



The Constructivist Approach in Education*

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Abstract

In the world, which is constantly undergoing change and globalizing as a result of interaction, there is a need for individuals that comprehend and internalize innovations and development and also aware of his/her duty. With the increase of consumption in the developing world, having individuals acquire correct knowledge is not enough to keep up with the modern world. The individual synthesizing knowledge and then producing new knowledge rather consuming it has been set as an objective. In line with this, the duties of schools in society are changing with the changing world and in schools individuals are expected to produce knowledge rather than consume it. In the constructivist approach addressing all these requirements, having individuals think and comprehend more, be responsible for their own learning, and control their own behavior have been emphasized. According to the constructivist approach, learning is achieved through the establishment of correlations between previous knowledge in the mind and new knowledge and by internalizing new knowledge. In constructivist learning environment the roles and duties expected of teachers and students have also changed.

The purpose of this study is to introduce the constructivist approach, whose significance is ever increasing education today in a detailed manner. In this scope, knowledge was provided on the philosophical aspect of the constructivist approach, learning and teaching according to the constructivist approach, the roles and duties of teachers and students according to the constructivist approach, and the constructivist learning environment.

Keywords: Constructivist approach, learning-teaching, learning environment, roles and responsibilities of teachers and students.

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INTRODUCTION

The individual accepted by the modern world is not one that accepts conveyed knowledge as it is and waits to be guided and molded but rather someone that interprets knowledge and effectively participates in the sense making process (Yıldırım and Şimşek, 2003:9). In line with this, constructivism, which started to develop as a theory on how learners learn knowledge, has in time become a theory on how learners construct knowledge (Perkins, 1999:8). Constructivism, which is an approach regarding knowledge and learning rather than teaching (Demirel, 2001:132), is the theory on how we learn in a sense (Marlowe and Page, 2005: 9).

The new paradigm, which started to be shaped at the beginning of the twentieth century and became widespread in the second half, argues that knowledge is not discovered but, interpreted and not revealed, but formed, in other words, it is constructed by the individual (Özden, 2003:54). According to this paradigm, knowledge is now not objective outside of the individual, but to the contrary, it is formed with the individual's own experiences, observations, interpretations, and logical thought. Together with possessed existing knowledge, the individual learns new knowledge by again adapting it to his/her own mental structures. Therefore, learning is experimental and subjective (Kılıç, 2001:9). In this learning approach, the previous experiences of the student constitute a foundation to learning. Knowledge exists not depending on subject areas but exists by being structured in a manner formed and expressed by individuals.

Constructivism is a cognitive based learning approach that actualizes as a result of the individual's "mental constructivism". Learning through constructivism in the mind depends on the student developing an approach concerning the world as a result of the interaction of the student and the environment it obtains the knowledge from and it is in. In this respect, experiences of humans acquired throughout life and how these experiences are perceived by them is important. This is because experiences appear as a result of interaction with the world. Experiences acquired through emotions, activities where hand and mind skills are utilized provide the knowledge required by the student for developing an understanding or changing an understanding (Erdem, 2001; Tekeli, 2002:28).

According to constructivism, while humans try to make inferences from its experiences resulting from its interaction with the environment, the need to construct knowledge arises. Thus, the individual has to construct knowledge in order to be able to deal with problems caused by the environment, in which it lives, and life. This process continues throughout the life of the individual. Constructivism, which is learning or sense- making theory that provides the opportunity for the explanation of the nature of knowledge and how humans learn (Abdal-Haqq, 1998), is not a new concept. According to Hawkins (1995), constructivism is as old as our traditions. The roots of cognitive psychology, sociology, anthropology, and constructivism implemented in education go back to philosophy (Hanley, 1994).

Philosophical Aspect of the Constructivist Approach

The philosophy of constructivism, which attempts to explain what knowledge is, how it is formed, and the nature of knowledge, is drawing great attention in recent years. Ideas that are put forward in the formation of constructivism, in other words, the origins of constructivism go back as far as Socrates, who said ‘Knowledge is nothing but perception.’ (Özmen, 2003:8). With this quote of Socrates, it is asserted that knowledge is abstract and is formed by the individual subjectively.

The first extensive theories of constructivism, which define it as a philosophy of learning, date back to works of philosopher, Giambattista Vico, in the 18th century, who states that people understand what they construct on their own (Yaşar, 1998:69). The explanation of Giambattista Vico in 1710 as “the one who knows something is the one that can explain it,” actually advocates constructivism. Afterwards, Immanuel Kant developed this idea and argued that humans are active in getting knowledge and they associate new knowledge with their previous knowledge and make it as their own interpretations (Cheek, 1992; Çınar et al, 2006:49). Many philosophers and educators have dealt with the concept of constructing knowledge. However, the first initiatives for developing an open idea on what constructivism is, what it covers, and its practice in child development and the classroom setting were conducted by Piaget and John Dewey (Özden, 2003:56).

According to Piaget, humans interact with their environment and make sense of these interactions. With these meanings schemas are constituted and processing of knowledge is learnt (Açıkgöz, 2004:68). Piaget associated the cognitive development of the human with his/her environment and moreover, he stated that knowledge emerged from this relation and was formed consciously and effectively by the individual.

As a result of studies conducted on the question of “How do we know what we know?” Jean Piaget reached the conclusion that “Knowledge is conveyed from one person to another as a whole; people need to construct their own knowledge and understanding” (Titiz, 2005:17). According to Piaget, the foundation of learning is discovery. When discovering knowledge, the child should have a role in every activity step by step. Activities should ensure that ideas are formed in the mind of the child. In the learning process, both students’ rights and wrongs should be observed and experienced and correct knowledge should be selected and utilized with the child’s own effort and will.

Dewey (1972) suggested that learning realized with a social effort, students should be supported so they can work together and form new knowledge, and for the formation of conceptual structures, common experiences could be utilized at the same time in order raise a good citizen. According to Dewey, education is based on action. Knowledge and ideas are only obtained with the trial of cases that seem to be logical and significant to the learner.

Dewey criticized traditional teaching methods due to their rote-learning structure and focused on methods where the student could achieve learning through experiences by thinking. Thus, he worked for the creation of study settings where the student was active, s/he could discover knowledge on his/her own, established real experiences with his/her environment, and had experiences (Açıkgöz, 2004:67).

According to Dewey, experience is a physical and cognitive process. For a human, an experience without the involvement of the body and mind cannot exist (Can, 2004:4).

Another scientist emphasizing the importance of social interaction and working in this field is Vygotsky'. Vygotsky believes that children learn concepts and ideas from the communications they establish with adults. He associates learning with social interaction and the social context. He argues that the source of concepts, ideas, phenomena, skills and attitudes acquired by children is the social environment. Based on this, he believes that the source of cognitive development is the interaction between humans and culture before personal psychological processes (Doğan, 2003:48). It can be said that in these advocated ideas, constructivism is at the foundation of Vygotsky's ideas.

Rousse, a philosopher of the 18th century, believes that students learn through senses, experiences, and activities. The child discovers and compares through senses and judges its experiences. The interaction of the child with its environment is important in it constructing knowledge (Özmen, 2003:10). Rousse argues that through mental activities and some activities, students construct knowledge. He asserts the existence of social settings in the construction of knowledge. The common point generally argued by Rousse and Dewey is basing knowledge on experiences and emphasizing the importance of social settings and interaction in learning.

Bruner, who is another prominent theorist of the constructivist approach, believes that for learning the learner needs to be active just like Rousse and Dewey. Bruner considers learning as an active process and in this process the learner forms the new idea and concepts on the existing old knowledge. The learner selects, engages in the exchange of knowledge, forms hypotheses, and makes decisions and whilst doing this, depends on cognitive structures. The student's cognitive structures facilitate the student making sense of his/her experiences, arranging them, and making it to extend beyond provided knowledge (Can, 2004:28). As an extension of this idea, the discovery learning model was developed by Bruner. Bruner's perception of learning and the learner as active, his emphasis on new knowledge being formed existing knowledge through cognitive processes means that in conceptual terms he is on common grounds with Piaget, Vygotsky, and Dewey. Kuhn, Wittgenstein, and Rorty, who are among philosophers of the 20th century, argue the effective participation of the individual in learning and believed that the individual needed to construct knowledge in an authentic context and emphasized that the applicability of the knowledge was important rather than its correctness (Erdem, 2001:4).

When the philosophical foundations of the constructivist approach are examined, it can be observed that scientists advocating this approach have the common view that students need to be active in the learning process. This is because according to this view, learning is constituted by the student itself. Student centered education that makes the student active, which is frequently referred to constructivism, takes its foundation from these views. In line with this, how the learning and teaching that shall be actualized according to the constructivist approach should be known.

Learning and Teaching according to the Constructivist Approach

Learning can be defined as the integration of every new knowledge with previous knowledge by correlating existing knowledge with new learning (Şaşan, 2002: 49) or the reinterpretation and reformation of old knowledge in light of new experiences (Gürol, 2002:170) and also the constant reorganization of the mental schemas of the learner (Erdem and Akkoyunlu, 2002:2). According to the constructivist approach, the previous experiences of the student constitute a basis for learning. Each new learning has the property of being based on prior learning and the preparative of following learning (Sever, 2004:31). Thus, it is argued that students can make sense of newly encountered circumstances by benefitting from previous experiences and preliminary knowledge (Asan and Güneş, 2000:1; Richardson, 2003). Thus, in the constructivist learning-teaching process, the goal is students that can think critically, are motivated and independent (Gray, 1997).

According to the constructivist approach, knowledge cannot be conveyed to students sitting at their desks by the teacher sitting at his/her desk (Gray, 1997). The individual can obtain knowledge from other individuals, books etc, however, what is important is not obtaining knowledge, but the internalization of this knowledge in the mind by being constructed (Marlowe and Page, 2005:9). Knowledge exists by being constructed in a manner created and expressed by individuals. Knowledge incoming from the external world passes through the filter of the mind. As everyone's perception and knowledge of the external world demonstrates considerable difference from that of others (Jonassen, 1999:139), making sense of learning is formed by the students actively constructing the meaning (So, 2002; Hanley, 1994). In order for learning to be achieved in constructivism, it is necessary for the individual to be active in learning activities for both his/her own learning and the learning of fellow group members. Thus, learning is experimental, subjective, and individual (Kaptan and Korkmaz, 2001:41).

In addition to the constructivist approach not refuting the need for students acquiring some knowledge and skills, it emphasizes the need for individuals to learn to think and understand more, be responsible for their own learning, and control their own behavior in education (Saban, 2000:123). At the foundation of the constructivist approach there is the view that knowledge or meaning is not present in the external world independent of the individual and it is not conveyed from outside into the mind of the individual passively, but to the contrary, constructed by the individual in the mind in an active manner (Cunningham, 1991; Duffy and Jonassen, 1992; Applefield et al, 2000; Yaşar, 1998). Thus, with regards to the nature of knowledge, constructivism focuses on knowledge generalization and construction and emphasizes the individual constructing his/her own knowledge based on research, scientific processes, and data (Stahl, 1995).

The nature of knowledge and learning, have been the basic justification of constructivism (Brook and Brooks, 1993). The activity of constructing knowledge realizes by means of the correlation between previous knowledge in the brain and new knowledge and the internalization of new knowledge. If there is an incompatibility with what is previously known and newly -learnt knowledge, the individual amends previous knowledge by reviewing his/her mental structure.

Jonassen (1991) explains this activity of constructing knowledge, which is frequently mentioned of in the constructivist learning model, as follows (cited by: Deryakulu, 2000: 61-62):

“By comparing newly encountered information during learning with existing mental structures, the individual attempts to place this new information in a suitable location in this structure. If the information does not contradict with the existing structure and the student can establish new relations between the new information and existing knowledge, this new information is added to somewhere suitable in the existing mental structure and becomes a part of the student’s mental structure. Thus, the new information, which seems unrelated and meaningless at the beginning, is associated with previously existing knowledge and internalized or transformed into, internalized meaningful knowledge. However, if the new knowledge contradicts with the mental structure of the individual or there is an incompatibility with new information and old knowledge, then by amending his/her mental structure in line with the new knowledge, the student attempts to solve with contradiction. Each new learning is an internal experience, in which the student reviews his/her mental structure, attempts to add something to this structure to develop it, and performs amendments when necessary. Students are involved in this process both in physical and mental terms. All these are the activities called “knowledge construction” by the constructivist theory.”

Learning in constructivist approach is based on internalizing the objective reality and the aim of education is to help students perceive the real world. In constructivism the whole effort made is to contribute to ensuring the permanence of learning and form high-level cognitive skills (Şahin, 2001). The person may use only his/her existing knowledge in order to make sense of a condition s/he has not known before and new learning is constructed upon prior knowledge through the interactions with external world. Learners are informed on the world; they are expected to place this content and form (structure) into their own thoughts (Jonassen, 1991:28). Notwithstanding the process of sense-making formation is individualistic, it cannot be deemed as separate from others or the context within the environment of interaction. As it is accepted that social environment has an important effect on personal sense-making formation, learning is considered as an operational activity and sharing of culture in many constructivist environment.

According to the constructivist approach, it can be said that the knowledge is constructed within a socio-cultural context by learners making inferences from their experiences and prior knowledge (Açıkgöz, 2004). The constructivist approach arguing that the knowledge is constructed by the individual himself/herself within his/her mind and that learning is not realized by transferring the learning directly from outside affected all dimensions of educational environment. As a result of this, teacher’s role and responsibilities changed in learning and teaching process, so teacher’s role and responsibilities must be determined for the success of learning and teaching processes performed according to the constructivist approach.

Teacher’s Role and Responsibilities according to the Constructivist Approach

Preschool and primary school teachers have an important place in individual’s cognitive development. In these periods the teacher is the person who feeds cognitive developments of future generations, forms a frame for the individual’s attitudes for

himself/herself, society, and the outer world and shapes them, and quickens the progress of skills such as communication, research, analytical thinking, problem solving, creativity, and esthetics that affect substantially the lifestyles of future generations (Senemoğlu, 2002:101). Therefore, the successful implementation based on the constructivist learning in primary education institutions is made possible with teachers that will implement the program by performing their duties. In constructivist classes the teacher does not assume the role of transferring knowledge and dominating the class in traditional class environment. Brooks & Brooks (1999) explain this condition as such:

“The constructivist teacher is like an assistant that facilitates learning, a friend or consultant who can be immediately consulted for any requirements. The teacher demonstrates attitudes and behavior that will facilitate cooperation and interaction in the classroom. The teacher creates environments rendering elements to be learnt meaningful and interesting for the students” (Brooks & Brooks, 1999: 21).”

According to the constructivist approach arguing for an understanding on student-Centered education, the teacher enables students to assume responsibility as much as possible during the learning process. At this point, the teacher acts as a guide and leader. S/he supports students’ learning by creating necessary environments within the class. Besides, the teacher enables students to establish communication both with him/her and other students, presents options that are suitable for individual differences of learners, and helps each student form his/her own decision by giving directives.

The constructivist teacher is teacher who establishes a good communication with children, dominates over child psychology and learning theories, creates a dynamic learning environment within class, organizes and, guides this environment. S/he must arrange various activities to realize the communication and interaction at the utmost level. By means of these activities s/he encourages the students to cooperate with one another and learn in groups. If necessary, the teacher may also act as a member of the groups and helps them learn. The teacher must have the sense of curiosity and excitement, motivation for research, and the will to work as a scientist more than the students.

According to the constructivist approach, it is the person himself/herself that realizes the learning; the teacher is the person that guides the student during the learning process. Therefore, the constructivist teachers do not tell the students about what to do. They wish that the students think, inquire, and obtain their own answers. At this point, they ask questions to students and help them learn. Brooks & Brooks (1999) explain this condition as such:

“Teachers create environments for students to solve the problem rather than solving it for learners. The teacher asks learners thought-provoking questions and encourages them to do research and solve problems. The teacher asks questions to the learner but never tells him/her anything about what or how to think. The constructivist teacher is like the north star; s/he never tells the student where to go but helps the student find his/her own way” (Brooks & Brooks, 1999:23).

The teacher is essential to create an environment where the students express their own thoughts and questions clearly and to perform constructivism within the class. The constructivist teacher creates environments so as to support the student’s

learning. S/he presents options that are suitable for individual differences of students, so they are made to enjoy the activities and are encouraged to gain self-confidence.

In constructivist approach in order to construct the new knowledge over the past knowledge the soundness of the basis, in other words, of the existing knowledge is essential. Hence, the teacher must be well-informed of students' level of readiness, try to understand their deficiencies, let them ask questions and help them discover their own deficiencies, and if any, correct concept failures. If the teacher does not perform these, the old students may repeat what they know or may establish incorrect foundations over missing/incorrect learning. Thus, it is essential for teachers to make plans according to prior learning while entering the learning environments.

The constructivist teacher must have students experience the chaos, hardships, and actual problems of daily life as well as having them achieve the targets that are prescribed in the program. In this way the students know, learn the daily life better, and prepare themselves for the future. The constructivist approach aims at developing not only students' mental skills but also their social abilities. According to constructivist understanding, the content is specified according to subjects taken from students' daily lives. The constructivist teacher must use different methods in class and ensure students' active participation in lesson, create an environment of confidence for them to express their feelings and thoughts, discover and support their natural interests, and increase their desires for learning by asking questions. In assessment and evaluation the teacher must pay attention not only to the product that emerges as a result of activity but also students' learning processes.

In short, according to the constructivist approach, the teacher acts as a guide, who knows their students very well, discovers their preliminary knowledge and makes them be informed of their preliminary knowledge, guide them to do research and cooperate, provide necessary materials for learning. Within class the more quality (eligible) the teacher's behaviors are the more quality (eligible) the students' behaviors become (Parlakıyıldız, 1998:37). The teachers help students become individuals that "learn how to learn" and form proper structures. At this stage the students have important roles and responsibilities as much as that of the teachers at the very least for a constructivist class to achieve its targets.

Student's Role and Responsibilities according to the Constructivist Approach

The constructivist approach starting to develop as a theory about how the learners learn the knowledge has turned into an approach about how the learners construct the knowledge over time. The learning is based on not the rote learning but the learner's transfer of the knowledge, his/her reinterpretation of the existing knowledge and formation of the new knowledge. While the individual is learning, s/he shares his/her past knowledge and experiences with the others through reflective dialogue method and ensures the formation of new knowledge. The learner synchronizes the learnt knowledge with the newly-learnt one and puts this constructed knowledge into practice in solving the problems in life (Erdem and Demirel, 2002:82; Preston, 1962:62; İşman et al, 2002; Ayas et al, 2005:41). Thus,

knowledge acquisition is not a result but a source to form the new knowledge (Akar and Yıldırım, 2004; Akpınar and Ergin, 2005:108; Özmen, 2004).

According to the constructivist approach, developing student's knowledge production capacity, interpreting and making sense of the knowledge s/he acquires are important rather than his/her being informed (Palabıyık, 2004:330). The individual tries to make sense of the knowledge in his/her mind and possesses the meaning (sense) s/he forms. In other words, the students form the learning not in the way it is presented to them but in the way it is constructed in their minds (Yaşar, 1998). The students assume their own responsibilities through many activities of dialogs, sharing and discussion, set targets for themselves, and construct the knowledge (Baki and Bell 1997; Jonassen, Howland, Moore and Marra, 2003).

According to Lilian Katz (1933), children form the hypotheses that will help to explain what they have observed in a natural way. They have unlimited energy for their interests in the phenomenon they have observed and they are in pursuit of understanding the knowledge decisively. They set their world of senses to work in order to understand the contexts because their aim is to obtain the general meaning. It may be that the children often arrive at correct meaning structures in their efforts of discovering or forming a meaning and incorrect structures may also be formed. According to constructivism, such conditions are indicators of constant development and students' questions for each new condition have the aim of forming the meaning structures.

The activities that will be conducted in constructivist learning-teaching process mainly must be stimulating the students' natural interests on the one hand and must be challenging for them to arrange their experiences and interests they have obtained from real life on the other hand (Terhart, 2003). While the curious learner becomes much more motivated to learning and with the feature of entrepreneurial learner s/he researches the knowledge more thoroughly and freely, examines, analyzes it, solves the problems, asks critical questions, makes comparisons, discovers creative ideas, discusses whatever s/he discovers, interprets and argues on whatever s/he interprets together with their reasons, so s/he becomes a wishful individual for lifelong learning and development. The learners sometimes see themselves as scientists like the expert of the knowledge they have constructed. Like teachers, also the learners are very patient, persistent, and contentious to achieve their aims. According to the constructivist approach, it can be said that students are not the individuals that receive the knowledge but they are expected to be young researchers that research, inquire, wonder, observe, evaluate their own activities, in other words, and work actively.

The individual asks critical and constructive questions in order to play an effective role in learning process by using his/her mental autonomy, establishes communication with other students and the teacher, and discusses the ideas (Marlowe and Page, 2005). They make efforts for the creation of a student-student interaction as well as the student-teacher interaction in class where friendship and sincerity are dominant. The student contributes to the development of other individuals with his/her instructive questions in learning environments (Lin et al. 1996: 211). As the learner is responsible for the learning of others who s/he works with, s/he knows the importance of cooperation and they perform group activities,

tests and all similar activities together. They have multiple perspectives by evaluating themselves, groups, and other groups.

According to the constructivist approach, students themselves construct the new knowledge by incorporating the new knowledge with the prior knowledge in their own mental processes and as a result of the interaction with their surroundings. Students are defined as thinking individuals and perceived as individuals, who discover important questions and ensure the perception of research and knowledge thoroughly and wholly. Students' basic responsibility is to study in a field they take interest in, decide on topics or sub-topics they will work in, and their own problem solving and learning methods (Yurdakul, 2004:96).

According to the constructivist approach that is an understanding of how learners construct the knowledge rather than teaching, learning experiences and learning environments depending on this gain importance. The students that are requested to adopt a constructivist understanding may acquire the requested knowledge, skills, and habits only in constructivist learning environments. Accordingly, specifying the features the constructivist learning environments must possess is needed.

Constructivist Learning Environment

As the constructivist approach has been adopted in education in order to have skills required by our age acquired, it is expected that education environments training individuals required by society have constructivist characteristics. As constructivism is a knowledge and education theory, constructivist learning environments are organized in a manner that ensures the meaningful construction of knowledge and the actualization of effective learning (Gültekin, 2004:35). The fundamental element of constructivist learning environments is the learner. Thus, in order to motivate learners to learn and increase their interest in the subject, the constructivist learning environment is organized with the mutual decision of the teacher and the learner (Şaşan, 2002:51).

The students should be positioned in the center in constructivist learning environments and the student should be provided with the opportunity to solve problems. This is because the one that shall learn is the student itself. Content should be presented in manner that shall ensure this and also in a manner with great variety. It must provide the opportunity for him/her to organize this content according to his/her learning strategy. The thing that is important in constructivism is not acquiring knowledge but rather the formation process of knowledge, in other words learning how to learn. When the construction of knowledge by students is achieved, they will develop the learning methods and problem solving strategies that suit them (Arkün and Aşkar, 2010).

In the constructivist classroom, students and teachers perceive knowledge not as unchangeable clichés that require memorization but, as a dynamic and constantly changing perspective pertaining to the world, in which they live, and the skill to extend this perspective. In learning environments, where the constructivist understanding is applied, individuals have to have more responsibilities and be more active in the learning process. Subjects are determined by taking previous

experiences of students into consideration. Thus, individuals have the opportunity to test the correctness of knowledge they previously constructed in their minds, correct their mistakes, and even give up on their previous knowledge and replace them with the new ones (Yaşar, 1998:71). Whilst all these activities are being implemented, students are effective in their own learning processes. According to the constructivist approach, as knowledge is constructed by the individual, the one that needs to be active in the environment is the learner (Baki ve Bell, 1997). Mental constructions concerning what is learnt are actually conducted by the individual. Thus, constructivist learning environments are organized in a manner that enables individuals to interact more with their environment, and hence, have rich experiences. Environments formed with means of communication such as videos, computers, photos, sounds etc., encourage the student to express him/herself in various manners (Arkün and Aşkar, 2010).

Rich learning environments presented to students to enable them to reconstruct their knowledge should include great and complicated ideas. In the learning environment, the complicated nature of truth should be taken into consideration and the environment should be in manner ensuring that the student makes effort (Jonassen, 1999). Thus, students should make efforts in the learning process and construct their knowledge actively.

On the other hand, in constructivist learning environments, knowledge should be presented in a context reflecting its use in real life, in other words, it should be associated to life and problem-based (Herrington and Standen, 2000). This is because humans are in life and have to develop their minds. Learners should be able to differentiate the position of knowledge they learned in real life and see the environment they shall use this knowledge. As the formation of knowledge is more important than its acquisition, sharing of what is learned by being conveyed to real life shall be more meaningful and beneficial. Jonassen (1999) emphasized that in constructivist learning environments there is a need to focus on purposeful and meaningful real problems (Jonassen 1999; Jonassen, Peck, and Wilson 1999). Problems encountered in real life do not have a single solution. Students encountering various problems in real life should be encouraged to look from different perspectives and achieve solutions through various means.

One of the greatest contributions provided by constructivism is ensuring that students know how students performed the thing they performed and have them acquire the thought on why they solved the problem in that manner. The thing that is expected of the student in constructivist learning environments is the student reflecting his/her own thought in a problem solving process. The environment must encourage the individual to think on his/her own processes and express these. Thus, the student can develop various solutions and acquire different systems of thought (Arkün and Aşkar, 2010).

According to the constructivist approach the autonomy and self awareness of the learner should be supported and developed. In-class applications should support these. For this purpose, activities ensure learners are more active in learning environments and encourage them to engage in discussions among themselves should be arranged. It is possible to say that learning is a reflection of the cooperation between students and students and also the students and the teacher and

those social activities have a great role in intellectual development (Arkün and Aşkar, 2010). Thus, in constructivist learning environments activities should be organized to enable students' to cooperate and interact with each other. Individuals working with their peers ensure learning by conveying knowledge to each other and learn from their peers. Furthermore, how knowledge is formed, how it can be used, and how it can be explained and advocated should be discussed (Can 2004).

Learning is not an outcome of development, but development itself (Jonassen, Peck, and Wilson, 1999); thus, the thing that needs to be measured is not only the result, but the process at the same time. In this context, evaluation should not be considered as separate from the teaching process and conducted together with teaching (Demirel, 2002). The student is evaluated multi-dimensionally in constructivist learning environments. Evaluation is performed not only by observing the product, but with the performance, development, things conducted in the learning-teaching process, and relations with surroundings and friends. In other words, evaluation is conducted within the learning process (Brooks and Brooks, 1993).

It can be observed that in order to achieve permanent and meaningful learning, learning environments should have activities that activate the student and guide the student to think, question, research, form his/her own knowledge and use this knowledge, solve problems, cooperate, and assume responsibilities. According to the constructivist approach, as the formation of meaning of the learner is taken as a basis (Tezci and Gürol, 2003), learning environments should be arranged in a manner that enables individuals to interact more with their environment and have rich learning experiences. According to such a perspective, with the quality of the learning-teaching process, it can be observed that characteristics such as enhancing the attention of the students in the lesson, assisting their more permanent and meaningful learning, ensuring an interactive learning setting, individualizing learning, and making lessons more interesting by increasing creativity and achievement become prominent.

RESULTS

The constructivist approach, which has become widespread today, argues that knowledge is not discovered but interpreted and knowledge is not revealed but formed, in other words, it is constructed by the individual. According to this approach, knowledge is not objective outside the individual on the contrary; it is formed with the individual's own experiences, observations, interpretation, and logical thinking. Individuals learn new knowledge by adapting it to their mental structure together with existing knowledge. In this learning approach, past experiences of the student constitute a foundation for learning. Knowledge exists not depending on subject areas, but in a manner formed and expressed by individuals.

When the philosophical foundations of the constructivist approach are examined, it can be observed that scientists advocating this approach have the common view that students need to be active in the learning process. This is because, according to this view, learning is formed by the student. Student-centered education that renders

the student to be active, which is frequently referred to in constructivism, is based on this view.

The nature of knowledge and learning has been the basis of constructivism. The activity of constructing knowledge is achieved through the correlation of previous information in the mind with new knowledge and the internalization of new knowledge. The constructivist approach, which argues the view that knowledge, is in the mind of the individual and formed by the individual and learning cannot be achieved through direct external conveyance, has influenced all aspects of the education environment.

According to the constructivist approach, the teacher is in the position of being an advisor, who knows his/her students very well, enables students to be aware of their preliminary information by revealing their preliminary information, guides students to research and cooperation, and provides the necessary materials for learning.

According to the constructivist approach, students construct new knowledge in their mental processes by combining them with their previous knowledge and interacting with their environment. Students are defined as thinking students and perceived to be persons that discover important problems and ensure that research and knowledge are perceived to be in-depth and complete. The basic responsibility of students is to work in field they are interested in, decide on topics or sub-topics they shall work on, and deciding on their own problem solving and learning methods.

As constructivism is knowledge and learning theory, constructivist learning environments should be arranged in a manner ensuring the construction of knowledge in a meaningful manner and the achievement of effective learning. For meaningful and permanent learning to be actualized, it is necessary for learning environments to have activities that activate the student and guide the student to think, question, research, form his/her own knowledge, use this knowledge, solve problems, cooperate with one another, and assume responsibilities.

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Eğitimde Yapılandırmacı Yaklaşım*

Özet

Sürekli bir değişim içinde bulunan ve etkileşim sonucunda küreselleşen dünyada, yenilikleri ve gelişmeyi kavrayan, içselleştirebilen, bunun yanında kendi üzerine düşen görevlerin de farkında olan bireylere ihtiyaç duyulmaktadır. Gelişen dünyada toplumların daha çok tüketmeye başlamasıyla birlikte, bireylerin doğru bilgilerle donatılması çağdaş dünyaya ayak uydurabilmek için yeterli değildir. Bireyin bilgiyi tüketmekten çok bilgiyi kendince sentezlemesi, yeni bilgiler üretmesi hedeflenmektedir. Bu doğrultuda değişen dünya ile okulların da toplum içerisinde görevleri değişmekte, okullarda bireylerin bilgi tüketmelerinden çok bilgi üretmeleri beklenmektedir. Bütün bu gereksinimleri karşılayan yapılandırmacı yaklaşımda bireylerin daha çok düşünmeyi, anlamayı, kendi öğrenmelerinden sorumlu olmayı ve kendi davranışlarını kontrol etmeyi öğrenmeleri gerektiği vurgulanmaktadır. Yapılandırmacı yaklaşıma göre öğrenme, zihindeki önceki bilgiler ile yeni bilgiler arasında ilişki kurularak ve yeni bilginin özümsemesi yolu ile gerçekleşir. Yapılandırmacı öğrenme ortamında ise öğretmenler ve öğrencilerden beklenen rol ve sorumluluklar da değişmiştir.

Bu çalışmanın amacı, günümüzde eğitimde önemi daha da artan yapılandırmacı yaklaşımı ayrıntılı biçimde tanıtmaktır. Bu kapsamda yapılandırmacı yaklaşımın felsefi boyutu, yapılandırmacı yaklaşıma göre öğrenme ve öğretme, yapılandırmacı yaklaşıma göre öğretmenler ile öğrencilerin rol ve sorumlulukları ve yapılandırmacı öğrenme ortamı konularında bilgiler sunulmuştur.

Anahtar Sözcükler: Yapılandırmacı yaklaşım, öğrenme-öğretme, öğrenme ortamı, öğretmen ve öğrencinin rol ve sorumlulukları.

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