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## THE CASE FOR EXAMINATION OF DIFFERENT METHODS USED IN LIFE SCIENCES AND SOCIAL STUDIES COURSES

### *Case Study*

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# THE CASE FOR EXAMINATION OF DIFFERENT METHODS USED IN LIFE SCIENCES AND SOCIAL STUDIES COURSES

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## Abstract

In this study aimed to identify preservice gifted education teachers' opinions on the instruction of life sciences and social studies courses and examine the activities, they developed regarding the several methods and techniques related to the courses. In this study, which has qualitative research features, an open-ended questionnaire was used as a data collection tool. It has been determined that the majority of preservice teachers prefer to use the constructivist approach in life sciences and social studies courses in terms of the obtained data. In addition, preservice teachers have stated drama, case study, and empathy among the methods and techniques that can be used in life sciences and social studies courses. It has been determined that preservice teachers also state various types of activities that can be used in the classroom for these methods and techniques. These types of activities include impersonations, activities which involve examples from everyday life and activities based on human relations.

*Keywords:* life sciences and social studies course, gifted education preservice teachers, methods and techniques.

## 1. Introduction

In the advancing and changing world, it is critical to include courses that involve elements from individuals' real lives in the educational system. Students have knowledge of events closely related to life and have the chance to experience and discuss these events with the help of these courses. The quality of courses on the primary school level during which the foundations are laid in children's lives has been gathering attention within this context.

The ability of younger generations to adapt to the multi-dimensional social structure of the 21st century which has seen an intense change and transformation is an important quality of humanity on the path to modernization. In this context, involving the life itself in the content of courses has been one of the most important attributes of modern curricula of life sciences and social studies (Kabapınar, 2012). While life sciences courses are instructed in the first three years at primary schools, social studies courses start to be instructed in the fourth year as a continuation of life sciences course in Turkey. Both courses have similarities. As courses which intensively cover the elements of individuals' lives, life sciences and social studies give students the chance to make contact with real life. In these courses which are instructed through association with individuals' immediate circle, psychological, cognitive and social contributions are also made to their developments (Aydın & Gürler, 2012).

While life sciences courses are instructed in the first three years at primary schools, social studies courses start to be instructed in the fourth year as a continuation of life sciences course in Turkey. Both courses have similarities (Ministry of National Education, 2018).

How the courses of life sciences and social studies are instructed by teachers to primary school students is also of vital importance. A great deal of duties falls to the programs of

Classroom Teaching and Gifted Education in faculties of education in this sense. It would be appropriate to ask about the opinions of the prospective teachers and perform activities in accordance with their opinions when providing the training in the teaching profession.

There are several studies in the literature which examine the opinions of preservice teachers on the courses in faculties of educations in terms of various factors/variables (Aksu, 2008; Gültekin & Gündoğan-Çöğenli, 2014; Güven & Ersoy, 2007; Kılınç & Uygun, 2015; Kurtdede-Fidan, 2009; Öztürk & Alkış, 2009; Şahin & Kartal, 2013; Türkmen, 2002; Yapıcı & Yapıcı, 2004). There are also other studies in which opinions of preservice classroom teachers on the courses of life sciences and social studies are investigated in the literature (Gültekin & Gündoğan-Çöğenli, 2014; Güven & Ersoy, 2007; Kılınç & Uygun, 2015). However, no studies were observed on the opinions of preservice gifted education teacher although they are to instruct these courses, too. The only examples in the national literature were observed to be the study performed by Mertol, Doğdu and Yılar (2013) in which gifted and talented students' metaphorical perceptions of social studies course were investigated and the study performed by Uzun (2006) in which the relationship between gifted or talented students' attitudes toward social studies course and their academic achievements.

On the other hand, no studies were observed on receiving preservice gifted education teachers' opinions on the instruction of life sciences and social studies courses. Hence, it is anticipated that the examination of preservice gifted education teachers' opinions on the courses of life sciences and social studies will contribute to the improvement of the quality of these courses. Accordingly, this study aimed to identify preservice gifted education teachers' opinions on the instruction of these courses and examine the activities they developed regarding the several methods and techniques related to the courses.

To this end, answers were sought to the following research questions:

- 1) What are the approaches that the preservice teachers would prefer when instructing the courses of life sciences and social studies and what are their features?
- 2) What are the opinions of the preservice teachers on the methods and techniques that can be used in the courses of life sciences and social studies and what suggestions do they have about the activities?

## **2. Methodology**

### **2.1. Research Design**

The case study design, which is qualitative research design, was used in the research. Case study research is a qualitative approach in which the investigator collects in-depth information on a real-life, current situation or multiple situations within a given time via multiple information resources and reports a case description (Creswell, 2015, p. 97). This design was chosen since it was deemed appropriate for the nature of this study.

### **2.2. Study Group**

The study group of the research consisted of 29 fourth-grade preservice teachers (22 females, 7 males) attending the Program of Gifted Education in the Department of Special Education at a university in Istanbul province. This group was chosen because they took the life sciences and social studies teaching the course. The preservice teachers were selected on a volunteer basis using the convenience sampling method (Patton, 2014).

### **2.3. Data Collection Instruments**

The data collection instrument used in the study was an open-ended questionnaire aiming to identify preservice teachers' opinions on the instruction of life sciences and social studies

and the methods and techniques that can be used in these courses. The questions in the open-ended questionnaire were about which approaches the preservice teachers would prefer in these courses, how the course books used in these courses differ by their approaches, which methods and techniques could be utilized in the courses and about developing activities with those methods and techniques.

The questionnaire was prepared by the researcher, and the expert opinions of five instructors and three classroom teachers had been received on the subject. The content validity indexes of the questions were calculated with the Lawshe (1975) technique (as cited in Yurdugül, 2005). As the content validity indexes were found to be 0.92, it was considered that these questions were valid.

#### 2.4. Data Analysis

The data achieved in the study were analyzed with the content analysis method. The main purpose of the content analysis, which is a qualitative research method, is to access concepts and relationships that might characterize the data at hand and help the data explained (Yıldırım & Şimşek, 2013).

The data were coded in relation to the methods and techniques used in the courses. In this process, the common characteristics of the codes were found to establish general categories and specific subcategories. All data were placed under these general and specific themes. In addition, quotations from the students' views were included to support these themes.

In the analysis of the qualitative data, the support of two expert faculty members was received to ensure the validity of coding. This expert was asked to recode the data obtained during the content analysis of the open-ended questionnaire. The coding of the researcher and the experts was compared, and the intercoder reliability was calculated using the formula given by Miles and Huberman (1994):  $\text{Reliability} = \frac{\text{Number of Agreements}}{\text{Number of Agreements} + \text{Number of Disagreements}}$ . According to Miles and Huberman (1994), when this value is greater than 0.80, the analysis is considered reliable.

In the analysis of the data collection instrument, the intercoder reliability coefficients between the different experts are given in Table 1.

Table 1. *Reliability coefficients of the data collection instrument*

Data collection instrument	Expert 1	Expert 2	Mean
Open-ended questionnaire	0,86	0,90	0,88

According to Table 1, when the data were analyzed, the coefficient averages of the analyses of the researcher and the other two instructors were 0.88. Accordingly, it can be said that the analysis of the data collection tool used in this study was reliable.

### 3. Findings

#### 3.1. Preservice Teachers' Opinions on How the Courses are Instructed

The findings of the first research question were achieved by analyzing the answers given by the participants to the open-ended questionnaire in regard to the approaches that can be used in the courses of life sciences and social studies. The data obtained are given in Table 2.

Table 2. *Approaches that can be used in the courses of life sciences and social studies*

Approach type	Number (f)
Constructivist approach	25
Behavioural approach	-
Both approaches	4
Total	29

According to Table 2, as for the approaches that can be used in the courses of life sciences and social studies, 25 of the preservice teachers preferred the constructivist approach while 4 of them reported that both approaches can be used together. There were no preservice teachers who preferred the behavioural approach alone. It was observed that the preservice teachers generally mentioned the importance of using the constructivist approach in the courses of life sciences and social studies. Moreover, 4 preservice teachers stated that using both approaches together would be useful and it is important to do so from time to time.

The findings obtained from the answers given by the participants about the courses instructed with the constructivist approach and the features of the books of these courses are given in Table 3.

Table 3. *The features of the courses instructed with the constructivist approach*

Main themes	Subthemes	Number (f)
Roles of student and teacher	Students are active	12
	Guiding role of teacher	10
Learning	Retentive learning	10
	Learning by doing-living	7
Presentation of information	Explored by students	7
	Constructed by students	5
Presentation of texts	Students' area of interest	6
	Associated with real life	6
Images	More images than texts	5
	Critical thinking	3
	Creative thinking	6
Activities	Including students in the process	5
	The needs of students	2

Regarding the data in Table 3, the preservice teachers provided opinions on the courses of life sciences and social studies instructed with the constructivist approach and their course books. According to the preservice teachers, there were theme activities among the main themes differently from the main themes in the behavioural approach. It was observed that 12 preservice teachers provided opinions on the subtheme students are active whereas 10 preservice teachers provided opinions on the subtheme guiding role of the teacher under the main theme roles of student and teacher.

Some of the preservice teachers provided opinions on the subject learning regarding the courses of life sciences and social studies in which the constructivist approach is dominant.

10 of the preservice teachers stated opinions on the subtheme retentive learning and 7 of them on the subtheme learning by doing-living.

Another main theme stated by the preservice teachers was the presentation of information. 7 of the preservice teachers providing opinion on this main theme stated that information is explored by students in constructivism-based courses whereas 5 of the preservice teachers stated that it is constructed by students. Regarding the main theme presentation of texts in the course books, 6 preservice teachers stated that texts are for students' area of interest while 6 preservice teachers stated that texts are associated with real life.

5 of the preservice teachers who provided opinions on the images in the course books stated that there are more images than texts whereas 4 of the preservice teachers stated that they are for critical thinking. Regarding the activities in the course books, 6 of the preservice teachers stated that activities are for creative thinking, 5 of them stated that they are for including students in the process, and 2 of them stated that they are for the needs of students.

Following the findings on the constructivist approach in Table 3, preservice teachers' opinions on the courses instructed with the behavioural approach and on their course books are given in Table 4.

Table 4. *The features of the courses instructed with the behavioural approach*

Main themes	Subthemes	Number (f)
Roles of student and teacher	Students are passive	8
	The leader is the teacher	6
Learning	Rote learning	5
Presentation of information	Being readily available	7
Presentation of texts	Didactically	5
Images	Less images than texts	5

According to Table 4, the features of the courses and course books of life sciences and social studies instructed with the behavioural approach were studied under the main themes roles of student and teacher, learning, presentation of information, presentation of texts and images. Under the main theme roles of student and teacher, while 8 preservice teachers stated that students are passive, 6 preservice teachers stated that the leader is the teacher as subthemes.

About the subtheme rote learning under the main theme learning, 5 preservice teachers provided opinions. 7 preservice teachers stated opinions on the subtheme being readily available under the main theme presentation of information. 5 of the preservice teachers reported the presentation of texts in the course books that they are included in the books didactically. 5 of the preservice teachers who provided opinions on the distribution of images in the course books reported that there are fewer images than texts and they do not like it in the behavioural books.

In the light of the achieved data, the preservice teachers would prefer the courses of life sciences and social studies instructed with the constructivist approach.

### 3.2. Opinions and Suggestions of Preservice Teachers on Methods and Techniques Used in the Courses

In this part, Table 5, 7 and 9 present the preservice teachers' opinions on several methods and techniques that can be used in the courses of life sciences and social studies, and their suggestions for activities using those methods and techniques are presented in Table 5, 8 and 10. Preservice teacher opinions on drama as one of these methods and techniques can be found in Table 5.

Table 5. *Preservice teachers opinions on the features and contributions of the drama method*

Main themes	Subthemes	Number (f)
Features of the drama method	Reconstruction of a situation or case	11
	Reconstruction based on a fictional work	8
	Improvisation	7
Contributions of the drama method	Ensuring retention in learning	5
	Ensuring understanding through examples	3
	Bringing different perspectives.	3

It is seen in Table 5 that the preservice teachers provided opinions on the features and contributions of the drama method. Accordingly, 11 of the preservice teachers stated their opinions regarding the reconstruction of a situation or case, 8 of them regarding the reconstruction based on a fictional work and 7 of them regarding the improvisation features of the drama method. As for the preservice teacher opinions on the contributions of drama, 5 preservice teachers stated its contribution of ensuring retention in learning whereas 3 preservice teachers each stated its contributions of ensuring understanding through examples and bringing different perspectives.

Table 6 shows preservice teachers' suggestions for activities using the drama method in the courses of life sciences and social studies.

Table 6. *Activities related to drama for life science and social studies courses*

Activities	Number (f)
Impersonations from real life	10
Meeting and preparation for the subject	6
Impersonations about traffic rules	5
Impersonations about keeping the environment clean	4
Improvisations about historical subjects	4
Impersonations about an ethical dilemma	2

According to the data in Table 6, 10 of the preservice teachers reported that impersonations from real life are activities associated with drama. The preservice teachers also provided suggestions for activities of meeting and preparation for the subject (6 participants), impersonations about traffic rules (5 participants), impersonations about keeping the environment clean (4 participants), improvisations about historical subjects (4 participants) and impersonations about ethical dilemma (2 participants).

Preservice teacher opinions on the features of the case study method which can be used in the courses of life sciences and social studies are presented in Table 7.

Table 7. *Preservice teachers opinions on the features of the case study method*

Main themes	Number (f)
Giving concrete examples from life	6
Explaining a subject with an example	5
Ensuring the retention of theoretical subjects	3
Facilitates understanding the subject	1

According to the opinions presented in Table 7, 5 of the preservice teachers provided opinions on case study being about giving concrete examples from life while 5 of them stated that it helps to explain a subject with an example and 2 of them reported that it is used for ensuring the retention of theoretical subjects. Only 1 preservice teacher stated that it facilitates understanding the subject.

The preservice teachers also made suggestions for activities using the case study method. They are shown in Table 8.

Table 8. *Activities related to the case study method for life science and social studies courses*

Activities	Number (f)
Activities which involve examples from everyday life	15
Activities ensuring student's activeness	12
Discussion activities	8
Activities for solving a specified problem	7

According to Table 8, the preservice teachers thought that activities which involve examples from everyday life (15 participants), activities ensuring student's activeness (12 participants), discussion activities (8 participants) and activities of solving a specified problem (7 participants) are fit for instruction with the case study method.

Preservice teacher opinions on empathizing which is a method that is used in the courses of Life Sciences and Social Studies are given in Table 9.

Table 9. *Preservice teachers opinions on the features of the empathizing*

Main themes	Number (f)
Putting oneself in other's place	12
Understanding what others feel	8
Understanding other's behaviors	7
Do act like the opposite	3
Internalization	2
Creating experiences	1

It is seen in Table 9 that the preservice teachers stated that empathizing is about putting oneself in other's place (12 participants), understanding what others feel (8 participants), understanding other's behaviours (7 participants), do act like opposite (3 participants),

internalization (2 participants), and creating experience (only 1 participant). The preservice teachers generally thought that it is important to include activities of empathizing in the courses of life sciences and social studies. Their suggestions for empathizing activities that can be used in these courses are presented in Table 10.

Table 10. *Activities related to empathy for life science and social studies courses*

Activities	Number (f)
Activities intertwined with life	7
Activities based on human relations	5
Activities about social order	4
Activities ensure open-ended activeness	3
Activities about values education	3

According to Table 10, 7 of the preservice teachers recommended empathizing activities which can be used in the courses of life sciences and social studies that activities intertwined with life can be performed. 5 of them recommended activities based on human relations while 4 of them recommended activities about social order. 3 preservice teachers each recommended activities that ensure open-ended activeness and are about values education.

It can be accordingly concluded from the findings that the preservice teachers stated the methods of drama, case study and empathizing among the methods and techniques that can be used in the courses of life sciences and social studies.

#### 4. Discussion and Conclusion

Great work falls to teachers about the instruction of life sciences and social studies which are primary school courses intertwined with real life. Therefore, it is of importance to instruct the life sciences and social studies teaching a course in a qualified way in faculties of education. Classroom teachers and gifted education teachers are among those who will instruct these courses. In this study, an open-ended questionnaire was applied to fourth-grade preservice teachers attending the Program of Gifted Education who would instruct the courses of life sciences and social studies in the future.

Opinions provided by the preservice teachers on the courses of life sciences and social studies instructed with the constructivist and behavioural approaches were grouped under the main themes roles of student and teacher, learning, presentation of information, presentation of texts, and images. They stated their opinions under the title activity in regard to the courses instructed with the constructivist approach. It was observed that the majority of the preservice teachers would prefer the constructivist approach used in the courses of life sciences and social studies.

In the study carried out by Gültekin and Gündoğan-Çöğenli (2014), the preservice teachers stated that life sciences course facilitate understanding oneself, one's learning properties and the learning process itself. The participant preservice teachers in that study also reported that life sciences course is about current life. The preservice teachers who participated in the study conducted by Güven and Ersoy (2007) found themselves competent and on a good level in regard to the competencies of life sciences and social studies teaching course.

Şahin and Kartal (2013) examined the opinions of preservice classroom teachers on the program of Classroom Teaching. They observed that the participants found the life sciences

and social studies teaching course which is a branch course to be significant and their effectiveness of primary importance.

A qualified examination of the instruction of the life sciences and social studies courses and methods and techniques to be used in these courses is important. It was found in this study that the preservice teachers stated the methods of drama, case study and empathizing among the methods and techniques that can be used in the courses of life sciences and social studies.

Among the studies on the matter, Murat, Aslantaş, and Özgan (2006) took the opinions of preservice teachers to evaluate the in-class activity processes of instructors. The results showed that half of the instructors were perceived to be competent in the in-class educational-instructional activities while the other half were perceived to be incompetent. The recommendations made in that study included providing preservice teachers with training in communication, role-playing, and the use of instructional techniques and materials.

Regarding features of the drama method, the preservice teachers stated that it is about the reconstruction of a situation or event, a reconstruction based on a fictional work, and improvisation while they stated ensuring retention in learning, ensuring understanding through examples, and bringing different perspectives in regard to the contributions of the drama method. It was observed that the preservice teachers provided the following opinions on the case study method: being about presenting concrete examples from life, explaining the subject with an exemplary situation, ensuring the retention of theoretical subjects, and facilitating understanding the subject. Moreover, the preservice teachers provided opinions of being about putting oneself in other's place, understanding what others feel and their behaviours, internalization and creating experiences.

It is of vital importance that preservice teachers can develop various materials and activities, especially in the teaching courses because it enables them to get prepared for their future teaching life. In a study which examined gifted and talented students' metaphorical perceptions of the social studies course (Mertol, Doğdu & Yılar, 2013), the students defined the course with metaphors such as life, education, intelligence, human, fun, source of life, information, and life sciences.

It can be argued that the gifted and talented students associated with the social studies course with life and fun in that study. How teachers use different methods and techniques in such courses is important in ensuring the activeness of students in the classroom setting.

It was observed in this study, too, that the preservice teachers made suggestions about the use of drama, case study and empathizing methods in the courses of life sciences and social studies. The preservice teachers made the following suggestions about the drama method: activities of meeting and preparation for the subject, impersonations about traffic rules, impersonations about keeping the environment clean, improvisations about historical subjects, and impersonations about the ethical dilemma. Regarding the case study method, the preservice teachers suggested activities which involve examples from everyday life, activities ensuring student's activeness, discussion activities, and activities of solving a specified problem. As for the empathizing method, the preservice teachers suggested activities intertwined with life, activities based on human relations, activities about social order, activities that ensure open-ended activeness and are about values education.

Consequently, how the courses of life sciences and social studies are instructed in the classroom and the usage levels of several activities are of importance for the teachers of the

future. Therefore, related programs in the faculties of education have a great responsibility in this sense.

### **5. Recommendations**

- It can be recommended that future studies investigate the usage of several instructional methods and techniques in the courses of life sciences and social studies because it is of specific importance that preservice teachers get to mingle with the ways of using these active learning methods in the classroom.
- It can be also effective in terms of instructing the courses of life sciences and social studies in accordance with the constructivist and behavioural theories and making the required comparisons.
- Also, by taking the opinions of prospective teachers in different countries, comparative studies can be conducted regarding the use of different methods and techniques in the classroom environment.
- By observing the courses in which different methods and techniques are used in the educational environment, the opinions of elementary school students regarding the educational process can be taken.
- Qualitative, quantitative and mixed studies can be carried out accordingly.

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