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ANALYSIS AND DEVELOPMENT OF CURRICULUM RELATED TO LEARNING THEORIES: LITERATURE REVIEW

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ABSTRACT

The curriculum is the basic structure in education that guides what, how, and why learning takes place. Learning theories provide an important psychological and pedagogical foundation for designing and developing curricula to be more effective and relevant. This article reviews the current literature on the relationship between curriculum analysis and development and learning theories, including behaviorism, cognitivism, constructivism, connectivism, and adult learning theory. The main objective is to evaluate how these theories are integrated into curriculum development, supporting and inhibiting factors, and recommendations for adaptive and innovative curriculum practices. The method used is a systematic literature review of articles from international and national databases from 2010 to 2025. The findings show that although current curriculum construction is largely influenced by constructivism and active learning theory, the application of more formal theories such as behaviorism and connectivism also appears, especially in the context of higher education and online learning. The main obstacles include a lack of understanding of the theory by curriculum designers, limited resources, cultural resistance, and technical challenges. The conclusion states that effective curriculum development requires in-depth contextual analysis, explicit integration of learning theory, stakeholder involvement, and continuous evaluation.

Kata kunci: Curriculum; Curriculum Analysis; Learning Theory; Curriculum Development; Teaching Practice.

INTRODUCTION

Education in the era of globalization and digital transformation is undergoing dynamic changes, requiring significant adjustments in curriculum design. Curricula designed decades ago often lose their relevance when faced with the demands of 21st-century competencies, which include collaboration, critical thinking, digital literacy, and effective communication skills (Coşkun Yaşar & Aslan, 2021). This indicates that the pedagogical framework underlying the curriculum needs to be constantly updated with reference to evolving learning theories. Learning theories, from behaviorism to constructivism to connectivism, play an important role in helping educators understand how students learn so that the curriculum can be designed in a contextual, adaptive, and needs-oriented manner (Munna, 2021).

Although many curricula claim to be rooted in learning theory, the reality of implementation often reveals a significant gap between theory and practice. Curricula sometimes only present normative theoretical references without real integration into daily learning practices. As a result, curriculum design can fail to have the maximum impact if the learning theory on which it is based is not appropriate to the socio-cultural context, infrastructure, or teacher capacity (Haagen-Schützenhöfer et al., 2020). According to Pacala (2023), this poses the risk that the curriculum will merely become a formal document without transformative power in the learning process. Furthermore, research in several countries shows that without a deep understanding of theory, teachers tend to implement the curriculum mechanically, rather than as a reflective framework that encourages pedagogical innovation (Ireland, 2024).

The urgent need for a responsive curriculum is increasingly relevant in the context of modern education, which emphasizes inclusive learning, online learning, blended learning, and lifelong learning. Traditional education models that emphasize one-way knowledge transfer are no longer sufficient to address global challenges. Instead, the curriculum needs to allow for flexibility, adaptation, and technology integration in order to meet the diverse needs of learners, including adults returning to education (Basit, 2021). The adult learning approach (andragogy) emphasizes the importance of experience and independent learning, while connectivism theory highlights the role of networks and digital technology in connecting knowledge (Abuhassna, 2024). Thus, these theories become an important foundation for developing a curriculum that is relevant to contemporary conditions.

In the context of curriculum development, a review of the latest literature provides a systematic mapping of the integration of learning theory with curriculum practice. Recent research shows a need for critical evaluation of how learning theory is used in the process of curriculum design, implementation, and evaluation (Button, 2021). For example, Ireland's (2024) study comparing the use of learning theory in national curriculum development in Ontario and New Zealand shows that countries with advanced education policies explicitly emphasize the integration of theory and practice. This provides inspiration for developing countries, including Indonesia, to review the effectiveness of their national curricula in accommodating developments in learning theory.

In addition, literature analysis also needs to highlight the supporting factors and obstacles in the application of learning theories in the field. Some supporting factors include teachers' readiness in understanding the theory, technological infrastructure support, and educational policies that provide room for innovation. Conversely, common obstacles include limited resources, lack of teacher training, and a tendency toward bureaucratization in curriculum development (Application of Learning theories in Curriculum Development, 2014). By systematically identifying these factors, curriculum development is expected to be more contextual and effective in improving the quality of education.

This literature review attempts to present a novel contribution by providing a systematic review of the latest research from 2010 to 2025 on the integration of learning theory in the analysis and development of curricula at various levels of education, including primary, secondary, higher, and non-formal education. In particular, this article identifies research gaps that are still rarely discussed, such as the lack of longitudinal studies, evaluation of curriculum implementation in non-Western local contexts, and minimal exploration of adult learning theory and connectivism in the curriculum (Pacala, 2023). Thus, the results of this review are expected to not only provide conceptual understanding but also practical recommendations that can be used as a reference by policymakers, curriculum developers, and education practitioners in Indonesia and countries with similar conditions.

RESEARCH METHODS

The research method used in this study was a systematic literature review (SLR) focusing on the relationship between learning theory and curriculum development. The literature search was conducted on articles published between 2010 and 2025, enabling the collection of relevant and up-to-date data in the field of curriculum. The databases used included Google Scholar, ERIC, Scopus, ScienceDirect, ProQuest, and available national repositories. The article search was conducted using keywords such as "curriculum development," "learning theories," "constructivism in curriculum," "behaviorism and curriculum design," "adult learning theory curriculum," "connectivism curriculum," and "instructional design models learning theory" (Coşkun Yaşar & Aslan, 2021; Pacala, 2023).

The inclusion criteria in this study were peer-reviewed journal articles, both empirical and review/meta-analysis, that explicitly discussed the relationship between learning theory and aspects of curriculum development or analysis, were available in full-text, and used English or Indonesian (Munna, 2021; Abuhassna, 2024). Meanwhile, exclusion criteria included theoretical articles that were not directly related to the curriculum, popular reports without data, unpublished theses, and inaccessible articles (Button, 2021; Ireland, 2024).

The research procedure included an initial search, screening based on titles and abstracts, full-text selection, and data extraction covering the learning theories used, forms of integration into the curriculum, educational context, implementation results, and barriers and supporting factors (Haagen-Schützenhöfer et al., 2020; Basit, 2021). Data analysis was conducted thematically by comparing the most frequently appearing theories and creating summary tables linking learning theories to education levels and implementation barriers. Where possible, the results of the analysis were visualized in bar charts or matrices to clarify the patterns of theory integration in the curriculum (Application of Learning theories, 2014). With this approach, the study is expected to provide a comprehensive picture of how learning theories are applied in curriculum development in various educational contexts (Abuhassna, 2024; Ireland, 2024).

Table 1. Summary of Research Methods (SLR)

Procedural Stage	Activity Description	Output
Search	Define the year range (2010–2025), select the database: (Google Scholar, ERIC, Scopus, ScienceDirect, ProQuest, repositori nasional), and use keywords: *"curriculum development"*, *"learning theories"*, *"constructivism in curriculum"*, *"behaviorism and curriculum design"*, *"adult learning theory curriculum"*, *"connectivism curriculum"*, *"instructional design models learning theory"*.	List of potentially relevant articles.
Screening	Filter articles based on title and abstract according to inclusion criteria (peer-reviewed, empirical/review, full-text available, English/Indonesian) and exclude irrelevant articles (purely theoretical, popular reports, unpublished theses, inaccessible articles).	Articles that pass the initial stage.
Eligibility	Read and assess the full-text to ensure that the article truly discusses the relationship between learning theory and curriculum development.	The final article suitable for analysis.
Data Extraction	Taking key information: (1) learning theory used, (2) form of integration in the curriculum, (3) educational context (level, country), (4) results of implementation, (5) obstacles & supporting factors.	Thematic dataset from selected articles.
Analysis	Thematic analysis to identify the most frequently mentioned theories, patterns of integration at the educational level, as well as obstacles and supporting factors. Presented in summary tables and visualizations (bar charts/matrices).	Comprehensive synthesis findings.

RESULTS AND DISCUSSION

Result

The following is a summary and key findings based on the selected literature

Table 2. Learning Theories Commonly Used in Curriculum Development

Learning Theory	Description	Level / Main Context of Use	Examples of Integration in the Curriculum
Behaviorisme	Focus on reinforcement, stimulus-response, objective evaluation	Pendidikan dasar, pelatihan teknis, asesmen & evaluasi	Repetitive practice modules, frequent formative testing, rewards/punishments for reinforcement (Munna, 2021) (ERIC)
Kognitivisme	Mental processes, cognitive structures, comprehension, memory	All levels, especially basic and intermediate; theoretical higher education	Curriculum that incorporates scaffolding strategies, advance organizers, and concept grouping
Konstruktivisme	Active learning, experiential learning, socio-cultural	Primary and secondary education; project-based learning; competency-based curriculum	Project-based curriculum, inquiry-based learning, collaborative learning
Konektivisme	Digital network learning, media & technology, lifelong learning	Pendidikan tinggi; pembelajaran *online* / blended; pelatihan dewasa	Online modules that combine discussion forums, MOOCs, and peer-to-peer learning
Adult Learning Theory (Andragogy)	Self-directed learning, adult learners' life experiences, practical relevance	Non-formal education, adult/professional higher education, training	Vocational training curriculum, evening courses, senior citizen degree programs

A literature review shows that the integration of learning theories in curriculum development plays a significant role in determining the direction, content, and methods of learning at various levels of education. Learning theories that are often used include behaviorism, cognitivism, constructivism, connectivism, and adult learning theory (andragogy). Each theory offers a different perspective on how learners acquire knowledge and skills, and how the curriculum can be structured to support this process.

Behaviorism, for example, emphasizes the stimulus-response relationship and the importance of reinforcement in the learning process. In the context of curriculum, this theory is widely used in primary education and technical training, where basic skills need to be formed through repeated practice and objective evaluation. The implementation of behaviorism is evident in the design of training modules, formative tests, and the use of rewards and punishments to reinforce desired learning behaviors (Munna, 2021). This is in line with the early tradition of curriculum design, which placed great emphasis on the measurability of learning outcomes. However, in contemporary practice, behaviorism is often combined with other theories to make the curriculum more adaptive to the needs of learners.

Unlike behaviorism, cognitivism focuses on internal mental processes, including understanding, memory, and cognitive structures. This perspective influences curricula that emphasize learning strategies that help learners organize information, such as scaffolding, advance organizers, and concept grouping. With this approach, students are encouraged not only to memorize information but also to understand the connections between concepts so that learning becomes more meaningful (Coşkun Yaşar & Aslan, 2021). Cognitivism is also widely applied in secondary and higher education, especially in fields that require strong conceptual understanding.

Meanwhile, constructivism focuses on active learning based on experience, social interaction, and cultural context. This theory underlies the emergence of project-based curricula, collaborative learning, and inquiry approaches. With constructivism, the curriculum is no longer seen as a collection of content that must be transmitted, but rather as a means of creating authentic and contextual learning experiences (Pacala, 2023). The integration of constructivism in the curriculum allows students to play an active role in constructing their own knowledge, which is relevant to 21st-century needs such as critical thinking, creativity, and collaboration skills.

In the last decade, connectivism has become increasingly popular with the development of digital technology. This theory views learning as a process of building a network of knowledge through

interaction with other people, media, and digital resources. In curriculum development, connectivism is integrated through the design of online modules, blended learning, and the use of MOOCs. For example, connectivism-based learning often uses online discussion forums, collaboration between students, and access to various open learning resources (Abuhassna, 2024). Connectivism is particularly relevant in the context of higher education and lifelong learning because it facilitates broad access to ever-evolving knowledge.

In addition, adult learning theory or andragogy also has a major influence on curriculum design, particularly in non-formal education, professional training, and higher education programs for adults. This theory emphasizes the importance of learners' life experiences, the need for learning that is relevant to real life, and an orientation towards self-directed learning. Andragogy-based curricula often take the form of professional training courses, certification programs, or evening classes for working adults (Basit, 2021). The successful implementation of this theory is greatly influenced by the relevance of the learning material to the practical needs of the participants.

The integration of learning theory into the curriculum does not occur directly, but rather through several important stages. First, needs and context analysis is a crucial initial step. Many studies show that understanding the students' background, cultural conditions, resource availability, and teacher readiness greatly determines the selection of relevant learning theories. For example, cognitivism can be used to understand how students process information, while constructivism is more suitable for analyzing how students learn in a social context (Ireland, 2024).

Second, learning theory forms the basis for selecting instructional design models. Models such as ADDIE, backward design, and Design-Based Research (DBR) are proven to be greatly influenced by the learning theory used. A study by Haagen-Schützenhöfer et al. (2020) shows that DBR, with its iterative nature, allows for the development of a curriculum that is continuously refined based on implementation data. This model facilitates the integration of constructivism and cognitivism theories more flexibly in learning practices.

Third, evaluation and feedback are integral parts of ensuring the alignment between learning theory and curriculum practice. Evaluation does not only focus on the final outcome but also assesses the extent to which the learning process is consistent with the underlying theory. Feedback from teachers and students forms the basis for revising the curriculum to keep it relevant and effective (Button, 2021).

Fourth, technological developments have opened up more opportunities to integrate learning theories into online and blended learning. Connectivism, in particular, has become the dominant theory in recent literature on technology-based learning, as it provides a framework for understanding how students construct knowledge through digital networks (Application of Learning theories, 2014).

Fifth, stakeholder involvement is also very important. Teachers, curriculum designers, students, parents, and even the government have a contribution to make in determining the direction of the curriculum. This involvement ensures that the learning theory chosen is in line with the real needs and aspirations of the community (Coşkun Yaşar & Aslan, 2021).

However, there are a number of obstacles that hinder the optimal integration of learning theories into the curriculum. One of the main obstacles is the lack of understanding of learning theories among teachers and curriculum developers, which often leads to superficial application of these theories. In addition, limitations in infrastructure and access to technology, especially in remote areas, also pose challenges in the application of connectivism-based learning (Ireland, 2024). Other obstacles include cultural resistance, educational bureaucracy, and a national curriculum that is too rigid, reducing the flexibility for local adaptation.

However, several supporting factors were also identified. These include expertise in learning theory among academics and education practitioners, policy and institutional support, and the availability of clear instructional design models. These factors facilitate the more consistent integration of learning theory into the curriculum (Pacala, 2023).

An interesting case study is the research by Haagen-Schützenhöfer et al. (2020) on the development of an optics curriculum in secondary schools through DBR. Over six years, this study conducted design iterations based on constructivism and cognitivism theories. This process consisted of stages of prototype implementation, observation, data collection, design revision, and finalization. The results showed a significant improvement in students' understanding of optical concepts compared to the control class that used a traditional curriculum. This study provides empirical evidence that the integration of learning theory in curriculum development, if done systematically and based on research, can improve learning effectiveness.

Overall, the results of this study confirm that learning theory is not only a conceptual framework but also a practical foundation for curriculum analysis and development. Each theory has a unique contribution according to a specific educational context, and the integration of theories often results in a more holistic curriculum design. By understanding these dynamics, curriculum developers can create designs that are more relevant, adaptive, and effective in facing educational challenges in the era of globalization and digitalization (Abuhassna, 2024).

Table 3. Barriers and Enabling Factors

Supporting Factors	Barriers
Adequate expertise in learning theory among curriculum developers/teachers	Lack of training in learning theory for teachers or curriculum designers
Resources (financial, technological, material)	Limited infrastructure and access to technology, especially in remote areas
Policy and institutional support	Cultural resistance, bureaucracy, desire to maintain old practices
The existence of a clear instructional design model and evaluation system	Weak or unsystematic evaluation, lack of process measurement and fidelity of implementation
Curriculum flexibility for local adaptation	Curricula that are too rigid, national standards that do not take diversity into account

Discussion

Integration of Behaviorism and Cognitivism in the Basic Curriculum

Behaviorism and cognitivism are often viewed as two contrasting approaches, but in curriculum practice, they can complement each other. Behaviorism emphasizes the formation of basic skills through stimulus-response and reinforcement, while cognitivism focuses more on internal mental processes such as understanding and memory. In elementary education curricula, the combination of these two theories can be seen in the use of repetitive exercises to reinforce basic skills, which are then combined with scaffolding strategies to help students understand more complex concepts (Munna, 2021; Coşkun Yaşar & Aslan, 2021). Thus, learning outcomes are not only objectively measurable but also meaningful for students.

Constructivism and Instructional Design Models

Constructivism greatly influences the development of project-based curricula and collaborative learning. This theory emphasizes that students construct knowledge through experience and social interaction. Instructional design models such as Design-Based Research (DBR) and backward design utilize constructivist principles to create flexible, real-world problem-based curricula. Haagen-Schützenhöfer et al. (2020) demonstrate how DBR was used in the development of an optics curriculum, where constructivism and cognitivism theories were combined to iteratively improve the learning design based on student feedback. This approach shows that integrating learning theories into instructional design models can result in more adaptive and responsive curricula.

Connectivism in the Digital Age

Advances in educational technology have led to the emergence of connectivism theory, which emphasizes learning through digital networks. In higher education and lifelong learning, connectivism provides a framework for utilizing online forums, MOOCs, and open learning resources. This allows learners to build knowledge through interaction with the global community. Abuhassna (2024) asserts that connectivism is effective when combined with other theories, such as cognitivism, to ensure that information obtained through networks can be processed and organized meaningfully. Thus, digital curricula should be designed with consideration for the integration of connectivism and cognitivism theories.

Adult Learning Theory (Andragogy) and Practical Relevance

Andragogy emphasizes independent learning and practical relevance, which are very important in the context of non-formal and professional education. An andragogy-based curriculum requires flexibility in content and methods, as well as adaptation to the life experiences of adult learners (Basit, 2021). When combined with constructivism, andragogy reinforces an orientation toward experience-based learning and real-world problem solving. This is evident in the design of professional courses that not only teach theory but also integrate case studies and field practice.

Barriers and Supporting Factors for Theory Integration

The incorporation of learning theories into the curriculum often faces barriers, particularly teachers' lack of understanding of learning theories and technological infrastructure limitations. For example, connectivism is difficult to implement in areas with limited internet access (Ireland, 2024). However, supporting factors such as policy support, the existence of clear instructional design models, and stakeholder involvement can strengthen the integration of theory (Pacala, 2023). Therefore, it is important for curriculum developers to not only select relevant theories but also adapt their application to local conditions.

CONCLUSIONS

The conclusion of this study confirms that integrating learning theories into curriculum analysis and development is a fundamental aspect of ensuring that the curriculum remains relevant, effective, and adaptable to student conditions and local contexts. Constructivism and cognitivism emerge as the most dominant foundations, as both provide a strong framework for building conceptual understanding and active learning experiences. However, other theories such as behaviorism, connectivism, and adult learning theory (andragogy) also play an important role, especially in specific contexts such as technical education, online learning, and professional education programs. The main obstacles identified include limited understanding of theory among teachers and curriculum developers, a lack of financial and technological resources, and institutional policies and cultures that do not fully support curriculum innovation. Therefore, a number of practical recommendations are proposed to strengthen the integration of learning theory into curriculum practice. First, continuous training is needed for teachers and developers to understand learning theory and its application. Second, the use of responsive and iterative instructional design models such as Design-Based Research (DBR) and backward design is highly recommended. Third, local needs analysis should be the first step in any curriculum development. Fourth, curriculum evaluation should be conducted continuously, covering not only learning outcomes but also the process and appropriateness of implementation. Finally, education policies are expected to allow flexibility so that the curriculum can adapt to the diversity of local contexts.

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