are very easy to access, the learning process can be done online or anywhere through the Zoom platform, Google Meet, etc. (Rondonuwu et al., 2021). Piaget's theory of constructivism changed the traditional view of education, which states that students are actively involved in their own learning process, not just passively receiving information. This theory emphasizes that learning is a process of building individual experiences and understanding of the environment. In the context of education, this calls

for a more active and collaborative approach to learning, where students act as active learners (Purnadewi & Widana, 2023). Currently, technology is developing and changing rapidly, so responding to these changes requires the right theories, methods and designs as education progresses through the learning process (Masgumelar, 2021).

Developing students' potential to the fullest is one of them. Understanding learning theory is very important for teachers in teaching students. The learning process in schools is closely related to learning theory (Mytra et al., 2022). Constructivism emphasizes the importance of direct experience and social interaction in the learning process. By emphasizing student activity, this theory promotes a more participatory and relevant education in which students not only receive information, but also engage in exploration, discussion, and reflection (Widana et al., 2024). This approach is particularly relevant in a variety of disciplines, including math, science, and language arts, where conceptual understanding and critical skills are essential. As the times change, the challenges in education become more complex. The quality of learning that affects students' cognitive development is a major concern (Mokalu et al., 2022).

The urgency of research focused on literature review on constructivism can be seen from the importance of this approach in the world of education and learning. Constructivism, which emphasizes that learning is an active process in which students construct knowledge based on their experiences, is considered relevant to creating a more effective and personalized learning environment (Sumandya et al., 2023). Literature review related to constructivism is important to (1) identify challenges and opportunities, where by conducting a comprehensive literature review, researchers can find patterns of challenges faced in implementing constructivism as well as solutions that may have been proposed in previous studies, (2) develop relevant learning approaches, where this review can also help in formulating recommendations related to methods and strategies that are more relevant to factual conditions in the field, (3) facilitate innovation in education: By understanding the latest developments in constructivism, teachers and other educators can be inspired to implement more innovative approaches that meet the needs of students.

The theoretical basis of constructivism is crucial to this study because it provides a philosophical and practical foundation for how ideal learning should take place. The theory not only provides an in-depth understanding of how students construct knowledge, but also guides the design and evaluation of learning practices aimed at improving the effectiveness and relevance of learning in the real world. By understanding the principles of constructivism, this research can evaluate existing learning practices, identify gaps between theory and reality in the field, and formulate more targeted recommendations in the implementation of constructivist learning.

Cognitive Developmental Theory Jean Piaget is one of the major pioneers of constructivism who introduced the theory of cognitive development. According to Piaget (1970), learning occurs through a process of assimilation and accommodation, in which individuals adjust their mental schema to accommodate new information. Piaget divided children's cognitive development into four stages: sensorimotor, preoperational, concrete operational, and formal operational. Each stage has distinctive ways of thinking that influence how children make sense of the world (Piaget, 1972). His literature confirms that learning should be adapted to students' stage of cognitive development in order to be more effective (McLeod, 2018).

Therefore, the application of Piaget's principles of constructivism in educational practice needs to be further investigated to understand its impact on the teaching and learning process. By examining the implementation of this theory, it is hoped that effective strategies can be found to improve the quality of education and optimize student potential. Based on the above introduction, researchers can investigate and examine constructivist learning theory in relation to learning, and the results of this study can later be used as a reference or source of information for teachers who want to apply Jean Piaget's constructivism theory in learning.

METHOD

The method used in this research is to use the literature review method with a qualitative approach where researchers will analyze and conduct an in-depth study of various journal articles that are in accordance with Jean Piaget's theory of constructivism obtained from several international journals, accredited and unaccredited national journals with the time span of publication of the reviewed literature set in the last 10 years (2014 to 2024). The selection of this range aims to get the latest perspectives and understand the latest developments in the theory and application of constructivism. and how the implementation of this learning theory in learning. Data from the literature will be analyzed using a thematic analysis technique, where each piece of literature will be coded based on the main themes or topics that arise in the research, such as theoretical aspects, application in education, challenges in implementation, and expected outcomes. This thematic analysis will help categorize the information based on certain themes and make it easier to construct a consistent argument.

RESULTS AND DISCUSSION

The following table provides a sample of the literature reviewed in connection with the constructivism literature review. Each article in the table is from a reputable journal or proceedings and covers important aspects of constructivism theory and applications in education.

Table 1. Sample of Literature Reviewed

No	Author Name	Article Title	Year	Journal
1	Smith, L.	"Jean Piaget: Cognition, learning, and epistemology"	2019	Journal of Cognitive Development (E-ISSN 2809-1922)
2	Phillips, D. C., & Soltis, J.	"Perspectives on Learning and Piaget's Influence in Education	2015	Educational Psychology Review (E-ISSN1925-475X)
3	Canggih G. Farunik	"Teori Perkembangan Kognitif Jean Piaget sebagai Dasar Aplikasi dalam Filsafat Pendidikan Konstruktivisme"	2020	Jurnal Filsafat Pendidikan
4	Udin Juhrodin	"Jean Piaget: Teori dan Implementasi"	2022	Jurnal Pendidikan
5	Canggih G. Farunik	"Teori Perkembangan Kognitif Jean Piaget sebagai Dasar Aplikasi dalam Filsafat Pendidikan Konstruktivisme	2020	Jurnal Filasafat Pendidikan

6	Ratna Dewi	"Teori Belajar Jean Piaget"	2020	Jurnal Pendidikan
7	Siti Aisyah	"Teori Perkembangan Kognitif Jean Piaget"	2014	Al-Ta'dib: Jurnal Pendidikan Islam
8	Lourenço, O.	"Piaget and Vygotsky: Many resemblances, and a crucial differenc	2015	New Ideas in Psychology
9	Blake, B., & Pope, T.	"Developmental psychology: Incorporating Piaget's and Vygotsky's theories in classrooms	2018	Journal of Cross-Disciplinary Perspectiv
10	Brown, A., & Reeve, R.	Cognitive Load and Piagetian Stages of Development in Classroom Instructio	2020	Educational Psychology Quarterly

Basic Principles of Piaget's Constructivism

The theory of constructivism, pioneered by Jean Piaget, has become one of the fundamental approaches in education. Piaget, a Swiss psychologist, argued that knowledge is not simply received from the environment, but is constructed by individuals through active interaction with the world around them. It is in this context that children are considered as active learners, who construct their understanding through the process of assimilation and accommodation. Herliani et al (2021), state that Piaget is known as the first constructivist figure who believes that a person's intellectual abilities are obtained through the process of finding a balance between what is felt and what is known, and on the other hand, as a result of this learning theory, students must be able to adapt appropriately. Jean Piaget's constructivism theory has several basic principles that become the foundation of the learning process.

The following is an explanation of these principles, namely: (1) Student activity, where students must be actively involved in the learning process. Piaget argues that knowledge is built through direct experience. By participating in activities that trigger critical thinking and exploration, students can understand concepts more deeply, (2) Direct experience where Piaget emphasizes the importance of direct experience in building understanding. For example, through experiments, projects or practical activities, students can relate theory to reality, (3) Interaction between students is essential in building understanding. Discussion and collaboration in groups support social learning, where students exchange ideas and perspectives, (4) Knowledge construction is built by individuals through the process of assimilation and accommodation. Assimilation is the process by which individuals integrate new information into existing knowledge schemes, while accommodation is the adjustment of those schemes to accommodate new information, (5) Piaget divided cognitive development into four stages: sensorimotor, preoperational, concrete operational, and formal operational. Each stage has different characteristics and cognitive abilities, which affect the way students understand and learn. Educators need to consider students' developmental stages to design appropriate learning experiences, (6) the process of reflection is very important in constructivist learning. Students need to reflect on their learning experiences to understand what they have learned and how they think (Supardan, 2016). Twomey Fosnot in Amineh & Dafatgari (2015) defines constructivism

based on four principles: (1) learning depends on what individuals already know, (2) new ideas occur when individuals adapt and change their old ideas, (3) learning involves discovering ideas rather than mechanically collecting a series of facts, (4) meaningful learning occurs through rethinking old ideas and coming to new conclusions about new ideas that contradict our old ideas. In addition, Muzakki, et al. (2021) also emphasized that independent learning is very suitable in the theory of constructivism learning according to Maria Montessori. According to Maria Montessori, independent learning and self-directed learning by students will be able to hone the abilities and sensory-motor development of students so that the learning they get becomes more meaningful.

Implementation in The Learning Context

Constructivism requires a teacher who moves as a facilitator, where the teacher's most important task is to help and guide students to find new knowledge without being directly involved in the student's learning process, so that students can find their knowledge more meaningfully between the knowledge they have and the new knowledge we will seek and involvement in the learning process. Brooks (1993) in Amineh & Asi (2015) summarises some important parts in terms of references related to what a constructivist teacher is like: a) directing students to take more initiative; b) using a variety of tools so that students are more involved and encouraged to use existing tools; c) inviting students to discuss first to see the extent of students' knowledge before giving them new knowledge; d) inviting students to be actively involved in the discussion process; e) instructing students to ask questions openly so that other students actively respond to these questions; f) involving students in experiences that show differences in the knowledge they already have, and then students liven up the atmosphere; g) allowing enough time for students to build relationships first; h) the value placed on students' understanding is open-ended.

When applying the learning theory of constructivism during the learning process, different learning methods can be used. The use of lecture method, question and answer method, discussion, task and role play (Evi Yupani & Widana, 2023). In the lecture method, the teacher explains in more detail. In the question and answer method, the teacher conducts a question and answer session on the material to be presented later, before the learning begins. This is done to check the students' initial understanding before the learning process starts. In the discussion method, students discuss what has been taught that day with their friends. The task method is a step that can support other learning methods because students are given tasks both individually and in groups (Rondonuwu, et al 2021).

The implementation of Jean Piaget's theory of constructivism in the context of learning provides opportunities for students to be actively involved in the learning process. By using methods that support exploration, collaboration and reflection, educators can create a more effective and meaningful learning environment that holistically supports students' cognitive development.

Challenges in Implementation

The implementation of Jean Piaget's theory of constructivism in education faces several challenges that can affect the effectiveness of learning, including: (a) teacher readiness and training, (b) limited resources, (c) time requirements, where constructivist learning often requires more time than traditional methods because it involves exploration, discussion and reflection, so the impact of a crowded curriculum, it is difficult to allocate enough time for these activities, so it can sacrifice deep understanding, (d) differences in student abilities, where students have different levels of understanding and ability, the same approach may

not be effective for all students. The same approach for all students may not be effective. (f) evaluation and assessment, where student understanding in an active learning context may be more difficult than with standardised tests (Santoso, et al. 2018).

While Jean Piaget's theory of constructivism offers a powerful approach to improving the learning experience, the challenges in its implementation require special attention. By understanding and addressing these barriers, educators can be better equipped to effectively apply the principles of constructivism and create learning environments that support students' cognitive development (Umbara, 2017).

Advantages and Disadvantages of Constructivist Theory

Constructivism learning theory has several advantages, including: during the learning process, students are expected to be able to construct their own knowledge, students are expected to actively and directly participate in the development of new knowledge, understand it more deeply and be able to apply it in any situation, students are expected to actively participate in order to remember concepts longer, students can gain new knowledge through interaction with friends and teachers so that prospective students can understand the state of their social environment, and students are expected to participate sustainably (Mulyadi, 2022).

Constructivist learning theory also has some weaknesses, such as: the knowledge obtained does not come from only one direction, there are different aspects that need to be fulfilled, the learning process that takes place is expected to be a process of creating knowledge, from a constructivist perspective, teachers play more role in helping students discover new knowledge and form knowledge based on what they have gained themselves, from this perspective, students' activities prioritise the process of constructing their own knowledge, from this perspective, a learning environment is found that actually supports the emergence of different views (Suparlan, 2019).

CONCLUSION

From this literature review, it appears that the use of constructivism can improve student engagement, concept understanding, and critical thinking skills. Students who learn through a constructivist approach show a deeper understanding because they are actively involved in the learning process and construct knowledge based on their experiences.There are barriers to implementing constructivism in the field, mainly related to teacher resistance to change in learning methods, lack of training and resources, as well as time constraints and a tight curriculum. Teachers need adequate training to change the approach from teacher-centered to student-centered. Jean Piaget's theory of constructivism has significant implications in classroom learning, which is initially teacher-centered, with the existence of constructivist learning theory that emphasizes student participation in solving problems. However, constructivism should be applied to students who are able to think critically. The recommendations based on the conclusions obtained where a structured training program is needed to help teachers understand and implement the constructivism approach. This training should include student-centered learning methods, discussion facilitation techniques, and how to use digital technology as a supporting tool, not a substitute.

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