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Science Teachers' Views regarding the Inclusion of 5th Grade Students in Secondary School

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Abstract
In Turkey, an eight-year compulsory-continuous education system turned into a twelve-year compulsory education system, which is divided into three periods as 4+4+4, and released to the public on 11 April 2012. Since 2012, 5th grade students have been studying as secondary school students. The inclusion of 5th grade students into secondary school leads to some problems. In line with this fact, the purpose of this study is to examine science teachers' views regarding the inclusion of 5th grade students into secondary school. Participants of the study were selected through opportunistic sampling and consisted of 36 science teachers teaching in secondary schools in Afyonkarahisar, Turkey. The research was performed at the end of the fall term of the 2014-2015 academic years. Data of this study were collected through a survey. The survey was consisted of personal information of the participant science teachers (gender, seniority etc.) and an open ended question form. The findings of the study obtained from science teachers showed that students had underdeveloped cognitive and affective skills due to the fact that they were in the stage of concrete development. It was also found that science teachers had difficulty in descending to the student level. However, in the study it was found that science courses in the fifth grade should be given by science teachers, not by classroom teachers, to make students more knowledgeable about the course. As stated earlier some of the participants argued that early integration of students to secondary education will contribute to their social development.
Key words: *Science teachers, secondary school, 5th grade students, branch of science and technology*

1. Introduction
In order to improve science literacy the learning domains of the curriculum are divided into four: knowledge, skills, affective domain and science-technology-society-environment. There are some differences between 2005 and 2013 curriculum [1; 2]. When we compare the science curriculum between 2005 and 2013, names of the some of the units within the subject areas have been changed and knowledge acquisitions have been decreased and time of the courses allocated for the units has been changed [3]. In the "Skills" learning domain, while only "Science Process Skills" take place in the science and technology curriculum in 2005, it has been observed that in 2013 science curriculum, "Life Skills" has been added to the learning domain of "Science Process Skills". In the "Affective" learning domain, while only "Attitude and Values" take place in the physical science and technology curriculum in 2005, it has been observed that in 2013 science curriculum, "Motivation" and "Responsibility" have been added to the learning domain of "Attitude and Values". In " Science-Technology-Society-Environment" learning domain, while only " Science-Technology-Society- Environment Relations" take place in the science and technology curriculum in 2005, it has been observed that in 2013 science curriculum, " Social Scientific Topics", " The Nature of Science", "Relationship between Science and Technology", "Social Benefits of Science", "Sustainable Development Awareness" and "Scientific and Career Awareness" have been taken place.
In this sense, it is important to know that how science teachers perceive the changes in the education system. For these purposes, the aim of the study is to determine the science teachers' views regarding the inclusion of the 5th grade students in secondary school.

2. Method

2.1. Model of the Research: In current research, qualitative research method was used. Qualitative research taps into people's interpretations of their experiences. The purpose of qualitative

research is more descriptive than predictive. The goal is to understand, in depth, the viewpoint of a research participant [4]. The views of the participants were taken by open-ended questions.

2.2. Participants: Participants of the study were identified through opportunistic sampling. Participants consisted of 36 science teachers (18 females and 18 males) teaching in secondary schools in Afyonkarahisar, Turkey. All participants took part in the seminar given by the researchers. Teaching experience of the participants varies from 4 to 28 years and all have a certificate of teaching.

2.3. Data collection tools: Data of this study were collected through a survey. Items in the open-ended form are as follows:

1. What are the differences between the past and current science curriculum?
2. What are the problems while lecturing the science course to 5th graders?
3. Which teaching methods or techniques do you use while lecturing 5th graders?
4. What are the benefits of the inclusion of 5th grade students into secondary school?

2.4. Data Analysis: Content analysis was used in the analysis of the data. Participants' open-ended forms were numbered from one to thirty six. Then, each form was reviewed and participants' responses were coded. In the coding process, both of the researchers were coded the forms independently. Next, the codes were compared. Using the reliability formula suggested by Miles and Huberman [5], the reliability of the form was found as %94. Related codes obtained in the data analysis were used as sub-themes and categories. Findings were presented under these headings with direct quotes indicated by numbers assigned to the related participants (For instance, T1 (Teacher 1), T2, etc.).

3. Findings

The themes, sub-themes and related categories developed as a result of the analysis are given in Table 2.

Table 2. Participants' overall views of the inclusion of the 5th grade students to the secondary school.

Theme	Subtheme	Category
Curriculum elements	Goal	Proper for the level
		Insufficient
	Content	Proper for the child
		Unnecessary simplification
	Learning-teaching process	Activity-based
		Student-based
İnclusion of the fifth grade to secondary education	Beneficial	In terms of social relations
		In terms of cognition
		In terms of affective gains
	Problematic	In terms of teachers
		In terms of students
		In terms of textbooks
		In terms of curriculum
Method and techniques	Student-centered practices	
	Teacher-centered practices	
	Both teacher- and student-centered practices	

3.1. Findings about the curriculum elements

The findings indicate that the participants mostly reported views about the subthemes of content and learning-teaching process and that they rarely expressed views about goals and measurement-evaluation. One of the participants who argued that the goals were proper for the level of children stated that "the topics were shortened. The curriculum was simplified and gains became proper for the student level." (T31). The participants reported positive views about the following points regarding the appropriateness of the content to the student level: the reduction of density, the change of the topic order, and the increase in covering examples from daily life. One of the participants who favored the reduction of density in the content stated "the density of topics has decreased and some topics were transferred from the fifth grade program to the sixth grade program." (T27). However, there were some participants who considered the number of activities less and the period longer as negative. One of such participants stated "the topics were made simplified and these topics are based on less information. And it requires a well-established time management and it leads to a need to use more frequently Internet and laboratory material. Given that this need is hard to meet, it is negative." (T32).

In regard to the subtheme of learning-teaching process the participants expressed views about student-centered approach and activity-based approach. They mostly emphasized learning by doing and learning through experiment-based activities. One of the participants stated “given that it is proper for activities and experiments students have begun to like the course. Student participation in activities positively contributes to learning.” (T14). Another participant with the same positive perspective stated “I think it is positive to include students in the process” (T35).

Although the majority of the participants agreed about the positive effects of the reduced topics in the curriculum. On the other hand, some of them considered it to be negative. It is surprising that the new curriculum was regarded as student-centered. However, the science and technology curriculum developed in 2005 was also student-centered based on the constructivist theory. It shows that the participants cannot comprehend the basics of the previous curriculum.

3.2. Findings about the inclusion of the fifth grade to secondary education

Some of the participants had positive views about the inclusion of the fifth grade to secondary education, while the others regarded as negative and problematic. The analysis showed that the participants considered it to be positive and beneficial in terms of social, cognitive and affective categories. One of such participants argued “it improves children’s acquisition the qualities of being a citizen. They can take part in social life.” (T4). Another participant focused on cognitive contributions and stated “it prepares students for next grade in a smooth manner. Otherwise, they may experience difficulties in the sixth grade.” (T9).

As stated above some participants had negative views about the inclusion of the fifth grade to secondary education. They thought that it was problematic in terms of the problems related to teachers, students, educational curriculum and books. In regard to teacher-related problems, one participant stated “given that the students are younger we had difficulty to motivate them.” (T31), concerning student-related problems one participant argued “given that the abstract thinking in many of them has not improved they had difficulty in comprehending some topics. They regard experiments as fun instead of seeing them as teaching activity.” (T16). Similarly, another one argued “they could not adapt to the course easily. They cannot keep up with the course due to the mental and developmental levels.” (T20). One of the participants made reference to book-based problems and remarked “textbook is not sufficient and there is no workbook. It is a problem for us.” (T19). Regarding the problems about the curriculum one of the participants explained “the fifth graders experience serious problems due to the insufficiency of the curriculum and not being able to prepare them for the next grade.” (T5).

Although the participants expressed both positive and negative views about the inclusion of the fifth grade to the secondary education, they had common consideration that students are younger and have some insufficient developmental characteristics.

3.3. Findings about the theme of methods and techniques

The participants reported that they employed those methods and techniques in the fifth grade different than those used in secondary science courses. They referred to student-centered, teacher-centered practices as well as those practices which were both student-centered and teacher-centered.

Some participants reported that they employed student-centered practices in course. For instance, T1 stated “given that students are used to the school context topics can be delivered through games. Drama technique is one of the frequent techniques I use.” Concerning teacher-centered practices one of the participants, T20, reported “I employ such educational portals as ‘Morpa Kampus’, ‘Vitamin’ during the proper topics.” Regarding the use of those practices which are both teacher-centered and student-centered one participant, T14, argued “since students are younger I try to make more activities. I attempt to explain the topics through experiments”.

It is surprising that some participants still use teacher-centered practices although the science curriculum is student-centered and research-based and inquiry-based. Although the science teachers make their courses funny by using educational games, it may be argued that tendency of the teachers to transmit information instead of using a guidance role is one of the barriers for having truly student-centered approach.

4. Conclusion and Discussion

The findings of the current study obtained from science teachers showed that students had underdeveloped cognitive and affective skills due to the fact that they were in the stage of concrete development. In parallel to this finding in the study carried out by Külekçi [6] it was found that such

students had lower levels of readiness and that teachers did not have sufficient information about their developmental stage and proper ways of teaching to this specific student group.

It was also found that science teachers had difficulty in descending to the student level. Similarly Demir, Doğan, Pınar [7] found that for the participants the courses in the fifth grade should be delivered by classroom teachers, not by branch teachers. The reason for this view is that the latter cannot descend to the student level in delivering the courses. However, in the study it was found that science courses in the fifth grade should be given by science teachers, not by classroom teachers, to make students more knowledgeable about the course. In a similar vein Demir, Doğan, Pınar [7] found that for branch teachers these courses should be given by them due to the fact that these courses require the knowledge of the field.

As stated earlier some of the participants argued that early integration of students to secondary education will contribute to their social development. However, this finding is inconsistent with that of Bahtiyar-Karadeniz [8]. In the latter study it was argued that integration of 10-year old students into secondary education will negatively affect their personality.

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