OPTIMIZING THE EDUCATIONAL PROCESS BY EMPLOYING THE CUBE METHOD FOR TEACHING SPECIALTY CLASSES IN THE AGRICULTURAL HIGHER EDUCATION

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Abstract. *The aim of the paper is to present the positive aspects of using the cube method in the teaching-learning of agriculture-related contents. We believe this method offers opportunities for the pedagogical management of a learning process that is thorough, easy and fun, with efficient cooperation and communication, in which the students are active participants. Learning is not merely storing information, but rather an activity which involves cognitive, volitional and emotional effort. Therefore, it is more easily and more effectively achieved when the student is engaged in an interpersonal relationship within which the efforts are coordinated via an exchange of messages.*

Key words: *educational process, efficient learning, cube method, interactive teaching strategies*

INTRODUCTION

One of the teachers' main responsibilities is to help their students learn. Only by possessing in-depth knowledge about the learning process can teachers have a rapid, correct and optimal intervention in the school educational approach. In order to achieve these goals, it is crucial to know the answers to the following questions: Which are the mechanisms of the learning process? How can one make their learning process be efficient and durable? How can children be taught to learn in an efficient manner? (DULAMĂ, MARIA ELIZA: 2009, p. 11).

The answer to all these questions is to be found in the teaching strategy chosen by the teacher during the educational process. OPREA, CRENGUȚA – LĂCRIMIOARA (2007, p. 8) defines the teaching strategy as "the *efficient way* in which the teacher helps students reach knowledge and develop their intellectual capacities, their abilities, skills, feelings and emotions; this *way* is built as a *complex circular ensemble of methods, techniques, educational means and types of organizing one's activity that complement each other*.

IOAN CERGHIT (2002: p. 273 – 274) defines the teaching strategy as "a hypothesis for action, whose validity will be confirmed only after it is applied".

Interactive learning strategies stimulate the participation of subjects in action, developing their complex cognitive processes, their individual experience and the skills for understanding and (self) assessing the values and situations through the use of active methods (OPREA, CRENGUȚA – LĂCRIMIOARA: 2007, p. 28). In *Pedagogie*: *dictionnaire des concepts cles. Apprentissages formation et psychologie cognitive,* active methods are "all methods that really involve the learners, making them build their own knowledge starting from case studies, role plays, situations proposed by themselves or by the trainers, where the learners' involvement is strong" (1997, p. 265).

DULAMĂ MARIA ELIZA (2008, p. 154) presents a few important characteristics of lessons based on learning through cooperation. These are as follows: *individual responsibility, direct interaction, positive interdependence, interpersonal skills, Group processing*.

MATERIAL AND METHODS

The aim of the study was to present the positive outcomes of using the cube method in teaching/learning agriculture-related content.

For this purpose, the study was focused on reaching the following **objectives**: to identify the possibilities of integrating the cube method in the educational process; to use the cube technique in the educational process (it is well-known that this technique develops imagination, creativity and critical thinking); to encourage the student's development through social interaction, as the latter leads to the cognitive and social-affective support necessary for the formation of the intellectual and psychological profile and for the integration of the student into society.

The paper is the result of applying the cube technique in one of the demonstrative lessons held during the pedagogical practice stage (over the course of the first semester of the 2016 – 2017 academic year), at BUASMV "King Michael the 1st of Romania" from Timișoara. Third year students at the specialization called *Environment Protection in Agriculture* were involved in the realization of this study.

The cube technique was developed in 1980 by Cowan and Cowan; it is a technique whereby a subject is studied and presented from several perspectives.

As described in the specialized literature, (Ilie M. (coord.): 2009, p. 94), this technique involves the following stages:

- First, a cube is built with the side of 15 – 20 cm. Each face of the cube displays instructions which the students have to follow in their thinking and writing activity.

In the variant proposed by the authors, the key-words written on the faces of the cube are: describe, compare, associate, analyse, apply, and find arguments for and against. The teacher guides the students' activities, which are formulated according to Bloom's taxonomy (Lozovanu, Silvia: 2001, p.72 - 73):

"*Describe*: Inspect the subject thoroughly and describe what you see (colours, shapes, sizes, etc.)

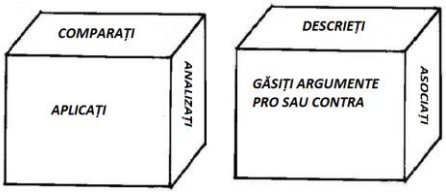
Compare: What do you think it resembles? What makes it different?

Associate: Set your imagination free. What associations of ideas does this suggest?

Analyse: How was it made?

Apply: What can you do with this geometrical shape? What uses does the object have?

Find arguments for and against: Take one side when it comes to this subject/object and its applications. Use any type of "arguments" for this purpose.



- The pupils/the students read a text or make a research starting from a theme. The activity can be done individually, too, in small groups or as a class.
- Then the pupils/students are asked to solve individually the tasks specified on the six sides of the cube. The instructions do not have to be solved in the order presented above.

- Each pupil/student shows their deskmate the result obtained after solving each task written on the cube, and the partner comments and asks questions.
- Class activity – a table is drawn with 6 columns, one for each face of the cube; one representative from each team will write in the given column what they wrote for that task. All columns are dealt with in the same way.
- If the technique is used in the stage of *realizing the meaning*, the cube faces will be filled in with information taken from the school book, from maps, diagrams or photos. *In the technique description* the focus is not placed on assessing the knowledge or the information written by the pupils/students; nevertheless, for efficient learning, feedback is crucial, whether it is comes from the teacher or from the colleagues. In the stage of *reflection* or *expansion*, the cube can be used again and completed with new information. (Dulamă, Maria Eliza: 2008, p. 180).

RESULTS AND DISCUSSIONS

When assisting in demonstrative lessons held by the mentors in the pilot schools, the students who participated in the study observed and analysed different interactive teaching techniques used in the specialized classes. Some of these strategies were put into practice in the lessons taught by students. It is among these interactive teaching strategies that the cube technique can be classified.

Applying the cube technique at the beginning of a lesson for acquiring new information allows of active involvement of students in establishing connections between *what I know* and *I think I know* about the subject and motivates them, raises their interest for study.

An example is given: application of the cube technique in an agronomics class for understanding the phenomenon – landslides.

The teaching process was focused both on the assimilation of knowledge and skills specific for this school subject, and on developing the attitudes and mechanisms of conscious and efficient learning, which students can also apply in various context outside of school.

For achieving the learning sequence, the following *cognitive operational objectives* were set. The students will be able to:

- identify the causes, conditions and consequences of landslides;
- explain how landslides happen;
- argue for or against a statement;
- establish preventive measures against landslides;

Also, *methodological operational objectives* were set. The students will be able to:

- describe the landslide they see in the photo;
- analyse the process of landslides from the schematic drawing;
- compare the landslide in the photo with the one in the schematic drawing;
- synthesize the information about landslides in a concise manner.

The following stages took place in the teaching situation:

➢ *Task*: Each of you has a cube. You have ten minutes to complete in your notebooks everything that is required on each face of the cube. The subject is: landslides.

- *Describe* the landslide in the photo!
- *Associate* the landslide to the way the sledge comes down a slope!
- *Analyse* the process on the schematic drawing!
- *Compare* the landslide in the photo with the landslide in the schematic drawing!

- *Apply!* Establish measures for landslide prevention!
- *Argue for or against the following statement: "Landslides are a risk for the environment!"*

➢ *Pair work*: Read to your partner what you wrote on the first face, and your colleague will tell you exactly what he liked and why. The second pupil presents what he/she has written, and his/her partner comments. You have five minutes to discuss in this way the ideas written on the six faces of the cube.

➢ *Class activity.* – Draw a table with 6 columns, one for each face of the cube. One representative from each team will write in the given column what they wrote for that task. Ask for additional ideas, in turn, for each face of the cube.

CONCLUSIONS

The multitude of possibilities in which this technique can be used facilitate its possibilities of integration in the educational process.

Thus, we can conclude that the cube technique can be applied: in different school subjects, themes and types of lessons; in different stages of the lesson; in various tests (oral and written); using various types of organization (individual, class, pairs, groups); substituting the tasks proposed by the authors with others, depending on the situation; using (if need be) only some faces of the cube; using key-words at random or in a certain logical order.

By applying this technique, the pupils/students acquire the following cognitive skills: analysing objects, phenomena, components of structures, relations, etc.; the capacity to identify the components and their characteristics; the capacity to describe visible aspects; the capacity to compare elements, characteristics, relations, etc., the capacity to put this theoretical information into practice.

Indubitably, the use of this technique helps in developing the imagination, creativity and critical thinking. Its use obeys the principle "from simple to complex" (from "describe" to "make a stand and bring arguments to explain your decision"), this requiring deeper thinking.

BIBLIOGRAPHY

CERGHIT, I. (2002). Sisteme de instruire alternative și complementare. Structuri, stiluri și strategii. București: Editura Aramis.

DULAMĂ, MARIA ELIZA (2008). Metodologii didactice activizante – teorie și practică. Cluj – Napoca: Clusium.

DULAMĂ, MARIA ELIZA (2009). Cum îi învățăm pe alții să învețe – teorii și practici didactice. Cluj – Napoca: Clusium.

IONESCU, M. (2000). Demersuri creative în predare și învățare. Cluj Napoca: Editura Presa Universitară Clujeană.

ILIE, M. (coord.). (2009). Teoria și metodologia instruirii. Timișoara: Editura Mirton.

LOZOVANU, SILVIA. (2001). "Aplicații ale tehnicii cubului în cadrul orelor de chimie" în Didactica Pro... Nr. 4 (8). Chișinău

OPREA, CRENGUȚA – LĂCRIMIOARA (2007). Strategii didactice interactive. București: Editura Didactică și Pedagogică, R.A;

PALICICA, MARIA, GAVRILĂ, CODRUȚA, ION, LAURENȚIA. (2007). Pedagogie. Timișoara: Editura Mirton.

RAYNAL, FRANCOIS, RIEUNIER, ALAIN. (1997). Pedagogie: dictionnaire des concepts cles. Apprentissages formation et psychologie cognitive. Paris: E.S.F.

*** M.E.C. (2007). Curriculum Naţional. Programe şcolare pentru aria curriculară: Matematică şi Ştiinţe [National Curricula. Mathematics and Science]. *Bucureşti.*