

Difficulties Science Teachers at Elementary School Level Experience in Science Instruction in Turkey

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Abstract: The aim of this research is to reveal the difficulties which science teachers face during the second stage of primary school. The survey collected and developed from literature knowledge has been applied to 121 science teachers working at elementary schools which belong to the Provincial Education Directorate of Konya in Turkey. The data obtained from surveys have been assessed and interpreted in the program of SPSS Windows. The result of the survey has revealed that in science instruction, science teachers experience difficulty in that they can't provide materials, that the materials they use are not suitable for students level, that they can not use up-to-date knowledge and instructional methods and techniques adequately in lessons. The result of the research indicate that teachers complain about insufficiency of physical structure of the school and the negative effects participating in the survey have expressed about students that parents are not concerned about their children and students have negative attitude for the lesson and teacher.

Key words: Primary schools • science education • science teachers • difficulties

INTRODUCTION

It is possible to form an effective and positive learning environment by considering and arranging many instructional components together. The desired result of learning fact is depended on teacher's or student's being in center, the mental structure of student, the physical situation of class environment, the use of time effectively, the atmosphere of class, the methods and techniques used by teacher, suitable assessment and the formation of learning centers ect. [1]. Since the elementary education, the first step of education system, is the institution where the child gets basic social knowledge and skills, the importance of teacher is greater. Later steps depend on the accumulations of knowledge gained in elementary institutions. To change the perception and attitudes students have until the age of 13 (class 8) is nearly impossible after this age. For this reason, it is a critical period for the development of attitudes of students for themselves and their worlds [2].

How the child will learn science is one of the most important matters science teachers have to know. The practices which are logical and satisfying for students at laboratory have to be determined. The necessary environment has to be provided by expressing the steps of the study and individual practice has to be carried out with necessary materials. Studies have to be assessed in detail at convenient times and if needed, alternative learning environments must be formed [3]. There must be an interaction between students, teacher and activity. Everyone can not get success by the same method. For this reason, the teacher has to improve very rich methods and select suitable one among them. The method not only must provide student with knowledge, but it also only must develop the skill of cooperative learning, discussion and social relations of students at the same time [4]. A qualified science teacher has to wonder how to teach the science and what new

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improvements in the field are. In order to be able to increase and develop students' interest about science, teacher has to educate them so that they can understand the nature of sciences adequately. For this, a qualified science teacher has to undergo a good preparation and education stage [5]. It claims that teachers have a good knowledge of the science field; otherwise, this situation may result in their teaching lessons without feeling and at knowledge level. Anyway, it is impossible for a teacher who has an insufficient knowledge of science to make explanation and practice on the subject [6].

The aim of science education is to enable students to learn the concepts of science permanently and to develop their thinking skills. In order to succeed this, the problems teachers experience have to be determined [7]. Real problems can only be determined in the environments where the problems is experienced [8, 9]. In otherwise situation, only imaginary problems can be produced and rather than an effective instructions, only imaginary one can be fulfilled with imaginary proposals for solutions. For this reason, the problems the teachers at art and science centers experience during instruction process have to be determined in learning environment, that is at science and art centers [10].

This research aim to determine difficulties science teachers working at elementary schools of ministry of National Education of Konya experience during education and instruction process.

The problem sentence: What are the difficulties the science teachers working at elementary schools experience in instruction process of science?

Subproblems:

1. What are the difficulties teacher experience resulting from providing and using materials?
2. What are the difficulties teachers experience about students?
3. What are the difficulties teachers experience about school?
4. What are the difficulties resulting from students?
5. What are the difficulties resulting from teachers themselves?

METHOD

This survey which has been carried out to determine the difficulties science teachers at elementary schools experience in science lesson is a school survey of scanning kind and aimed at determining a detailed case. The school survey is a research method which is carried out using such techniques as polls, interviews in the fields of problems about school [11]. The research has been fulfilled working use of general scanning methods.

The population and sample: Science teachers working at primary schools of Ministry of National Education of Administrative province of Konya in 2004-2005 academic year constitute the population of the research. 121 science teachers working in the Administrative Province of Konya in 2004-2005 academic year constitute the sample of this research in which the method of group sampling in used.

The data collection device: A scale consisting of 6 parts as being personal knowledge, difficulties about using and providing materials, methods, techniques, difficulties about school, difficulties resulting from student and teacher himself/herself has been prepared. There are 3 alternatives in the scale which has been transformed into a form of Likert type. These alternatives are 'yes', 'no', 'sometimes'.

The practice of the research: By going to the primary schools selected as sample in the centre of Konya, we have informed science teachers about the survey. The survey was presented to science teachers and collected on the same day. In this way, it has been made easier to get the survey back. Among 135 science teachers, 121 of them have given exact answers in the survey. Not writing names on the survey, asking written questions and survey administrator's informing teachers in the situations of hesitation have made the survey more comprehensible.

The analyze of data: In the analyze of the research data, the computer programme, SPSS, has been utilized and as statistical technique, descriptive analyze has been used [11].

RESULTS

In this section, the data obtained from the results of the survey applied have been assessed by interpreting.

Nearly half of the teachers (41.5) have expressed that they benefit from educational materials in some situations and %34 of them have told they always benefit from these materials. In one hand, %27.6 of teachers think the materials used in lessons are suitable for students’ level, on the other hand, %39.8 of them have expressed that the materials are not suitable for students’ level. Material using in lesson does not result in discipline problems. Material using does not have much place in inservice trainings and teachers on a large scale benefit from educational technologies sufficiently (Table 1).

Teachers have to improve and train themselves about subject in which they are insufficient by participating in inservice training courses. When the table is examined, it’s seen that teachers can not be trained sufficiently about material using in inservice training courses (Table 1).

While 47.2 % of teachers have found the courses of educational methods and techniques they have taken from the schools they graduated insufficient. %31.7 of them have selected the alternative ‘sometimes’ about the mentioned matter (Table 2).

Teachers have expressed that they can sometimes provide necessary environment for the method of demonstration, that they do not have difficulty in selecting suitable model phenomenon for the level of students. They have also explained taht they mostly select suitable methods and techniques for studens’ level (Table 2).

Teachers have expressed that negative happenings occurring around school affect students’ motivation for lessons and that there sometimes occur problems resulting from the social structure of school environment. They have also added that the Guidance Service is not sufficient to impede problematic-student-behaviour and the physical structure of the school is generally insufficient for education and instruction. In addition, they have told that the behaviour and attitudes of their directors are effective in their motivation (Table 3).

Table 1: Difficulties, teachers face, resulting from providing and using materials and the frequency distributions

Sentences	Yes		Sometimes		No	
	%	f	%	f	%	f
1 Can you benefit from the materials at your school appropriately and at the right time?	42	34.1	51	41.5	30	24.4
2 Are the materials used in lessons suitable for levels of students?	34	27.6	40	32.5	49	39.8
3 Does using materials result in discipline problems in class?	24	19.5	29	23.6	70	56.9
4 What is the importance level of material using in inservice training?	24	19.5	41	33.3	58	47.2
5 Can you use new educational technologies (Computer etc.) adequately?	53	43.1	37	30.1	33	26.8

Table 2: Difficulties teachers face about educational methods and techniques and the frequency distributions

Sentences	Yes		Sometimes		No	
	%	f	%	f	%	f
6 Do you find the courses sufficient about methods and techniques you have taken from the school you graduated?	26	21.1	39	31.7	58	47.2
7 Can you provide necessary environment to use the demonstration methods?	27	22.0	62	50.4	34	27.6
8 Can you select a model phenomenon for the level of student to practice the model phenomenon investigation?	60	48.8	33	26.8	30	24.4
9 Can you select suitable methods and techniques for the understanding level of students?	47	38.2	56	45.5	20	16.3

Table 3: Difficulties teachers experience about school and the frequency distributions

Sentences	Yes		Sometimes		No	
	%	f	%	f	%	f
10 Do the negative happenings occurring around school affect students' motivation for the lesson?	54	43.9	39	31.7	30	24.4
11 Are there any problems resulting from the social structure of the vicinity of school?	56	45.5	39	31.7	28	22.8
12 Is guidance service sufficient to impede problematic student behaviour?	13	10.6	40	32.5	70	56.9
13 Is the physical structure of school convenient for educational and instructional training?	55	44.7	33	26.8	35	28.5
14 Do the behaviour and attitudes of directors towards you affect your motivation on education and instruction?	68	55.3	30	24.4	25	20.3

Table 4: Difficulties teachers experience resulting from students and the frequency distributions

Sentences	Yes		Sometimes		No	
	%	f	%	f	%	f
15 Does the indifference of students' guardians affect student's attitude for lesson negatively?	82	66.7	29	23.6	12	9.8
16 Do economical problems of parents affect motivation of students negatively?	47	38.2	35	28.5	41	33.3
17 Do the negativities resulting from the friendship environment of student reflect to lesson?	64	52.0	41	33.3	18	14.6
18 Do the interferences of students' relatives in the problems of student reflect to lesson negatively?	42	34.1	51	41.5	30	24.4
20 Does student's developing negative attitude for the lesson and teacher affect the lesson negatively?	70	56.9	23	18.7	30	24.4

Table 5: Difficulties resulting from teachers themselves and the frequency distributions

Sentences	Yes		Sometimes		No	
	%	f	%	f	%	f
21 Do you think you have sufficient knowledge about the field of science?	58	47.2	31	25.2	34	27.6
22 Do you follow up-to-date knowledge about the science lesson?	50	40.7	35	28.5	38	30.9
23 Do you find yourself sufficient for problems of students?	40	32.5	52	42.3	31	25.2
24 Do you experience difficulty due to understanding differences of teachers discipline?	52	42.3	50	40.7	21	17.1
25 Do you use time effectively and sufficiently during lesson?	69	56.1	27	22.0	27	22.0

Teachers have explained that the indifference of parents is a great factor in student's developing negative attitude for the lesson and that even if economical problems of parents sometimes have a negative effect on students' motivation, they do not always affect their motivation. They have also expressed that the negativities resulting from the friendship environment of students reflect to lesson negatively and the interference of relatives in the problems of students does not reflect to lesson negatively and that students' having negative attitude for the lesson and teacher affects the lesson negatively (Table 4).

Teachers have expressed that they have sufficient knowledge about the science lesson and that they mostly follow up to date knowledge about it. They have also explained that although they sometimes feel insufficient about problems of students, they can solve them and that there may occur difficulties due to the discipline understanding of teachers. Lastly, they have told that they are able to use time effectively and sufficient during lesson (Table 5).

DISCUSSION

Among the difficulties science teachers experience in getting and using materials, not always being able to use materials in school, not finding materials used suitable for the level of students and not including sufficient knowledge about material

using in inservice training courses come first. Educational material has to be suitable for subject and for the level of students and each material has to be aimed at getting students acquire the goal which represent a group of behaviour [12]. It has been expressed that it will be very significant to use the technologies of knowledge and of communication in teacher/training so that the society can be provided with needed human qualities at information age [13]. In learning process, attracting students' attention and interest on the subject being taught and maintaining their attention alive during learning process enable a comprehensible and an efficient science teaching to occur. The more sensory organs of students are addressed, the more efficient and permanent learning will be. For this reason, teachers have to benefit from educational methods and materials (computer simulations, video cassettes etc) in order to adress the sence of students as much as possible. Besides, the rapid improving technology increases the instructional alternatives in the institutaions of education [14]. According to many researchers, instructional technologies that are used efficiently have the potential to improve the education system [15, 16]. In higher education programs in Turkey which trains science teachers, teacher candidates must be given enough oppotunity to know and use educational materials and technologies. It seems significant to get the material and technological equipments at primary schools in Turkey sufficient.

Science teachers have explained that the courses about instuctional methods, techniques being taught in higher education programmes are not productive enough for themselves. In aditon, it has been revealed that teachers are deprived of necessary environments to be able to use some methods. By presenting students exactly with the existing knowledge in the cirriculum of science education and by using the lecture methods in which student is passive and which is teacher-centered, meaningful learning, an efficient and permanent science education can not be fulfilled and the success level of students can not be increased [14]. Today, instead of the use of educational methods that do not allow students' active participation in lessons, getting students to participate in the activity being carried out as much as possible is preferred by educators [17]. The educational methods and techniques which aim the active participation of students in lessons are extremely significant for science education [18, 19]. This situation reveals teacher candidate's necessity to do more practice about the methods and techniques at the faculties which train science teachers. The participation of student in classroom activities must be enable in science lessons and the use of methods and techniques enabling students to acquire the skills of critical thinking, of interpretation and research must be considered.

Difficulties science teachers expreince are the problems resulting from the social structure of school surrounding and the noise of envirotnment, the inefficiency of guidance services, the inadequacy of physical structure of school for education and the behaviour and attitudes of directors. The level of the noise coming from outside impedes the auditory perception greatly [20]. For this reason, noise is not a desired situation at all for learning. Teachers have explained that the conflicts resulting from the behaviour and attitudes of directors are undesired situations in view of decreasing productivity [21]. They have emphasized that the security, economicality, suitability for healt, soundness, usefulness and being easy operable of school buildings are important [22]. Arranging the surroundings of schools as suitable for education and preparation of them for increasing the motivation of students are as significant as for teachers as it's for students.

Such problems as the indifference of guardians of students, the negative effects of economical problems of parents on students, the negativenesses resulting from the environments of friendship of students, the intense of failure anxiety of students and students' having negative attitudes for lesson and teacher appear as the problems which restrict science education. The indifference of parents for the school and education process of students is one of the most important problems in education system [23]. Besides, the role of teacher is great in students' having negative or positive attitude for the teacher and lesson [24]. The solution of these problems for science instruction depend on establishing a serious process of public relations and the guardian-school dialogue as well as training qualified science teachers.

The problems resulting from science teachers themselves can be listed as: the inability to follow up to date knowledge, the insufficiency for the solutions of student problems, the problems which result from differences stemming from the different discipline understanding of teachers, the inability of using time efficiently and adequately during lesson. The teacher who has the habit of studying friendly and in collaboration with students, who has a complete knowledge of field, who can understand the nature and need of students, who has no deficiency in general education and scientific attitude, who

is respectful and affectionate and who can analyze individual differences among students and who can use various methods and technologies in lessons is an ideal teacher [25]. The vocational qualities that a teacher must have are the knowledge of general culture, the knowledge of subject matter, vocational skill and competencies [26]. Vocational competencies can be listed in 3 components as personal competency, competency of branch and educational competency [27]. The teacher's values, attitudes, experiences, shortly all his/her manners entirely affect his/her students, the society, his/her own vocational future and his/her colleagues [28]. The characteristic of teachers are effective in shaping the personalities of students [29]. One of the important problems teachers have is to conduct the behaviour and learning [30]. In classes where learning and behavior is well-conducted, students fulfill the educational devices and the problematic behaviour that impede the use of devices decrease gradually. The teachers' opportunities to follow up-to-date knowledge and sources must be increased and they must be given enough importance. Besides, for the solutions of problems resulting from different discipline understandings of teachers, the matter should be discussed in teachers' council, group meetings.

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