

Pre-Service Turkish Language and Primary School Teachers' Perceptions of Constructivism by Analyzing Their Concepts

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Abstract: This study aims to research the extent to which the constructivist approach is reflected in the metaphors produced by pre-service teacher trainees on "teacher and learner" through the use of metaphor analysis. As commonly known, metaphors are linguistic, cognitive and mental structures providing clues as to a person's knowledge, values, beliefs, viewpoints and evaluations regarding a concept. The participants to the present study were 380 students studying in the Department of Primary School Education and Department of Turkish Education at the Faculty of Education, Cumhuriyet University. These pre-service teacher trainees were given a form, in which they were asked to write the metaphors and reasoning that they have produced for the concepts "teacher and learner." The collected data were analyzed using the metaphor analysis technique and these metaphors were examined based on teacher and learner roles suggested by the constructivist approach. According to the findings, most of the metaphors generated by the participants reflect teacher and learner roles in traditional approaches. It was concluded that the pre-service teacher trainees were not able to adopt and internalize the constructivist approach at satisfactory levels.

Key words: Preservice teachers, Constructivism, Metaphor analysis, Educational concepts, Discourse analysis

INTRODUCTION

The questions concerning how humans learn and how knowledge is formed have been a field of research and reflection for centuries. Epistemological studies carried out for this purpose have extensively found their way into this branch of philosophy and educational sciences. A lot of research studies have been carried out; many theories and scientific approaches have been introduced to account for the relationship between learning and knowledge. In line with this, the behaviorist approach that was introduced in the first quarter of the last century in the field of education has been replaced by other approaches. In this process which can be described as a paradigm shift [1], behaviorist approaches have always been referred to as traditional, while those replacing it have always been called alternative approaches. One of these approaches that is considered relatively new, but the origins of which dates back to 19th century, is the constructivist approach, on which there is a large body of both supportive or critical literature.

Constructivism focuses on how knowledge is constructed by the individual rather than the knowledge itself; therefore, it aims to define the mechanism of

learning. It posits that learning occurs in an intentional process, in which the learner is active. On the one hand, the teacher functions as a guide, supporter and facilitator in this learner-centered approach. On the other hand, the learner explores knowledge, learns it and improves his/her overall knowledge in line with his/her own cognitive development. He/she does this by adding new knowledge into past experiences and knowledge by establishing relationships and making meaning out of them.

It is observed that various research studies have focused on certain aspects of constructivism. In the constructivist approach, existent experiences of the individual are crucial [2-4]. The student is not a passive recipient of knowledge [5] the world of experience is constructed through interaction, interpretation.

Constructivism attaches importance to the construction of knowledge and meaning-making. According to this approach, knowledge is a non-absolute and unneutral accumulated body that is internally formed, developmental, obtained with social and cultural input [3]. Individuals make meaning themselves and form their own viewpoints rather than adopting them from others. When they do this, they build the new stuff upon the existent experiences, skills, beliefs and

viewpoints [6, 7]. In other words, learners uniquely learn their cognitive capacities and skills; they shape their knowledge with the impact of the social and cultural structure in which they grew up.

Fox (8) Summarizes How the Constructivist Approach Views Learning:

- Learning is an active process.
- Knowledge is not passively received by learners; it is constructed.
- Knowledge is not explored; it is created.
- Knowledge is personal and context-bound.
- Knowledge is constructed in the social context.
- Learning is the process of making meaning out of the world.
- Effective learning entails meaningful, open-ended and challenging problems for the learner to solve.

It was John Dewey, William James, Jean Piaget, Lev Vygotsky, Jerome Bruner and Ernst von Glasersfeld, who contributed to the view of constructivist education most.

The Role of the Teacher: The role of the teacher in the constructivist approach is different from that of in a traditional one. According to this approach, the teacher assumes the role of an assistant to learning, accelerator, a facilitator and a guide. In today's world, teachers have responsibilities such as helping learners make meaning out of gradually increasing body of knowledge rather than transferring this knowledge directly and making learners appreciate how to associate it with previous knowledge and experiences. One of the ultimate aims of this approach is to associate the knowledge to be learned with those already learned; that is, meaning-making. The teacher prepares the learners during the pre-lesson, during lesson and post-lesson phases in line with their cultural, social, cognitive and affective developments; he/she motivates, guides them and helps them construct knowledge by themselves. As noted earlier, it is essential that the learner be active during the learning process, so that he/she can uniquely construct knowledge. The learner has to realize a set of experiences and various intellectual activities and internalize knowledge. On the other hand, the teacher has to prepare the appropriate environment, in which the individual can construct knowledge; he/she has to provide them with the chance to try out and explore and assume a role similar to that of a guide [9]. The teacher is in the position that guides the learner through the way to knowledge rather than transferring it.

The teacher in this approach is open-minded, democratic, modern, self-perpetuating, unbiased, provides appropriate learning experiences, takes into account individual differences and learns with the learners besides being good at his/her area (10:22). The teacher should facilitate the development of atmospheres, in which students can communicate with each other and gain knowledge, where there is increased cooperation for learning and which support asking questions and making one's point (11:21). To do this, the teacher triggers and helps develop learners' such skills as reflection, asserting, coming up with solutions and problem-solving by asking various questions.

The Role of the Student: The students in traditional approaches are passive recipients who never challenge how and why they gain knowledge. Learners are taught without taking into consideration such factors as individual differences, skills, intelligence and the pace of learning (12:p.5). According to this approach, learning occurs as a result of the learner's responding to the stimuli in the environment (13:p.120). Learners have highly different roles in the constructivist approach, in which they gain knowledge by actively constructing it. Instead of being given ready and rigid knowledge, individuals explore knowledge, construct and implement it in unique ways. Starting with reflection on their own learning styles, learners carry out some actions concerning learning. They participate in the activities related to the lesson, do research, explore and associate the new information with existent knowledge. In brief, this approach gives the learners the responsibility of their own learning.

In this approach, learners make decisions about learning by using their skills, motivation, beliefs, attitudes and what they have as a part of their experiences. The learner is selective, constructive and active in this process (14:p. 144). Previous experiences, learning styles, viewpoints and readiness of the learners are significant factors that direct their learning. Learners make their own decisions (15:p. 10). In sum, learners have the control over their learning and manage the decision-making mechanism in this approach.

During the process of constructing the knowledge, the learner tries to make meaning out of the knowledge in his/her mind and take credit for this meaning. In other words, individuals learn by constructing rather than readily adopting what they are provided.

Metaphor Analysis: As a relatively new technique, metaphor analysis, which was rarely mentioned in the literature in the past, emerged as a scientific technique in

the literature after the studies by Lakoff and Johnson [16] on the functions of metaphors in the human mind. This technique is seen as one of the sub-branches of discourse analysis by some researchers [17, 18]. Metaphors help people add new features to a concept by subjectifying it in line with their point of view and they direct human behavior. Therefore, it is a useful tool to manifest the individual's knowledge of a particular issue, the process of meaning-making, individual, social, cultural recognition of a concept [19, 20]. Metaphors are highly valuable research tools used for developing novel viewpoints in educational research and practices since the meaning and processes in the deep structures are unearthed (21:p.13). Through metaphor analysis, some data that cannot be collected with any other method are presented without harming the potential of the message [18].

Aristotle [22] defined metaphor as the act of referring to a concept by using another one. Metaphors reveal a person's approach to a concept, for which he/she uses a metaphors through analogy. Language is basically metaphorical because humans recognize and evaluate the world through concepts and metaphors affect daily thinking, speech and even actions. Since humans always use concepts and develop metaphors for these concepts, the metaphors they develop reveal their knowledge about, experiences and approaches related to this concept. Metaphors are a way of thinking that exhibits how a person views the world [18]. These metaphors that exhibit a person's interest in, approach to and judgment on the concept, for which he/she produces metaphors, are used in educational research as in other fields of study. This is because a metaphor used for a particular concept, as a part of the individual, social and cultural process of recognizing and interpreting that concept, guides thoughts and behavior by indicating knowledge, judgment and evaluation and even by adding new features to it [19, 20]. When the studies implementing the method of metaphor analysis in the field of education are analyzed, [23-32], it is seen that these studies focus on such important issues as institutions, teachers, students and other issues related to attitudes of students, teachers and learners.

In metaphor analysis, a person's knowledge, judgments, viewpoints and evaluations are examined by taking the metaphors that person has developed for a particular concept as a point of departure. In the most commonly used design, participants are given a concept and asked to develop a metaphor for that particular concept and why they did so. For example, with a survey

containing items such as "*Education resembles... because...*" metaphors and rationales that are used by a person to describe school are analyzed using the rules of discourse and metaphor analysis. By analyzing such metaphors, people's ideas, attitudes and values are identified [17].

Since metaphors provide clues as to a person's knowledge, values, beliefs, viewpoints and evaluations about a concept, through metaphor analysis technique, this study aims to explore the extent to which the constructivist approach is reflected in the metaphors produced by pre-service teacher trainees on "teacher and learner."

Significance of the Study: The elementary school program that was put into practice in 2005 suggests that activities be done and learning environments be designed based on constructivist principles. Therefore, both in-service teachers' and pre-service teacher trainees' knowledge, experiences about and their attitudes towards constructivism are highly significant in terms of the objectives of this program in particular and the whole country's achieving its objectives in general. Teacher trainees come to university with powerful and successful teacher images in their minds [33, 6]. Their attitudes and beliefs reflect their approach to events, persons, methods and techniques. These approaches in turn have an impact upon and govern how they will practice their prospective profession [34,7]. As a consequence, teachers' and pre-service teacher trainees' attitudes and beliefs are among the factors that affect their professional life [35]. This program was put into practice when the senior teacher trainees were studying in the last one or two years of high school. There were naturally some problems regarding implementation during the initial years of the program. Since the professional life of the pre-service teacher trainees who will utilize constructivist pedagogy in their profession from the next year on will be affected by their evaluations of this approach which has been practiced for almost seven years, it is essential that these evaluations are in line with the objectives of university education and those of Turkish national education. The data to be obtained from these evaluations will contribute to teacher education programs, general educational policies and the development of in-service training programs. Furthermore, findings obtained through various methods like the one followed in this study will not only enrich the literature on the issue, but they will also produce new perspectives.

Purpose of the Study: Metaphors are cognitive and linguistic structures that reflect people's knowledge and evaluations of a concept. In this study, "the cognitive theory of metaphor" by Lakoff and Johnson [16] was used as the theoretical framework. In this regard, if the metaphors that the pre-service teacher trainees developed for the concepts "teacher and learner" are appreciated well, the extent to which constructivism is internalized as regards roles that they give teachers and students can be determined. The actual aim here is to research the effect of the metaphors produced by the pre-service teacher trainees for the concepts "teacher and learner" and their knowledge of, attitude towards and evaluations of constructivist approach on why they produced these metaphors. Besides this primary purpose, secondary purposes are as follows:

- The characteristics of the metaphors produced by pre-service teacher trainees about the concepts teacher and learner
- The presentation of the meanings that they developed about the concepts of learner, teacher and constructivism

MATERIALS AND METHODS

Participants: The participants to the present study were the students (n=380) studying at Primary School Education Program and Department of Turkish Education at the Faculty of Education, Cumhuriyet University. 183 of these students were studying at the Department of Turkish Education and 197 of them were studying at Primary School Education Program. 186 of the students were males, while 194 of them were females. The participants were junior and senior students at these departments.

Data Collection: The participants were given forms which required them to write the metaphors and the reasoning behind each metaphor in addition to such demographic data as their department and gender. As commonly known, metaphors are composed of three sections: the topic, vehicle and ground. In other words, the participants were given topics and they were required to provide the vehicles and grounds. The initial section of the form included items asking for demographic data and it ended in the items, "*A teacher resembles... because...*" and "*A student resembles... because...*" After each item some space was provided, so that the participants could write

why they used a particular metaphor for the concepts "teacher and student". They were given forty minutes to complete the form.

Data Analysis: The following steps were followed during data analysis: 1) Listing, 2) Grouping, 3) Naming, 4) Comparison and analysis. The procedures carried out in this step are as follows:

Listing: The metaphors that the participants produced were listed individually for each concept. The perspectives of the participants that failed to produce any metaphors were disregarded.

Grouping: The metaphors were categorized by grouping them in terms of meaning and function.

Naming: Groups of metaphors were tagged with names that encompassed all the metaphors in the group.

Comparison and Analysis: In this step, the metaphors were grouped for the second time by two other independent raters (Ayhan Öztürk and Hakan Ülper). Based on the comparison of the analyses, it was seen that the second pair grouped the data with 91% similarity. This rate shows that the grouping procedure has high interrater reliability. After this step, the percentages of the metaphor groups produced for the concepts teacher and learner were calculated and the data belonging to these groups were analyzed based on the perspectives of constructivism on the concepts teacher and learner.

FINDINGS AND RESULTS

In this section, common characteristics of the groups were explained based on the metaphor groups that the participants in the study group produced for the concepts teacher and learner and the explanations for why they chose these metaphors. Later, the analyses carried out under the light of the roles that the constructivist approach offered for teachers and learners and the results of these analyses are presented.

The Metaphors Used for Teachers: In the study group, the students used totally 83 different metaphors for teachers. These metaphors were as follows: "Guide, mentor, counselor, model, compass, sun, candle, enlightening, torch, lantern, flashlight, leader, initiator, commander, president, prime minister, imam, coach,

administrator, lion, the queen bee, director, train, shepherd, artist, sculptor, painter, wind, gardener, tailor, master, actor/actress, farmer, artisan, construction worker, bee, encyclopedia, information machine, the Internet, robot, resource, ocean, sea, pen, library, book, tree, fruit tree, a wheat kernel, flower (which is used for honey production), rose, garden, mother, father, family, friend, relatives, a warm hug, harbor, drug, aspirin, water, soil, rain, time, everything sacred, angel, a gift from God, patience, favor, television, encrypted box, chocolate, silver, jug, imagination, dream and horrible." In this study, the metaphors produced by the participants and the reasons why they produced these metaphors were examined and the metaphors were categorized into two groups; that is, the group that exhibits the characteristics of constructivism and the one that does not.

The constructivist metaphor group for the concept teacher was composed of guide, mentor, counselor, model, compass, sun, candle, illuminator, torch, lantern and flashlight. As it is commonly known, major functions of the teacher in terms of constructivism are providing guidance in learning, being an assistant, facilitator and accelerator. Table 1 presents the metaphor group (n=86) that exhibits these functions in the metaphors produced in the study group and the reasons why they used them. The percentage of the students in this group was calculated to be 22.

The students in the other metaphor group described teachers through traditional metaphors. 297 of the participants were included in this group forming the majority with 78%. The teacher trainees in this group considered the learners passive and teachers active during the learning process and they gave the teachers most of the responsibilities in this process. According to such metaphors, the teacher is the dominant element that shapes students, transfers knowledge, knows everything and ensures learning.

When the distribution of the metaphors across gender and departments is examined, the same distribution mentioned above is observed. In Table 2 and 3, it is seen that the metaphors produced for the concept "teacher" do not differ significantly across gender and department of the participants. 22% of both males and females produced metaphors about teachers that could be associated with the constructivist approach. The same distribution (22% for the constructivist approach) was seen when the departments were considered.

The Metaphors Used for Students: The trainees in the study group used 74 different metaphors for the concept "teacher". 6 students did not produce any metaphors. The metaphors developed by the study group for students are as follows: A hungry person, hungry chicken, key, car, the moon, memory, brain, notebook,

Table 1: The distribution of the teacher-related metaphors based on constructivist and traditional approaches

Group	Metaphors	Frequency	Percent
Constructivist Approach	Guide, mentor, counselor, model, compass, sun, candle, enlightening, torch, lantern and flashlight	83	22
Traditional Approach	Leader, initiator, commander, president, prime minister, imam, coach, administrator, lion, the queen bee, director, train, shepherd, artist, sculptor, painter, wind, gardener, tailor, master, actor/actress, farmer, artisan, construction worker, bee, encyclopedia, information machine, the Internet, robot, resource, ocean, sea, pen, library, book, tree, fruit tree, a wheat kernel, flower (which is used for honey production), rose, garden, mother, father, family, friend, relatives, a warm hug, harbor, drug, aspirin, water, soil, rain, time, everything sacred, angel, a gift from God, patience, favour, television, encrypted box, chocolate, silver, jug, imagination, dream and horrible	297	78
Total		380	100

Table 2: The distribution of the metaphors across the programs

Group	Turkish Education Program		Primary School Education Program	
	F	%	F	%
Constructivist Approach	39	21	44	22
Traditional Approach	144	79	153	78
Total	183	100	197	100

Table 3: The distribution of the metaphors across genders

Group	Male		Female	
	F	%	F	%
Constructivist Approach	41	22	42	22
Traditional Approach	145	78	149	78
Total	186	100	194	100

Table 4: The distribution of the student-related metaphors based on constructivist and traditional approaches

Group	Metaphors	Frequency	Percent
Constructivist Approach	Miner, actor, athlete, computer, sponge, tinder, candidate artist, young bird, dad, pen, clock, ant, river, explorer, child, incumbent, future, life and bee	43	12
Traditional Approach	A hungry person, hungry chicken, key, car, the moon, memory, brain, notebook, white paper, empty cup, empty swimming pool, empty box, empty plate, empty board, tree, plant, sapling, flower, green tree, rose, chameleon, hollow-heartedness, bread, miner, actor, athlete, computer, sponge, tinder, candidate artist, young bird, dad, pen, recording machine, mirror, clock, ant, river, explorer, child, incumbent, future, life, bee, dough, sculpture, raw metal, wood, imagination cube, everything, dark room, window, tumbler, endless road, worker, slave, robot, machine, camera, sheep, cat, sacrifice, cow, ideology laborer, trial board, pebble, leaf, soldier, knife, honeycomb, race horse, scapegoat, for sale, remote-controlled car and poor-fellow	331	88
Total		374	100

Table 5: The distribution of the metaphors concerning the concept of student across the programs

Group	Turkish Education Program		Primary School Education Program	
	F	%	F	%
Constructivist Approach	20	11	23	12
Traditional Approach	158	89	173	88
Total	178	100	196	100

Table 6: The distribution of the metaphors concerning the concept of student across genders

Group	Male		Female	
	F	%	F	%
Constructivist Approach	19	10	24	12,5
Traditional Approach	163	90	168	87,5
Total	182	100	192	100

white paper, empty cup, empty swimming pool, empty box, empty plate, empty board, tree, plant, sapling, flower, green tree, rose, chameleon, hollow-heartedness, bread, miner, actor, athlete, computer, sponge, tinder, candidate artist, young bird, dad, pen, recording machine, mirror, clock, ant, river, explorer, child, incumbent, future, life, bee, dough, sculpture, raw metal, wood, imagination cube, everything, dark room, window, tumbler, endless road, worker, slave, robot, machine, camera, sheep, cat, sacrifice, cow, ideology laborer, trial board, pebble, leaf, soldier, knife, honeycomb, race horse, scapegoat, for sale, remote-controlled car and poor-fellow.

An examination roles of the learner in the constructivist approach indicates that a constructivist learner is an active person who seeks knowledge, explores, produces, uniquely constructs knowledge,

assumes responsibility of this process, finds his/her own ways and styles of studying and learning. Upon examining the metaphors and explanations for them in terms of these roles, the metaphors that exhibit learner functions that are in harmony with the constructivist approach are as follows: Miner, actor, athlete, computer, sponge, tinder, candidate artist, young bird, dad, pen, clock, ant, river, explorer, child, incumbent, future, life and bee. When these metaphors and the reasoning behind them are examined, it is seen that the student does research, studies, nurtures himself, assumes responsibility for his/her learning, behaves actively during learning and develops his/her own method. As seen in Table 4, this metaphor group was produced by totally 43 students and it formed 12% of the metaphors in the study group.

The number of students in the study group developing metaphors that represent the learner functions in traditional approaches was 331 and the participants in this group formed the 88% of the metaphors in the study group. The metaphors in this group generally compared learners to passive beings who are in need of knowledge transfer and materials that are processed by others.

Table 4 presents the distribution of the metaphors developed for the concept of student according to the departments of the participants. The percentages of the metaphor groups chosen by the learners are similar in both programs. In this respect, there are almost no differences between them.

Table 5 shows the gender distribution of the metaphors concerning the concept of student by the teacher trainees in the study group. The results indicate that female participants produced 2,5% more metaphors which exhibit the characteristics of learner functions in the constructivist approach than males did.

Based on the findings mentioned above, the results of the study are as follows:

- The majority of the pre-service teacher trainees forming the study group (78%) produced metaphors for the concept teacher according to teacher roles in traditional methods. Some 22% of the students produced metaphors for the concept teacher according to teacher roles in the constructivist approach.
- Upon examining the metaphors that the pre-service teacher trainees produced for the concept student to decide whether these metaphors encompassed the functions of constructivist learners, it was seen that only 12% of the participants produced metaphors in line with the characteristics of constructivism. A great majority of the participants (88%) present their perceptions of the student concept with metaphors which reflect the characteristics of traditional approaches.
- When the results are considered globally, the participants mostly (teacher: 78% and student: 88%) produced metaphors bearing the characteristics of traditional approaches. In this regard, it is observed that pre-service teacher trainees at educational faculties that provide education based on the curriculum changes in 2005 have not internalized the constructivist approach.
- When the metaphors are examined, it is seen that teacher-related metaphors exhibiting the characteristics of constructivism constituted 12% of

the metaphors, while those which were teacher-related formed 22% of them. The difference in favor of the concept of teacher can be attributed to the pre-service teacher trainees' not internalizing the constructivist approach that they encountered during the university education and in the final years of their high school education. Though constructivism and the new program are stressed in many classes at the university, the pre-service teacher trainees have not adopted the functions of a teacher in the constructivist approach. Continuous teacher-centered lecturing might be considered as another reason.

DISCUSSIONS AND RESULTS

Analyzing the metaphors that pre-service teacher trainees produced about the concepts "teacher and learner," the present study examined the extent to which they have internalized and adopted constructivism; in other words, whether they have developed metaphors within the scope of constructivism. As commonly known, metaphors are mental models that organize a person's knowledge of that particular concept. As significant elements of human language and cognition, metaphors are able to shape and change our thoughts, perceptions and understanding [36,16, 37]. However, it should be borne in mind that revealing all intellectual structure might be possible through more challenging and extensive studies even though metaphors provide clues as to the intellectual structure by which the person can recognize, understand and evaluate the world.

The studies investigating the metaphors developed for basic concepts in education, especially those related with the concepts teacher and learner can be seen in the literature [23, 38-43]. The present study aims to examine and unearth cognitive designs and structures related to the metaphors produced by teachers, students or other stakeholders in education and their perceptions, understanding, evaluations and reproduction of meanings. In this study, metaphors, as powerful mirrors that reflect the subconscious, are accepted to exhibit people's beliefs, values and stance.

In the present study, an analysis of the metaphors produced by pre-service teacher trainees and the reasoning behind has shown that most of the metaphors for "teacher and learner" concepts are in line with the functions that exist in traditional approaches. The education that they received in the faculty of education was not able to change the mental structures developed by their previous traditional experiences. The students

will qualify as teachers at the end of the academic year in which this study is conducted. In this regard, they receive education based on traditional approaches, but they have to teach their students by using the constructivist approach. The lessons that the pre-service teacher trainees receive during the university years fail to change their values, beliefs and perspectives that they will use in their professional life.

Recommendations: When the findings of this study are considered, it is clear that the constructivist education at the university received by the students that form the study group in this study falls short in providing the trainees with values, beliefs and perspectives that they will use in their prospective professional life at adequate levels. Therefore, applied studies can be recommended to develop the knowledge, skills of the pre-service teacher trainees who are currently being educated and broaden their perspectives.

The findings of this study that examined the extent to which constructivism which is the main source of instruction in the programs that has been in practice since 2005 can be compared with those of other studies; the findings can be merged and they can be presented to educational faculties, ministry of education and administrators. Both pre-service and in-service teachers should be given training by taking into account the findings of such studies conducted on this issue.

Carrying out research on educational problems, cases or events by using different methods and techniques will help all stakeholders of education view such issues from multiple perspectives and reach more holistic results. Therefore, new solutions and characterizations based on these results will be more reliable and target-oriented. That's why different studies, methods and techniques should be encouraged; they should be used more commonly; theoretical improvement and adaptation should be ensured.

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