Examples of instructional design for social studies according to meaningful learning and information processing theories

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Abstract

The fundamental purpose of this study is to present concrete examples of instructional design from theory to practice and to evaluate these examples. In the study, “meaningful learning theory” of Ausubel, one of the descriptive theories which enlighten teaching-learning processes, and “information processing theory” of Gagne, one of the prescriptive theories are analyzed. Related to these theories, instructional designs are developed for in-class activities of the social studies course. These examples are compared with the in-class activities of Ausubel and Gagne’s teaching theories.

Keywords: Meaningful learning theory, information processing theory, teaching theory, learning theory, instructional design, social studies.

1. Introduction

Studies for practices in all fields are carried out on the basis of certain theoretical concepts and principles. Similarly, in the field of education, development and implementation of curricula, materials, teaching-learning processes are realized based on the theoretical grounds. These theoretical grounds are psychological principles, ideals, values and needs of the community, and principles envisaged by the educational philosophy. These rules and principles should be considered in planning, organizing and conducting educational activities; and educational activities should be carried out in accordance with them.

In the study, “meaningful learning theory”, one of the descriptive theories which enlighten teaching-learning processes, and “information processing theory”, one of the prescriptive theories are analyzed; and in relation to these theories, instructional designs are developed for in-class activities of the social studies course. These instructional designs are compared with each other; and proposals are offered as a result of this comparison.

2. Meaningful Learning Theory

Theory of Ausubel, who is a cognitive psychologist, focuses on meaningful verbal learning or advance organizers. This theory which is also called expository teaching includes descriptive principles for both how a person learns, and features of an instructional activity and how it should be organized. According to this theory, learning occurs through retention of meaningful learning materials. Rote learning is a mechanical learning and does not turn into a meaningful learning unless it is organized. Ausubel set forth the difference between meaningful learning and rote learning as follows: Rote learning is a kind of learning where the subject learned is learnt without making connection to the other subjects and so it is forgotten rapidly. However, rote learning which is repeated many times is not forgotten (like multiplication table). Meaningful learning, on the other hand, is a kind of learning...
where the subject is learned meaningfully in an integrated way through incorporating the new subject or concept into the relevant subjects and concepts and through establishing connections between the new subject or concepts and the existing information of the learners. Therefore rote learning is forgotten rapidly whereas the meaningful learning is not (Yeşilyaprak, 2009, p. 323; Ausubel, 1963).

Ausubel advocates the necessity for developing certain strategies in order to maintain and increase permanency of the subjects learned in class with an aim of activating efforts for meaningful learning. Ausubel refers to these strategy components as “advance organizers”.

Meaningful learning theory covers principles and strategies that can be used in class environments where face-to-face communication occurs. In this regard, teaching-learning process includes determination of advance organizers, installation of them into appropriate materials and presentation of these materials to the learner.

### 2.1. An Example of Instructional Design for Implementation of Meaningful Learning Theory

Setting Instructional Objective: Student recognizes, in general, the surface features of the region she/he lives in on the relief map of Turkey.

Concept – Principle – Subjects: Defining the concepts of surface feature, mountain, plain, plateau, river, and lake; and demonstrating them on the relief map.

Prerequisites/preliminary information: Giving examples for natural and human elements, distinguishing natural and human elements and revealing differences between natural and human elements.

Pool of Examples: A picture including natural and human elements; photographs and 3D drawings of the concepts of surface features, mountains, plains, plateaus, rivers and lakes; short films about the surface features, mountains, plains, plateaus, rivers and lakes; and demonstration of the concepts on the relief map of Turkey.

Organizer (Descriptive/Comparative): Graphic organizers for the natural and human elements.

Exposition Format: Principles of meaningful learning theory (Subsumption, deduction, prerequisite, inclusion), expository teaching strategy (measures that should be taken with respect to concentration, motivation and evaluation factors).

1. Teacher presents the organizer schema to the students. She/he both steers students to the new learning activities and also informs them on these activities through this schema.

2. Teacher makes students to examine the picture exhibiting natural and human elements together. She/he asks students to give examples for the natural and human elements shown in the picture and to tell the differences between these two elements; consequently they draw a schema for the subject. When necessary, teacher gives different examples and tips. She/he continues these activities until the attainment of educational objective for distinguishing natural and human elements, which is a prerequisite for the students. After that, she/he passes to the next activities aiming attainment of another objective.

3. Generalization: Teacher shows students photographs and 3D drawings of surface features (mountain, plain, plateau) and waters (river, lake), define these concepts by emphasizing differences and similarities between them and demonstrates the relevant schema. Teacher makes students to examine this schema and asks them some questions about the basic concepts indicated on the schema.

4. Teacher shows a short film about the surface features and waters to the students. Then she/he asks questions for what they have seen in the film as examples for surface features and waters and wants them to define especially these natural elements they saw in the film by their own words.

5. Teacher shows the Relief Physical Map of Turkey to the students. She/he ensures the students to touch the relief map and especially makes them to feel the rises and falls on the map. Teacher wants students to give examples for the surface features and waters they learned and to explain them through the map.

6. Teacher draws attention of the students to the conventional signs part on the Relief Physical Map of Turkey. She/he shows color bar indicating altitude levels on the map to the student and makes explanations about it. She/he asks students to estimate altitude of certain places on the map.

7. Teacher wants students to show surface features and waters of the region they live in on the relief map and to group surface features and waters in the region. She/he helps students to transfer the information they have learned into the new situations.

Assessment and Evaluation / Measurement of Permanence: Teacher assigns homework in order to make the information learned permanent and to ensure its transfer into new situations. She/he makes a brief review of the
activities carried out during the lesson and explains what to be done in the next lesson. Teacher may benefit from the maps and schemas during brief review of the lesson. She/he may also make evaluations by using assessment questions prepared to measure the permanence of the learning.

3. Information Processing Theory

This theory developed significant approaches and proposals which will be very beneficial for teachers in planning and implementation of the instructional activities with the broadest perspective. This theory, the foundations of which were laid by Gagne, consists of principles for designing the instruction within the integrity of a cascaded system (Babadoğan, 1996, p. 70; Joyce and Weil, 1972).

According to Gagne, the most important cornerstone of the teaching process is the learning situations. Therefore learning situations should be analyzed in the most detailed way. Learning situations are structured on the basis of three fundamental elements: “sense organs of students” and “situations and behaviors stimulating senses of students” (Alkan, 1977, p. 103).

Gagne defines eight instructional steps which will guide teachers to organize teaching situations by considering basic components of the information processing theory: attention/alertness, inform students of the objectives (expectancy), retrieval to working memory, selective perception, encoding into long-term memory, responding, feedback and recall (cuing retrieval) (Babadoğan, 1996, p. 74; Erden and Akman, 1995, p. 180).

Gagne developed “Instructional Design Model” by combining behaviorist approach which he was supporting at the beginning and the information processing approaches which he pioneered later. The most important cornerstone of the information processing theory including the Instructional Design Theory is the memory.

This theory acknowledges that cognitive functions of an individual show many similarities with the functioning principles of a computer. In the study presenting concrete behaviors for the teachers, activities are gathered under the headings of attention, active learning, meaningfulness, organization, advance organizers, memory facilitators, over learning and automation.

3.1. An Example of Instructional Design for Implementation of Information Processing Theory

Attention/alertness: Teacher reads a letter written by a person having migrated from village to city. Instead of reading a letter, teacher may show students an appropriate part of a film about the migration such as “Migratory Birds” and “Migration”.

Informing students of the objectives: Teacher explains students that they will learn “the relationship between the places where people live intensively and the geographical features”; and that thanks to comprehension of this relationship they can comprehend the reasons for certain problems such as migration, urbanization, slums-unplanned urbanization and unemployment, and can produce solutions for these problems in the future.

Retrieval to working memory: Teacher reminds students about the migration in the letter they read or the film they watched with an aim of attracting their attention at the beginning of the lesson and asks students “which geographical features make people to prefer some places for settlement more than the others”. While replying this question, students are made to retrieve the subjects they learned previously (surface features, waters, climate, etc.) and therefore the new information is correlated with the prior information and thereby made meaningful.

Selective Perception: Teacher wants students to give examples for the factors having impacts on the distribution of population; and then these examples are listed and grouped. Teacher makes students to examine illustrated population, physical and climate maps of a geographical region and provides students to make inferences about the relationship between population, and surface features and climate.

Encoding into long-term memory: In this stage, teacher makes students to conduct studies/research for correlating regions having high population density with the surface features.

Responding: This is the learning phase in which teacher gives feedbacks to the students about whether the learning occurred or not. Teacher may ask written or oral questions to the students about the subject.

Feedback: During this phase, teacher gives feedbacks about learning of the subject and when necessary, makes corrections to it.
Recall (cueing retrieval): Teacher makes reinforcements for the subject with an aim of making the learning permanent and encoding it into the long-term memory. Teacher makes guidance to the students for using memory facilitators such as analogies, encoding, and abbreviations for the subject.

4. Conclusion

Instructional theories of Ausubel and Gagne, in general, resemble each other in the planning phase of in-class activities but there are outstanding differences between them in the implementation phase. The meaningful learning theory focuses more on the expository or in other words a teacher-centered teaching; whereas teacher undertakes the role of a guider or moderator in the information processing theory. Both theories particularly underline activeness of the students in class. Contrary to the common understanding, even Ausubel states that students should be active and emphasizes meaningful learning is different from the rote learning within his meaningful learning theory. Prescriptive instructional theories, unlike the descriptive ones, analyze each phases of the instruction in detail and include strategies that should be employed by both teachers and learners. Particularly, in the information processing theory, significance of the memory is underlined.

Students have a negative attitude towards the social studies course which is generally regarded as a boring course which is irrelevant to the real life and based on just rote memorization. The social studies course is mainly a verbal course and therefore the goal of making learning permanent makes the delivery of course more difficult. The most convenient solution for transforming the course from a rote memorization into an attractive subject is qualified teachers having good command of teaching-learning theories and practices.

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