

The Effect of PATH-Image Schema on Yemeni High School Students for Learning Prepositions

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Article History

Received: 14/07/2023

Accepted: 05/08/2023

Published: 09/08/2023

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Abstract

In cognitive linguistics, image schemas were introduced as mental generalizations from embodied experiences capturing notions such as Containment, Support and Source-Path-Goal movement. These spatiotemporal relationships can be found in human cognition as information skeletons for analogical reasoning, as a grounding factor for abstract language, and as conceptual building blocks for concepts as well as events.

Both teachers and students neglect the importance of prepositions. Many students only acquire some prepositions, but they cannot apply them in speaking or writing. A large number of foreign language learners face some difficulties in mastering prepositions. In this paper, it will be shown how a lot of dictionaries fail their target audience in describing and explaining the semantics of prepositions. Lakoff assumes that it is easier to learn, remember and use a lexical item if one knows how the meaning of a preposition is motivated. The purpose of this study is to investigate the effects of learning prepositions based on image schema theory which appear to be a key component in these processes in human cognition.

Keywords: prepositions, cognitive image schemas, Source-PATH-Goal.

1. Cognitive Linguistics and its Approach to Language

Cognitive semanticists' main concern is the nature of the relationship between the conceptual structure and the external world of sensory experience. In other words, they explore the nature of human interaction with and awareness of the external world, and to build a theory of conceptual structure consonant with the ways we experience the world.

Cognitive linguists have proposed that image schemas underlie significant aspects of language and thought. Image schemas are generally understood as experiential gestalts that arise from recurring patterns of embodied experience such as CONTAINMENT, BALANCE, and PATH.

Some researchers claim that not only a specific part of the brain but rather the whole human cognitive system, influences the structure of language. By looking at language and its connections with human sensory and perceptual experience in the world, they try to

construct a model of the human language system. Researchers such as Langacker, Johnson, and Lakoff & Johnson consider the model to be a collection of patterns, providing a rich basis for every language. These abstract patterns are called *image schemas*. They are mental representations merged with everyday sensory and perceptual experiences of physical objects.

2. Image Schema

The theory of image schema is first articulated by Mark Johnson in 1987. It was originated in philosophy, but it has been developed in Cognitive Semantics which is a branch of Cognitive Linguistics. Cognitive semantics holds that meanings are in the head, and they are likened to concepts in people's mind (Evans, 2007, P. 40). Researchers like (Johnson, 1987, p. 40) assert that concepts are not structured in our minds in the form of semantic features or represented in a way that resembles words (qtd. in Evans & Tyler,

2005, p. 38). Conceptual representations are in the form of what termed by Mark Johnson (1987) image-schemas. Therefore, image schemas are relatively abstract conceptual representations that are formed directly from using our bodies to interact with and observe the world around us (Evans &Green, 2006,p. 89).

Image schemas are defined as schematic versions of images. Images represent specific and embodied experiences. Johnson (1987, p. 15) defines image schema as a dynamic recurring patterns of organism-environment interactions. They are not specific, but they are schematic where they represent schematic patterns that arise from imagistic domains such as paths, containers, forces, and links that recur in a variety of embodied domains and structure our bodily experience. Image schemas can also structure non-bodily experience via metaphor (Lakoff, 1987, p. 453).

Image-schemas represent information about the spatial relationships between objects and the physical movement in the world (Mandler & Pagán Cánovas, 2014, p. 17). Evans & Green (2006, p. 102) argue that images are fundamentally different from image-schemas because they contain many details concerning their own shapes and colors. Mental images are the consequence of a conscious cognitive process which requires recalling visual memory. We can close our eyes, imagine the face of any person, but we cannot bring into awareness an image-schema. "Image-schemas are buried 'deeper' within the cognitive system [...] and as such are not available to conscious introspection" (Evans & Green, 2006, p.186). They are more abstract, general, and schematic than ordinary images. In another sense of that term, image-schemas are schematic versions of images (Croft & Cruse, 2004, p.65).

Image schema represents embedded and abstract frameworks causing people to view reality in a particular way. The Source-Path-Goal schema is the notion that makes us view events and entities as coming from, being, and going somewhere. The abstract structuring of our minds in terms of origins, paths as well as destination is an important factor for people for cultivating absolute beliefs regarding eternal destinations such as heaven and hell (Semino, 2008, p. 7).

3. The Importance of Image Schema-Based Method

Image schemas play important role in getting language fit to experiences (Evans & Green, 2006, p. 29). They are made up of many aspects that can be analyzed separately. In language, they can be expressed by the use of prepositions, modals, verbs, and morphemes (Evans &Green, 2006, p. 189). Image schemas form our experiences. For instance, rooms, boxes, and bottles are used as containers. They are comprised of complex aspects. The CONTAINER schema, for instance, is a concept that consists of boundary which is the walls that define the shape of the landmark, interior which is area within the boundary and the boundary itself, and exterior that is the area outside the landmark, where they are the minimum requirements for a container (Lakoff, 1987, 187). It is a theory about a particular kind of configuration where an entity is supposed by another that contains. That is, it is meaningful since containers are meaningful in our everyday experiences (Evans

&Green, 2006, p. 46-47). Another example is SOURCE-PATH-GOAL. The path is defined as a moving from one location to another, and it has a starting point or sort, and the goal or destination means a series of contiguous locations relating the source and the goal. The path schema constitutes an experiential gestalt where it has internal structure; however, it emerges as a coherent whole.

The way prepositions are taught by teachers and presented in conventional grammar textbooks suggests that students are not provided with ways of generalizing patterns. Learners are not supported in making generalizations of all of the various meanings of the preposition by themselves. On the other hand, since image schemas are schematized and integrated meanings of the lexical and grammatical concepts of a language, they may be a way for students to grasp the whole map of grammar items in a cohesive manner. Several studies have been made by other researchers to support the idea of using image schemas in grammar teaching in general and prepositions in particular.

Kurtyka (2001, p.49) is perhaps one of the earliest studies that emphasized the significant role of image schemas in ESL. Even though he did not conduct any experiments, he was the first to stress, from a linguistic point of view, that imagining is an indispensable part of learning and that visual representations of meaning can provide a chance for learners to gain a better understanding of the semantics of prepositions and phrasal verbs. Taniguchi (2011, p. 69) investigation revealed the efficacy of showing image schemas in teaching the preposition *up*. After he showed the image schemas (including some variants) of *up* to his native Japanese-speaking students, they were able to correctly understand the meanings of unfamiliar idioms involving the word. Fujimori and Yoshimura (2013, p.81) also presented positive results in a similar experiment with Japanese-speaking students in which the experimental group who studied prepositions (*over* and *above*) with schematic visual animations received better scores on the posttest than the control group who studied the same prepositions with only the corresponding Japanese translations.

4. Objective of the Study

The study aims at raising the student's awareness of the different senses associated with each preposition by deepening the understanding of the relations and the differences between them. We hypothesize that applying PATH- image-schema-based method in the classroom will improve the students' understanding of prepositions that express path. Moreover, we hypothesize that teaching students prepositions, using PATH- image- may have a positive impact on the students' attitudes towards applying it to learn other polysemous prepositions. The study is limited only on spatial meaning of the target prepositions, considering PATH-image schema-based method and the instructions involve students to engage in a radically new way of thinking which require a lot of cognitive demands.

5. Applying PATH-Image Schema on Prepositions

From the cognitive linguistics point of view, Lakoff and Núñez (2000, p. 29) present a well-worked-out perspective of the Source_Path_Goal schema. Their work follows linguistic convention where the moving, active object is called 'trajector' and the goal, or the end destination, is called 'landmark'. In Source_Path_Goal both a direction and a 'purpose' are implied in the image schema, which changes the conceptual nature of the movement.

The term 'Path', propounded by Talmy in connection with his examination of the Motion event (2007), written by the researcher with the uppercase 'P' at the beginning, pertains to the PATH image schema (Lakoff, 1989, p. 2). Apart from the Path, Talmy has distinguished several participants in the Motion event, such as the Figure (the trajector in Langacker's terms), the Ground (the landmark according to Langacker, nevertheless the Ground and the landmark are not overlapping categories, neither are the Figure and the trajector), and the semantic component of Manner in the Motion event.

According to Rauh (1996, p. 19), directional prepositional phrases express a specific kind of a path. It is assumed that prepositional phrases have a referential argument. In general, the referential argument of special prepositions identifies a special entity. Referential arguments of directional prepositions do specify a path, for instance, given by the meaning of motion verbs. Thus, changing the location can be described by referring to a path of motion embedded in a path relation. For instance, the directional preposition *in* 'into' does describe the goal of a path and internal argument of the preposition locates this goal. Thus, a preposition is seen as a path relation (PA-R), connecting a path with a location that is represented by place function (PL-F). PATH-prepositions such as *through*, *across*, *into*, *around*, *along*, and *over* contain a path in their meaning.

Some prepositions such as *towards*, *into*, *over*, *through*, *along*, *across*, *on*, and *out of*, have the PATH- schema as integral part of their meanings. They all designate a specific type of path. There are some basic elements of the PATH schema which are: a starting point, a sequence of connected and immediate locations, and an endpoint. Path image schema can be illustrated as:



Figure1. PATH-image schema

(1) Towards

Angel walked **towards** a ruined church.

TR LM

The prepositional construction describes a spatial scene in which the trajector physically moves along a path in the direction of the landmark. This spatial scene is likely a prototypical scene associated with the primary, spatial meaning of *towards* (Lindstromberg, 2010, pp. 26-27). It corresponds to the path image

schema which includes a source point and a goal connected through a path

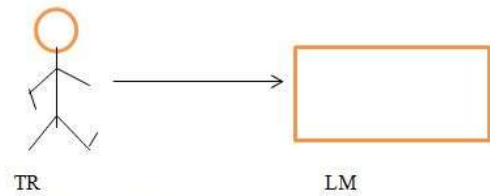


Figure 2. Path schema of *towards*

(2) On

The preposition *on* is primarily static, but it can also be used in the dynamic context. And there is a kind of dynamic schema of *on*, which is described here as PATH image schema. For instance:

Al Capone has got his finger **on** the trigger at long last.

In the above example, the preposition *on* in this situation denotes a kind of dynamic relationship between the TR (finger) and the LM (trigger). In the specific context of the one tightening the attachment, there is a series of movement involved in the process.



Figure 3. PATH schema for *on* (Ming, 2011, p.65)

(3) Into

The combination of PATH- prepositional phrases is only possible when the base verb combines with PATH- prepositional phrase such as *into*, and there is no change in the manner of motion. That is, the manner of motion is applied by the verb to the whole path.

The train is driven in front of the buffer **into** the station.

Max has dived through the reeds **into** the lake.

The path-related locations are commonly specified via the spatial relation between the mover and some object in the environment. Also, the changes in location can be analyzed in terms of SOURCE-PATH-GOAL. The preposition *into* is used to express the final static status after an object (the TR) moving towards a destination consisting of an enclosing boundary and an interior. The path stops at the interior of the LM (Schematic representation of *in* indicating the final inclusive status of a process (Lindner, 1982, p.305).

She ran **into** the room.

Harry sauntered **into** the room.

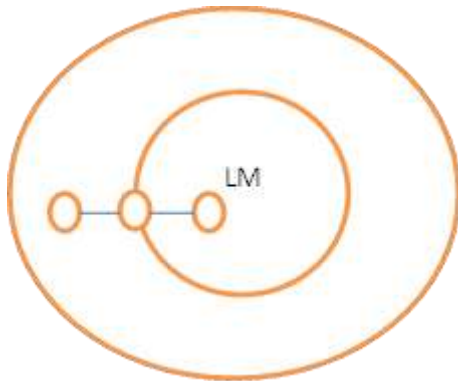
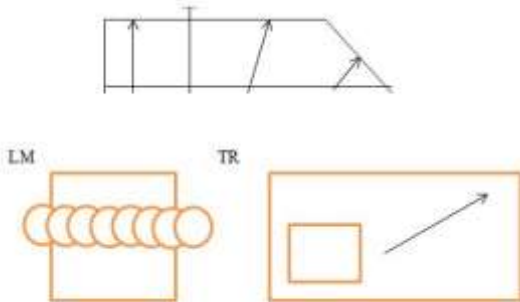


Figure 4. Path Schematic representation of *into*

(4) Across

The spatial meaning of *across* refers to paths. It expresses the movement of a trajector (TR) from one side of a landmark (LM) to the other; the side directly opposite (Lindstromberg, 2010, p. 123). For example:

They walked **across** the desert.
People are moving **across** the street.



In this figure, the arrows depict the movement and the direction of the TR.

Figure 5. Path schema of *across*

(5) Over

The English preposition *over* provides a useful point of departure for the perspective we will advance. It has often been suggested that certain prepositions encode "movement". For instance, like Lakoff (1987, p. 65) argues that the central spatial sense associated with *over* constitutes a 'dynamic' above-across meaning element. Lakoff explicitly claims that this sense encodes a "path", along which the TR travels.

The TR moves along a path represented by an arrow. The TR is above and has no contact with the LM. The TR moves across the boundaries of the LM. The schema can be expressed in the sentence:

The plane is flying **over** the hill.
The cat jumped **over** the wall.

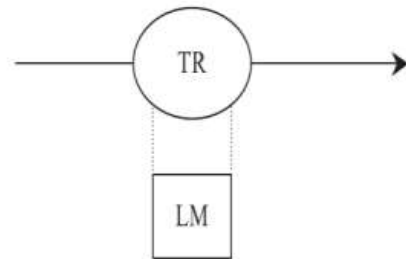


Figure 6. PATH-image schema of *over*

(6) Through

The basic meaning of *through* designates a path, along which a TR moves into and then out to the other side of a bounded LM, like in the following instance:
A pigeon flew in **through** the open window. (Lindstromberg, 2010, p.20).

The schema indicates that the TR passes from one side to the other of the LM. The arrow represents the movement of the TR that traverses the bounded LM by means of an entrance point and an exit point.

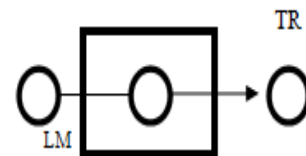


Figure 7: Path schema of *through*

(7) Out Of

Some motion descriptions specify location by making use of these same schematic structural elements of a landmark. The schematic structure of the preposition *out of* indicates that the exterior is the Goal location. In the following sentence, *out of* expresses SOURCE-PATH-GOAL schematic structure:

Harry sauntered **out of** the room.

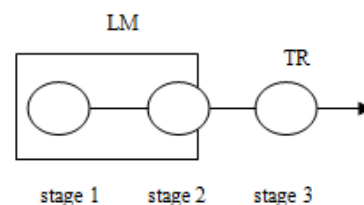


Figure 8. Path schema of *out of*

(8) Along

The English preposition *along* requires that the path of a moving Figure be unbounded. PATH-image schema can be expressed by the preposition along that denotes the movement of the trajector away from a landmark along a given path as in the following example:

She shifted **along** the side of the table.
TR ————— LM

Figure 9. PATH-image schema of *along*

6. The Experiment

The experiment is broken down into three stages, a pre-test, treatment, and a post-test. The subjects of the study were 60 students from the tenth level of students who study English as a foreign language at **Harron School**, in Yemen. They were randomly chosen and divided into a Control group (N= 30) and an Experimental group (N= 30)

The test consisted of two parts. Part one focused on the prepositions that express path *into, over, above, across, out of, and through*. The purpose of this part was testing the students' awareness of their different senses, and whether they could identify the correct meaning. Part one was a multiple choice exercise where the total number of sentences was 81, and students were given three choices of meanings for each preposition, and they had to choose the correct one.

On the other hand, part two was filling in the blank format. It aimed at investigating whether students could identify the distinctions between the target prepositions. It focused mainly on situations where the target prepositions seem to mean the same thing, so the test consisted of a story summarized in a short paragraph with 17 filler items. The students were required to fill in the blanks with the appropriate preposition (*through, into, across, above, over, out of*), without providing them with choices. They were asked to determine the missing preposition and the appropriate sense that fits the context in the paragraph.

After the pre-test, the Control Group was taught in the usual way. The teacher used definitions found in dictionaries and illustrative examples to explain the meanings of each preposition. The Experimental Group received image-schema-based instructions. This aims at depicting the meanings via image-schemas and raising the student's awareness of the relation between the different senses of each preposition. The instruction received by the Experimental Group was divided into three phases, pre-instructional phase, instructional phase, and post-instructional phase. In the pre-instructional phase, the students were asked about their background knowledge of prepositions in general. Their attentions were directed by the teacher. They replied that though they had studied prepositions several times, they knew only one meaning. In the instructional phase, the students were provided with a brief description of the target prepositions, presenting the concept of the central meaning which represents a spatial relation between a trajector and landmark. Then, the teacher explained that the spatial and non-spatial senses of *prepositions* were related and organized around a central *image schema*. The meanings of *into, across, out of, above, across, through, and over* were illustrated by image schemas with examples. In the post-instructional phase, the students worked in pairs to answer exercises in order to give them more room to discuss and engage them in deep processing of the meanings presented. Then, students in the Control and the Experimental Groups took the post-test.

7. Analysis and Discussions

The scoring procedure of the test was as follows. In part I and part II, one point was given for each correct answer, while a wrong answer was given zero. On the basis of this, we applied descriptive

statistics and statistical testing; we used paired t-test to test results within the same group and t-test between the post-tests of both the Experimental Group and Control Group. The alpha level was set at .05.

Part One

The following table summarizes the scores of part I of the Control Group and Experimental Group.

Table 1
Descriptive Statistics of Part One

Groups	Control (n=30)			Experimental (n=30)		
	Mean	%	SD	Mean	&	SD
Pre-test	16.66	34.77	3.62	15.55	32.83	6.00
Post-test	16.20	35.43	4.33	33.62	68.61	7.24

The analysis of the results reveals that there is no a statistically significant and remarkable difference between the pre-test and post-test performances in the Control group ($p > .50$). In contrast, in the Experimental Group, we notice an increase of 18.07 (the point estimate= 33.62-15.55) in the mean of correct answers between the pre-test and post-test. This change is very statistically significant (p -value<.0000001). Thus, image-schema-based instruction dramatically improves the outcomes of the students. Overall, when we compare between the post-tests of both the Control Group and the Experimental Group, we can see that there is a difference, and the effects of the treatment is statistically significant. We can conclude on the basis of the analysis that the application of image-schemas to teach polysemous prepositions is better than the traditional method (p -value<.0001).

Part Two

Table 2 shows the descriptive statistics of fill-in-the-gaps activity scores.

Table 2
Descriptive Statistics of Part Two

Groups	Control (n=30)			Experimental (n=30)		
	Mean	%	SD	Mean	%	SD
Pre-test	6.8	36.12	2.21	7.60	31.03	2.16
Post-test	7.4	39	2.11	12.77	56.08	3.32

It is noticed that the scores of Control group shows very small improvement of 0.6 (7.4- 6.8) from the pre-test to post-test with no statistical significance. However, the scores of experimental Group improve strikingly from pre-test to post-test, with a point estimate of 5.17 and p -value<.000*. The test scores of the post test of the Experimental group are significantly higher than those of the Control Group ($p < .000^*$). This proves that image-schema-based instruction has positive effect on the students' performances where they can identify the distinctions among the target prepositions.

8. Conclusion

The study shows that teaching students prepositions by applying image-schema-based instruction improve the learning of *above*, *across*, *into*, *out of*, *over*, and *through* by making students aware of their different meanings between them. Depicting the meanings in image-schemas and building into the students' minds the knowledge of the motivation behind the senses besides the central meaning helped the students to remember and use them better than students who were just given the definitions found in dictionaries. Furthermore, by applying image schema, the students can engage in deep processing of the target prepositions through giving them an opportunity to process the various senses in different contexts. The study gives reason to believe that students who received instruction based on image schemas could manage to fill the lexical gaps they had before the instruction.

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