

A Study on Lateral Teaching Strategies for Middle School Vocabulary Teaching Integrating Herbart's and Piaget's Theories

Zunshai Xi^{1,*}, Hong Yun¹

¹School of Foreign Languages, Sichuan University of Science & Engineering, Zigong 643000, China

*Corresponding author: 2351463144@qq.com

Abstract

In the contemporary educational landscape, with the continuous advancement of educational philosophies and the diversification of teaching methodologies, lateral teaching has emerged as an innovative instructional model, garnering widespread attention. Addressing the issue of low learning efficiency among middle school students in vocabulary teaching, where teachers often rely on direct teaching, this study delves into the process of vocabulary learning by integrating the theories of apperception by Herbart and cognitive development by Piaget. It posits that vocabulary learning constitutes a process of assimilation and accommodation. Building upon this foundation, this research proposes the adoption of lateral teaching strategies, implemented through the design of a series of engaging activities and the provision of diverse learning materials. The research findings indicate that lateral teaching strategies can significantly enhance middle school students' vocabulary learning outcomes and foster their holistic development. This discovery holds significant implications for the advancement and development of the educational enterprise.

Keywords

Lateral Teaching; Apperception; Assimilation and Accommodation; Vocabulary Teaching.

1. Introduction

Direct teaching[1], as a method in which teachers directly impart and explain knowledge to students, occupies a significant place in the field of education due to its directness and efficiency. However, this model also exhibits limitations that cannot be overlooked. Specifically, relying solely on direct vocabulary teaching struggles to fully ignite students' learning interest and intrinsic motivation, while also impeding the construction of a systematic and solid vocabulary system among students. Furthermore, direct teaching tends to be teacher-centered, with students largely in a passive reception state throughout the process, lacking sufficient opportunities for practice and interaction. This, to a certain extent, constrains the development of students' critical thinking and innovative abilities.

When a particular vocabulary item fails to effectively stimulate students' learning interest in the classroom, students may quickly plunge into a state of exhaustion, with their comprehension abilities subsequently decreasing significantly. In such contexts, if teachers continue to adhere to the traditional direct teaching model, students' learning efficiency will not only be greatly compromised but may even render it difficult for them to effectively master the learned vocabulary. This situation not only results in a dual waste of time for both teachers and students but also significantly diminishes the overall teaching effectiveness.

Given the limitations of direct teaching and the diverse needs of students during the learning process, it is particularly crucial to explore a teaching method that can stimulate students'

learning motivations, activate their cognitive vitality, and enable them to more effectively acquire vocabulary knowledge. Against this backdrop, the importance of lateral teaching as an innovative teaching model becomes increasingly prominent. Lateral teaching, by designing diversified teaching activities and providing learning materials related to students' interests, aims to transmit vocabulary knowledge in an indirect manner, potentially breaking through the limitations of direct teaching and enhancing students' learning experiences and outcomes.

2. Theoretical Foundation

(1) Herbart's Theory of Apperception

According to Herbart's theory, the cognitive process of students constitutes a process of apperception[2,3]. The concept of apperception refers to the formation of effective connections between new knowledge learned by students and their existing old knowledge in their minds, thereby constructing an apperceptive mass. The term "effective connections" does not imply a simple, mechanical assembly of old and new knowledge but rather emphasizes the existence of a certain relevance between new and old knowledge, allowing them to interact and subsequently form a new knowledge system. An apperceptive mass refers to the newly constructed theoretical system arising from the interaction between old and new knowledge, which, compared to the original theoretical system, is more extensive and systematic.

(2) Assimilation and Accommodation in Piaget's Cognitive Development Theory

In Piaget's theory of cognitive development, the concepts of assimilation and accommodation[4] collectively elucidate how students engage with and integrate new knowledge during the cognitive process. Assimilation[5] refers to the organic integration of new knowledge into an individual's existing knowledge framework when there is a high degree of compatibility between the new and existing knowledge. This process results in the expansion of the existing knowledge system. Conversely, accommodation[6] occurs when new knowledge lacks such high compatibility with existing knowledge, rendering it unassimilable within the original framework. In such instances, a parallel new knowledge system is established on the foundation of the old, forming a juxtaposition with the original system and collectively contributing to a more expansive and integrated overall knowledge structure.

(3) Integration of Apperception with Assimilation and Accommodation Theories

Apperception represents the process through which students receive and comprehend knowledge, with assimilation and accommodation serving as indispensable components of this process. Therefore, this paper posits a potential correlation between the two. Herbart suggested that meaningful learning should constitute a process of apperception, wherein new knowledge must form effective connections with existing knowledge. However, Herbart did not elaborate on the specific mechanisms of this connection, namely whether new knowledge is incorporated into the existing knowledge system or whether it forms a parallel knowledge system alongside the old. Both scenarios facilitate the integration of new knowledge into existing understanding, yet the question of whether this integration occurs through juxtaposition or direct incorporation warrants further exploration. Consequently, this paper introduces Piaget's theories of assimilation and accommodation to provide a more comprehensive explanation of this phenomenon, thereby complementing Herbart's theory of apperception. By integrating Herbart's theory of apperception with Piaget's theories of assimilation and accommodation, a novel theoretical framework emerges for analyzing the connections between new and existing knowledge points in the cognitive process of students. Specifically, within the context of apperception, the connections between new and existing knowledge points can be conceptualized as components of assimilation and accommodation. This integration lays the theoretical foundation for the proposition of lateral teaching.

3. Lateral Teaching

(1) Conception of Lateral Teaching

Lateral teaching, also referred to as indirect teaching, represents an educational mode that stands in contrast to direct teaching. While direct teaching conveys information to students through a series of explicit lectures, lateral teaching does not rely on such direct methodologies. Instead, it fosters knowledge acquisition in students by encouraging them to explore a range of activities or learning materials, thereby enabling them to subtly and unconsciously acquire knowledge. As a strategy that contrasts with direct teaching, the essence of lateral teaching lies in its indirect method of knowledge transfer. It relies on a carefully crafted series of activities or learning materials to guide students in naturally absorbing and mastering knowledge through exploration and practice. Specifically, lateral teaching emphasizes the importance and agency of students as the primary learners, urging them to construct their own knowledge systems through active exploration, discovery, and reflection. This teaching mode not only focuses on the efficiency of knowledge transfer but also places greater emphasis on nurturing students' thinking abilities and enriching their emotional experiences, aligning well with the cognitive processes involved in vocabulary learning for children.

(2) Significance of Lateral Teaching

Lateral teaching proves effective in facilitating students' acquisition and comprehension of vocabulary, aligning well with their cognitive processes. It aids students in seamlessly integrating newly learned vocabulary into their existing knowledge frameworks during vocabulary learning, thereby fostering the assimilation process. When new vocabulary introduced in instructional activities fails to establish connections with students' prior knowledge due to a lack of understanding of the new information or insufficient similarity to trigger associations, teachers must focus on explanation and guidance, assisting students in constructing new, independent knowledge systems in their minds. These new systems stand alongside the original ones, collectively forming a comprehensive cognitive framework. Consequently, from the perspectives of both assimilation and accommodation, lateral teaching holds significant importance in enhancing students' understanding of the entire vocabulary system.

4. Comparison Between Lateral Teaching and Direct Teaching

(1) Theoretical Foundations

The theoretical foundation of direct teaching is rooted in behaviorism[7], which emphasizes that learning is a process of stimulus-response connection. In direct teaching, the knowledge serves as the stimulus, while students respond to the knowledge by recording, practicing, memorizing, etc. These behaviors are the responses to the stimulus. Behaviorism believes that through repeated stimuli and responses, students can form stable learning habits and skills. On the other hand, the theoretical basis of lateral teaching draws upon Piaget's theory of cognitive development[8] and Herbart's theory of apperception[9]. Herbart posits that new knowledge must integrate with old knowledge to form an apperceptive mass in order to be effectively absorbed and consolidated. Piaget further explains that the integration of new and old knowledge occurs through assimilation and accommodation. Therefore, learning is a process of assimilation and accommodation. In lateral teaching, teachers provide engaging learning materials and activities to encourage students to explore, communicate, and learn. This process involves assimilation and accommodation, which provides students good opportunities to assimilate new knowledge into their existing cognitive structures, and adjust their cognitive structures to absorb new knowledge.

(2) Teaching Objectives

In terms of teaching objectives, there are notable differences between lateral teaching and direct teaching. Lateral teaching not only emphasizes the imparting of knowledge but also places greater significance on cultivating students' problem-solving abilities, innovative thinking skills, and team collaboration capabilities. This objective stems from lateral teaching' emphasis on fostering students' comprehensive development through the exploration of activity materials and the conduct of teaching activities. During the implementation of lateral teaching, students have the opportunities to engage in in-communication, thinking, and problem-solving, which not only facilitates the internalization of knowledge but also stimulates their creativity and teamwork spirit. In contrast, the teaching objectives of direct teaching are relatively singular, primarily focusing on the memorization of knowledge and the proficiency of skills. Direct teaching typically adopts a more direct and explicit teaching approach, aiming to enhance students' knowledge mastery and skill improvement through repeated practice and reinforcement of memory. However, this teaching may, to some extent, overlook the cultivation of students' problem-solving abilities, innovative thinking skills, and team collaboration capacities.

(3) Teaching Process

In terms of the teaching process, direct teaching focuses on the teacher's delivery, where students primarily play the role of passive recipients, with knowledge transmission. In contrast, indirect teaching emphasizes students' active inquiry, with the teacher transitioning to the role of guide. By setting problematic situations, providing learning resources, and other methods, teachers stimulate students' desire to explore and guide them to actively construct their knowledge systems. The differences between these two teaching modes in the teaching process are not only reflected in the way knowledge is transmitted but also deeply reflect different teaching philosophies. Specifically, direct teaching tends towards traditional spoon-feeding, while lateral teaching places greater emphasis on students' subjectivity and creativity.

(4) Teaching Outcomes

In terms of teaching outcomes, direct teaching and lateral teaching exhibit notable differences. Direct teaching tends to facilitate short-term memory, with students demonstrating good short-term recall but limited long-term learning capabilities. Conversely, lateral teaching fosters strong long-term learning capacities, contributing significantly to the enhancement of students' overall competencies. These differing outcomes highlight the two teaching modes in terms of their impact on students' learning effectiveness.

5. Facilitating Role of Lateral Teaching in Vocabulary Learning

(1) Facilitative Effect in the Process of Assimilation

Lateral teaching facilitates students' effortless assimilation of vocabulary. In contrast to traditional direct teaching, lateral teaching eschews the method of direct teaching. Instead, it creates a relaxed and enjoyable learning environment for students through an abundance of engaging activities and learning materials. In such an atmosphere, students can subtly assimilate new vocabulary into their cognitive structures through exploration and practice. This approach of integrating education with entertainment makes it easier for students to accept and internalize vocabularies.

(2) Facilitative Effect in the Process of Assimilation

Lateral teaching enables students to construct a more profound vocabulary system during the accommodation process. Compared to direct teaching, students, under the guidance of teachers, engage in practical activities and explore learning materials within the framework of lateral teaching. This successful approach allows them to establish a new knowledge system in their minds that runs parallel to their existing knowledge framework. Connections are formed between old and new knowledge, thereby constructing a more comprehensive and profound

cognitive structure. Due to the role of personal participation and practical engagement, students' understanding and mastery of vocabulary become more in-depth, resulting in a more stable and abundant vocabulary system.

6. Advantages of Lateral Teaching

(1) Enhancing Learning Motivation and Interest

Lateral teaching emphasizes students' subjectivity and participation, stimulating their learning motivation and curiosity through engaging activities and diverse learning materials. When students actively engage in the vocabulary learning process, they are more likely to generate intrinsic motivation, thereby taking a more proactive approach to assimilate and accommodate new vocabulary. Additionally, lateral teaching encourages mutual influence and support among students, further enhancing their learning motivation and interest.

(2) Facilitating the Development of Independent Learning Abilities

Lateral teaching encourages students to actively participate, explore, and discover knowledge through diversified learning materials and practical activities. In this process, both assimilation and accommodation of knowledge involve students' autonomous exploration of vocabulary. Therefore, lateral teaching contributes to cultivating their independent learning abilities.

(3) Fostering Critical Thinking and Problem-Solving Abilities

In lateral teaching, students are required to continually reflect, analyze, and evaluate the vocabulary they learn, a process that contributes to the cultivation of their critical thinking and problem-solving abilities. Specifically, by designing a series of inspiring and challenging learning activities and exploratory tasks, students are prompted to transition from passive recipients of knowledge to active constructors of knowledge. When investigating problems and engaging in related activities, students must constantly question the validity and authenticity of the information they encounter and form their own viewpoints accordingly. This process not only exercises their logical reasoning skills but also nurtures their unique insights into vocabulary, thereby fostering critical thinking and problem-solving abilities.

(4) Facilitating the Transfer of Knowledge and Skills

During the process of lateral teaching, students are required to utilize their existing vocabulary in various activities, exploring learning materials, and solving practical problems. Consequently, they must apply their known vocabulary to unknown situations, thereby exercising their transfer abilities. Through the ingenious design of course content, lateral teaching effectively facilitates the transfer of knowledge and skills, enabling students to flexibly invoke and innovatively apply their existing vocabulary when confronted with new situations or problems. This, in turn, demonstrates their exceptional information integration and innovative capabilities.

7. Application Strategies of Lateral Teaching

The application strategies of lateral teaching refer to the integration of lateral teaching concepts and methodologies into specific teaching practices. Through a series of meticulously designed teaching activities and means, coupled with appropriate guidance from teachers, these strategies aim to promote students' active exploration, deep understanding, and effective application of vocabulary. These application strategies are intended to optimize students' vocabulary learning processes, enhance learning efficiency and quality, and assist students in better achieving assimilation and accommodation of vocabulary. This paper will focus on introducing several common lateral instructional methods, including project-based teaching, storytelling teaching, and communicative language teaching. Although these methods possess their unique characteristics, they share a commonality in that they can stimulate students'

learning interest and motivation through various approaches and pathways, thereby promoting the development of their cognitive abilities and thinking skills.

(1) Project-based Teaching

Project-based[10] learning refers to a process in which students engage in discussion, study, and exchange centered around a theme, problem, or large-scale project. In this process, students need to break down the overall project or task into a series of smaller projects or tasks, and achieve the goals of the larger project by progressively solving these smaller tasks.

In the context of project-based teaching, when dealing with vocabulary related to daily life, teachers can assign students to create a poster with the theme of "Daily Life," including at least twenty vocabulary words related to daily activities. Students are required to use these words to describe their own daily routines. In the process of creating the poster, students may consciously or unconsciously associate learned words such as "father" and "mother" with their existing life experiences, recognizing a high degree of similarity and easily incorporating new vocabulary into their original cognitive structures. This demonstrates the facilitative role of project-based learning in the assimilation process of students' vocabulary learning. When describing modes of transportation, students may encounter unfamiliar vocabulary or expressions such as "subway." However, during the process of creating the "Daily Life"-themed poster, through consulting dictionaries, asking teachers, and other means, students gradually grasp the meanings of these words. They realize the differences between these new words and their existing vocabulary, constructing a new vocabulary system in their minds. This highlights the promotional effect of project-based learning on the accommodation process in students' vocabulary learning.

(2) Storytelling Teaching

Story-based teaching[11] refers to the integration of engaging and lively stories into instructional contexts, which can be flexibly applied during classroom introductions or knowledge explanation sections to enhance teaching effectiveness.

For instance, when the instructional objective is for students to understand and utilize target vocabulary within the thematic context of "home," and engage in simple descriptions and exchanges centered around "home," teachers can create a story about Zip and Zoom, where Zip hides his puppy in a certain room and Zoom needs to find the puppy based on clues. Within the narrative, teachers present the target vocabulary one by one and utilize the storyline to aid students in comprehending the meanings and usages of the new vocabulary. By associating the new vocabulary with the story's plot, students form deep memories and recognize a high degree of similarity between the new vocabulary and other elements in the storyline, incorporating the new vocabulary into their existing vocabulary system in conjunction with the storyline. This exemplifies the facilitating role of story-based teaching in the assimilation process of vocabulary learning.

Conversely, when teachers narrate a story about aliens, students may encounter the word "alien," and due to the possibility that their pre-existing knowledge system lacks concepts and descriptions of alien appearances, they may feel puzzled and unable to establish a strong connection between the word "alien" and their prior cognition, impeding the assimilation process of vocabulary. At this juncture, teachers can guide students through information searching related to "aliens" using the storyline and clues, directing them to discover connections between aliens, "humans," and "organisms," and assisting students in adjusting their cognitive structures or establishing a new vocabulary system based on the word "alien." This demonstrates the promotional effect of story-based teaching on the accommodation process in vocabulary learning.

(3) Communicative Language Teaching.

Communicative Language Teaching (CLT)[12] is an instructional approach that emphasizes the organization of communicative activities, aiming to facilitate students' language learning and communicative competence through authentic or simulated communicative situations. In this process, students are encouraged to apply language in specific communicative contexts and engage in active exchanges, thereby mastering language knowledge and skills through practice. For example, when instructors are teaching English vocabulary related to nutrients, they can design a series of communicative activities centered around the theme of "nutrients" to enable students to learn new words in real or simulated contexts. Teachers may employ role-playing activities, where some students act as nutritionists and others as clients, creating a communicative setting where nutritionists promote nutrients to clients. As students use the word "nutrients" in communication, they may associate it with previously learned related words such as "nutrition", "protein", and "milk", recognizing their high degree of similarity and easily understanding "nutrients" through these connections. This exemplifies the facilitating role of communicative teaching in the assimilation process of students' vocabulary learning. However, when students encounter completely unfamiliar words during communicative interactions, such as when a nutritionist promotes "insurance" along with nutrients to a client, they may struggle to connect the new word with their existing vocabulary system and undergo the assimilation process. In such cases, teachers can guide students to search for information, helping them understand the meaning of "insurance" and identify the differences and connections between this word and their existing vocabulary. Students may either adjust their cognitive structures to accommodate this new word or establish a new vocabulary system centered around "insurance" in their minds. This demonstrates the promotional effect of communicative teaching on the accommodation process in students' vocabulary learning.

(4) Random Access Teaching

Random Access Teaching[13] refers to a teaching approach where instructors present knowledge points from multiple dimensions and levels in order to deepen students' understanding and mastery of these points. In middle school vocabulary teaching, teachers can provide diverse learning materials or activities centered around the same vocabulary item, presented from different perspectives, thereby aiding students in better comprehending and retaining this new vocabulary.

When the instructional objective is set to "master vocabulary related to animals, such as 'elephant', 'lion', 'tiger', etc.," teachers can present students with multiple learning materials pertinent to these animal-related words. Through repeated exposure and learning, students encounter the same vocabulary in various contexts, thereby deepening their understanding and memory of these words. For instance, when students first encounter vocabulary like 'elephant, lion, tiger' in reading materials discussing "animal conservation," they may form a preliminary impression of these words. Subsequently, when they encounter these same animal-related words again in reading materials discussing "the difference between herbivores and carnivores," students can easily connect their previous learning experiences from different perspectives, thereby more effectively facilitating the assimilation and internalization of the vocabulary.

If students find it confusing when presented with new vocabulary from different angles, teachers can provide timely guidance to help students optimize their existing cognitive structures or construct new cognitive structures for the vocabulary presented from a different perspective. For example, when introducing the new vocabulary "solar-system," in addition to explaining its basic concept, teachers can further elaborate on the solar system's position and hierarchy within the universe. For classification dimensions that students may find difficult to understand, such as the cosmic division of the solar system, teachers can aid students in better comprehending and retaining the new vocabulary "solar-system" by imparting knowledge about the hierarchical structure of the universe.

8. Limitations

One significant limitation lies in the difficulty of its implementation. This is primarily due to the level of teaching skills required by teachers. To effectively guide students in exploring learning materials and engaging in learning activities, teachers must own advanced guiding abilities. Thus, the demand for highly skilled teachers represents a notable limitation of lateral teaching.

9. Development Trends and Frontiers

With the widespread application of artificial intelligence and big data technologies in the field of education, lateral teaching should be deeply integrated with multimedia information technology, aiming to provide students with more personalized and efficient learning experiences. The incorporation of advanced means such as digital technology, multimedia storage technology, and multimedia communication technology not only provides solid technical support for lateral teaching but also greatly enriches its teaching methods and means, making personalized teaching feasible. In the practice of lateral teaching, teachers can publish teaching materials in advance through online platforms to guide students in conducting thorough previews. At the same time, utilizing network tools, teachers can gain a deep understanding of students' learning needs and precisely match learning resources that cater to these needs. With the aid of big data technology, teachers can systematically analyze students' learning styles and subsequently tailor teaching activities to align with each student's learning characteristics, thereby more effectively stimulating students' learning interests and enthusiasm.

10. Conclusion

By integrating Herbart's theory of apperception with Piaget's theories of assimilation and accommodation, this paper proposes that students' cognitive process is a dynamic integration of new and old knowledge, forming an apperceptive mass. This integration occurs in two primary aspects: assimilation, where new knowledge is incorporated into the existing knowledge system to form a new, unified knowledge framework; and accommodation, where new knowledge that cannot be integrated into the existing system leads to the formation of a parallel, new knowledge system. Together, these processes constitute the apperceptive mass. After analyzing these theoretical foundations, the paper further highlights the importance of lateral teaching in enhancing student motivation and knowledge acquisition, with a particular focus on assimilation and accommodation in the context of vocabulary learning. It discusses these aspects to demonstrate the effectiveness of lateral teaching in middle school vocabulary teaching. Following the elucidation of lateral teaching's advantages and effectiveness, the paper presents specific vocabulary teaching methods that embody lateral teaching principles and examines how these methods facilitate students' vocabulary system construction from the perspectives of assimilation and accommodation.

Compared to direct teaching, lateral teaching is more likely to stimulate students' learning initiative and enthusiasm. It also aids students in constructing their vocabulary systems more effectively in terms of both assimilation and accommodation. However, direct teaching remains indispensable in specific teaching contexts due to its directness and efficiency in imparting knowledge. Therefore, teachers should fully integrate lateral and direct teaching methods in actual classrooms to leverage their respective strengths, thereby enhancing students' learning interest and achieving the goals of making learning enjoyable and creating efficient classrooms.

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