Applying the Subject "Cell" Through Constructivist Approach during Science Lessons and the Teacher's View

[1]Mustafa Doğru and [2]Suna Kalender
[1]Ministry of Education, Amasya, TURKEY, E-mail:mustafadogru@yahoo.com
[2]Deparment of Science Education, Gazi Faculty of Education, University of Gazi, Ankara, TURKEY

Abstract: In this study our purpose is to determine how the teachers are applying the structuralist approach in their classes by classifying the teachers according to graduated faculty, department and their years in the duty. Besides understanding the difference of the effects of structuralist approach and traditional education method on studennt success and knowledge sustainability For the study the teachers are given likert type surveys and primary school 6th clas students are used as final test and the repeat of the last test as data collecting tools The study, has been carried in 23 schools in Mersin City Center with 53 Science Teacher and two branches of Davultepe Atatürk Primary School where is Mersin City Davultepe district, where 52 students are used as 24 of them in control group and 28 of them in experimental group. The poll has been applied to teachers and the final test and same test after 15 days has been applied to the test students. While analyzing the final test data to measure the success and sustainability of the students t test is used.

Key words: Constructivist approach, cell, elementary science

INTRODUCTION

What is constructivism?

As an educational constructivist, the constructivism is a trend, discourse and theory that was emerged and disseminated during the period between 1980 and 1990 (Welsch, Jenlink, 1998). This term tells that the information is constructed by the student. That is to say, the individual does not adopt the information as it is, he restructures his own information. He adopts the information he is provided in combination with his own information under his own conditions (Özden 1999). The constructivism describes structuring of the reader the mental presentation in an active manner by means of combining textual information with the new information (Spivey, 1987). Strommen & Lincoln (1992) argues that new philosophies are required in the field of education; the technology should effectively be a part of the education, leading us the principal modifications in the curriculum. The authors argue that this is a theory of the constructivists that has made significant accomplishment in recent years. The structuralism is described in ALN Magazine,1997 as an educational philosophy that is created by the students with their own knowledge. They live together with it. It is therefore, such knowledge that it is an educational philosophy specific to the individuals (Narrated by Erdoğan, Sağan, 2002).

In such a learning approach, past experiences of the student play the essential basis. The information exists by structuring upon individuals creative and descriptive actions of the individuals, rather than its relation with the subject areas. It is therefore empirical, subjective and individual (Kaptan and Korkmaz, 2001). In XVIII Century, the philosopher Giambatista Vico is in fact defends with his statements of "the one who knows something also provides an explanation". Emmanuel Kant further developed the same idea and said that the human being was active in receiving the information, establishing its relation with previous information and making its own information. Scientists like John Dewey, Piaget and Vygotsky had contributed to the structuralism in the sense of shaping the construction with their works (Özden, 1999).

The constructivist philosopher is closely related with the idealist philosophers. The constructivists argue that our information in fact reflect our opinions. They also contend that it is not possible to determine whether the observers monitor the same objects or not. They hold that the experience and opinion are in fact the determinants of how to sense the world. The truth is an individual structure. We hold the truth as what is "beneficial" for us. For majority of the constructivists, the ideas are not taken as completely wrong or right. This is mainly because, it is not possible for everyone to be in accord with what is the nature of the truth. The constructivist prefers to speak of the interests of the majority of the scientific society rather than (the "truth")what is "true"(Colburn, 2000).

Ernst von Glasersfeld (1991) determines that all constructivists agree on following ideas: "The context of information is the outcome of the student's activities rather than passive action or training on the information". The principle rule of the constructivism is that; it has been notwithstanding argued since Ancient Greece – by making attributes to Socrates dialogues that helped the construction of innovative understanding of the students as opposed to more direct and didactic context of learning it is generally accepted that it is daring to announce that it is a separate school of the basic epistemological trends. As Howe and Berv explained "… the constructivist should propose something deeper than that, something which is deeper than the epistemological point of view. Otherwise, it

would be abandoned since they were useless. Stemhagen, 2004).

The individual construct the truth by their communication and interactions with their social and physical environment (Siviş, 2002).

Going back to the short history of the constructivism, Howe and Berv were followed by John Locke's empiricism and René Descartes' rationalism. For Descartes, rational activity enables the information; this is in fact revelation of what has been already there, a distinct form of the information (Stemhagen, 2004).

The structuralism is a perspective that emerged in evolutionary and informatory psychology, whose prominent figures include Bruner (1990), Kelly (1955), Piaget (1969) Von Glaserfeld (1993) and Vyogotsky (1978). To Piaget Inhelder (1969), the structuralism asserts that each individual creates a mental world in his individual informatory process. These processes are in the individual's discretion, the integration of the information (or its meaning) with preassembled diagrams (assimilation) and modify the diagrams to suit with the frame (installation) (Narrated by Young, Collin, 2003).

Constructivist Learning

Academic Board (2002a) has made the statement "The nature of the information and the works accomplished in the course of learning process has yielded different approaches for human enlightenment. In particular new studies in the field of psychology have given rise to the constructivism followed by the behaviorism and cognitive approach. In classical training approach, the individual is regarded as distinct from the information. The teacher is, however, the main source of information. According to the constructivism, the information is not independent from the information. To Strommen and Lincoln (1992), the constructivists regard learning as a process of mental formation. The students learn the new information by installing them in their previous knowledge. The students simplify the new information in order to grasp the new information with respect to their comprehension (Narrated by: Erdoğan, Sağan, 2002).

To Gagnon, J.R., Collay, M.., the constructivist learning has been one of the most remarkable approaches during the last decade. The works which has been accomplished by Dewey, Montessari, Piaget, Bruner and Vygotsky have been the historical emergence of the structural learning theory. The structuralism represents a shift in paradigm towards to the education to informative theory from the behavioral theory. As it has known, the behavioral epistemology (information theory) is based on the intelligence, object areas, information levels and reinforcement. The constructivist epistemology is argued as its structures its own information on the basis of the individual's interaction of his surrounding. (Narrated by: Özdemir, 2002).

The process of learning in the constructivist approach is to create the learning event with measurable results that require communication to be established by the information that is convened by the teacher or by any other mechanism established for the student (Lefoe, 1998).Ith

Marlowe and Page explain the basic of the constructivism as follows:

The structuralism is connected with the construction of the information rather than acquiring it. To this theory, it is how the individuals learn that matter. The constructivism is not an accumulation or memorizing the information, but rather it is about thinking and analysis. The structuralism is about the comprehension and practice, rather than feedback. The constructivism is about the active learning. It is not a process of learning upon passive receipt of the ready-made information from someone else (Narrated by: Özdemir, 2002).

Teaching- Learning Process in Constructivism

According to Fidan (1986), in constructivism, the learning is performed in the individual's mind. The individual assimilates and actively responds to the external warnings rather than a passive receiver of the external stimulants. According to Connel and Franklin (1994), Jonassen (1994), Jonassen, Davidson, Collins, Campbell and Hagg (1995), the information is not transferred and stored to the individual's brain. The constructivist asserts that all learning process is something that is related with a mental constructivism. According to this assumption, the individuals structure the elements to be learned in relation with their previous knowledge. In constructivist process, the individual does nothing but to create meanings with respect to the information and adopt such meaning with his previous knowledge. In another word, the individual conducts the learning process by structuring the information in their minds rather than their original form in the introduction. Yaşar, 1998).

Proposing the information constructivism in the individual's mind, the constructivist approach has become extremely popular with respect to the explanation of the learning process. It is extremely important to perceive that this process involves the student's previous level of knowledge for accepting the new information, which enabled the increase in the efforts to freshen their existing information with respect to the technical curriculum (Karamustafaoğlu et all., 2004).

Cunningham and Turgut (1996) argue that the process in the mental structuring can be outlined as follows: The information received from the external environment is recorded in the memory, if it is not contradictory to existing information and conforms to specific scheme in the mind. The individual conducts several arrangements if the information is not in conformity with the mental structures and fails to fit a specific scheme. According to Senemoğlu (1997), the individual forms schemes to the new scheme that are related to the information which will be learned in the mind. (Narrated by: Yaşar, 1998).

In constructivist approach, each learner tries to generate his/her own meaning in accordance with his/her own information of background and way of living, and attributes different meanings to a concept. It is therefore, the target of learning cannot be determined

exactly. Instead, the general objectives are defined for the learners to be achieved (Hooloway, 1999).

Cruickshank at all (1995) have shown that diverse studies conducted on the constructivist learning have proven that the attractive, orderly arranged ambient as well as positive attitudes generates advantageous for the learning process and enable the students to learn better. In addition, the students maintain their eagerness for longer period of time, participating to the arguments and effective group activities. The pleasant and comfortable physical ambient ensure the students to feel confident and participating more effectively (Narrated by Şen, 2002). Teachers play crucial role in creating such ambient. It is therefore the teachers have key role in the success in educational process. The professional expertise of the teachers should be revealed also in creating the suitable training ambient. It is important for the teacher to create a constructivist approach in the classroom. This is mainly because; the constructivism is the way to emphasize the importance of the authentic and meaningful activating in developing the problem solving skills and to make them meaningful (Şen, 2002).

The appraisal in the class where the constructivist approach is adopted is made as follows.

It is the process that matter rather than the teacher's appraisal. The criteria of the measurement are determined together with the students (Çiçek, 2005).

To Alkove and McCarty (1992), the constructivist understanding makes use of the observations regularly performed rather then the appraisals on the basis of the tests for the student's performance. (Narrated by: Yaşar, 1998). To this end, the teacher prepares the observation form to be used in the classroom and regularly keeps the records. The results of the education are discussed with the students in the group or one by one. In short, the learning process under the constructivist ambient is not a transfer of the information at all. It is rather creating an affirmative educational ambient, making the student an active member of such ambient and facilitating the learning (Narrated by Yaşar, 1998).

The constructivism sets the framework of the appraisal. The appraisal process is considered as the performance evaluation in accordance with the selective short questions or current standards. Such an appraisal is important for all classes. In addition to more classical test forms, participating of the students to inspection activities might be included in their appraisal process. The terminology of authentic appraisal is related with the appraisal of the students while they perform their laboratory tests or solving real practical problems. The active appraisals of the students what they do and why they do such things include open-ended questions and scoring of the student's activities (Colburn, 2000). When considering the purpose of enhancing his/her level of knowledge, improving, formative and constructive appraisal play important role in measuring the level of information. This is, however, possible by increasing the relations between the students and teacher, who learn with the constructivist approach in accordance with the individual's requirements. In order to realize that, the students should be classified in accordance with their knowledge levels to be provided

information to the group's requirements (Türnüklü, 2004).

The constructivist is saying that the student is having unique experience. Therefore the individuals bring their own faith and information and they have their own ideas. But sometimes the intuitive ideas are different that what the society accepts. Some people express this point more briefly. For them the students come to the class with lots of false knowledge. The key point is the students are far away from being an empty cap waiting to be filled. When it is so, the science education, according to the constructivist is containing changing the transformation of what is learned before. Teaching is about helping the students to understand why and how their scientifically explained ideas which predict the things that will happen in a situation are better than their intuitive ideas. This opinion is conflicting with the one saying that the teacher is giving lesson to the students and the learning is digestion of this knowledge (Colburn, 2000).

According to Demirel (1999) the learning in the classical class environment depends on memorizing and repetition of the knowledge. But in structuralism, the transformation of knowledge and re construction is the point. Therefore transferring the learned information to a new situation or applying it, is important and there are differences in traditional class and constructed class. When the traditional class and constructed class is compared the following situation is seen (Figure 1) Traditional education method can be applied to all situations requiring explanation. These models also say that re innovation of innovated things will be a big time loss. Because of the easy usage most of the teachers use this approach as it is efficient increasing and used education approach (Bilen, 1993).

In the structural learning ambient the students are encouraged for thinking, save them from memorizing and believing them is necessary. The students shall have the multi view and provide them creating alternative solutions which are effective in constructing the information (Şen, 2002).

The Role of the Teacher and the Student in the constructivist Education Environments

Teachers in a constructivist class (Brooks and Brooks, 1993):

1- Accept and encourage the self- administration and entrepreneurship of students. They respect student's opinions and they encourage students to think independently. Teachers help students for having intellectual identity. Students design the problems and the questions. At the same time, students undertake the liability of the things they learn themselves as problem solvers and analyze them.

2- Teachers ask students open-end questions and provide the sufficient time for them to answer.

3- Thinking at high-level is encouraged. The structuralist teachers are encouraging for students to go beyond giving simple answers founded on facts. Students are encouraged to summarize the concepts by analyzing, estimating and verifying and to establish relationships besides defending their opinions.

Traditional Class	Knowledge Constructing Class
. Students study individually. The education program is processed by emphasizing induction and basic skills. . Pre defined and fixed programs are main points. The program is understood as a gap to be filled by the teachers. . **The teachers searches for the true answers for what they teach to the students**. . The evaluation, is done for student learning and generally measured with tests.	. The education is given by deduction and with basic concepts. The program is directed through student questions. Studies as a group. . The weight in program activities is first hand data and used materials. The student is seen as thinker bringing contribution to the life and relevant rules. . Teachers are the people in affection with the students and making environment arrangement. The teachers concerns of the students understand the basic concepts in the lesson. . **The evaluation, is done with education and is focused on universal works** The students works as union

(Receiver: Şen, 2002).

4- Students are always in dialogue with their teachers and other friends. The social articles help students in changing and developing their opinions.

5- Students should be engaged with the experiences encouraging the discussions and challenging the hypothesis. A constructivist teacher provides students with opportunities to be able test their hypothesis especially in-group discussions focused on experiences.

6- Unprocessed data, basic resources, motivating physical and multi-interactive materials are used in lessons. (Quoted by: Aytaç, 2003).

If we want to duplicate these clauses;

7- Providing laboratory activities prior to discussing the results that students seek to find,

8- Discussing the laboratory prior to giving lesson on the subject,

9- Establishing laboratory information desk that students can create and arrange information,

10- Making tests requiring for students to use more concepts,

11- Using the investigation strategy to encourage students to think and analyze,

12- Allowing students to develop procedure in order to give answer to the laboratory question, and

13- Locating students in the places where the groups are discussing, searching and sharing (Colburn, 2000).

It may be problematic in class that the teacher's requiring the arguments of students to be correct according to his/her own point of view. The arguments are meaningful for students may not be sufficient according to the wide point of view in the teacher's mind. This case may cause negativeness for the information to be conformity with each other between all participators engaging teaching/learning. It may make the class management difficult besides lack of learning. It may cause discipline problems in class. It is an inconvenient truth that a good teaching is provided by qualified teachers. In addition to this, it is an important point for the teacher to provide an efficient class management for an efficient education. Thus, class management should help students to develop the methods for understanding and directing besides obtaining an efficient behavior pattern. (Hoşgörür, 2002).

According to Alkove and McCarty (1992) ; Kindsvatter, Wilen and Ishler (1996), students in structualist education environment are not passive like in traditional education environment, furthermore they undertake more responsibilities. From the opinion that it shall make their further learning easy, they try to get benefit from every kind of opportunities and facilities in the environment that can contribute in developing their mental structures. They care performing their own responsibilities efficiently in order to provide group dynamic within the group. They evaluate the members of the group they work together with and themselves objectively. They accept every kind of criticism in a tolerant manner. In addition to an efficient student-teacher interaction in class, they give effort to establish a student to student interaction on which friendship and intimacy are dominant. They use every kind of opportunity in order to use and apply their knowledge in new environments (Quoted by:Yaşar, 1998).

Using Structualist Approach in Science Education

According to Treagust, Duit and Nieswandt (2000), it was stated that, in several studies in the field of Science education, the students thought different from the scientist in various Science matters and had several alternative concepts. This is because the alternative concepts and the learning difficulties they caused were specified. In these studies, it was stated that the students' alternative concepts were resistant to change and that the traditional teaching methods were inefficient in creating conceptual change in students. Only saying to students that these concepts are wrong doesn't remove the alternative trends because the concepts are logical in the respect of the students and can explain their experiences (Quoted by: Köseoğlu et al, 2002).

According to Taber (2000), the learning theory claiming that the information cannot be transferred to student from teacher directly and that it should be structured by the student himself actively is rather successful in explaining why the students have alternative concepts. And it gives essential clues about what can be done in order to create conceptual change in students by means of more efficient teaching

approaches. For this reason, many Science educators have emphasized that using the principles arising from the structuralist learning theory may be more efficient in order to exchange the alternative concepts of the students with more scientific concepts and to develop more efficient teaching approach during education (Quoted by :Köseoğlu et al, 2002).

Problem Statement

Can the Primary School Science teachers apply the constructivist approach in their classes? Is there any difference between the effect of the constructivist approach and the effect of the traditional teaching method on the success levels and knowledge permanence of the students in teaching the subject of cell to the students of the 6th class of the Primary School?

Sub Problems

1. Is there any difference in the Primary School Science lesson teachers' being able to apply the constructivist approach in their classes according to their years in duty?

2. Is there any difference between the success levels and knowledge permanence of the control group using traditional method and the test group using constructivist approach, in which the subject of Cell is taught?

Objective of the Study

The objective of this study is applying the subject of Cell in the Primary School Science lessons according to the constructivist approach and obtaining teachers' point of views.

Importance of the Study

In our century, the importance of Science and Technology increases day by day. Either economical, or social or political thoughts' being change rather than in the past and the nations' developments' based on the developments made in science are the explanation of this importance. While this importance is given to science and technology, the importance of the Science lessons increases directly. Science teaching should be by means of tests and the activeness of the students and be contemporary and concrete. In order to provide this, the interest especially for the new approaches and methods has been increasing recently. One of these approaches is constructivist approach. The constructivist approach is an approach defining the activeness of the students, providing the lessons to pass as entertaining and instructive, and most importantly providing everything necessary for performing efficient teaching. For this reason, the interest for this approach increases day by day. Whereas since by means of this study, by obtaining the points of views of the teachers about to the what extent the structuralist approach is applicable by the Science lesson teachers, in the respect of the assignment years of the teachers and the success and permanence of the students, by comparing it with the traditional teaching method, the difference between them has been betrayed, it is hoped that this study shall help the educators. Further, it is hoped that this study shall throw light for the other studies to be performed in the field of Science education.

Scope and Restrictions

1- For the study, in the education years of 2004-2005, the likert type poll was applied to the teachers in 23 schools in the center of the province of Mersin and at the end of the application tests were applied to the students of Davultepe Primary School in the town of Davultepe of the province of Mersin.

2- For poll design, 53 teachers were reached and for the test design, total of 52 students were applied as 6-A class (28) to be test and 6-B class (24) to be control group.

3- The application period of the study is 1 month for the poll; and is 4 weeks and 12 hours as equal for the test and control groups for the application.

4- The subject of cell was taught to the test group by means of the constructivist approach-teaching model and to the control group by means of the traditional teaching method.

For the first part of the study, a poll arranged by the researcher and approved by the expert was applied, for the second part, a test measuring success and permanence arranged by the researcher and approved by the expert was applied with certain intervals. .

THE METHOD OF THE STUDY

In this chapter the method of the study, the application steps and data obtaining techniques and tools are examined.

The Methods Used in the Study

The poll and application method is used in this study. The poll is an observation by preparing a question list which the information obtained people will directly read and answer (Seyidoğlu,2000). The application method, as it can be understood from the name, is the studies of trying and controlling of two or more parameters. (Cebeci, 1997). The poll has been applied in 23 primary school for 53 teachers for 1 months of period. The application is in Davultepe Primary school students in Mersin City Davultepe District. The experiment group of 28 children is 6/A and 24 children is from 6/B class.

The Steps of the Study Application

The likert type poll is used while the poll is being prepared. The poll questions are prepared by the studies. While preparing, the literature is scanned and specialist consent is obtained. In the primary school science lessons, they wanted to answer whether they find constructivist approach education method useful or nor is asked (34 methods)., by marking one of the five answers (I agree totally, I agree, I am undecided, I disagree, I absolutely disagree).

The value of the interval options

1.00–1.80 I absolutely disagree "Very negative"
1.81–2.60 I disagree   "Negative"
2.61–3.40 I am undecided   "Neutral"
3.41–4.20 I agree   "Positive"
4.21–5.00 I totally agree   "Very positive"

The literature has been scanned during the application and the cell subject is adapted to constructivist approach. During the four weeks (12 hours) the Cell has been thought to the group and the control group is taught the Cell in traditional methods. When the experiment group was applied the following order was followed: First week a cell model is brought to the class and the students are asked what it could be. The students answered that the model is a Cell model and that the cell exist in everybody. Later they went to the lab and students were shown the inner mouth epithelium cell and onion membrane cell. All the students are told to bring projects for the following week and they were divided into groups. Next week all the students brought their projects and after the projects the students are asked questions so a discussion ambient is created. The students are never interfered they were being guided and when necessary open ended questions are asked, the discussion is directed. An examination of ten questions had been performed in the weekend. In third week the students are shown the concept map with slide show and the empty spaces were filled by students

applied fifteen days later to provide sustainability of the knowledge. This test is also applied to the control group at the same lesson hours.

Data Collecting and Tools

The poll is prepared by researcher as a data collecting tool. After the poll is applied and collected, SPSS program is used for data analyze and the analyze of each material has been evaluated when they are active during the application. These evaluations are portfolio evaluations, mid term, and the evaluation of the end of lesson. The application ends the test as data collecting tool and has been prepared by the researchers and approved by the specialists. With the exam for end of application, the success rates are measured and with the test being applied 15 days later, the sustainability of the knowledge is measured. T test is used as the data collection tool for the analysis of the test.

FINDINGS AND INTERPRETATIONS

The findings regarding the profiles of the teachers attending the study process

As it is seen from table 1 the minimum duty year

Table 1. The Findings regarding the Department and Duty Year of the Teachers attending the Poll

DUTY	DEPARTMENT				
	Biology Teacher	Science Teacher	Chemistry Teacher	Other	Total
0-5 Years	4	2	2	15	23
6-10 Years	2	3	1	6	12
11-15 Years	1			2	3
16-20 Years			1	1	2
21 and above		3		10	13
Total	7	8	4	34	53

and the same week drama techniques were applied to the students. The necessary materials were prepared before and the students were made to perform. In the last lesson the students are given puzzles to fill. The lacking or mistaken places were shown and corrected. In the fourth week, the student groups are named on the blackboard and a contest is arranged. The group will be deemed as winners who answer the most correct answers to fifteen questions. The same test has been

teachers are in other departments with 11-15 years. The minimum number of science teachers is 2 and 0-5 years

As it is seen from the table 2 the minimum number teachers are 16-20 duty years teachers. These are education faculty, school teachers. The total maximum number is the teachers between 0-5 years. Most of them are Science-Literature graduate teachers.

The Findings Regarding the Duty Years of the Teachers attending the Poll and Analyze of the answers

Table 2 Findings Regarding the School and Duty Years of the Teachers attending the Poll

DUTY	SCHOOL					
	Education	Science-Literature	Engineer	Teachers School	Other	Total
0-5 Years	10	12			1	23
6-10 Years	5	4	2			11
11-15 Years	3					3
16-20 Years	1			1		2
21 and above	7			6	1	14
Total	26	16	2	7	2	53

Table 3. The distribution of the teachers answers to the poll questions

ARTICELS N=53	X	S	EXPLANATION
1. The teacher should control the knowledge before starting the lesson	4,924	0,331	Very Positive
2. The teacher should let the students to be active in the class	4,867	0,341	Very Positive
3. The teacher should make the students realize that the topics in the class are connected with daily ideas	4,735	0,486	Very Positive
4. The teacher should obtain students opinions before declaring own ideas or books and resource ideas	4,698	0,574	Very Positive
5. The teacher should encourage the student to tell their opinions completely.	4,735	0,486	Very Positive
6.The teacher should ask the students open ended questions in all stages of the lesson	4,500	0,707	Very Positive
7. The teacher should let students ask questions to each other	4,396	0,768	Very Positive
8. The teacher should research the students' questions and use them	4,377	0,765	Very Positive
9.The teacher should give enough time to the students to answer the questions of the students	4,301	0,952	Very Positive
10. The teacher should demand a poster from the students explaining the ideas of the teacher	4,113	0,847	Positive
11.The teacher should provide the necessary ambient for discussion	4,339	0,918	Very Positive
12.The teacher should determine the discussion subject previously	4,641	0,484	Very Positive
13. The teacher should help students express themselves	4,679	0,546	Very Positive
14.The students should be prepared before for the discussion	4,452	0,845	Very Positive
15. The teachers should give study topic to the students	4,660	0,516	Very Positive
16. The teacher should make the necessary explanations regarding the subject	4,717	0,689	Very Positive
17. the students should research by themselves	4,452	6,826	Very Positive
18. The student should guide the students during their study	4,490	0,696	Very Positive
19. The teacher should encourage the students for utilizing different resources and specialists	4,641	0,484	Very Positive
20. The teacher should be encouraged for advising result-cause relations	4,622	0,562	Very Positive
21. The sample event should be benefited and the sample events must be selected from daily life	4,584	0,569	Very Positive
22. The teacher should talk with students for preventing students' error about the concept which must be removed by the teacher	4,377	0,790	Very Positive
23. The model, Picture, slide tools should be used during the lesson	4,622	0,627	Very Positive
24. The experiments should be applied in the lessons and the students should contribute to the experiments	4,660	0,516	Very Positive
25. Computers should be utilized in the lesson	4,547	0,606	Very Positive
26. Brainstorm techniques should be applied	4,528	0,638	Very Positive
27. Concept map should be used in the lesson	4,434	0,693	Very Positive
28. The teacher should use demonstration method according to the subject	4,358	0,761	Very Positive
29. The teacher should give the students their roles and explain students' ideas after the demonstration and later wait for the students to ask and tell questions to each other.	4,283	0,743	Very Positive
30. The teacher should apply mass work in the lessons	4,150	0,794	Positive
31. The teacher should give importance to class and line order in the class	4,584	0,633	Very Positive
32. The teacher should apply lots of methods in the class	4,547	0,910	Very Positive
33. The teaching process should continue in all times according to the appropriate times that the students are active.	4,528	0,749	Very Positive
34.The teacher should evaluate the process the same time with configuring (unit/subject end, the knowledge they learned and concept mistakes and questions regarding explaining) and with level determining (by asking questions to learn their level)	4,717	0,454	Very Positive

Table 4. The Finding Regarding the Answers given to the 10th article of the Poll

ARTICLE 10	Group 1	Group 2	Difference Between Averages	F	P
The students make resources on their own	11-15 Years	0-5 years	16,3478	5,598	0,000
	11-15 Years	6-10 years	16,4545	5,598	0,001
	11-15 Years	16-20 years	16,000	5,598	0,034
	11-15 Years	21 year and above	16,7857	5,598	0,000

Table 5. The T test findings in success of Experiment and Control group students

GROUP	N	X	SS	Sd	t	P
Experiment	28	33,4643	12,962			
Control	24	28,1250	21,016	50	1,120	0,064

Table 6. Final Test Result Findings Regarding the Control Group Students Sustainability

GROUP	N	X	SS	Sd	t	P
Experiment	28	34,7875	18,860			
Control	24	26,750	29,841	50	1,178	0,017

When the Table 3 is examined it is seen that the teachers are very positive towards structural lesson teaching

The Findings Regarding the TUKEY results in the Answers of the Teachers according to their Duty Years

As it is seen in the Table 4, the teachers were asked "The students must make the researches on their owns" in the 17th article, the following answers as 11-15 years teachers, 0-5, 6-10, 16-20 and above years of teachers have answered differently (F=5,598; p< 0,05). It means that the teachers working between 0-5, 6-10, 16-20, 21 years above are looking more positive.

The findings regarding the t test results analyze of the constructivist approach in the experiment and control group students and Traditional Instruction methods' success in telling the Cell subject

When the table 5 is examined the experiment group is X= 33,4643 and control group is X= 28,1250. (t = 1,120 ; p> 0,05) therefore there is no meaningful difference for the groups

The Findings regarding the t -test result of the final test points to measure the sustainability of the success obtained by telling in the Constructivist Approach and Traditional Instruction Methods

When the Table 6 is examined, we will see that the experiment group X= 34,7857 and the control group is X= 26,750. (t = 1,178 ; p< 0,05). Therefore, there is a meaningful difference between the groups.

CONCLUSION AND ADVICES

All of the teachers participating in poll agreed that the 1st article of the poll, which claims that "All teachers should evaluate the students' backgrounds before the lesson", is fully applicable in the classrooms. All of the teachers participating in the poll agreed that the 2nd article of the poll, which claims that "Teacher should encourage students to be active during the lesson", is fully applicable in the classrooms. Structuralism is neither an educational management nor an educational strategy. Learning process is more important than instruction in structuralism (Brooks and Brooks 1993). In the constructivist educational environment students,

on the contrary of traditional educational environment, are not passive and they take more responsibility. Hoping that their future learning process would become easier by increasing their mental abilities encourages students to benefit from all possibilities in the learning environment. Students are more willing to accomplish their responsibilities in the group for the continuity of group's dynamic. They evaluate themselves and other group members objectively. Students are open and showing tolerance to any criticism that may come from the other group members. In the classroom, in addition to effective teacher-student relationship, students are willing to provide friendly, sincere relationship between other classmates. They are eager to use and implement what they have learned in new environments (Alkove and McCarty, 1992; Kindsvatter, Wilen and Ishler, 1996, p.113). All the teachers participated in the poll agreed that the 3rd article of the poll, which claims that "Teacher should show and provide awareness of students that the instruction they are taking is directly related with real life", is fully applicable in classrooms. All of the teachers participating in the poll agreed that the 4th article of the poll, which claims that "Teacher should ask about student opinions before giving his/her or idea or ideas from books and resources", is fully applicable in the classrooms.

All of the teachers participating in the poll agreed that the 5th article of the poll, which claims that "Teacher should encourage students to express their own ideas about the topic", is fully applicable in the classrooms. All of the teachers participating in the poll agreed that the 6th article of the poll, which claims that "Teacher should ask open ended questions to students in each stage of the lesson", is fully applicable in classroom. Teacher should ask open ended questions to students and should give adequate time to answer them (Colburn 200). All of the teachers participating in the poll agreed that the 7th article of the poll, which claims that "Teacher should allow the students to ask questions to each other", is fully applicable in classroom. All of the teachers participating in the poll agreed that the 8th article of the poll, which claims that "Teacher should examine and use student's questions", is fully applicable in classrooms. Teachers of 6-10 and 21 years and above and All of the teachers participating in the poll agreed that 9th article of the poll, which claims that "Teacher should give adequate time to students to be able to answer the questions they asked to each other" is fully applicable in classroom. Teachers of 0-5, 16-20 and 21 years and above and all of the teachers participating in the poll agreed that 10th article of the poll, which claims that "Teacher should ask for a poster from students containing their own ideas", is fully applicable in classrooms.

Teachers of 16-20 years and all of the teachers participating in the poll agreed that 11th article of the poll, which claims that "Teacher should provide effective discussion environment to students ", is fully applicable in classrooms. All of the teachers participating in the poll agreed that 12th article of the poll, which claims that "Teacher should determine the topic before student's discussion stage", is fully applicable in classrooms. All of the teachers participating in the poll agreed that 13th article of the poll, which claims that "Teacher should assure that all students can freely give their ideas during the discussion ", is fully applicable in classrooms. All of the teachers participating in poll agreed that 14th article of the poll, which claims that "Students should be prepared for a discussion ", is fully applicable in classrooms. All of the teachers participating in poll agreed that 15th article of the poll, which claims that "Teacher should give research topics to the students", is fully applicable in classrooms.

All of the teachers participating in the Poll agreed that the 16th article in the Poll, which claims that "The teacher should give the necessary explanations", is fully applicable in classrooms. The other faculty teacher in the Poll agreed that the 17th article in the Poll, which claims that "The students should make the research on their own" is fully applicable in classrooms; all other teachers participating the poll have fully agreed this. According to these articles and tukey the teachers of 11-15, 0-5, 6-10, 16-20, 21 years and above are looking more positive. All of the teachers participating in the poll agreed that the 18th article in the Poll "the teacher should guide the students during the study" is fully applicable in classrooms. The teacher which is used to be the traditional methods and discipline provider, information distributing roles is seen as a friend to person who helps to make learning easier in the structural education and shows attitudes for making learning east. The subjects to be learned will become more interesting (Slavin, 1994, s.225). To provide efficient learning, the students should take responsibility. The learning in the school ambient should be student centered and an effort must be given in this manner. In order to improve the students, they ask them "what do you think?" "Why do you think so?" "How did you come to this result?" They avoid the students to answer the questions as "yes" or "no" (Alkove and McCarty, 1992). All the teachers participated in the Poll claims that "the teacher should encourage the students for different resources" is fully applicable in classrooms. The state of "The teacher should encourage the students for reason and cause" can be applicable in the classrooms.

All of the teachers participating in the poll agree that the 21st article claiming "the sample event shall be utilized and samples shall be selected from daily life" is fully applicable in the classrooms. All the teachers agreed on the 22nd article saying that "The teacher should talk with the students to remedy the concept mistakes" is fully applicable in the classrooms. All of the teachers participating the poll agreed that the 23rd article claiming tools like, models, slide shall be used during the lecture" is fully applicable in the classrooms. All of the teachers participating in the poll fully agree with the 24th article saying "the experiments shall be performed in the class and the teacher should make the students do the experiments" is fully applicable in the classrooms. The teachers having 6-10 years of duty period agreed on this. All the teachers participating the poll fully agree the 25th article claiming that the computers shall be utilized in the classes by teachers having 6-10 years of duty; all the teachers participating the poll agree on the 26th article of "Brain storm shall be applied" is fully applicable in the classrooms.

All the teachers that participate in the poll fully agree on the 27th article saying that the concept map shall be used in the lessons. This article was agreed by the teachers that have 21 years or more work experience, and all other teachers completely agree this. The information getting from outside is not fitting the patterns in the mind that the individuals makes new arrangements (Cunningham and Turgut, 1996). The teachers are agreeing on the 28th article of the poll saying that "the teacher shall demonstrate method" is fully applicable in the class. The entire teachers agree on the 29th article of the Poll saying that "the students shall explain each other their opinions and ask questions".

The 30 article saying that "the teacher should give importance to mass" is fully applicable by the teachers and the cooperative learning and problem based learning approaches is utilized.(Alkove and McCarty, 1992; Jonassen, Davidson, Collins, Campbell and Haag, 1995). The teacher shall use cooperative learning (Colburn, 2000). The learning based on cooperation is based on small groups of students working on a group and learning that subject. (Demirel, 1991; Slavin, 1991). All the teachers agree on the 31st article saying "a teacher shall give importance to class and line orders" is fully applicable in classrooms. The 32nd article saying that "the teacher should apply lots of methods in the class" is fully applicable by the Science Teacher department graduates and all the other teachers agree on this.

The 33rd article saying that the teacher should made the evaluation in all the times. The article 34 saying that the teacher should made the evaluation as configuring (end of the unit) and determining (by asking questions to determine level) (Colburn, 2000).

The t test results of the last test finds out that: there is no significant difference in structural approach and traditional approach. The success of the subjects is nearly same in the methods.

According to the results of the last t test, the structural approach and traditional education has an important and significant difference in the sustainability of the learned lessons. The sustainability with structural approach is more than traditional knowledge sustainability.

The structural approach saying that the teacher centered education is highlighted to be more successful with student centered education is seen as the best and the most necessary method in Science education (Köseoğlu, Kavak, 2001).

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