

Adaptive Learning in the Independent Curriculum: Integration of Behavioristic, Cognitive and Constructivist Theories in Educational Technology

Darmawati A¹

¹ Universitas Pejuang Republik Indonesia

Marwan ²

² Universitas Pejuang Republik Indonesia

Suhenrik P ³

³ Universitas Pejuang Republik Indonesia

Rizal Arizaldy Ramly⁴

⁴ Universitas Pejuang Republik Indonesia

Supardi Salam⁵

⁵ Universitas Pejuang Republik Indonesia

Corresponding Author: darmawati.pajak801@gmail.com, marwansangqa1@gmail.com, endisuhenrik89@gmail.com, arizaldyramly@gmail.com, supardi.salam@upri.ac.id

Abstract

Education is one of the important pillars in shaping the future of the nation. Rapid changes in a world filled with uncertainty and destruction prompted governments to evaluate and update educational curricula. In Indonesia, this effort is carried out through the Merdeka Curriculum which covers education levels ranging from elementary to tertiary education. In an effort to respond to the challenges of a changing world, this curriculum is integrated with diverse educational theories, such as behavioristic, cognitive, and constructivist theories, according to the level of education and the field of educational technology. An approach that aligns education with the challenges of a changing world. The integration of behavioristic, cognitive, and constructivist theories according to the level of education and the field of educational technology is the key to its success. With this approach, it is expected that graduates can face uncertainty and destruction with strong skills, knowledge, and understanding.



Keywords: Curriculum Independent, Behavioristic, Cognitive, Constructivist

INTRODUCTION

The Merdeka curriculum has become an important approach in the Indonesian government's efforts to face destructive global challenges and uncertainties. At its core, this approach gives schools and teachers greater autonomy in designing curricula that fit local needs and global developments. In this change, technology-based education plays a crucial role. This article explores the integration of behavioristic, cognitive, and constructivist theories in adaptive learning in accordance with the Merdeka Curriculum, especially in the context of technology-based education.

At the level of primary education, behavioristic theory by B.F. Skinner provides a foundation for adaptive learning through the use of interactive technologies. The use of interactive learning software and learning media that stimulate students' active responses can improve learning outcomes. Positive incentive systems and continuous assessment are also effective tools in measuring student achievement.

At the secondary education level, cognitive theory demands a more abstract and complex understanding. Therefore, adaptive learning should emphasize deeper processing of information. Problem-based learning, collaboration, and the use of cognitive aids such as concept maps and simulations are becoming relevant methods.

At the higher education level, constructivist theory emphasizes the construction of knowledge by individuals. This requires adaptive learning that gives students autonomy in guiding their own learning. Project-based approaches, self-directed learning, and mentorship are important instruments in supporting constructive learning.

The integration of technology at all levels of education provides powerful tools to support the Curriculum Merdeka approach. The use of technology, such as social media, learning software, and cognitive aids, can enrich students' learning experiences. Therefore, this approach not only creates a curriculum that suits the destructive global challenges and uncertainties, but also enables the development of students' abilities that adapt and innovate in an ever-changing world.

RESEARCH METHOD

The writing of this article uses the literature review method, this literature study method is used to search databases from various references, such as research journals, *journal reviews*,



annual reports, books and data related to Adaptive Learning in the Independent Curriculum. *Literature review* can also be a technique for proving a problem that produces output in the form of reports used in focusing studies, developing theories, and identifying gaps in research results between theories and facts in the field. When researchers carry out literature reviews in their research, it means doing activities, collecting data, evaluating data, and analyzing from various sources related to the studies that have been prepared. Literature review research can also develop methods used in web-based procedure techniques. Journal articles have been obtained in this study starting with collecting integrated journals. The data needed is in the period 2013-2023 in order to maintain the latest and updated literature to be studied. Journal articles are obtained through the Google Scholar site, then journal articles are sorted and selected in order to obtain relevant data sources. The last stage of the journal article is analyzed and summarized the results.

RESULT AND DISCUSSION

The results of obtaining journal articles searched with keywords that have been compiled, then collected, sorted, then processed all data sources by reading, examining each data, and relating to questions that have been compiled by previous researchers.

Curriculum Merdeka: A Brief Overview

Curriculum Merdeka is an educational approach that gives more autonomy to schools and teachers in designing curricula that suit local needs and global developments. This reflects the spirit of independence and self-reliance in educational decision making. Cholilah, M. (2023) stated that the implementation of the independent curriculum is basically oriented towards improving the competence of students along with all support systems that lead to the realization of graduate quality.

Basic Level : Behavioristic Theory

The basic level is an important period in the formation of basic understanding and basic skills. The behavioristic theory by B.F. Skinner emphasizes that learning is the result of a response to external stimuli. In the Merdeka Curriculum, this can be realized by:

1. Use of Interactive Technology: The use of interactive learning software and learning media that can stimulate students' active response.



2. *Reward Systems*: Implement a positive incentive system to encourage positive behavior and good outcomes.
1. *Continuous Assessment*: Uses formative assessment to provide continuous feedback, enabling improvements in student responses.

Research conducted by Setiawan (2016) Behaviorism is said that the theory of behavioral development that can be measured, observed and produced by students' responses to stimuli. Responses to stimuli can be reinforced with positive or negative feedback to the desired condition behavior. Punishment is sometimes used in eliminating or reducing improper actions, followed by describing the desired action. Behavioristic learning theory emphasizes behavioral change as well as the resulting interaction between stimulus and response.

Planning the learning material to be learned Ideally, the learning process carried out by the teacher is really in accordance with what is expected by students and also in accordance with student conditions, so that here the teacher will not over-estimate and or under-estimate students. But reality is not so. Some students already know and some others do not know at all about the material that will be learned in class. To be able to provide learning services to all groups of students who are close to the ideal (according to the initial abilities and characteristics of each group) we can use two approaches, namely students, (a) adjusting to the material to be learned, namely by the way the teacher conducts tests and groupings (in this case the test is carried out before students follow the lesson), or (b) the learning material is adjusted to the circumstances of the students (Atwi Suparman, 1997:108).

Behavioristic theory can recommend instructional guidelines to educators, which are in the form of appropriate stimuli in the learning process so as to elicit student responses that are the desired learning outcomes. Behavioristic learning theory explains that learning is a change in behavior as a result of the interaction between stimulus and response. From several behavioristic learning theories developed, it can be concluded that to elicit the expected response requires reinforcement. The application of behavioristic learning theory is very suitable for the acquisition of skills that require practice and habituation that contains elements such as: Speed, spontaneity, flexibility, reflexes, endurance and so on so that the most suitable model is Drill and Practice, for example: used in early childhood education, kindergarten to practice good habits, because children are very easy to imitate behavior in their environment and really like praise and appreciation. As for secondary education and higher education, this behavioristic theory is widely



used, among others, to train foreign language conversation, typing, dancing, using computers, swimming, sports and so on.

Secondary Education Level: Cognitive Theory

At the intermediate level, students begin to develop more abstract and complex understandings. Cognitive theory, as proposed by Jean Piaget, emphasizes the importance of understanding and processing information. In the Merdeka Curriculum, this can be implemented by:

1. Problem-Based Learning: Encourages students to solve problems that require critical thinking and problem solving.
2. Collaboration: Using technology that supports collaboration in projects that require students to think critically and communicate effectively.
3. Use of Cognitive Aids: Utilization of technology such as concept maps, simulations, and other cognitive aids to assist students in processing complex information.

The level of relevance of the results of Nurhalizah's research, T. (2023) stated that the results of this study show that the independent curriculum is effective in learning and makes it easier for educators and their learning hours, students also feel comfortable with learning now because it can encourage being more active in learning, from a cognitive aspect the majority of students can follow learning or equivalent to 95% of students.

At the secondary education level the application of cognitive theory can be more complex by encouraging learners to think abstractly, analyze complex information, and connect more abstract concepts. Cognitive theory in learning is a framework that focuses on the process of thinking, memory, and understanding in processing information. By implementing learning strategies based on cognitive theory, we can provide a more meaningful and immersive learning experience for learners. It is important to remember that cognitive theory can be applied in all levels of education and has a significant role in appreciating the active role of learners, encouraging critical thinking, and strengthening connections between concepts. Hopefully this understanding of cognitive theory can help educators in improving the quality of learning and assist learners in achieving their learning potential.



Higher Education: Constructivist Theory

Higher education is the stage where students are more independent in their learning. Constructivist theory, espoused by figures such as Jean Piaget and Lev Vygotsky, emphasizes the importance of the construction of knowledge by individuals. In the Merdeka Curriculum, this can be achieved by:

1. Project-Based Learning Approach: Integrate research projects and problem-based projects in the curriculum to encourage knowledge construction.
2. Independent Learning: Encourage students to take initiative in guiding their own learning, with the support of lecturer mentoring.
3. Mentorship: Implement a mentorship model that supports constructive learning where students can discuss and collaborate with their mentors.

According to Purba, et al. (2021) based on Piaget's work, constructivism differs from behaviorism in that it is inherently structured thinking for developing concepts and acquiring language. Learners actively explore their environment by building on existing cognitive structures or schemes. The constructivist approach sees that activities are provided to build children's current and developmentally appropriate knowledge, and challenges them so that through the process of accommodation, they continue to make progress. This is supported by Herliani, et al. (2021) that learning by applying constructivist theory in the process in the classroom means that the learning emphasizes the process and freedom of students in exploring knowledge and efforts in constructing their own experiences.

Constructivist learning theory explains that learning is a process that requires students to be active in building knowledge independently. The basic principle in constructivist learning theory is to give learners the opportunity to take a leading role in controlling the thought process and interacting with the surrounding environment. The paradigm built in constructivist learning theory emphasizes that students have different initial abilities in constructing new knowledge. So that the role of educators is to guide the process of knowledge construction can run smoothly.

Constructivism theory helps students find new ideas based on the experience and support of the knowledge they gain so that it can make students' lives more dynamic and knowledge continues to grow. Nevertheless, support from a conducive learning environment also needs to be considered to maximize the results achieved by students. Efforts that can be



made by educators to optimize constructivism learning theory and its implementation in the Independent Curriculum are by designing more creative and innovative learning without neglecting the effectiveness and efficiency in it. In addition, educators must also *upgrade* self-knowledge, especially in the field of technology so that learning becomes less monotonous and boring. Educators are also required to be able to provide more concrete and relevant examples with the times.

The Merdeka Curriculum in the view of constructivist learning theory both considers education as a form or part of the experience obtained. The implementation of the Independent Curriculum based on constructivist learning theory emphasizes aspects of independence or freedom for students and educators to develop learning processes based on real experiences which are then connected to abstract concepts (theories). Therefore, in the implementation of the Independent Curriculum based on constructivist learning theory, in addition to students, educators are also required to continue learning based on experiences gained from the surrounding environment, especially in the application of the Independent Curriculum. For example, by making observations and narratives from fellow teachers in different educational units. This can be an alternative to be used as inspiration in optimizing the application of the independent curriculum according to the needs and characteristics of students.

The implications of constructivist learning theory are also outlined in the basic concepts used in designing learning outcomes in the Independent Curriculum. The preparation of learning outcomes is published more simply so that students have a longer time to achieve the expected competencies in more depth. In the preparation of learning outcomes arranged based on phase by phase, educators also have a looser and more free time to develop learning because they are not in a hurry to complete content content within one year as was the case in the previous curriculum. As already explained, in constructivist learning theory, learning is considered a process of new knowledge construction carried out by learners with the initial abilities they already have, followed by their learning experiences and social interactions. In this concept, learners will be led to actively discover new knowledge based on their cognitive maturity with the aim of building understanding and creating a work based on the knowledge and skills acquired. When students have been able to create works, it means that they have understood and mastered the expected competencies. When referring to constructivist learning theory, the ability to understand has



been at the highest level, in contrast to *Bloom's taxonomy* where understanding is at the C2 level.

As an important instrument in the implementation of learning, the Independent Curriculum is expected to be a means to produce inclusive learning, where the climate created in learning can accept the diversity of students with all differences in the social, religious, cultural and ethnic fields. The expected inclusion learning is reflected in the application of the Pancasila learning profile as an effort to realize the growth of tolerance in learning activities. The Merdeka Curriculum is also expected to be implemented sustainably in the long term. Therefore, its presence is supported in regulations in legislation that are fundamental. However, even though it has been supported by strong regulations, the sustainability of the implementation of the Independent Curriculum also requires the support of the community / public and parents.

CONCLUSION

The integration of educational technology at all levels of education provides powerful tools to support the Curriculum Merdeka approach. The use of technology, such as social media, learning software, and cognitive aids, can enrich students' learning experiences. Therefore, this approach not only creates a curriculum that suits the destructive global challenges and uncertainties, but also enables the development of students' abilities that adapt and innovate in an ever-changing world.

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