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The Application of Image Schema Theory in the Teaching of Prepositions in Middle School English: Taking the Preposition on as an Example

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Abstract: This paper takes the preposition "on" as an example to explore the application of image schema theory in the teaching of prepositions in middle school English. Traditional teaching relies on mechanical memorization and fixed collocations, neglecting the inherent cognitive logic behind the polysemy of prepositions, which makes it difficult for students to understand their abstract usage. The Image Schema Theory constructs the core schema of the preposition "on" through physical experience, and then extends it to abstract domains such as time, state and medium through metaphor. Teachers can enhance students' cognitive transfer through methods such as physical demonstrations, schema comparisons, and situational exercises, enabling students to better master the different usages of the preposition "on".

Keywords: Image Schema, Teaching of Prepositions, Middle School English Teaching.

1. Research Background

English prepositions are core grammatical elements that connect sentence components, express spatial relations and abstract logic[2], but their polysemy and flexibility often become difficulties for middle school students in learning. Take the high-frequency preposition "on" as an example. Its basic spatial meaning is "in..." "Surface" (such as "on the table") can extend to abstract domains such as time (on Monday), state (on fire), and depend on (depend on) [12], and students often confuse the meanings in specific contexts due to mechanical memory rules. Traditional teaching often relies on teachers giving examples and students reciting them, treating prepositional collocations as fixed phrases and lacking an analysis of the internal cognitive logic. For example, students may memorize "on the table" and "on time" by rote, but fail to understand why they share the same preposition. This fragmented teaching approach leads students to make frequent mistakes in complex contexts and may even affect the accuracy of their reading comprehension and writing expression.

The Image Schema Theory proposed by cognitive linguistics provides a new path for the teaching of prepositions. This theory emphasizes that humans construct basic cognitive schemas through physical experiences (such as spatial orientation perception), and then expand them to abstract concepts through metaphors. The traditional teaching approach that regards prepositional collocations as isolated phrases has fragmented the intrinsic systematicness of the polysym network. However, the imagery schema-driven teaching method is expected to help students establish a cognitive connection of "spatial perception → abstract concept", fundamentally enhancing the acquisition efficiency[5].

2. Image Schema Theory

George Lakoff and Mark Johnson in their co-authored book "Metaphors We Live By" in 1980 The concept of "Image Schema" was systematically proposed for the first time [4]. They emphasize that humans form fundamental cognitive structures through direct interaction between the body and the physical world (such as walking, grasping, observing, perceiving spatial relationships, etc.), which form the basis for constructing more abstract thinking and conceptual systems. in 1987, Johnson published his monograph "The Body in the Mind" The Bodily Basis of Meaning, Imagination, and Reason describes imagery diagrams as "recurring, dynamic perception-motion patterns that give coherence and structure to our experience" [3]. Li Fuyin holds that image schemas originate from the perceptual interaction and movement experience between the body and the external environment, and they are dynamic and abstract representations of these recurring perceptual or movement patterns[7].

Container schema and path schema are the two most common types of image schema: The Container Schema stems from a large number of container-related experiences in our daily lives (such as entering and leaving a room, pouring water from a bottle, and putting items into a box). After countless experiences related to containers, an image schema of containers will form in our minds. For example:

1.I take out a bottle of juice from the refrigerator.

2.I pour the juice into a cup.

The Path Schema is rooted in the basic experience of human beings moving or moving objects (such as walking, throwing, and transporting). This schema contains three core elements: the starting point (Source/A), the Path (Path), and the ending point (Goal/B). For example:

1.I came here from my home yesterday.

2.To travel from Chengdu to Beijing.

The core elements of the image schema theory can be summarized into three points : First, experientiality: It stems from the physical interaction between the body and the environment (for example, the "container" schema originates from the experience of entering and leaving a room or a cup); Second, dynamics: Schemas are not static images but rather incorporate processes of force transmission or spatial transformation (such as the "path" schema implicitly containing moving trajectories). Three, metaphorical Expansion: The basic body experience schema generates and

understands abstract concepts through metaphorical mapping from concrete domains (typically space, force) to abstract domains. For example, "on schedule" inherits the structure of the "contact/support" schema, while "Bright Future" or "in trouble" employs the "path" schema to map spatial orientation and movement to life circumstances.

Langacker proposed the "Trajector-Landmark" model, which decomposed the image schema into the focal point (TR) and the reference object (LM) in spatial relations. For example, in The sentence "The lamp is on the table", the lamp (TR) takes the desktop (LM) as the reference point, and a "contact/support" relationship is formed between the two[6]. This model effectively explains the internal reasoning of polysemy phenomena such as prepositions (such as on, in, over, from, to), that is, different senses often originate from the manifestation of the same image schema (such as "path", "container", "contact") in different contexts. This model provides an operational framework for the polysemy analysis of prepositions.

3. Relevant Research on the Theory of Image Schema in the Teaching of Prepositions in Middle School English

IN the junior high school stage, Liu Feifei selected prepositions such as IN/ON/OUT for research and conducted teaching through container schemas (such as "in" representing a closed space) and contact schemas (such as "on" representing surface contact). It was found that the accuracy rate of the experimental group in the delayed post-test of abstract collocations (such as "in trouble") was 19.8%-22.3% higher than that of the traditional teaching group[10]. In high school, Ma Jingyi focused on the discrimination of easily confused prepositions. The experimental group adopted dynamic path schema ("over" emphasizing crossing trajectories) and static contact schema ("on" emphasizing support surfaces) for comparative teaching. One month later, the accuracy rate of context discrimination in the experimental group increased by 21.4% to 28%[11]. During the university stage, Li Minmin found that after learners could independently construct semantic networks for the prepositions TO/OVER (such as extending "to" from the spatial direction to the temporal/destination domain), their abstract meaning test scores increased by 17.8%[8].

In terms of gender factors, boys are more sensitive to spatial schemas, but girls can bridge the gap through practice [1]. In terms of cognitive style, field-dependent students need teachers to guide schema demonstrations (such as gesture simulation paths) [13], while field-independent students are better at schema derivation [8]. Furthermore, negative transfer of the mother tongue can also affect schema acceptance. For example, the Chinese word "tree" corresponds to the English word "on the tree" (contact schema) rather than "in" (container schema), which requires targeted compensatory teaching [15].

4. The Application of Image Schema Theory in the Teaching of Preposition "on" in Middle School English

(1) Core Schema Analysis: From "Physical Contact" to "Abstract Support"

The core of the image schema theory lies in helping students construct and understand the core spatial relationship schema of prepositions. For the preposition "on", its core schema is "something (projectile, TR) comes into contact with the surface of another object (boundary marker, LM), and is supported by that surface." Therefore, in the teaching of prepositions in middle school English, applying the theory of image schema to teach the preposition "on" can start from the construction of core schema to help students establish the basic cognition of "contact + support".

In The classroom, teachers can lead students to carry out physical operations to help students establish embodied experiences: the teacher attaches a magnet to the outer surface of the box (The magnet is on the box); The teacher attached the magnet to the side of the plastic box.

Then ask the students, "Why do we say 'on the box' when the magnet is outside?" Guide students to describe their tactile experience (such as "the magnet is closely attached to the surface of the box without any gap"), and introduce the core schema of on - "contact + support". Guide students to summarize the core physical features of on: contact (contact surface) + support (surface provides support to resist gravity). Emphasize the superficiality of on, regardless of whether the surface is horizontal (desktop), vertical (side of the box), or inclined.

Teachers can help students distinguish the two prepositions "on" and "off" through diagrams. The teacher shows the students the following illustration: Illustration 1: The book is on the table. Use a downward arrow to represent gravity and an upward arrow (from the desktop to the book) to represent support force, reflecting balance. Illustration 2: A part of The book is suspended outside the edge of The table, with only partial contact (The book is half on and half off the table) or the book is completely off the table.

Then ask the students: "What is the biggest difference between when a book is on the table (on) and when it drops off the table (off)?" Guide students to focus on the existence or absence of "contact" and the disappearance of "support". The core of emphasizing "off" is "disengagement". After establishing the core schema of on, this activity immediately further clearly defined the boundaries of on by comparing its antonym off (there must be contact), reinforcing the schema feature that "contact is the prerequisite for support".

(2) Metaphorical Expansion: Cognitive Transfer of Three Types of Abstract Usages

After students have firmly grasped the core physical schema of on, teachers need to guide them to understand its application in the abstract domain (time, state, medium), with the key being to reveal how these abstract concepts can be metaphorically understood as having the characteristics of "contact points" or "support surfaces".

In the classroom, teachers can help students understand the abstract application of "on" in the field of time through the following activities. The teacher draws a horizontal "timeline" and marks on it: one dot represents "Monday"; A long rectangular box represents "February"; A longer rectangular box represents "the morning", and a dot is marked on it to represent "8:00 AM". The teacher asked the student: Why do we say on Monday, on the weekend, on Christmas Day, on the morning of May 1st, but say in February, in the morning? in 2023?" Guide students to discuss the representation on the timeline. Then we explain: We metaphorically refer to specific dates, days of the week, particular festivals, and the morning/afternoon/evening of a

specific day (these are regarded as specific points or short segments on the timeline) as a "contact point/surface", and thus use "on" to indicate that the event "adheres" to occur at this point. The months, seasons, years, and the general term "morning/afternoon/evening" (which are regarded as time containers) are denoted by "in".

Teachers can help students understand the abstract application of "on" in the field of states by playing videos. The teacher plays a slow-motion video of the flame burning on the wood and marks: Flame (TR) attached to the surface of the wood (LM), and points out that "The house is on fire" indicates that the flame "contacts" the wood and "supports" the burning state.

In the classroom, the transfer of the media field can be compared through real example sentences: "The news was on TV last night" and "The notice is in the newspaper" (the notice is contained inside the physical "container"). This contrast can help students understand that when "on" is used in information carriers such as television, the Internet (presented on the screen surface), and radio (intangible transmission surface), the core remains the metaphor of information adhering to or being transmitted through the "surface"

(3) Contextualized Practice: From Understanding to Creative Application

Finally, promote the transformation of students from understanding to application through contextualized exercises. Teachers can guide students to create new sentences with diagrams and explain The diagrams of the sentences. Let students create and explain sentences like "The pressure is on the CEO", and guide students to imagine the pressure (TR) as a heavy object pressing on the shoulder of the CEO (LM), and use the "contact + support" diagram to understand the abstract concept. Another key exercise is to focus on high-frequency confusion points for comparative analysis, such as the usage of prepositions in transportation vehicles. Show the three-dimensional sectional view of the bus, clearly mark the enclosed passenger area (using "in", container diagram) and the roof luggage rack (using "on", surface diagram), and compare and practice sentences such as "in the car/on the bus/on the train". This intuitive comparison based on schemas can help students understand the core spatial relationship (closed container vs....) Make accurate judgments and applications on open surfaces/platforms.

(4) Suggestions for textbook Compilation

First of all, the teaching materials should clearly distill and highlight the core image schema of "on", avoiding the accumulation of scattered and isolated example sentences. Each core schema should be accompanied by clear, typical and student-life-related visual illustrations to intuitively present spatial relationships. This is a key step in establishing a cognitive foundation.

Secondly, the organization of teaching materials should follow the cognitive law of expanding from concrete spatial relationships to abstract metaphors. For instance, first establish a basic schema through specific scenarios such as "books on the table" (supporting contact) and "stickers on the box" (surface attachment), and then gradually transition to abstract usage.

Thirdly, when practicing design, it is necessary to strengthen schema mapping and contrast. A large number of tasks should be designed that require students to explain the usage of "on" using specific schemas, and activities for comparison and discrimination with easily confused prepositions should be arranged to encourage students to actively make judgments based on schema differences [9].

Finally, the textbook should include a schema summary chart, clearly presenting the various meanings of "on" and their corresponding core schemas, which is convenient for students to review and form a networked knowledge structure, truly achieving the transformation from mechanical memory to concept understanding and application[14].

5. Conclusion

This paper reviews the application research of image schema theory in the teaching of prepositions in middle school English, focusing on the polysemy analysis of the preposition "on". The image schema theory provides an effective cognitive framework for analyzing the polysemy network of prepositions through the core schema of "contact + support" and its metaphorical expansion to abstract domains such as time, state, and medium, breaking through the limitations of isolated memory collocation in traditional teaching. The schema-based teaching strategy can significantly deepen learners' understanding of the systematic semantic association of prepositions, especially having theoretical guiding value for resolving the negative transfer of the mother tongue. Future research can focus on exploring the innovative application aspects of VR/AR technology. By dynamically simulating the "projectile - boundary marker" relationship and visualizing abstract concepts, students' immersive understanding of the schema can be deepened.

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