



Integrating Educational Theories for Effective Learning: A Comprehensive Analysis of Behaviorism, Nativism, Cognitivism, Functionalism, Constructivism, Humanism, and Cybernetics in Education

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Abstract

Education is a vital component of human development, encompassing a spectrum of educational theories that provide distinct methodologies for learning and teaching. These theories, including behaviorism, nativism, cognitivism, functionalism, constructivism, humanism, and cybernetics, each offer unique perspectives on the learning process. Behaviorism underscores the role of environmental stimuli and reinforcement in learning, while nativism highlights innate language acquisition abilities. Cognitivism posits learning as an active cognitive process involving information processing and problem-solving, whereas functionalism links language development to social interaction. Constructivism views learners as active creators of knowledge through hands-on experiences and reflection, while humanism emphasizes personal growth and development, with teachers serving as facilitators. Additionally, cybernetics applies control and communication principles to educational technology and systems. These diverse theories are not mutually exclusive but can be integrated or adapted to suit specific learning contexts. Educators can draw upon these varied approaches to tailor their teaching methods to align with the individual needs and educational goals of their students, thereby fostering effective and sustainable learning environments.

Keywords: Behaviorism, nativism, cognitivism, functionalism, constructivism, humanism, cybernetics, education, learning, educational theory.

1. Introduction

In language learning and human understanding, two fields of science that play a central role are linguistics and psychology. Linguistic theory and psychological research have made important contributions to understanding how humans interact with language, the language learning process, and how language develops in society. In this article, we will explore the meaning, history and development of linguistic and psychological theory, as well as how essential these two fields are in a deep understanding of language and success in learning.

Linguistics, as the scientific study of language, developed along with human civilization. Language is the main means of human communication and one of the most distinctive characteristics that distinguishes humans from other creatures (Bickerton, 2016). Since ancient times, philosophers and scholars have been interested in understanding the origins, structure, and role of language in society. From philosophers like Plato to contemporary linguists like Noam Chomsky, the study of linguistics has changed and developed significantly (Bickerton, 2016). In its development, linguistics was divided into several streams and subdisciplines such as structural linguistics, generative, comparative, sociolinguistics, and others. The study of modern linguistics involves the analysis of sounds, grammar, semantics, pragmatics, and other aspects of language. Concepts such as generative grammar, communication theory, and language modeling have become an integral part of language and literature learning (Fitch et al, 2012).

On the other hand, psychology, as the study of human thoughts, behavior and experiences, also has a great impact on understanding the language learning process. Cognitive psychology, in particular, is closely concerned with language processing, including how humans understand, store, and produce language. In history, cognitive psychology has experienced significant evolution from a behavioral approach to an information processing-based approach. Figures such as Jean Piaget, Lev Vygotsky, and Noam Chomsky have provided important insights into children's cognitive development, language comprehension, and thought processes.

The development of psycholinguistics and neurolinguistics has also become an important part in understanding the relationship between language and the human brain (Jacobs & Schumann, 1992). Both fields utilize research on the structure and activity of the human brain to uncover the secrets of language learning processes and communication disorders. With advanced technology such as brain scanning, we can now see how the human brain responds to words, spoken language, and written language. The combination of linguistic theory and psychological research has provided a strong foundation for the development of effective language learning methods. In the era of globalization, understanding languages and communication skills are very valuable assets. Therefore, an in-depth understanding of linguistic and psychological theories in language learning is very important.

The development of language learning, both first language (L1) and second language (L2), is a complex domain and is always changing along with the development of theories and learning approaches. Language teaching is a relentless challenge, and language educators continue to develop various models, strategies, approaches, methods, techniques, and tactics to facilitate language understanding and mastery.

Specific language learning methods that emerge from the language learning process have a variety of approaches and methods, each with its own characteristics (Cook, 2016). For example, the grammar and translation method emphasizes understanding grammar and translating texts into or from the target language. Meanwhile, the direct method focuses on using the target language in daily communication, without the need for translation. The audiolingual method prioritizes intensive listening and pronunciation training, while the silent teacher method gives students the main role in the learning process. Various other methods such as the total physical response method, suggestopedia, language learning communities, and communicative language learning methods also provide unique approaches to language learning.

Apart from specific methods of language learning, language educators can also adopt general models or methods that are relevant in the context of language learning. Models such as cooperative learning, process science, contextual teaching and learning (CTL), active learning, PAIKEM (Active, Innovative, Creative, Effective and Fun Learning), blended learning, web-based learning, and many others, provide a variety of an approach that can be adapted to the needs and characteristics of students.

It is important to remember that the existence of various models and methods of language learning cannot be separated from the influence of individual points of view and theories about language and language learning. For example, audiolingual methods that emphasize repetitive practice and repetition are the result of the influence of behaviorism theory, which emphasizes habit formation through repetition. Thus, language learning can be seen as a reflection of the underlying linguistic and psychological theories.

In this article, we will dig deeper into how linguistic and psychological theories influence various methods and approaches in language learning. We will explore how understanding these theories can help in designing more effective and holistic learning experiences, for both first and second languages. In addition, we will consider how the use of appropriate methods and adaptation of learning models can improve students' learning outcomes and prepare them to participate in an increasingly globally connected society.

2. Discussion

2.1. Linguistic theory

Linguistic theory has a crucial role in language learning. Linguists provide diverse views on language, and this influences approaches and methodologies in language learning.

2.1.1. Structuralism

Structuralism emerged in the 19th century and was one of the first approaches to approach language with a scientific and codified methodology. The main figure of this school was Ferdinand de Saussure, a Swiss linguist. He views language as a structural system consisting of interrelated elements. Other figures from the structuralism school include Leonardo Bloomfield, Edward Sapir, Charles Hockett, and Charles Fries.

Structuralist views on language learning include:

1. Language learning is considered the acquisition of habits that can be strengthened through practice and repetition. Language is seen as a skill acquired from the surrounding environment and then trained through imitation and reinforcement.
2. Spoken language is considered purer than written language, because spoken language is an original and more natural form.
3. Each language has its own rules that are different from other languages. It covers grammar, phonology, semantics, and other aspects of language.
4. Each language has complementary rules, allowing speakers to organize their thoughts according to existing language rules.
5. Language always experiences changes and developments along with the evolution of society.
6. The final standard for measuring the authenticity and validity of a language is a native speaker of that language.
7. The main purpose of using language is to exchange ideas, share opinions, and communicate effectively.

8. Research techniques in language studies use a scientific and systematic approach that is similar to research methods in the exact sciences.

The school of structuralism played an important role in building the theoretical foundation for language analysis. This approach places emphasis on the internal structure of language and views it as a system that can be analyzed with rigorous scientific methods. Even though this school has developed and divided into various other sub-disciplinary schools, the legacy of structuralism is still visible in the various language learning approaches and methods used today.

The principles espoused by structuralism in language analysis are closely related to behaviorism, a school in psychology that emphasizes learning as strengthening habits. This is reflected in the approaches and principles of language learning adopted by structuralism. The following are some important principles raised by this school:

1. Learning as the Acquisition of Habits: Structuralism views language learning as the acquisition of habits. This principle states that language skills are acquired through repetition, practice, imitation, and memorization. This is in line with the behaviorist view which emphasizes reinforcement through repetition to form habits.
2. Oral Aspect of Language: This school views that everything that is spoken is the most important aspect in language learning. Therefore, teachers must start learning by providing exercises to students starting with listening, understanding and speaking exercises. This reflects a focus on spoken language as a central component in language learning.
3. Language Differences: Structuralism believes that the differences between the student's native language and the target language should be given great attention. Teachers must understand these differences and overcome barriers that may arise.
4. Translation: To help students understand the difference between the native language and the target language, teachers are allowed to translate words or sentences. It helps in understanding concepts in the target language through the native language.
5. Changes in Language Rules: This school realizes that language rules change as language develops. This reflects the understanding that language is a living and changing entity.
6. Understanding Teachers as Native Speakers: This school views native speakers of the target language as the ultimate standard for justifying and accepting the language. Teachers play a role in directing students towards understanding and using language in accordance with these standards.
7. Teacher explanations are inductive: Teachers in the structuralism school provide explanations using an inductive approach, namely by providing examples that support understanding of concepts.
8. Language learning activities according to this theory include practice, repetition, and reinforcement. Teachers focus on oral skills and strive to understand and overcome differences between the student's language and the target language. Translation is used as a tool to aid understanding, and emphasis is placed on correct use of language. Understanding these principles can provide valuable insight in designing effective language learning strategies based on understanding language structure. Although structuralism has developed since the beginning of the 20th century, its influence can still be found in the language teaching approaches used today.

2.1.2. Transformational Generative Flow

The Transformational Generative school is a school in linguistics that has a different view of language learning compared to the structuralism school. This school was pioneered by Noam Chomsky, a leading linguistics expert who changed the way we understand language. The following are some of the main views and principles adhered to by the Transformational Generative school:

Deep Structure and Surface Structure Concepts: This stream introduces the concepts of deep structure and surface structure in language analysis. Deep structure refers to an abstract structure that includes the core meaning of a sentence, while surface structure is the concrete appearance of the sentence.

Transformation: This school proposes the idea that language sentences can be produced through a number of transformation procedures that change one surface structure into another structure. This helps in understanding how different sentences can be formed from the same basic structure.

Language as Fitrah (Innate): This school believes that language is fitrah, or the basic potential that humans have from birth. This means that humans have an innate predisposition to understand and develop language.

Language Acquisition Device (LAD): Chomsky introduced the concept of a language acquisition device (LAD). This is a mental mechanism that is thought to enable humans to learn language. LAD allows children to recognize language structures and rules naturally.

Concepts of Language Competence and Language Performance: This school distinguishes between two main concepts, namely language competence and language performance. Language competence refers to the abstract knowledge about language possessed by a person, while language performance is the actual use of language in daily communication. Universal Grammar Concept: The Transformational Generative school believes that there are universal concepts in language, which are the same basis for all languages in the world. This means that humans innately understand the basic principles that apply to all languages.

Transfer Ability: Chomsky believes that a person has the ability to transfer "central words" (core words) together with other open words. It refers to a person's ability to understand and use relevant vocabulary in a language.

Object of Linguistic Study and Cognition: This school emphasizes that the object of linguistic study is related to the knowledge (language competence) that children have. Cognition and understanding language rules are the main focus in language learning. The ability to transform one sentence into another sentence is an important aspect in developing language performance.

The Transformational Generative school has had a significant impact in linguistics and has shaped our understanding of language, especially in the context of language learning. This theory shifts the focus from habit formation to understanding language as a system and introduces universal concepts that exist in language. This view has influenced various language learning methods and continues to be an important research subject in language studies.

2.2. Psychological Theory in Language Learning

Understanding language and the ability to communicate are characteristics that distinguish humans from other creatures. Thinking and language skills enable humans to explore and understand phenomena, interact with others, and convey their thoughts and ideas. Therefore, understanding how humans learn language has an important role in education and linguistics.

Many experts have put forward various theories about language learning. There are variations in their views, ranging from those that contradict each other to those that complement each other. In this context, we will discuss several psychological theories that are relevant in language learning. These theories include Behaviorism, Nativism, Cognitivism, Functionalism, Constructivism, Humanism, and Cybernetics.

Before discussing these theories in more depth, it is important to understand the meaning of theory. According to McLaughlin, theory functions to help us understand and organize data about experience and provide referential and appropriate meaning. Every teacher has a theory about language learning, although not all of them express this theory. Theories have several functions, including describing, explaining facts, predicting events, and controlling the learning process.

In the context of language learning, theory is concerned with understanding and organizing experiences in language learning. Learning a language itself is the acquisition of knowledge about a language through study, experience, and instruction. All learning activities involve memory, and a strong memory plays an important role in learning ability. Psychological theories in language learning help in understanding how humans acquire, process, and use language. Learning principles, such as deliberate, planned, controllable results, and a continuous assessment system, are important factors in language learning.

The characteristics of behavior change in learning include that the change occurs consciously, is continuous, functional, positive, active, not temporary, has a purpose or direction, and covers all aspects of individual behavior. The learning process is expected to bring change, produce new skills, and efforts to achieve better results. By understanding various language learning theories, educators can develop more effective approaches to teaching language to students, and students can increase their understanding of how they can better acquire language.

2.2.1. Behaviorism Theory

Behaviorism theory, pioneered by John B. Watson, emphasizes the importance of observable behavior and the relationship between stimulus (stimulus) and response (reaction) in language learning. According to this theory, all behavior, including language acts, can be explained through stimulus-response relationships. This theory rejects the influence of instinct and consciousness in human behavior.

Watson conducted a famous experiment involving a baby named Albert. At first, Albert was a baby who loved playing with white mice. However, Watson managed to change Albert's behavior by hitting a hammer every time Albert approached a white mouse. As a result, Albert became afraid of white mice and other white furry things. This experiment shows that habituation can change a person's behavior in a real way.

This theory says that effective language behavior is the result of certain responses being reinforced. This response can become habitual or conditioned, whether the response is in the form of speech or an understanding response. Verbal behavior is described as behavior that is controlled by consequences, such as reinforcement (rewards) or punishment. Teachers must be careful in determining rewards and punishments, because effective rewards will reinforce positive behavior, while effective punishment will reduce undesirable behavior.

Skinner, a behaviorist, developed the theory of operant conditioning which refers to responses that occur without a clear stimulus. This response is strengthened by reinforcement or punishment. This theory is also used to explain language learning, where speech is a response that can be strengthened by reinforcement. Pavlov and Thorndike's theory also supports behaviorist theory in language learning. Pavlov suggested that learning involves habitual responses, while Thorndike developed the theory of trial and error which focuses on linking stimulus and response. Both theories highlight the importance of learning through repetition and reinforcement.

Although behaviorist theories have advantages in explaining language learning and behavioral acquisition, they also have limitations. They often cannot account for the full complexity of language acquisition, including cognitive aspects such as understanding meaning and more complex language structures. Therefore, behaviorist theories need to be combined with other theories to provide a more complete picture of language learning.

2.2.2. Theories of Nativism

The theory of nativism suggests that the acquisition of language in humans is the result of innate talent and not solely due to environmental influences. This theory argues that humans have a natural ability to understand and learn language that is already genetically present in them. In other words, language is considered a biological gift.

The term "nativism" comes from the belief that language learning is determined by the innate talents possessed by every human being. This theory has received support from various experts, including Eric Lenneberg who stated that language is a special human behavior and is biologically determined. This concept of language talent is very well known thanks to the contribution of Noam Chomsky, a major figure in nativism.

According to Chomsky, humans are the only creatures capable of communicating through verbal language. Language is also considered very complex, so humans cannot learn language from other creatures. Chomsky stated that every child born into the world is equipped with what he calls a "Language Acquisition Device" or LAD (Language Acquisition Device). LAD is an internal mechanism that allows humans to understand and use language.

LAD according to Chomsky has four language talents, namely:

1. The ability to distinguish language sounds from other sounds.
2. The ability to organize language events into various variations.
3. Knowledge of possible and impossible language systems.
4. Ability to evaluate evolving language systems in a simple way from received language data.

Chomsky argued that children's language is a legitimate system of their system. Children's language at every stage of development is systematic. Children continually form hypotheses based on the input they receive, test them through their speech, and continually revise those hypotheses. This process continues until the child's language reaches a form that is acceptable in their environment. Nativism theory emphasizes that language is human nature, and every child has an innate talent for understanding and using language. This theory emphasizes the importance of innate aspects in human language acquisition.

2.2.3. Cognitivism Theory

Cognitivism theory is an approach to the study of language acquisition that focuses on the role of cognition or thought processes in language acquisition. In contrast to the behaviorist approach which focuses on behavior and environmental influences, cognitivism theory emphasizes that children's language abilities come from their cognitive maturity. The central concept of cognitivism theory is that language is controlled by human reason.

The cognitive approach argues that language development must be based on or derived from more fundamental developments and changes in human cognition. In other words, the order of children's cognitive development will determine the order of their language development. The language learning process is seen as a complex thinking process involving aspects such as memory, perception, thoughts, meaning and emotions which influence each other.

One of the key figures in cognitivism theory is Jean Piaget, who argued that the complex structure of language is born and develops through continuous interaction between children's level of cognitive functioning and their lingual environment. This language structure is not only given by nature or learned through the environment, but develops as a result of active interaction between children and their environment.

The stages of cognitive development in children involve assimilation (adjusting new knowledge to existing cognitive structures), accommodation (adjusting cognitive structures to new knowledge), disquilibration (accepting new knowledge that is not in accordance with what is already known), and equilibration (mental balancing after this occurs, assimilation). The language learning process in the cognitive view occurs when children are able to assimilate the knowledge they already have with new knowledge. This process involves the stages of paying attention to the stimulus, understanding the meaning of the stimulus, storing the information that has been understood, and using it.

The cognitive approach emphasizes that the language learning process is determined more by the way the child organizes language material than by the child's age. The process of learning a language involves activities that involve understanding the environment, using images or verbal visualization, and understanding abstract ideas. In cognitivism theory, language learning is seen as a complex thinking process and is closely related to children's cognitive development.

2.2.4. Functional Theory

Functional theory presents a more modern view of language acquisition with a focus on the relationship between language, cognition, and social interaction. This is a response to developments in psychology, especially constructivism, which have shifted cognitive and structural approaches in understanding language learning.

Cognition and Language Development Functional theory links language development with cognitive development. In this framework, language learning is seen as the result of children's interactions with their environment and as a product of their cognitive capacities. This involves the development of communication and understanding that follows the development of the child's cognitive and conceptual capacities. In this case, meaning takes precedence over language form, with the development of languages related to the complexity of the meaning they can express.

Social Interaction and Language Development Functional theory also emphasizes the important role of social interaction in language development. Language is basically used for interactive communication. Therefore, this theory

initiates studies that focus on functional aspects of language communication, including pragmatics and communication. The importance of communication in language development shows that language acquisition does not only depend on cognition and memory structures, but also involves social interactions and the surrounding environment.

Functional theory highlights the importance of engaging children in communicative and social activities that are relevant for their language development. This offers a more holistic and contextual perspective in understanding how children learn language. In the context of functional theory, communication and language use in real situations become the center of attention, and language development is seen as the result of ongoing interactions between cognitive, communicative and social aspects.

2.2.5. Constructivism Theory

Constructivism theory is a view that emphasizes the active role of learners in forming their understanding of the world. It is an approach that highlights the role of individuals in constructing their own knowledge through experience and interaction. There are several important aspects in constructivism theory:

1. **Knowledge Formation:** Constructivism theory assumes that humans construct their own understanding of the world through their cognitive activities. Learning is not a passive process of receiving information, but is an active process in which learners construct their own knowledge.
2. **Active Experience** Constructivism emphasizes that learners must be actively involved in the formation of their knowledge. They must have opportunities to investigate, test ideas, observe, and interact with their environment. It involves experimentation, conversation, question-answering, and observation.
3. **Teacher's Role** Although the teacher's role remains important in constructivism, teachers do not simply convey knowledge passively. Instead, teachers play a role in providing guidance, providing opportunities for exploration, and helping students develop their understanding. Teachers must encourage students to be active in the learning process.
4. **Deep Understanding** Constructivism highlights the importance of deep understanding rather than simply memorizing information. Students who are actively involved in experiments and hands-on experiences will have a deeper understanding than those who only receive detailed explanations from the teacher.
5. **Application of Concepts** Students' understanding in constructivism is not just about words or definitions, but about concepts and problem solving that arise from their experiences. This means that students can apply the concepts they learn in real-life contexts.

Constructivism theory encourages educators to create learning environments that stimulate exploration, question-answering, and problem solving. It recognizes the important role of learners in the process of constructing their own knowledge and emphasizes the importance of deep understanding rather than simply memorizing information.

2.2.6. Humanism theory

Humanism theory considers that language learning should be focused on the needs and experiences of individual students. Instructional programs are designed to enable students to create learning experiences that suit their needs and goals. This allows each student to develop his or her unique potential (Lozada, 2020).

Apart from that, humanism theory also emphasizes the importance of self-actualization and building self-confidence (Lozada, 2020). Students are seen as individuals who have the potential to grow and develop personally and academically. They are given the opportunity to take an active role in the learning process, including in selecting activities and making decisions related to their needs and interests. In a learning environment that adopts humanist theory, the teacher acts as a facilitator. They create an atmosphere that allows students to be actively involved in the learning process. Apart from that, students are also encouraged to work together as a group of supporters, interacting, helping and evaluating each other.

Meaningful communication is also a main focus. The material taught must be authentic and relevant to students' daily lives. The student's mother tongue is considered a very helpful tool in understanding and formulating hypotheses about the language being studied. It is important to remember that the main goal of humanism theory in language learning is to help students develop holistically in society. This approach emphasizes the importance of understanding and meeting individual student needs in the learning process.

2.2.7. Cybernetic theory

Cybernetic theory is a framework that emphasizes the study of control and communication in various systems, be they biological systems or machines. The term "cybernetics" was first introduced by Nobert Wiener in 1945, and since then, this theory has become the basis for many approaches in various fields, including education. In the context of learning, cybernetic theory brings the concept that learning is a process that involves input, process (processing) and output (result). It reflects the way students receive information (input), process it (process), and generate new understanding or knowledge (output).

One important aspect of cybernetic theory is its application in the world of education, especially along with advances in information technology. Communication systems such as computers have been used in various learning methods, including e-learning, virtual learning, and other approaches. The advantages of cybernetic theory in education include flexibility, interactivity, global access, easy access to material, and reducing students' fear of expressing opinions or asking questions.

The use of cybernetic theory in education has produced various innovative learning methods, more in line with developments in information technology. With this approach, students can play an active role in the learning process and have more control over their own learning. This approach opens the door to learning that is more adaptive and tailored to individual needs, allowing students to learn in the way that is most effective for them.

3. Conclusion

Based on the information that has been provided in various educational theories, we can draw the conclusion that there are many different approaches to learning and teaching. Each theory has different perspectives and principles, which emphasize certain elements in the educational process. The following are some conclusions that can be drawn from the various educational theories that have been discussed:

1. Behaviorism This theory emphasizes the importance of environmental influences in learning. Students learn through responding to stimuli and feedback provided by the teacher. Repetition and reinforcement are key in establishing desired behavior.
2. Nativism This theory emphasizes an individual's innate talent in language learning. The LAD (Language Acquisition Device) concept by Chomsky claims that humans have an innate talent for understanding and developing their language.
3. Cognitivism This approach emphasizes the importance of cognitive development in learning. Learning is seen as a complex thinking process, where students are active in processing information, understanding, and solving problems.
4. Functionalism This theory emphasizes that language is the result of cognitive and functional interactions with the social environment. The meaning of language is understood as the result of a meaningful communication process in a social context.
5. Constructivism This theory considers students as active constructors of their own knowledge. Learning involves a process of construction and understanding by students, which is better achieved through direct experience and reflection.
6. Humanism This approach emphasizes the individual aspects of students, with a focus on personal development and individual needs. Learning is an active process managed by students, and the teacher acts as a facilitator.
7. Cybernetics This theory emphasizes control and communication in systems. In education, this is related to the application of technology and information control systems in learning.

In educational development, these approaches are often used simultaneously or adapted to certain learning contexts. In practice, teachers must understand these different theories and choose the approach that best suits students and learning goals. A wise combination of be

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