Journal of Awareness

Cilt / *Volume* ***4,*** Sayı / *Issue* ***3,*** **2019**, *pp.* **367-376**
E - ISSN: **2149-6544**
URL: https://www.ratingacademy.com.tr/ojs/index.php/joa
DOİ: https://doi.org/10.26809/joa.4.028
Araştırma Makalesi / *Research Article*

CHALLENGES OF ACQUIRING SCIENTIFIC KNOWLEDGE FOR STUDENTS OF PRE-UNIVERSITY EDUCATION AND TEACHER RESPONSIBILITIES IN THE CLASSROOM ENVIRONMENT

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Geliş Tarihi: 10 Temmuz 2019; Kabul Tarihi: 25 Temmuz 2019
Received: 10 July 2019; Accepted: 25 July 2019

ABSTRACT

It is already known that one of the greatest challenges of education nowadays is: motivating students in language acquisition. The school, besides being one of the main agents of socialization, is at the same time the main institution which has the responsibility and the attribute to provide students with scientific knowledge according to their age and characteristics.

Thus, in order to guarantee this attribute, specialists of education, educators, researchers in the field of education psychology, methodology, etc. constantly recommend the application of critical thinking techniques by the teachers.

The aim of this paper is to highlight the importance of acquiring scientific knowledge at an early age and defining effective strategies in order to achieve this goal.

This paper also aims to review some important issues such as: motivating students through teaching strategies in classroom environments and the responsibilities of the teacher who will serve as a catalyst to carry out the above processes.

Through this study we will answer these questions: How can students be motivated in classroom environments when scientific knowledge can be provided in different ways and in relatively short time? What are the most effective strategies for their motivation? Why is it so important to acquire scientific knowledge for this age? What are the specific responsibilities of the teacher during this process?

Key words: *motivation, pre-university education, classroom, environment, teaching strategies.*

This study is the revised version of the paper at the same name which was presented at the "The IV. International Rating Academy Congress on Village Institutes and New Researches in Education" taking place in Çanakkale/Turkey on May 2-3, 2019.

1. METHODOLOGY

Qualitative and quantitative methods have been used for the realization of this paper. Thus, a great deal of literature in Albanian as well as in foreign languages has been reviewed. Likewise a questionnaire for teachers with 10 questions is created. This questionnaire was built in accordance with ethics code standards, respecting the anonymity of respondents through the protection of their personal data.

The questionnaire is completed by 25 teachers who teach to grades 1-9 in elementary education. Thus, 15 teachers surveyed teach classes in primary education grades 1-5, and 10 of them belong to primary elementary education, thus grades 6- 9.

Teachers who are part of the survey belong to primary schools Myrteza Sala and the 9-year school Dritëro Agolli, Bilisht, Devoll district, Korçë. The survey was conducted during February - March 2019.

2. THE IMPORTANCE OF SCIENTIFIC KNOWLEDGE AT AN EARLY AGE.

Issues related to the method of inclusion, quantity and quality of scientific knowledge in textbooks have become the subject of discussions and debates especially in the last two decades.

Various domestic and foreign studies generally emphasize the consideration of individual characteristics of children's age, which should be alternated with the general qualities they show in such common classroom environments. Questions that help us understand more about the importance of acquiring scientific knowledge in primary education are:

What is the contribution of scientific knowledge in preparing students for what they will become in the future, in the complex society of the 21st century? How and how much should adults interfere, through education in this process?

We can begin to provide some background information by observing textbooks although the amount of information contained there has undergone changes over the last two decades due to the implementation of educational reforms in the pre-university system. Researchers in the field of methodology, social sciences and natural sciences present various reasons for the importance of early adopting of scientific knowledge.

Harlen and Qualter (2004:10) think that education through scientific knowledge aims to help children understand the phenomena and events that occur in the surrounding world. According to them, it is important for the children to understand what has been discovered through their daily experiences.

Other authors mention other reasons which, according to them, speak of the necessity of transmitting knowledge related to evolution. According to Kennedy et al. (2004), the most commonly asked questions of children in primary education are: Why do birds fly? Why do some plants grow in the desert? Why do children have similarities with their parents? Each of these questions has a response to include separation, inheritance mechanisms, reserves and water use.

Other authors are of the opinion that the role of the acquisition of scientific knowledge in primary education and not only is twofold. Thus, according to Peacock (2005:8) students get acquainted with natural and with social phenomena. Likewise, social phenomena such as bullism or racism are managed to be kept under control by the teacher.

Thus, in the multitude of information about scientific achievement, students understand that these disciplines are:

• activities performed by people;

• activities related to all aspects of the human society;

• activities involving thinking and is covering processes, Peacok (2005).

Likewise, Osborn, et.al (2000:67) propose five specific strategies to use in primary education such as: compliance, incorporation, creative meditation, retreatism and resistance.

3. IMPLEMENTING STRATEGIES IN THE CLASSROOM IN FUNCTION OF LEARNING OF SCIENTIFIC KNOWLEDGE.

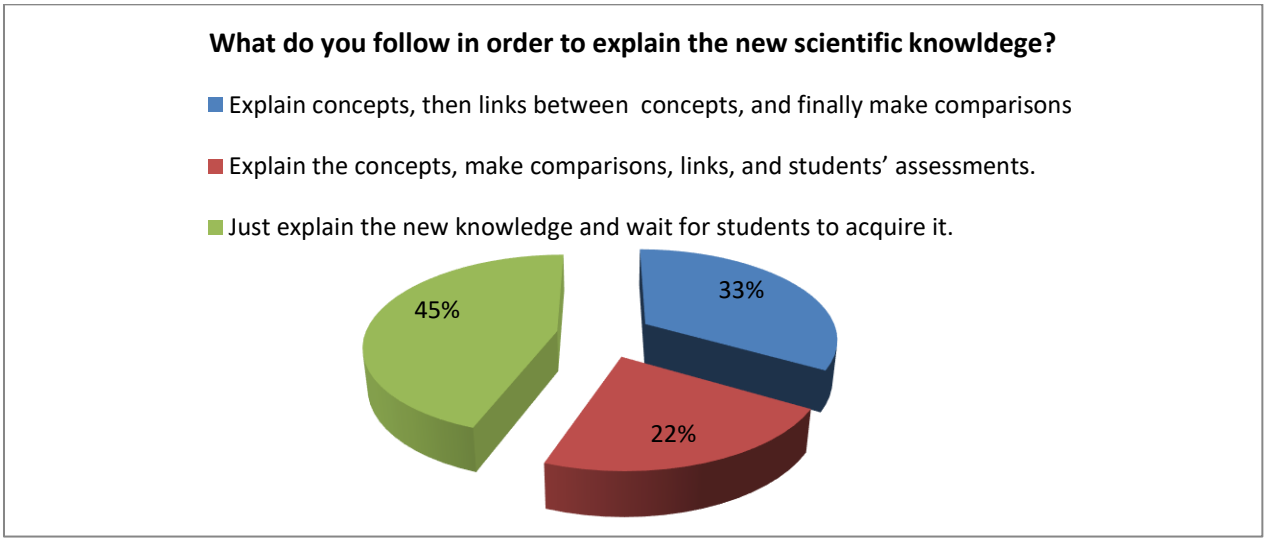
Improving quality in primary education and facilitating the learning process requires diversification of the implementation of effective strategies and professional teacher training. Referring to researches in the field of education, we will note that most of them insist on the importance of the preliminary planning and details of any activities performed within the classroom environment and not just those. Moreover, Galton et al. (1999: 85) emphasize that teachers today are working harder in the sense that they are more engaged in many students' interactions not only within and outside the classroom environment.

In the framework of identifying the role of implementation of these strategies and students' motivation, in acquiring scientific knowledge in pre-university education, we are graphically present the responses of 25 teachers. From the survey conducted, it results that 15 teachers belong to primary education, grades 1-5 and 10 teachers teach in the grades 6-9.

The reason for selecting teachers from two educational cycles is to achieve a possible analogy between them. Also from the survey, teachers have reported that most of them around 75% have over 10 years of experience as a teacher. Only 2% of teachers have 1-5 years of experience as teachers and 23% of teachers refer to having 5-10 years of experience.

The main purpose of this question is to identify the need for ongoing training that teachers in the service should develop on the development and studies in the relevant fields.

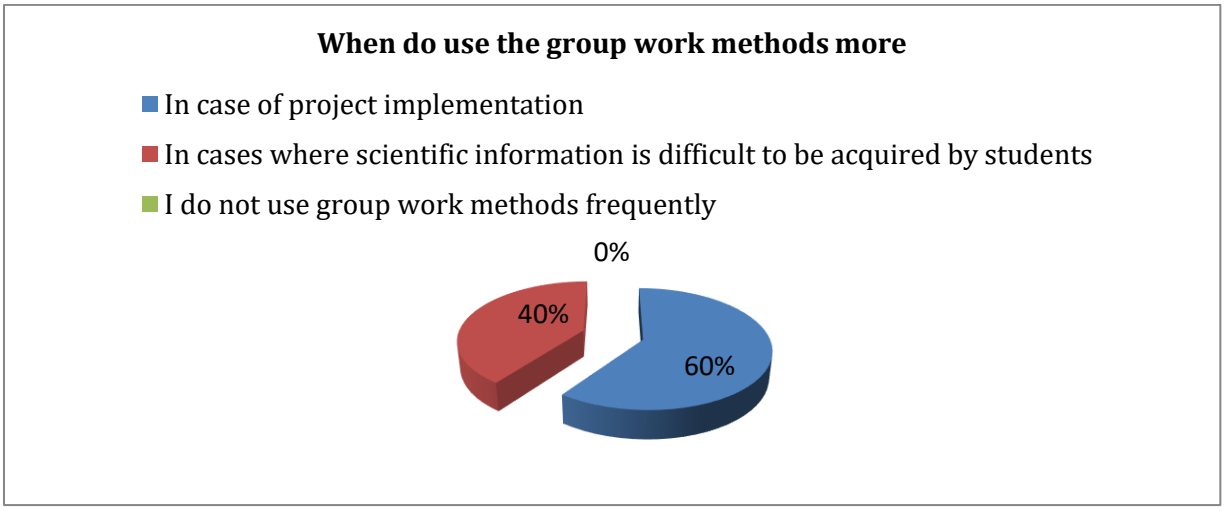
Graph. 1.



As it can be seen from Graph.1, regarding the question of how to explain the new scientific knowledge and the ways followed by the teachers, teachers answered as following: the vast majority of respondents, i.e. 45% of them only explain scientific knowledge and then wait for the students to acquire. Also, 22% of them say they pursue another way of explanation: they first explain the concepts, then make comparisons between them, the connections between the concepts and the phenomena, and finally the student's assessment (of course not with a mark), over how much they have absorbed the information.

Another strategy was used by the teachers, which turns out to be chosen by 33% of them. Thus, these teachers initially explain the new concepts, then the links that exist between them, and finally they make a comparison between them. This type of strategy does not turn out to be as effective as the previous strategy because pupils' feedback regarding to the level of acquisition of information is unclear.

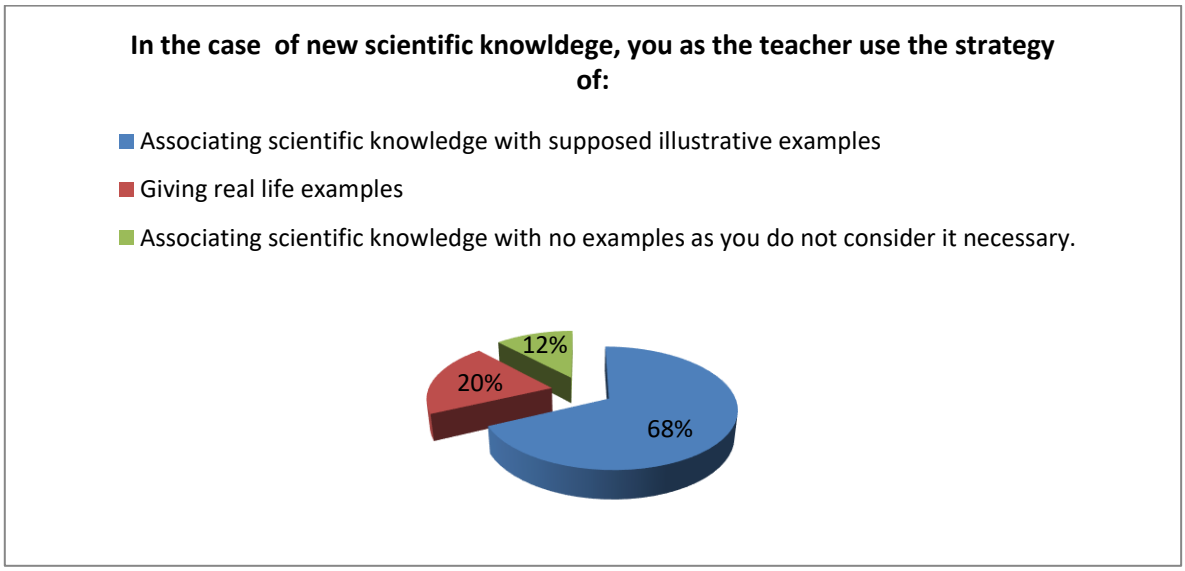
Graph. 2



Another strategy recommended by researchers, educators, and educational specialists is the method of group work. From Graphic Number 2, we note that this strategy is used by all surveyed teachers. Their views show cases when they use this strategy.

Thus, 60% of the respondents referred that the group work methods are used in the case of realization of different projects and not in cases of explanation of new scientific concepts. Only 40% of them consider them necessary and use group work methods to improve learning, and consequently learning in the classroom.

Graph. 3

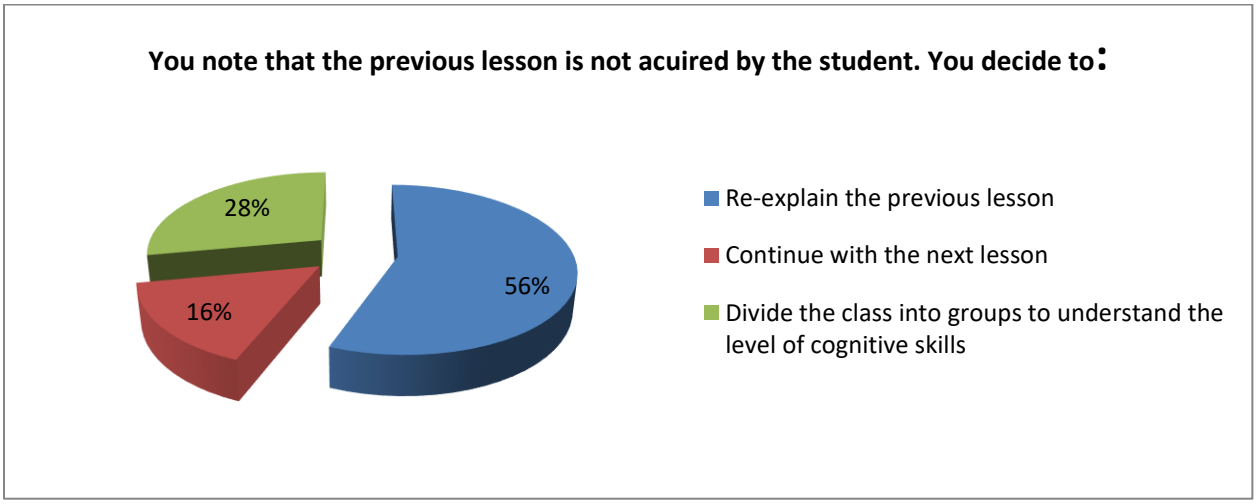


From Graph. 3, we understand that 68% of respondents use illustrative examples for scientific knowledge explanation. Only 20% of them are associated with concrete examples of everyday life. Moreover, there are those surveyed who do not find it necessary to associate

scientific knowledge with examples, either from everyday life or supposedly by satisfying the information provided in the textbooks.

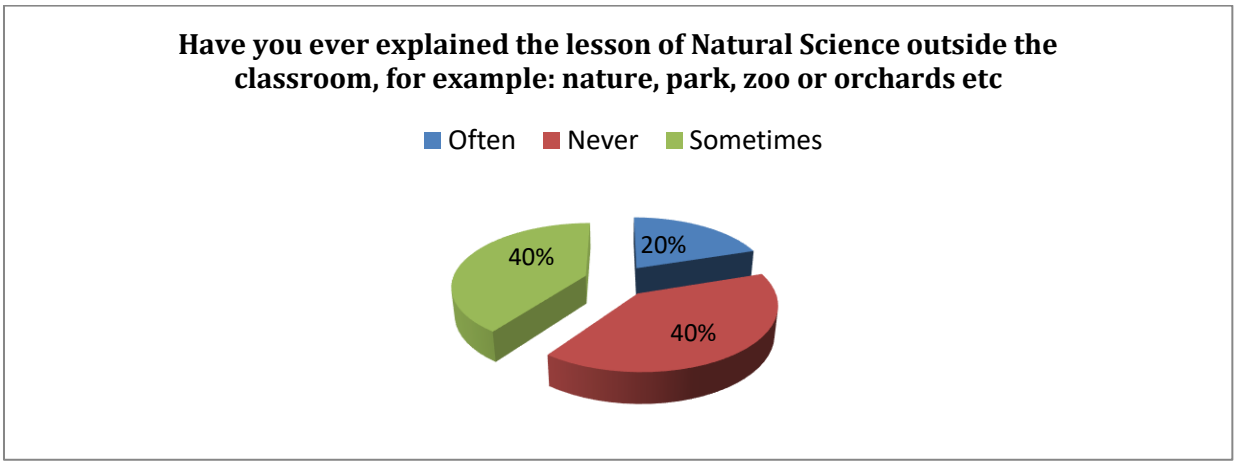
If we refer to Piaget's theory, on the basis of the four-stage development of children's development, illustrative examples were those who played an important role in the acquisition of information. Moreover, according to this theory, the role of the examples is irreplaceable to learn for children aged 7-12 considering the fact that their abstraction skills begin after age 12. In this case, the illustration with examples helps the process of learning.

Graph. 4



From graphical presentation of question number 4, we notice that in cases where scientific knowledge could not be appropriate, teachers' modes of action are three: 56% of them re-teach the previous lesson, 16% continue with the next lesson according to the defined program and 28% share the classroom in groups to understand better the rate of acquisition of information and what kind of explanation each group needs.

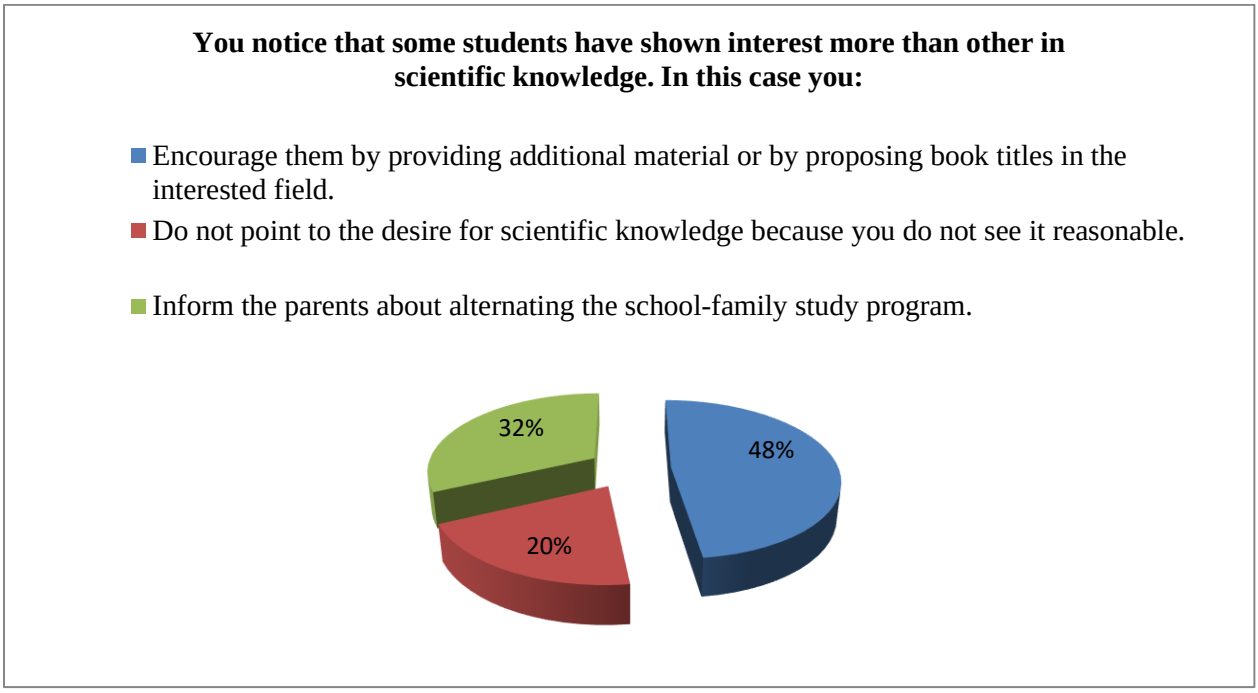
Graph. 5



According to graph number 5, it shows us the frequency of classes (free or not), in non-classroom environments, such as in a park, a zoo, or a fruit grove. Most respondents have referred that they do not use this strategy. Only 20% of the teachers say they have realized such lessons in order to look closely at the development of natural or human processes.

Likewise, 40% of them suggest that they use this strategy often, in order to increase their learning skills through concrete observation by pupils of natural or social phenomena, or just a phenomenon.

Graph. 6

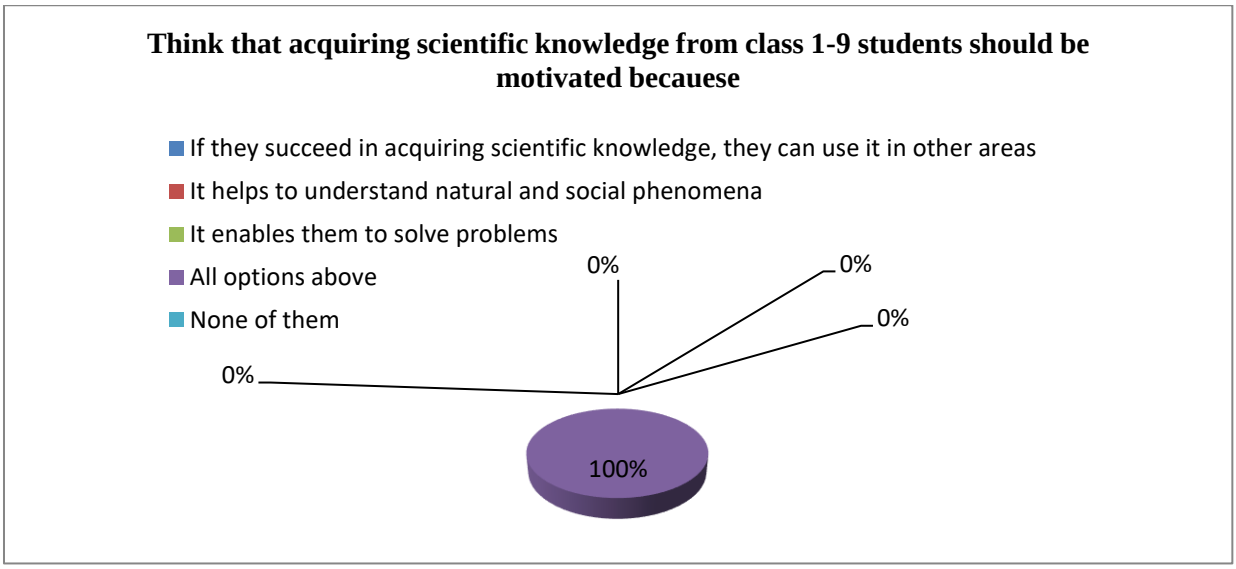


Despite the variety of techniques and learning strategies being implemented, learning skills are different due to the impact of such factors such as: their individual characteristics, their wiliness. Under these conditions, teachers easily understand which students exhibit greater interest in acquiring scientific knowledge than others.

From the respondents, it turns out that 48% of them encourage students. As a method of encouragement, the use of additional materials related to the relevant field is used.

Also, 32% of teachers have referred the fact that parents of students are also aware of the particular interest shown by students. Only 20% of respondents think that pointing out the interest of these students is not common but unnecessary.

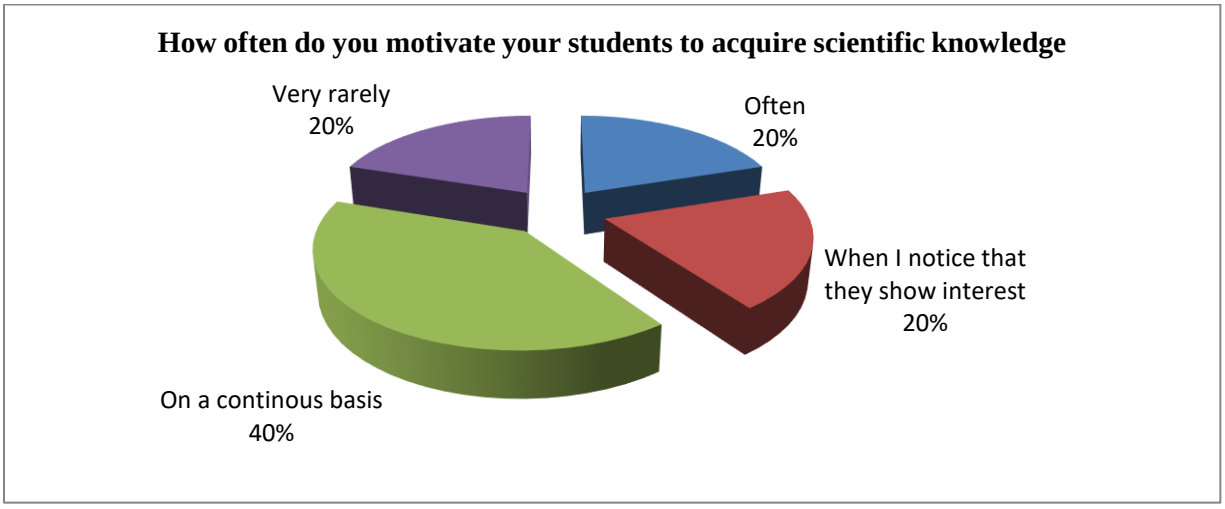
Graph. 7



When discussing about motivation and its importance in the teaching process as well as in the learning process, all surveyed teachers agree that motivation by them helps students not

only to acquire scientific knowledge but also helps them understand why natural and social phenomena occur and how they will be able to solve the problems they face.

Graph. 8



And while the degree of awareness of the major role of motivation was high in the surveyed teacher, its implementation in class seems not at these levels. From graphical presentation we understand that 40% of surveyed teachers refer to motivate students continuously, in order to facilitate scientific knowledge.

Also, only 20% of respondents refer to motivation as a strategy to facilitate the acquisition of scientific knowledge. Thus, there are still teachers, 20% of them, that rarely use this type of strategy. In these graph there are teachers who say that motivation is used when they think it is necessary, especially when pupils seem more interested than others but this type of strategy is not part of their common practice.

4. CONCLUSIONS

One of the greatest challenges of today's teachers is, among other things, the motivation of students to acquire scientific knowledge.

In order to motivate them towards learning, the teacher has some responsibilities that he or she must fulfill during the learning process at or outside the classroom.

One of the most recommended strategies of foreign and local scholars in the field of education is to associate this knowledge with concrete, supposed, or life-giving events.

Likewise, praising and highlighting the interest of students with a positive approach to learning is seen by them as an essential and positive factor in motivating students to feel learning.

Also, this paper showed that the theoretical information set in the textbooks, alternating with classroom lessons developed outside the classroom, increases students' learning and curiosity over natural and social phenomena.

This paper concluded that the degree of teachers' awareness on their role in the classroom is at high levels, but the concrete implementation of practices that increase motivation, curiosity and students' interest in acquiring scientific knowledge did not appear to be at the same levels. Under these conditions, in the framework of the recommendation I would suggest that teachers, especially those of elementary education, should develop special training in order to increase students' motivation towards scientific knowledge and consequently to improve the learning process.

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APPENDIX

Respondent no. _____

You are chosen as a suitable person to provide information about the importance of acquiring scientific knowledge in elementary education. This questionnaire helps us to understand what some of the strategies used in class are, in order to improve the ability to learn. The information you provide will only be used for study purposes and will be anonymous. If you are interested in the results of the study, please contact eviondas@yahoo.com.

I. General information

1. Grades that you teach are.

a) 1-5 b) 6-9

2. Your job experience as a teacher is:

a) 1-5years b) 5-10 years c) 10-15 years d) 15-20 years e) over 20 years

II. Data on classroom activities.

3. What ways do you follow in order to explain the new scientific knowledge?

a) Explain concepts, then links between concepts, and finally make comparisons.

b) Explain the concepts, make comparisons, links, and students' assessments.

c) Just explain the new knowledge and wait for students to acquire it.

4. when do use the group work methods more?

a) In case of project implementation

b) In cases where scientific information is difficult to be acquired by students

c) I do not use group work methods frequently.

5. In the case of new scientific knowledge, you as a teacher use the strategy of:

a) Associating scientific knowledge with supposed illustrative examples

b) Giving real life examples

c) Associating scientific knowledge with no examples as you do not consider it necessary.

6. You note that the previous lesson is not acquired by the students. You decide to:

a) Re-explain the previous lesson.

b) Continue with the next lesson

c) Divide the class into groups to understand the level of cognitive skills.

7. Have you ever explained a lesson of Natural Science outside the classroom, for example, in nature (park, zoo, orchard etc.).

a) Often

b) Never

c) Sometimes

8. You notice that some students have shown interest more than others in scientific knowledge. In this case you:

a) Encourage them by providing additional material or by proposing book titles in the interested field.

b) Do not point to the desire for scientific knowledge because you do not see it reasonable.

c) Inform the parents about alternating the school-family study program.

9. Think that acquiring scientific knowledge from class 1-9 students should be motivated because:

a) If they succeed in acquiring scientific knowledge, they can use it in other areas.

b) It helps to understand natural and social phenomena

c) It enables them to solve problems

d) All options above

e) None of them.

10. How often do you motivate your students to acquire scientific knowledge?

a) Often

b) When I notice that they show interest

c) On a continuous basis

d) Very rarely