History of Educational Psychology Figures Who Shaped Modern Education

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Abstract
This study discusses seven educational psychology figures who made fundamental contributions to the understanding of the learning process and human cognitive development. These figures include Jean Piaget with his theory of cognitive development, Lev Vygotsky with his sociocultural theory, B.F. Skinner with behaviorism and programmed learning, Jerome Bruner with his theory of discovery learning, John Dewey with the concept of learning by doing, Howard Gardner with his theory of multiple intelligences, and David Ausubel with his theory of meaningful learning. Each of these theories offers a unique perspective on how humans learn and develop, which has shaped the foundation of modern educational practices. These theories complement one another and provide a comprehensive framework for understanding the learning process from various viewpoints: cognitive, social, behavioral, and constructivist.
Keywords*: historical figures, cognitive development, discovery learning.*

Introduction

Understanding how humans learn and develop has been the focus of research by educational psychologists for over a century. Each of the figures discussed in this review made unique contributions that have formed the foundation of modern educational practice. The need to understand the learning process arose from the realization that traditional education, which focused on the passive transfer of knowledge, was not effective enough to develop students' full potential.

Jean Piaget revolutionized our understanding of children's cognitive development by identifying systematic stages of development. His theory was later supplemented by Lev Vygotsky, who emphasized the importance of social and cultural aspects of learning. B.F. Skinner provided a practical behaviorist perspective through his theories of operant conditioning and programmed learning. Jerome Bruner developed the concept of discovery learning, which emphasized the importance of students' active involvement in the learning process.

John Dewey brought a pragmatic dimension with his concept of learning by doing, which emphasized the importance of direct experience in learning. Howard Gardner expanded our understanding of intelligence through his theory of multiple intelligences, challenging the traditional view of a single intelligence. David Ausubel made a significant contribution through his theory of meaningful learning, which emphasized the importance of integrating new knowledge with existing cognitive structures.

The collective contributions of these figures have changed the way we view education, from a teacher-centered learning model to a more student-centered, interactive, and meaningful learning model. A deeper understanding of these theories is essential for the development of more effective educational practices that are in line with the needs of modern learning.

Research methods

The research method used in this paper is a literature study. The author explores articles, journals, books, encyclopedias, which are relevant to the topic being studied. Through in-depth research, the author gains a complex understanding that is accurate and relevant to complete the

writing of this article. The steps used are to find the type of library used, conduct a review of the specified articles, and present the results of the literature study in the journal article written.

Results and Discussion

Modern educational psychology has been shaped by the contributions of a variety of thinkers and researchers who have devoted their lives to understanding how humans learn and develop. This article will discuss seven key figures whose thinking has shaped the foundation of modern education as we know it today.

1. Jean Piaget (1896-1980): Theory of Cognitive Development

Jean Piaget, a prominent Swiss psychologist, made a monumental contribution to the field of educational psychology through his theory of cognitive development. Originally interested in biology, Piaget spent more than five decades of his life studying how children develop their ability to think and reason. His research began with close observations of his own children, which later evolved into a comprehensive study of children's cognitive development.

Piaget identified four main stages of cognitive development that every child goes through. The first stage is sensorimotor (0-2 years), where infants learn to understand the world through their senses and motor actions. At this stage, important milestones include the development of the concept of object permanence – the understanding that objects remain even when they are out of sight. Infants also begin to understand simple cause-and-effect relationships and learn through trial and error.

The second stage, preoperational (2-7 years), is marked by children's ability to use symbols and language to represent objects and experiences. Although they can use symbols, children's thinking at this stage is still very egocentric - they have difficulty seeing situations from another person's perspective. Children do not yet understand the concept of conservation and their thinking is more intuitive than logical.

Entering the concrete operational stage (7-11 years), children begin to develop the ability to think logically about concrete situations. They can understand conservation, classify, and sequence objects in a series. It is important to note that at this stage, children already understand reversibility - the concept that actions can be reversed to return to the initial state.

The final stage, formal operational (11 years and above), marks the ability to think abstractly and hypothetically. Adolescents can reason deductively, understand complex concepts, and think systematically about possibilities. This is the highest level of thinking in Piaget's theory.

Piaget's theory is built on several key concepts, including schemas - basic units of knowledge that develop with experience. The process of cognitive adaptation occurs through assimilation (incorporating new information into existing schemas) and accommodation (changing schemas to accommodate new information). Equilibration, or achieving cognitive balance, is the intrinsic motivation for learning.

The impact of Piaget's theory on modern education has been significant. Active, hands-on learning approaches, exploration and discovery, and experiential learning are all rooted in his thinking. The teacher acts as a facilitator who provides an environment that supports independent exploration and problem solving. Modern curricula are designed with stages of cognitive development in mind, are spiral in nature, and emphasize deep understanding.

Although Piaget's theory has faced some criticism, such as the rigidity of developmental stages and the lack of consideration of cultural factors, his contributions remain fundamental to education. The constructivist approach, student-centered learning, and developmental assessments he developed continue to influence educational practice today.

The concepts Piaget developed have formed the basis for many modern learning methods. His emphasis on the importance of active learning and independent discovery has inspired the development of innovative learning methods. Understanding the stages of cognitive development helps educators design learning that is appropriate to the abilities and needs of students at each stage of development.

Piaget's legacy in education continues through various research and development of learning theories. Researchers and educational practitioners continue to develop and refine his ideas, creating more effective and modern learning methods. Piaget's theory of cognitive development remains an important foundation in understanding how children learn and develop, forming the basis for better educational practices in the future.

2. Lev Vygotsky (1896-1934): Sociocultural Theory

Lev Semyonovich Vygotsky, a Russian psychologist, made a revolutionary contribution to our understanding of children's cognitive development through a sociocultural perspective. Although his life was relatively short, his theory has formed a fundamental basis for modern educational practice. Unlike Piaget's approach that emphasized individual development, Vygotsky argued that children's cognitive development cannot be separated from the social and cultural context in which they grow up. A central concept in Vygotsky's theory is the Zone of Proximal Development (ZPD), defined as the distance between the actual level of development as determined by independent problem solving and the level of potential development as determined by problem solving under adult guidance or collaboration with more capable peers. The ZPD is fundamental to understanding how learning occurs in a social context and how appropriate support can facilitate cognitive development.

Vygotsky introduced the concept of scaffolding, although the term was actually coined by Jerome Bruner who developed Vygotsky's ideas. Scaffolding refers to the process of providing gradual support to the learner, which is progressively reduced as the student's competence increases. The concept emphasizes the importance of social interaction in learning and the crucial role played by teachers and more competent peers.

Vygotsky's theory emphasizes that language plays a fundamental role in cognitive development. He argues that language is not only a tool for expressing thoughts, but also an instrument for shaping thoughts themselves. Through social interaction and the use of language, children not only learn new words but also develop new ways of thinking and understanding the world.

In the context of learning, Vygotsky emphasized the importance of collaborative learning. He argued that the most effective learning occurs when children interact with more competent others in the context of meaningful activities. This social interaction allows for the transfer of knowledge and skills from the more expert individual to the learner.

Vygotsky’s contributions to modern education are evident in a variety of learning practices. Cooperative learning approaches, peer tutoring, and various forms of project-based learning involving social interaction all reflect the influence of Vygotsky’s thinking. His theories have also influenced the way we understand the role of the teacher, who is not simply a transmitter of information but a facilitator who helps students construct their own understanding.

Vygotsky also emphasized the importance of cultural context in learning. He argued that cultural tools, including technology and symbol systems, mediate learning and cognitive development. This understanding is particularly relevant in today’s digital age, where technology and social media play a significant role in learning.

The implications of Vygotsky's theory for contemporary education are far-reaching. Inclusive education, which emphasizes the importance of social interaction between students of varying abilities, reflects Vygotsky's understanding of the ZPD and social learning. The use of formative and dynamic assessments is also influenced by his thinking about the importance of understanding students' developmental potential, not just their current ability levels.

Although Vygotsky died young, his theories continue to be influential and relevant in modern educational contexts. Contemporary research continues to develop and expand his ideas, particularly in the context of educational technology and online learning. Vygotsky's sociocultural perspective provides a valuable framework for understanding how technology and social media can be effectively integrated into learning.

Vygotsky's theories also have important implications for curriculum development and pedagogy. His emphasis on socially mediated learning encourages the development of more interactive and collaborative learning methods. This approach is particularly relevant in addressing the challenges of 21st-century education, where collaboration and communication skills are becoming increasingly important.

3. B.F. Skinner (1904-1990): Behaviorism and Programmed Learning

Burrhus Frederic Skinner, or better known as B.F. Skinner, is a behaviorist psychology figure who has had a major influence on the world of education. Skinner developed the theory of operant conditioning which is the basis for various modern learning practices. His contributions to understanding human behavior and the learning process have formed the basis for various teaching methods that are still used today.

Skinner's operant conditioning theory is based on the principle that behavior that is reinforced tends to be repeated, while behavior that is not reinforced or punished tends to be reduced. Unlike his predecessor, Ivan Pavlov, who focused on classical conditioning, Skinner emphasized the importance of consequences in shaping behavior. He argued that learning occurs as a result of the interaction of organisms with their environment.

One of Skinner's most important contributions to education was the development of programmed instruction. This method is designed to provide learning materials in small, structured units, where students can learn at their own pace and receive direct feedback. This approach became the forerunner to the development of various computer-based learning methods and modern online learning.

In the context of learning, Skinner emphasized the importance of positive reinforcement. He argued that punishment, although it can stop unwanted behavior in the short term, often has negative side effects. Conversely, positive reinforcement is not only effective in shaping desired behavior but also creates a more conducive learning environment.

Skinner also introduced the concept of shaping in learning, namely the process of forming complex behavior through gradual reinforcement of approximations of desired behavior. This method is still widely used in various learning contexts, especially in special education and complex skills training.

Skinner's behaviorist principles have influenced various aspects of modern educational practice. The use of reward systems, providing direct feedback, and gradual learning are some examples of applications of his theory that are still relevant. Criteria-based assessment systems and structured learning also reflect the influence of Skinner's thinking.

In the development of learning technology, Skinner's contribution is very significant. The teaching machine he developed became an early prototype for various modern interactive

learning platforms. The principles of programmed learning that he developed are still the basis for designing learning software and learning management systems (LMS).

Although Skinner's theory is often criticized for being too mechanistic and ignoring internal cognitive processes, its influence in education cannot be ignored. Behaviorism provides a clear framework for understanding how learning environments can be designed to maximize learning outcomes.

4. Jerome Bruner (1915-2016): Discovery Learning Theory

Jerome Bruner (1915-2016) was an American cognitive psychologist who made significant contributions to the field of educational psychology through his discovery learning theory. This theory emphasizes the importance of understanding the basic structure of a subject and the active role of students in the learning process through discovery. Bruner believed that the most effective learning occurs when students discover concepts and principles themselves, rather than just passively receiving information.

In his theory, Bruner put forward three stages of cognitive development that influence how individuals understand their environment. The first stage is enactive, where children understand the environment through direct physical actions and movements. The second stage is iconic, when children begin to understand objects through images and visualizations. The third stage is symbolic, where children are able to use symbols, language, and logic to understand abstract concepts.

Bruner also introduced the concept of scaffolding in learning, which is a form of gradual support from teachers to students. This support is gradually reduced as students' ability to learn independently increases. He emphasized that the curriculum should be arranged in a spiral, where basic concepts are introduced first and then gradually increased in complexity according to students' cognitive development. In its implementation, Bruner's discovery learning theory encourages teachers to create learning situations that allow students to explore and discover concepts on their own. The teacher acts as a facilitator who provides the right materials and situations for discovery learning, provides direction when needed.

5. John Dewey (1859-1952) learning theory and findings

was an American philosopher, psychologist, and educational reformer who made major contributions to the world of education through his revolutionary learning theory. His main thinking on education is known as the concept of "Learning by Doing" or learning by doing, which emphasizes that true learning occurs through direct experience and active involvement of students in the learning process.

In Dewey's view, education should be progressive by placing students as the center of learning (student-centered). He opposed the traditional education model that places teachers as the only source of knowledge and students as passive recipients. Instead, Dewey believed that teachers should act as facilitators who help students develop critical thinking and problem-solving skills through direct experience.

The concept of inquiry or investigation is an integral part of Dewey's learning theory. He advocates learning through an active inquiry process in which students are invited to identify problems, collect data, make hypotheses, test solutions, and draw conclusions. Dewey also introduced the concept of "Continuous Reconstruction of Experience" which emphasizes that each new learning experience must build on previous experiences, creating a continuous and meaningful learning process.

The social aspect of learning receives special attention in Dewey's theory. He viewed education as a social process and believed that schools should be miniature societies where

students learn to interact, collaborate, and develop social skills. Dewey also emphasized the importance of democracy in education, where students are given the freedom to think, express themselves, and actively participate in decision-making.

Dewey's learning theory has had a major influence on modern educational practices. The application of his theory can be seen in various contemporary learning methods such as project-based learning, experiential learning, and problem-based learning. Dewey's evaluation of learning does not only focus on the end result, but also considers the process and individual development of students. Although developed more than a century ago, Dewey's learning principles remain relevant in today's educational context and continue to inspire innovation in learning practices.

Dewey's legacy of thinking about education lives on in various modern learning approaches. His influence can be seen in methods such as active learning, cooperative learning, and various other constructivist approaches that emphasize the importance of experience and active involvement of students in the learning process. His theories have not only changed the way we view education but also continue to inspire educators in developing more effective and meaningful learning methods for students. 6. Howard Gardner (1943-present): Theory of Multiple Intelligences

Howard Gardner, a psychologist and educational researcher from Harvard University, developed the theory of multiple intelligences that revolutionized the traditional view of intelligence. Gardner opposed the concept of a single intelligence measured by IQ tests, and instead proposed that each individual has a unique combination of different types of intelligence. Gardner initially identified seven types of intelligence in his book "Frames of Mind" (1983), which later expanded to eight, and eventually nine types of intelligence. The nine intelligences include: linguistic intelligence (language ability), logical-mathematical intelligence (the ability to think logically and mathematically), visual-spatial intelligence (the ability to understand space and images), musical intelligence (sensitivity to music and rhythm), bodily-kinesthetic intelligence (the ability to control body movements), interpersonal intelligence (the ability to understand others), intrapersonal intelligence (self-understanding), naturalistic intelligence (sensitivity to nature), and existential intelligence (the ability to understand fundamental questions of existence).

In the context of education, Gardner's theory emphasizes the importance of recognizing and developing the various types of intelligence that students have. He argues that the traditional education system focuses too much on linguistic and logical-mathematical intelligence, while ignoring other forms of intelligence. Gardner believes that each student has a different intelligence profile, and learning should be designed to accommodate this diversity. The implications of the theory of multiple intelligences in learning practice are very broad. Teachers are encouraged to use a variety of learning methods and approaches that can accommodate various types of intelligence. For example, in teaching a concept.

6. David Ausubel (1918-2008): Meaningful Learning Theory

David Ausubel, an American educational psychologist, developed the Meaningful Learning Theory which made a significant contribution to understanding how students acquire and retain knowledge. This theory emphasizes the importance of integrating new information with existing knowledge in students' cognitive structures, in contrast to rote learning which tends to be mechanical and temporary.

The main concept in Ausubel's theory is the "advance organizer", which is introductory material presented before the main learning material. This advance organizer functions as a

cognitive bridge between what students already know and what will be learned. Ausubel believed that learning becomes more meaningful when students can connect new knowledge with concepts they already understand.

In his theory, Ausubel distinguishes between meaningful learning and rote learning. Meaningful learning occurs when students actively integrate new information into existing knowledge structures, while rote learning occurs when new information is simply stored without being linked to existing knowledge. He emphasized that meaningful learning is more effective because the information learned can last longer and can be transferred to new situations better.

Ausubel also identified three conditions necessary for meaningful learning: the material to be learned must be potentially meaningful, students must have relevant concepts in their cognitive structure, and students must have a desire to relate new material to existing knowledge. Teachers play a critical role in creating these conditions through careful lesson planning and the use of appropriate teaching strategies.

In teaching practice, Ausubel's theory encourages the use of strategies such as concept maps, analogies, and concrete examples to help students make connections between new and existing knowledge. Concept maps in particular are a powerful tool for visualizing relationships between concepts and helping students organize their knowledge systematically.

The influence of Ausubel's theory is evident in many aspects of modern education. The constructivist approach to learning, which emphasizes the importance of students' prior knowledge and the active construction of understanding, is heavily influenced by Ausubel's thinking. His theory has also influenced curriculum design and the development of instructional materials that take into account students' cognitive structures and the importance of connections between materials.

Ausubel's contributions to education also include his emphasis on the importance of structure and organization in learning. He argued that learning materials should be structured hierarchically, starting with more general and inclusive concepts and then moving to more specific concepts. This approach helps students build a more comprehensive and integrated understanding. Although developed decades ago, Ausubel's theory of meaningful learning remains relevant in contemporary educational contexts. In an increasingly complex information age, the ability to meaningfully integrate and organize knowledge has never been more important. Ausubel's principles continue to provide valuable guidance for educators in designing effective and meaningful learning for students.

Conclusion

This article shows that the contributions of these seven figures have formed a fundamental foundation for our understanding of learning and the development of educational practices. Their theories are not only relevant today, but also provide a valuable framework for the development of education in the future. A comprehensive understanding of these theories allows educators to design and implement more effective and meaningful learning for learners.

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