



Meaningful Learning and Educational Environment

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Abstract

To Ausubel, meaningful learning is a process in which new information is related to an existing relevant aspect of an individual's knowledge structure. Meaningful learning requires relevance of prior learning and new learning. In the teaching and learning process teachers can facilitate the learners' schema. They should activate the appropriate schema of learners before starting teaching. By meaningfully learning a permanent knowledge is structured. But when the rote of learning is occurred knowledge becomes a temporary knowledge.

In an educational environment, teacher helps students for structuring the knowledge. In the structuring of the knowledge process, learners associate their existing and new knowledge using their mental activity. To organize new knowledge advance organizers and concept maps play an important role in meaningful learning. Both of them ensure to remembering existing knowledge and acquiring permanent knowledge.

In this study it's aimed to strengthen the meaning of meaningful learning and address to creating knowledge. It's intended to explain the use of concept maps and related meta-cognitive tools to advance learning. Also to explain implementing meaningful learning into teaching. For this reason, in this study Ausubel's meaningful learning theory, the importance of educational environment, advance organizers, subject design, principles in the teaching theory for meaningful learning, concept maps, concept formation and concept attainment is discussed. Ausubel's meaningful learning theory has also some limitations despite of having some positive aspects. At the end of the study, positive and limited aspects of the meaningful learning theory have been clarified.

Meaningful learning provides gaining in-depth knowledge. Meaningful learning may be significant in the case of implementing efficiently. If a student cannot perceive or hear the organizers presented in the process of learning-teaching, teaching may become meaningless. If the students are not willing to the meaningful learning, mechanical learning may appear.

Keywords: Meaningful learning, educational environment, structured information, memory process, concept maps.

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INTRODUCTION

The construction and reconstruction of meanings by learners require that they actively seek to integrate new knowledge with knowledge already in their cognitive structure. Ausubel's assimilation theory of cognitive learning has been shown to be effective in guiding research and instructional design to facilitate meaningful learning. "Situated learning" occurs when learning is by rote or at a lower level of meaningful learning. Concept mapping has been used effectively to aid meaningful learning with resulting modification of student's knowledge structures. When these knowledge structures are limited or faulty in some way, they may be referred to as Limited or Inappropriate Propositional Hierarchies (LIPH's). Conceptual change, or more accurately conceptual reconstruction, requires meaningful learning to modify LIPH's (Novak, 2002).

In this study, it's aimed to strengthen the meaning of meaningful learning, the use of concept maps and implementing meaningful learning into teaching. At the first section of the study the Ausubel's meaningful learning theory, memory process is discussed. At the second section, the importance of educational environment, advance organizers, subject design, principles in the teaching theory for meaningful learning, concept maps, concept formation and concept attainment are discussed. At the third and the last section of the study, positive and limited aspects of the meaningful learning theory have been clarified.

Ausubel's Meaningful Learning Theory

According to Ausubel, learning would be more permanent when an individual makes sense of new perceptions by relating with the knowledge learned and accumulated in long term memory. Meaning in a psychological manner is a product or a differentiating content resulting from compounding potential meaningful material with cognitive structure (Ausubel & Robinson, 1969). Meaning is a function of how an individual experiences a composition of thinking, feeling and action in line with her/his life experiences. Individuals acquire different life experiences in the different environments. Individual differences and presents context cause to making of different meanings to the same object or situation. Experience and context have a crucial effect on the meaning (Novak, 1998). Learning by discovery makes learning meaningful. Knowledge becomes a temporary knowledge when a concept definition is learned by rote. Meaningful learning requires an upper level of endeavour and provides a permanent knowledge.

Ausubel (1968, p. iv) stated the basis of the meaningful learning as mentioned below;

"If I had reduced the educational psychology to a sole principle, I would have said that the primary factor having an effect on the learning is the existed knowledge of the learner. Exam the existed knowledge of the learner, ascertain it and teach according to these."

According to the expression mentioned above, it is necessary for teacher to exam the existed knowledge of the learner before planning. An individual learns in an educational environment, and there is interactivity among the teacher, student and

tools. According to Ausubel, however, how a student learns is more important than a teacher's function.

Responsibility for learning belongs to the individual. Individual structures the knowledge within his/her mental activity. Learning will be more permanent when an individual makes sense of new perceptions by relating with the knowledge learned and accumulated in long term memory. As it was stated by Ülgen (1997), individual is discriminative, constructive and effective within the learning process. Individual is aware of perception, finding a reason, inferring and remembering. Knowledge are better remembered when the new knowledge to be learned are meaningful and relations are meaningfully established among the knowledge.

Ülgen (1997, p. 147) stated his interpretation mentioned below on how the meaningful learning is occurred by using learner's responsibility as a base in the learning:

“Individual has the features of perceiving characteristics of the objects and situations and reorganizing these in mind. Individual internalizes and constitutes by means of generalization, abstraction and organization on the existed knowledge, therefore, a new meaning develops in the mind. This learning is a meaningful learning. In the mechanical learning, knowledge is accumulated directly in the mind without reorganizing.”

Meaning is a product of the meaningful learning process. If the knowledge is not meaningful and has no any relation with the relevant material, knowledge cannot be learned in a meaningful way. This situation leads to rote learning. Additionally, if an individual intends to rote learning despite of having appropriate ideas in his/her cognitive structure, rote learning occurs again (Novak & Gowin, 1984).

Meaningful Learning and Memory Process

Memory can be described as a performance for keeping experiences from background in mind. In order to provide permanence for knowledge, firstly, the mentioned knowledge should be perceived. Hence, acquiring some impressions can be a matter of discussion in the initial stage. Impressions acquired as a result of perception are kept in mind. It is suggested that this occurs by means of some changes in neurons and interrelationship among the neurons (synapses) (Baymur, 1994). It is possible that Ausubel has also discussed neurological developments in the memory process. In the neurology, new synapses take a form between neurons accumulated new notions and neurons accumulated existing knowledge. In this manner, qualitative and quantitative changes in the knowledge originate from the meaningful learning (Novak, 1998). In the course of occurring a meaningful learning, neural cells are effective on the accumulating place of the knowledge and realises a functional integration with synapses or new neurons. With the learning, which is continued by means of relating new knowledge to the existed knowledge, scope and appearing neural integrations show an increase (Novak, 1998). Some relationships are established among the nerve cells by its nature. Perceptions are interrelated in groups by nature.

New stimuli are interpreted under the light of our experiences in the past. Acquired ones constitute a base for the future learning (Ülgen, 1997). Each of fields

has generis principle and notions. These help to solve a problem belonged to its field and sometimes to a different field. In this manner, new knowledge is gained by means of transferring knowledge (Ülgen, 1997). *Perception, opinion, notion and action are the functions of the memory* (Atkinson et al., 1996).

It can be understood that the notion given in the supplementary agreement is both similar to and different from another one. For example, vapour likes a fog but it is different from the air (it consists of water molecules, not molecules such as oxygen). One learning by supplementary agreement (resulting from the questions of why and how) can acquire one or more than one notion in general and provide an agreement between the meanings of old and new notions in a supplementary manner. In this situation, completion/integration comes into question, because new notions or relationships are integrated in the cognitive structure and an agreement occurs when the meanings of similarities and/or differences are integrated in the cognitive structure.

Notion is a learning having continuity, and memory is a variable having effects on the permanency of the knowledge. In the notion formation, the procedure for coding the relevant knowledge in the short-term memory is important for recalling the knowledge in long-term memory back. In the Klatzky's coding by making sense of objects in the cognitive learning, encoding the processed knowledge with a certain cues appears within the format developed by the individual. Knowledge in the long-term memory is remembered in a new format by means of searching and selecting by the individual (Ülgen, 2001). Establishing a relationship between the relevant and new knowledge facilitates the comprehension. Recalling is based on the relationship between the learning process and meaningfulness.

Individuals reorganize by relating new knowledge to preliminary knowledge through mental activity and realise a meaningful learning process. Permanent knowledge cannot occur in the mechanical learning because of the fact that reorganization of the knowledge is out of the question. Existing knowledge leads to perception of the new knowledge. Schemas accumulated in the long-term memory are hypothetical knowledge structures, these include the elements of the relevant knowledge and have plan characteristic for additional knowledge. Schema includes not only appearance but also meaning. Messages are encoded by means of translating into indicators before accumulating in the long-term memory. The encoded knowledge is remembered or recalled. Encoding has a specific format in itself. In the memory process, sensorial receptors convey stimuli to the cortex by translating into indicators. These indicators are translated into a meaning in the brain. After completing the processes, these are accumulated in the long-term memory by translating into the indicator having a definite format. In the process of obtaining information, encoding knowledge by relating to the existing knowledge through a certain strategies after processing affects the remembering positively. Existing knowledge has a characteristic cue in terms of remembering new ones. Individual has encoded by means of the cues (Ülgen, 2000).

Establishing a semantic network, developing a schema and raising a notion are the products of learning by comprehending. Establishing a semantic network indicates to a hypothetical restructure in the brain by means of remembering all symbols by the individual.

On the encoding of a meaning in the long-term memory, knowledge is encoded and based on the core meaning. The more meaning of the knowledge to be learned is processed in detail, the more it is permanent in the unit memory. If the knowledge is organized in the course of learning and if the context including learning is similar with the context in the remembering time, it indicates the more cues of seek-find-recall, thus remembering is facilitated (Cüceloğlu, 2000). If elements that must be remembered are meaningful but there is no any connection among these, memory can be developed as well by adding meaningful connections ensuring recall ways. The more meanings are processed, the better memory will be.

Organization of the knowledge and context has a crucial importance on the encoding-recall interaction in the long-term memory. The more regulation on the encoding material causes to the more facilitates on the recalling of the knowledge. Internal and external situations are a part of the context as well, when we encode the knowledge (Atkinson et al., 1996).

Schema Development

Schema is a form of the knowledge, which indicates to the organizing indicators of the knowledge in the memory (Ülgen, 2001). Schemas have effects on both encoding and recalling stages of the memory (Atkinson, 1996). Classification function of the schema has a close connection with the other two roles: it helps to remember and comprehend objects and events (Byners, 2011).

Three process have importance in the schema development: accretion, tuning and restructuring (Byners 2001; Ülgen, 2001). Accretion and tuning include changing of the existing schema. Thus, it becomes more elastic (Byners, 2001). Accretion is to build new perceptions on the relevant existing knowledge. This is equivalent to Piaget's assimilation concept. It occurs in the lights of the existing knowledge in the making sense of the news (Ülgen, 2001). Tuning includes more of a structural changing. The crucial dimension is the restructuring. It includes creating a completely new schema by means of making an analogy with the existing old schema (Byners, 2001). It indicates to Piaget's orientation concept. Schemas control encoding new knowledge, accumulating in the long-term memory by formatting and recalling these knowledge after elapsing (Ülgen, 2001).

Structuring of the Knowledge

Individual develops some principles by making a comparison between the existing and new knowledge in the structuring of the knowledge, and solves a problem by using these principles. Thus, individual structures the knowledge using the mental activity. Individual regulates his/her knowledge in a consecutive manner in the process of the structuring knowledge. Individual transfers his/her knowledge after learning the principle and concepts.

Recalling of the relevant knowledge in the long-term memory requires the structuring or to be structured the knowledge conceptually by means of performing learning tasks. In order to be performed the cognitive tasks in the concept learning, cognitive resources should be used effectively. Cognitive task is related with mental activity of the individual (Ülgen, 2001).

Knowledge Development

Schemas have important functions in the mind. These classify the experiences. Schema creates the classes using memory capacity in the more productive manner, classifies the knowledge, and each of the individuals having the same memory accumulates his/her experiences individually. Schemas appear by going through an abstraction process. For example, a child sees a sweeper for the first time when his/her mother is sweeping the room, then he/she sees his/her father when he is sweeping bedroom, then he/she sees his/her grandmother when she is sweeping her home, and in process of time, child recognizes that all the situations covering the different appearances of all the experiences are in common in the “sweeper schema”. User and colour of the sweeper are not important. The known is that the sweeper is used for cleaning the carpets (Byners, 2001).

Piaget’s opinion corresponds to the schema theory. Details disappear when schemas and concepts occur. Meaningful relations and structuring of the knowledge gain importance among the opinions (connections in the node-link structure).

Once the schemas occur, three processes have effects on the remembering related with experiences. These processes are selection, gist-extraction and interpretation (Byners, 2001). The situations related with the schema are selected in the creating a selection. These aspects of the experience are specific, real and the encoded and accumulated aspects in a selective manner. These are described as it was in detail. Then, secondarily, gist-extraction process begins. It may be difficult to build a real and detailed description by means of these two processes. Generally, brief information is given. Interpretation process is important as being third process. Schemas help to understanding the indistinct and unvoiced things by filling the blanks (Byners, 2001).

Educational Environment

It is necessary for the teacher to use some cues and to organize the knowledge in order to help students for structuring the knowledge in an educational environment. Teachers should give multiple examples for creating a schema and they should request learners to find common traits. As it was stated by Byner (2001), meaningful learning occurs when learners integrate the existing schema with the new knowledge or when they make an analogy between existing and new schemas. In order to facilitate this schema, teachers should actuate the appropriate schema before starting to a lesson. In case of a new subject, being lack of materials and schemas of the learners, teachers should use advance organizers.

When using the structuring knowledge in the education, preliminary knowledge of the students is developed for the future learning. Students learn learning (Ülgen, 2001).

Advance Organizers

Ausubel has stated that some strategies should be developed with the purpose of ensuring permanency of the matters learned in the dynamism of meaningful learning efforts. Components of the mentioned strategy are entitled as “Advance Organizers”. Pre-learning is a primarily teaching strategy (Novak, 1998).

Advance organizers should response to following two needs: 1) conceptual and propositional knowledge of the learner, which has existed individually, should be recognised, and 2) new knowledge to be learned should be organized properly and given consecutively in order that student can develop skills of relating existing concepts to propositions (Novak, 1998).

Advance organizers ensure to remembering existing knowledge and to making matters learned permanent. Therefore, it is necessary to develop advance organizers and to regulate sequence of the content in a way to ensuring clearance, permanency and integrity in the cognitive structure. Advance organizers are a conceptual framework presented to students in the beginning of the education. Content should follow this conceptual framework.

Ausubel has listed features of advance organizers in a following way (Ausubel, 1968):

- Advance organizer should involve abstract and general aspects of the teaching material.
- It should be selected in order to make clear, to integrate and to ensure internal connections of the teaching material.
- It should not be mistaken for examining or summarising the material, which is on the same abstraction level with the material to be taught.
- Teaching material should be related with highly abstract and general idea regarding learning.
- It should fulfil the task of organizing teaching material mentally, and therefore it should create a conceptual framework, which the learner ensures integration with the teaching material.
- It should remove the structures blocked the matters learned newly in the pre-learning matters.
- It should become different depending on the subjects.
- In the beginning of a lesson, it should be presented as a wording, descriptive paragraph, question, show, film, sentence or a lesson.
- A written or verbal material can be presented in a way of an explanatory or didactic presentation.

Subject Design

Knowledge learned as meaningful is the knowledge structured and controlled in the combination of action, feeling and consciousness. To deem knowledge in any field – you can work up a connection between the knowledge acquainted and how you can infer from the experience in this field, and you can exemplify for the knowledge that you have learned meaningfully. These are the knowledge, which you control and feel your power on it. Deem that you learn by rote. These are the knowledge, which you forget generally or which you cannot relate these to your experiences in a less manner or by no manner of means and which you cannot control (Novak, 1998).

In order to be structured, subjects are regulated consecutively, as it was in Bloom's Theory. Context of the individual is considered, when presenting subject in the meaningful learning. It is necessary that the individual allows for relating to preliminary knowledge, and thus, that it should be interiorised by the individual, in

order that the subjects evoke and actuate the existed schemas. Subjects should enable to be distinguished and to be integrated. Ausubel presented two proposals in order to establish a connection between individual's cognitive structure and disciplines (Ülgen, 2001):

A) Progressive differentiation: it is to be presented the more abstract and general concepts of a discipline in a prior manner, then, to be considered the differences between these concepts, details and distinctive features in a gradually manner.

B) Integrative reconciliation: The content to be learned should be meaningful. A connection should be established between the new and existing concepts. Next lesson should be related with the former one and it should be integrated with it. Each of the knowledge unites forms integration in itself. There are concepts arrayed in a certain order and relationships between the concepts in this integration. If a student could not understand this order and see relationships of the new subject, he/she has difficulty in the comprehending of the subject.

Characteristics of the Teaching Efficiency

There exists a student learning and a teacher preparing the teaching environment in a learning event. Either teacher plans and presents the subject or student learns knowledge by studying. In both events, either student records the knowledge in a the same manner, then remembers the same knowledge when attaining to the relevant stimulus (mechanical learning); or he/she reorganizes his/her perceptions by means of existing relevant knowledge, then enters into memory. Second one is a meaningful learning. Learning is a process that the knowledge becomes a structural position (Ülgen, 1997).

Meaningful learning – principles in the teaching theory

Ülgen (1997) stated the meaningful learning theory within the frame of three articles:

- For a new learning, remembering existing knowledge regarding new one facilitates the learning and supports permanency.
- Reorganization of the perceived knowledge in the mind ensures permanency of the learned knowledge.
- The fact that extracted abstract knowledge are generalised into new events by means of the different examples facilitates obtaining new knowledge.

The teacher, who intends to utilise meaningful learning theory, should plan his/her tasks in three stages. Primarily, teacher should exam compliance of this theory with the teaching targets. Second stage is to be determined subjects discussed essentially. The last stage is the selection of the examples and preparing these.

In order to create a meaningful learning, the following procedures should be fulfilled respectively (Ülgen, 1997):

1. The subject to be learned should be analysed, and concepts and skills, which can be generalised in a high level, should be selected.
2. Subjects should be ordered according to pre-condition principle. Concepts and principles in the low level should be determined. In order that a student can learn by

means of generalization, miscellaneous examples should be prepared with these concepts and principles.

3. Pre-knowledge of the student should be known. Information acquired on the student's knowledge will help to selection of the advance organizers.

4. Advance organizers should be selected (If it is related with the concept to be learned or with filling the blanks regarding pre-knowledge).

5. Presenting style of advance organizers should not be confused (If it will be made with reading, listening or watching a drama, etc.).

Fulfilled procedures until this stage are related with preliminary preparation. Then, implementation is initiated.

1. Presentation of the advance organization is performed.

2. In the departure from the advance organizers, students should be activated in line with new learning activities.

3. The fact that student correlates these concepts and generalizes should be ensured by means of presenting the prepared concepts to the student. The fact that student groups these concepts into subgroups should be ensured by means of giving examples. In this manner, the student can develop a skill of analysis and generalization.

4. In order that the student can learn, the fact that selected principles and concepts adopt and transfer into new positions should be experienced. If the student can perform transferring, he/she is efficient.

Last stage is an evaluation stage. With the purpose of testing permanency of the learning, a tool for testing attitude level of the student is prepared in order to evaluate attitude level of the student.

Developments based on the “Meaningful Learning”

Some studies have been developed based on the meaningful learning theory of Ausubel. Especially, Novak and Gowin have performed important studies grounded on concept maps based on this field.

Concept Maps

Novak and Gowin (1984) opined regarding “concept maps” based on the meaningful learning principles of Ausubel in order to state meaningful relations between the concepts and proposals. The matter aimed with the concept maps is the fact that they can correlate meaningful relations between the concepts in a form of the proposal (Novak & Gowin, 1984).

Concept maps help the knowledge to be organized by the teacher and the key concept and principles to be found by the students. Students learn the learning, when they gain a skill and experience regarding on the structuring of the concept maps they can show a better performance on the meaningful learning (Novak, 1998). Concept maps are a kind of schematic tools, which are used for indicating a group of the concepts within the framework of the proposals. It can be paralleled with a visual roadmap and it is a method that can be followed in order to combine the meanings of the concepts in the proposals. In addition, concept maps ensure a schematic summary

regarding the matters learned, when completing the learning (Novak & Gowin, 1984).

Realising of a heard, seen, held or smelled matter can take some months. This is based on the concepts in their minds. This aim is a base for a programme, which helps to students on the learning to learn. Concept maps are the ruling tools in the organization of a new material to be learned (it verifies the known matter). Concept maps may contain some mistakes and imperfections. However, meta-learning knowledge has an important role in the meaningful learning process because of the fact that it includes how the meaningful learning is performed as well (Novak, 1998). Meta-cognitive learning is the learning to learn. An individual can develop meta-cognitive learning by means of creating a concept map, because of the fact that they create a semantic network by means of establish some relationships between the concepts in the meantime (Novak & Gowin, 1984).

Concept maps should be gradual; the more comprehensive concepts should take a place on the top of the map and more specific and less comprehensive concepts should take a place on the bottom of the map. Procedures, which help students to find certain concepts (words) from a written or verbal material and to determine interrelationships among these concepts, are emphasized (Novak & Gowin, 1984).

There exists a point to take into consideration in creating a concept map: this is skill of the individual on the enriching and recognising the meaning of his/her life. In the learning, individual differences should not be ignored (Novak & Gowin, 1984). Not only concept maps help students to acquire a meaningful knowledge from the field experiences but also help students to increase their positive feelings and actions in the course of the experience (Novak & Gowin, 1984).

Concept Learning

Concept Formation and Concept Attainment

Individual reveals the concept by means of the inductive method in the concept formation. This is a finding him/her self of the individual in a sense. A child makes some cubes. These cubes have different dimensions and colours. As a result of this tangible experience, child discovers the features of a cube by using the inductive method. These discovered features take also a place in the representative symbol of the cube. These are the symbols that child has developed from his/her experiences and can recall in the absence of the substantial cubes. When completing this, child has a “cube” concept. At this point, child has just gained the concept, but he/she has not given a name yet. He/she learns to write and speak the “cube” symbol in order to demonstrate that he/she has just gained the concept. This is a kind of symbol learning. The concept gains a “determinative” meaning.

Concept Attainment against Concept Formation

The descriptions given by the learner for a concept consist of the meaningful terms expressed primarily. Description is a form of the proposal. Concept attainment is a process of continuous inferring. Example: Azerbaijan grandfather tells an event lived through with his grandchild: “when my grandchild was 5 years old, he asked me “what is being angry?” My grandchild is 6 years old and has a big sister, and I

have estimated that my grandson could hear from whom immediately. I have tried to make an explanation on its meaning by using concepts and proposals. I have exemplified the matter such as a matter bothered you or something not being liked. However, I noticed that my grandchild was not interested in my words. My attempt for the explanation of the “being angry” concept failed. On the following day, we went on a boat trip and my grandchild fell asleep with his lifejacket. Upon arrival to the beach, I put my grandchild in to a hammock. My grandchild awakened approximately 15 minutes later. My grandchild walked to me by tugging, and said me “grandfather, please take off my lifejacket, it makes me angry”. Grandfather ensured that his grandchild had assimilated the concept. The meaning of the concept was completely a functional part of the cognitive structure (Novak, 1998).

When we establish the knowledge frameworks related to a given field, learning definitions and meanings of the concept and concept acquisition are smoothed (Novak, 1998).

Proposal Learning

In order to provide a meaningful learning on the knowledge to be learned newly, in the case that the relevant ideas in the cognitive structure has no any primary or secondary relationship, the combined/disorganised relationships appear. Many of the new proposals take a place in this class of learning concept and construe. These are meaningful learning because of its including a mix of existing knowledge.

Positive and Limited Aspects of the Meaningful Learning Theory

Ausubel’s meaningful learning theory has also some limitations despite of having some positive aspects. Positive and negative aspects of the theory have been discussed under the different topics.

Positive Aspects of the Meaningful Learning Theory

Positive aspects of Ausubel’s theory are determined as mentioned below: Thus, in the case that a secondary specific element is not recalled, it facilitates the learning of the new knowledge. May be, first and foremost matter is the fact that a meaningful knowledge can be implemented in the diversity of new problems or contexts, thus, knowledge transfer, which is necessary for a creative thinking, increases (Novak, 1998).

- Students to have permanent knowledge (gaining in-depth knowledge) and to provide a meaningful learning.
- Learning by discovering may not be meaningful in every time or it may not be sufficient separately. Meaningful learning is as important as learning by discovering. Meaningful learning may be significant in the case of implementing efficiently.
- Knowledge has permanency, and these can be transferred to the next learning.

Limited Aspects of the Meaningful Learning Theory

In the Ausubel’s theory, limitations are mentioned below:

- If a student cannot perceive or hear the organizers presented in the process of learning-teaching, teaching may become meaningless.

- If the students are not willing to the meaningful learning, mechanical learning may appear.
- There is a need for a free environment and a plenty of time. Democracy understanding of a teacher is limited with a power of making an efficient plan, which centralizes the student and understands the individuals (Ülgen, 2001).

CONCLUSIONS AND RECOMMENDATIONS

When the individual consciously gives meaning to the information, he/she internalizes the information. Individual develops some principles by making a comparison between the existing and new knowledge in the structuring of the knowledge. In an educational environment, meaningful learning occurs when learners integrate the existing schema with the new knowledge. Knowledge becomes a temporary one when a concept definition is learned by rote. Meaningful learning requires an upper level of endeavour and provides a permanent knowledge. As it was stated by Ülgen (2001), when using the structuring knowledge in the education, preliminary knowledge of the students is developed for the future learning. Students learn learning.

Meaningful learning has four important advantages over rote learning. First, knowledge acquired meaningfully is retained longer – much longer in many instances. Second, subsumed information results in increased differentiation of subsumers, thus adding to the capacity for easier subsequent learning of related materials. Third, information that is not recalled after obliterative subsumption has occurred has still left a residual effect on the subsuming concept, and in fact, the whole related framework of concepts. Fourth, information learned meaningfully can be applied in a wide variety of new problems or contexts; the transferability of knowledge is high (Novak, 1998).

Individual gains new knowledge by transferring knowledge. This transfer of knowledge occurs after learning the principles and concepts. The principles and concepts adopt and transfer into new positions should be experienced. If the student can perform transferring, it can be said that he/she is efficient. It's clear that meaningful learning is essential in the event of implementing efficiently.

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Anlamli Öğrenme ve Eğitim Ortamı

Özet

Ausubel'e göre öğrenme anlamli olmalıdır. Birey yeni bilgilerini daha önce öğrendiği bilgilerle ve uzun süreli bellekte depolanan ilgili bilgilerle ilişkilendirerek anlamlandırdığında, öğrenme daha kalıcı olmaktadır. Bireysel ayrılıklar bilgiyi anlamlandırmada önemli rol oynar. Bireyin içinde bulunduğu bağlam, geçirilen yaşantılar bilgilerin farklı yorumlanmasına neden olur. Bireysel yaşantıların bilgiyi zihinsel yapılandırmada önemli bir etkisi vardır. Öğrencinin bilgi birikimi öğrenmede çok etkilidir. Öğretim planlanırken öğrencilerin bilgi birikimleri dikkate alınmalıdır. Yeni öğrenilen bilgi öğrencinin daha önceki bilgileriyle örtüşmüyorsa öğrenen konuyu anlamakta zorlanır.

Keşfederek öğrenme öğrenmeyi anlamli yapar, kavramın tanımını ezberlendiğinde bilgi geçici bilgi olur. Anlamli öğrenme ileri düzeyde bir çaba gerektirir ve kalıcı bilgi sağlar. Birey kendi zihinsel, etkinliği içinde bilgiyi yapılandırır. Birey yeni algılarını, daha önce öğrendiği ve uzun süreli belleğinde depoladığı ilgili bilgilerle ilişkilendirerek anlamlandırdığında öğrenme daha kalıcı olmaktadır.

Bireyler zihinsel etkinlikleri ile yeni bilgileri ön bilgileriyle ilişkilendirerek yeniden organize ederler ve anlamli öğrenmeyi gerçekleştirirler. Kalıcı öğrenmeler anlamli öğrenme ile gerçekleşir. Mekanik öğrenmede bilgiler ezberlenir ve çok kısa süre içinde unutulur. Günlük yaşamda sürekli kullanılanlar unutulmaz. Mekanik öğrenmede öğrenen bilgileri kendisine geldiği gibi alır, kaydeder, sonra ilgili uyarıcıyla karşılaştığında olduğu gibi hatırlar. Anlamli öğrenmede birey etkin biçimde algılarını daha önce edindiği ilgili bilgilerle yeniden organize eder, sonra belleğe kaydeder.

Öğretmenin eğitim ortamında bilgiyi sunarken öğrencilerin bilgiyi yapılandırmalarına yardımcı olabilmek için ipuçları kullanması, bilgileri organize etmesi gerekir. Bireylerde şema oluşturmak için öğretmenler çoklu örnekler vermeli ve öğrenenlerin bunlar üzerinde düşüncelerini istemelidir. Öğrenenler yeni bilgiyi var olan şema ile birleştirdiklerinde ya da var olan şema ile yeni şemanın benzerliklerini oluşturabildiklerinde anlamli öğrenme gerçekleşir. Öğretmenler derslerde öğrenenlerin uygun şemalarını harekete geçirici etkinliklere yer vermeli, öğrenilecek konu yeni ise üst düzey örgütleyicileri kullanmalıdırlar.

Ausubel anlamli öğrenme sürecinde öğrenilenlerin kalıcılığını sağlamak amacıyla "üst düzey örgütleyiciler" adı altında birtakım stratejiler geliştirilmesi gerekliliğini ortaya koymuştur. Üst düzey örgütleyiciler, zihinsel yapıda bulunan ve daha önceden öğrenilenlerin hatırlanmasını ve öğrenilenlerin kalıcı hale gelmesini sağlamaktadır. Bu nedenle üst düzey örgütleyicilerin geliştirilmesi ve içeriğin sırasının, bilişsel yapıda açıklık, kalıcılık ve bütünlük sağlayacak şekilde düzenlenmesi gerekmektedir. Üst düzey örgütleyiciler, öğretimin başlangıcında öğrenciye sunulan kavramsal bir çerçevedir. İçerik bu kavramsal çerçeveyi izlemelidir.

Anlamli öğrenmede birey öğrendiđi bilginin farkındadır ve bilgilerini transfer edebilmektedir. Birey anlamli bir şekilde öğrendiđi bilgiye örnek verebilir. Bu Ezberleyerek öğrenmede bilgiler çođunlukla unutulur çünkü günlük yařantıyla iliřki kurulmamıřtır.

Anlamli öğrenme kuramından yararlanmak isteyen öğretmenin yapacaklarını hazırlık ařamasında üç ařamada planlamalıdır. Öncelikle bu kuramın öğretim hedeflerine uygunluđunu incelemesi gerekir. İkinci ařama iřlenmesi gereken konuların belirlenmesidir. Son ařama ise örneklerin seçilmesi ve hazırlanmasıdır.

Ausubel'in anlamli kuramına dayalı olarak geliřtirilen çalışmalar arasında kavram haritaları önemli bir yere sahiptir. Kavram haritaları öğretmene bilgiyi organize etmesine yardımcı olmada ve öğrencilere anahtar kavram ve ilkeleri bulmalarında yardımcı olur. Öğrenciler kavram haritalarını yapılandırma ile ilgili beceri ve yařantı kazandıklarında öğrenmeyi öğrenirler ve anlamli öğrenmeyi daha iyi gerçekleştirirler Özellikle Novak ve Gowin bu alana dayalı kavram haritalarını temele alan önemli çalışmaları yapmışlardır. Kavramlar ve önermeler arasındaki anlamli iliřkileri göstermek için Ausubel'in anlamli öğrenme ilkelerine dayanan "kavram haritalarına" iliřkin görüşlerini belirtmişlerdir. Kavram haritaları öğretmene bilgiyi organize etmesine ve öğrencilere anahtar kavram ve ilkeleri bulmalarında yardımcı olur.

Meta-öğrenme bilgisinin de anlamli öğrenme sürecinde öğrenmeyi öğrenmeyi sađlaması açısından önemli bir yere sahip olduđu söylenebilir. Birey, biliř ötesi-öğrenmeyi kavram haritası oluşturarak geliřtirebilir.

Ausubel'in anlamli öğrenme kuramının olumlu yönlerine karşın bazı sınırlılıkları da bulunmaktadır. Olumlu yönleri; anlamli bir şekilde öğrenilen bilgi problem çözme becerisini de geliřtirir. Öğrencilere kalıcı bilgi kazandırabilmesi (derinlemesine bilgi edinmesi) ve anlamli öğrenmeyi sađlamasıdır. Buluş yoluyla öğrenme her zaman anlamli olmayabilir ya da tek başına yeterli olmayabilir. Anlamli öğrenme buluş yoluyla öğrenme kadar önemlidir. Anlamli öğrenme kuramı etkin bir şekilde uygulandıđı takdirde anlamli olabilir. Bilgiler kalıcıdır ve bir sonraki öğrenmeye transfer edilebilir. Ausubel'in kuramında sınırlılıklar ise řu şekilde ifade edilebilir; öğrenci, öğretme-öğrenme sürecinde sunulan organize edicileri algılayamaz ya da duyamazsa öğretim anlamını yitirebilir. Öğrenciler anlamli öğrenmeye istekli deđillerse, mekanik öğrenme gerçekleştirilebilir.

Bu çalışmada anlamli öğrenmenin anlamının güçlendirilmesi ve bilginin oluřumuna dikkat çekilmesi amaçlanmıştır. Anlamli öğrenme başlıđı altında kavram haritalarından ve öğrenmeyi iletirmek için ilgili meta-öğrenmeden söz edilmiştir. Çalışmada aynı zamanda anlamli öğrenmenin öğretimde uygulanmasının açıklanması da amaçlanmıştır. Bu amaçla Ausubel'in anlamli öğrenme kuramının anlamı, anlamli öğrenmenin gerçekleşmesinde eğitim ortamının önemi, üst düzey örgütleyiciler, konu tasarımı, öğretimi, kavram haritaları, kavram oluřumu ve kavram özümleme tartışılmıştır.

Anahtar Sözcükler: Anlamli öğrenme, eğitim ortamı, yapılandırılmış bilgi, bellek süreci, kavram haritası.

