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Views of Prospective Science Teachers on Teaching Patriotism Value Within the Scope of Science Class *

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Abstract

In this study, the value of patriotism, which is one of the ten core values that students should acquire in the science course, was selected. In this context, the aim of the study is to reveal the views of pre-service science teachers on the teaching of patriotism and examine them in the context of value teaching. In this study, holistic single-case design, one of the qualitative research methods, was used. The research was conducted with pre-service science teachers studying at Süleyman Demirel University Faculty of Education in the 2019–2020 academic year. All the data in the study were obtained with the "Semi-Structured Interview Form," developed by the researcher and consisting of open-ended questions. To ensure the reliability of the research, three expert opinions were consulted. The reliability of the research was calculated using the Miles and Huberman formula (reliability = agreement / agreement + disagreement) by determining the number of agreements and disagreements in the comparisons. In the analysis of the data in the study, both descriptive and content analysis were used as qualitative analysis techniques. According to the findings obtained in the study, most pre-service science teachers do not have much knowledge about value teaching approaches (indoctrination, value clarification, value analysis, moral dilemma, etc.), they consider patriotism as consciousness, responsibility, sacrifice and sense of unity and solidarity, they think that patriotism value is not sufficiently included in the curriculum, they have almost half and half different opinions about the effectiveness of the science course in teaching patriotism value, that it is necessary to go beyond the official curriculum when teaching this value, that they will mostly use methods such as excursion and drama when teaching values, that they will mostly prefer materials such as films and documentaries when teaching values, that scientists will want to serve their own countries more in the context of patriotism, and that most of the pre-service teachers have high beliefs about teaching the value of patriotism. As a result of this research, it was concluded that for pre-service science teachers to teach the value of patriotism effectively, they should encounter more value teaching studies both in the dimension of curriculum and during their education life in the faculty to increase their awareness levels about this value.

Keywords: science, pre-service teachers, patriotism, value, value teaching

Introduction

Patriotism is defined by Janmaat and Mons (2011) as "sociological or social love in the social dimension that has the power and effect to integrate societies, cultures, and cultural environments through the love of human existence". Based on this definition, it can be said that patriotism is of great importance for the social cohesion of multicultural societies. Patriotism can also be defined as the love of one's country or the responsibilities of citizens towards their country (Primoratz, 2013). Macintyre (1984), emphasizing loyalty in the definition of patriotism, states that patriotic people want their own country to be better than other countries. Finn (2006) and Ravitch (2006) defined patriotism as embracing the homeland, being attached to it, and being proud of one's homeland. This pride can take many forms. For example, making one's homeland more livable than other places, making sacrifices for the well-being of the country, helping the country's development, and working for the benefit of the country.

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Patriotism is also a value whose affective characteristics predominate. Affective characteristics have the power to directly or indirectly affect all learned behaviors that an individual will show throughout his or her life (Erişti & Tunca, 2012). From this point of view, we can say that children are not only taught but also educated in schools. Values are also an important affective domain dimension that should be taught to children in schools within the curriculum. In addition, it may be wrong to associate value only with the affective dimension. Because if we look at the value holistically, it can be said that it also has cognitive and psychomotor dimensions (Yaman, 2012).

Values should be associated with the courses in schools, and it is important that individuals acquire them functionally. It is one of the important duties of all teachers to consciously teach values to children who try to gain them informally in the family on formal grounds at school (Küçükahmet, 2004). In addition to teaching values to children effectively, it is also important how much the teacher who will teach that value has or thinks about that value. The meaning and perspective that the teacher attributes to the value to be taught are directly proportional to the effect that value will have on the child (Kurtdele Fidan, 2009).

Revealing the thoughts of pre-service teachers, who will transfer some value judgments to their students when they become teachers, about those value judgments before they start to work is also important (Elkatmış, 2009; Gökderer & Çepni, 2003). Because whether the prospective teacher has the value judgment that he or she will teach to his or her students when he or she starts to work or not will predict the values that the future generation will acquire. From this point of view, conducting such studies shows that there is a need for some preventive and guiding studies in terms of value teaching. As a matter of fact, revealing the attitudes and perceptions of pre-service teachers who will teach that value to students in studies on value teaching is also important in this respect.

Although different studies have been conducted on value teaching, there have not been many studies on the perceptions and attitudes of pre-service teachers towards the value to be taught. This research will contribute to the field in this respect and fill the gap in the literature. In addition, this study will create a sense of awareness in pre-service teachers and guide the studies to be carried out for value teaching in science courses. It is also seen that the importance and awareness given to value education have increased recently in our country (Gündüz, 2016; Beldağ, 2016). However, a limited number of studies (Babadoğan & Kunduroğlu, 2010) were found on the acquisition of values in science education.

Considering the relationship of values with society, since science is connected with society, it shows that science cannot be separated from values. In order to explain the nature of science to students, it is necessary to give special importance to morality, character, and ethical and scientific values. In other words, a science that does not contain values does not seem possible. Students are also likely to encounter a topic related to scientific ethics now or in the future (Reiss, 1999). Sadler (2004), on the other hand, states that individuals who have thoughts on socioscientific issues and take decisions on these issues should have an understanding of ethical values.

In the science lesson, the teacher realizes the interaction between science and value in every aspect and tries to show her students ways to understand the nature of science. At the end of this, values are formed, and they have the opportunity to spread in society (Allchin, 1999). While planning value-added activities in science education, concepts such as nature, environment, science, and knowledge should be taken into account. The teacher, who is the planner and implementer of education, should be aware of the interaction between science education and science (Bilir, 2019, p. 18). Science teaching is meaningful when it gives students a high level of values, ideals, and emotions, as well as cognitive competencies (Nieswandt, 2007).

In our country, values were first emphasized in the science curriculum prepared in 2005 (MoNE, 2005). With the addition of ten root values to the science curriculum renewed in 2018, research on value teaching in science has started to be included (Candarlı Arkoç, 2020; Şentürk, 2020; Yaman, 2019; Tok, 2019; Türker, 2019, Çelik, Çamlıbel, & Duygu, 2016; Herdem, 2016; Yüce, 2011).

In addition to cognitive knowledge, students gain several skills in the affective domain in the science course. Value judgments (patriotism, benevolence, responsibility, honesty, patience, etc.) are among these affective domain skills. For example, a student will not only gain scientific thinking skills in an experiment but also contribute to the development of his or her country and fulfill his or her responsibility towards humanity by making new discoveries with his or her experiments. In this case, a sense of patriotism will develop. Thus, the student will have gained some value judgments.

When value teaching is mentioned, lessons such as life science and social studies with social content come to mind. However, values are related to all courses and have an interdisciplinary structure. Transferring values education to students by integrating it with the courses instead of providing it free from the courses can provide more successful results (Şentürk, 2020; Herdem, 2016; Kunduroğlu, 2010). Both social studies and science courses were created according to the collective teaching system (Kaya, 2018).

As a result of this research, a perspective will be formed by determining the views of pre-service science teachers on the value of patriotism, which will guide the curricula to be developed in the future. Thus, by raising awareness about the importance of this value, pre-service science teachers will have information about what they should do when teaching patriotism when they start to work. In this context, the aim of the study is to reveal the views of pre-service science teachers on the teaching of patriotism and examine them in the context of value teaching. To achieve this aim, answers to the following sub-objectives were sought:

- 1- What is the awareness level of science teacher candidates towards value-based teaching approaches?
- 2- What does patriotism mean according to science teacher candidates?
- 3- What are the views of pre-service science teachers about how much patriotism is included in the science curriculum?
- 4- What are the views of pre-service science teachers on how effective the science course is in teaching the value of patriotism?
- 5- What are the views of pre-service science teachers about whether to go out of the official curriculum when teaching patriotism?
- 6- What are the teaching methods that pre-service science teachers think they should use most when teaching patriotism?
- 7- What are the teaching materials that pre-service science teachers think they should use most when teaching patriotism?
- 8- How do prospective science teachers evaluate the contributions of scientists to humanity in the context of patriotism?
- 9- What are the views of pre-service science teachers on how the feeling of patriotism will affect the scientific studies of people?
- 10- What are the beliefs of prospective science teachers that patriotism can bring to students?

Method

Research Design

In this study, holistic single-case design, one of the qualitative research methods, was used. In single-case designs, as the name suggests, there is a single unit of analysis (an individual, an institution, a program, a school, etc.). This design is based on the questions of 'how' and 'why' and allows in-depth examination of a phenomenon or event that the researcher cannot control (Merriam, 2013, Creswell, 2007, Gerring, 2007). The research was conducted with prospective science teachers studying at Süleyman Demirel University Faculty of Education in the 2019–2020 academic year. Considering the accessibility of the research, an easily accessible sample was selected. In this context, prospective science teachers at the Faculty of Education of Süleyman Demirel University in Isparta constitute the sample of this study. First-year students were excluded from the study because they had not yet encountered much of the science curriculum. The distribution of pre-service science teachers at the university where the research was conducted is shown in Table 1 below.

Table 1. Demographic information of pre-service science teachers at the university where the research was conducted

	Gender					
	Male		Female		Total	
Grade	f	%	f	%	f	%
2 nd Grade	6	6	26	26	32	32
3 rd Grade	7	7	28	28	35	35
4 th Grade	4	4	29	29	33	33
Total	17	17	83	83	100	100

As stated in Table 1, 17% (n = 17) of the science teacher candidates participating in the research were male and 83% (n = 83) were female. In addition, 32% (n = 32) of pre-service science teachers are second graders, 35% (n = 35) are third graders, and 33% (n = 33) are third graders. The study was based on volunteerism, and the

identities of the participants were kept confidential. The participants' gender, grade level, age range, and the type of school they graduated from varied. According to Yıldırım and Şimşek (2008), the researcher's adequate identification of the individuals who are data sources in the research is a measure that increases the external reliability of the research.

Data Collection

All the data in the study were obtained with the "Semi-Structured Interview Form," developed by the researcher and consisting of open-ended questions. In this technique, the researcher prepares the interview protocol, including the questions he or she plans to ask in advance. If the respondent answered certain questions in other questions during the interview, the researcher may not ask these questions. The semi-structured interview technique gives the appearance of being a more appropriate technique in educational science research due to a certain level of standardization and flexibility at the same time (Ekiz, 2003).

In the preparation of the form, firstly, the relevant literature was reviewed, and interview questions for pre-application purposes were revealed in line with the information obtained. Expert opinion was taken from three lecturers for the form, and some questions were rearranged and some questions were removed in line with the feedback. Then, based on the pre-interview with 20 people, some of the questions were corrected, and the form was finalized. The semi-structured interview form consists of 18 questions to determine the opinions of pre-service science teachers about teaching patriotism.

To ensure the reliability of the research, three expert opinions were consulted. These experts are academicians working at Süleyman Demirel University, Sakarya University, and Nevşehir Hacı Bektaş Veli University. The reliability of the research was calculated using Miles and Huberman's (1994) formula ($\text{Reliability} = \frac{\text{agreement}}{\text{agreement} + \text{disagreement}}$) by determining the number of agreements and disagreements in the comparisons. In qualitative studies, a desired level of reliability is achieved when the agreement between expert and researcher evaluations is 90% or above. The reliability specific to this study was calculated at 94%. In terms of validity, reporting the collected data in detail and explaining how the researcher reached the results are among the important criteria of validity in a qualitative study.

Data Analysis

In the analysis of the data in the study, both descriptive and content analysis were used as qualitative analysis techniques. The purpose of descriptive analysis is to interpret the findings obtained by organizing them and to present them to the reader with integrity of meaning. In descriptive analysis, direct quotations were used many times to reflect the thoughts of the interviewed students in a striking way. The data obtained for this purpose were first described in a logical and understandable way, and then these descriptions were interpreted (Yıldırım & Şimşek, 2008).

In content analysis, it is aimed at reaching concepts and relationships that can explain the collected data. The data were first written by the researcher in the computer environment, and the concepts and relationships that can explain the collected data were reached (Yıldırım & Şimşek, 2008). In content analysis, the facts that may be hidden in the data are tried to be revealed. In content analysis, data are analyzed in four stages. These are coding the data, finding themes, organizing the codes and themes, and defining and interpreting the findings.

Findings

The data obtained from the research results are discussed below, respectively, within the scope of sub-objectives.

1. Findings for sub-objectives

Table 1. Awareness levels of pre-service science teachers towards value teaching approaches

Knowledge about value-based teaching approaches	f	%
Yes	22	22
No	78	78

Based on the table above, when we look at the opinions of pre-service science teachers about whether they have knowledge about value teaching approaches (indoctrination, value clarification, value analysis, moral dilemma, etc.) based on the results of the interview form applied to pre-service science teachers, it is seen that most of

them have no idea about this issue. The pre-service teachers who had an idea also stated that they did not know much about its content and that they had only heard its name.

The fact that pre-service science teachers who want to teach the value of patriotism to their students when they start to work have knowledge about what approaches they will use while teaching this value is a situation that positively affects the teaching of the value in the desired direction. Therefore, increasing the awareness of pre-service teachers about value teaching approaches during their university education can contribute both to the development of positive attitudes about themselves and to the development of a self-efficacy belief that they can easily teach that value to their students.

As a matter of fact, we can predict that it will not be easy for pre-service teachers who do not have much idea about value teaching approaches to teach this value to their students in the desired direction, and their students may have difficulties internalizing this value.

2. Findings for sub-objectives

Table 3. Opinions on the meaning of patriotism according to pre-service science teachers

Category	Theme	Code	f
Individual-oriented	Based on awareness	To do one's duty towards the homeland in the best way and to serve the homeland	13
		To do everything for the homeland	9
		To risk everything for the sake of the homeland	3
	Based on responsibility	To be hardworking	4
		To love the homeland	43
		To value the homeland	5
	Based on sacrifice	To be loyal to the homeland	4
		To value sacred values	1
		To fight for the homeland more than themselves when necessary	9
Society-oriented	Based on the feeling of unity	To be united in difficult times	6
		To view this as a whole and as united	3

According to the table above, based on the results of the interview form applied to pre-service science teachers, their perceptions of patriotism were categorized into two groups: individual-oriented ($n = 77$) and community-oriented ($n = 23$).

While individual-oriented patriotism was perceived as consciousness ($n = 25$) and responsibility ($n = 52$), community-oriented patriotism was thought to be more sacrifice ($n = 14$) and a sense of unity ($n = 9$). According to the answers given by pre-service science teachers, patriotism was mostly thought of as individual patriotism. Within the individual-oriented patriotism perception, it was mostly thought of as love for the homeland ($n = 43$). To summarize, the main opinion adopted by the pre-service teachers is that if a person feels that he or she belongs to his or her own homeland and has love for it, this will turn into patriotism over time.

When we look at the phenomenon of community-oriented patriotism, we see that the idea of fighting for one's homeland more than oneself ($n = 9$) and being together in difficult times ($n = 6$) is more common. We can think that such social feelings expressed by pre-service teachers complement individual feelings; in other words, both individually and socially, one has responsibilities for one's homeland.

The opinion of the pre-service teacher with the code T.9 about patriotism is as follows:

Patriotism is one's personal virtue. This virtue is the thing that keeps a person alive. We cannot live without it. Just as a person cannot live without honor, we cannot live without our homeland. If we think in this context, we can live without everything, but we cannot live without our homeland. The Turkish nation does not abandon its homeland at any cost.

Some of the other pre-service science teachers' opinions about patriotism are as follows:

T7: The one who loves his or her homeland the most is the one who does his or her duty the best.

T19: Love for the homeland means making sacrifices.

T26: Love for the homeland means coming together for the homeland even if we do not love each other.

T34: Love for the homeland means risking everything for its sake.

T49: Love for the homeland comes from faith.

T57: Love for the homeland is to follow Atatürk's path.

T61: To love the homeland is to protect the flag and to be in love with it.

T73: Homeland is sacred.

T82: Love for the homeland means to work hard for the homeland.

T99: Love for the homeland means fighting for it at all costs.

Considering the opinions of other pre-service science teachers, we can say that patriotism or patriotic love is not like any other love; it is the most important sanctity of a person; it is important to do all kinds of services for the homeland; it is important for everyone to do their duty well and fulfill their responsibilities; to protect the homeland against all dangers; to know and protect its past; to consider the interests of the country rather than their own interests; and to show the necessary struggle to move the country forward.

3. Findings for sub-objectives

Table 4. Pre-service science teachers' opinions on how much patriotism is included in the science curriculum

Inclusion of the value of patriotism sufficiently in the curriculum	f	%
Included	19	19
Not included	81	81

When we look at the opinions on whether the value of patriotism is sufficiently included in the science curriculum based on the results of the interview form applied to pre-service science teachers, most of the pre-service teachers (n = 81) think that the value of patriotism is not sufficiently included in the curriculum. The pre-service teachers who thought that it was included stated that it was not explicitly included but indirectly included.

Curriculum is the guiding element that leads pre-service teachers, directs them, and makes education functional and qualified. The curricula also reflect the educational philosophy of the country. If we want pre-service teachers to be raised consciously at the point of value teaching and to be aware of some information, it is important that we can easily see this in the programs. Because pre-service teachers, whom we expect to bring some root values such as patriotism to their students, are very much intertwined with this value while examining the science curriculum in the process of studying at the faculty of education and constantly encountering it, they may gain sensitivity.

Some values that are not encountered much in the curricula may directly affect the understanding of value teaching to be given in schools since they will not be given enough importance by pre-service teachers. Because people are sensitive to the issues, they are aware of and care about them.

4. Findings for sub-objectives

Table 2. Pre-service science teachers' views on the effectiveness of the science course in teaching the value of patriotism

The Extent that the Science Course is Effective in Teaching Patriotism Value	f	%
Effective	56	56
Not effective	44	44

According to the table above, based on the results of the interview form applied to the pre-service science teachers, when we look at the thoughts about whether the science course is effective in teaching the value of patriotism, we can say that they are almost divided into two at the point of whether it is effective or not. The pre-service teachers who think that it is effective are of the opinion that although the science course focuses more on science and thinking skills, the student can gain value judgment during the lesson, both with friends and while doing activities and experiments. The pre-service teachers who think that it is not effective think that the content of the science course is shaped more around science, technology, and thinking and that it would be better if the value of patriotism was given by associating it with social courses.

When value teaching studies are examined, it is seen that there are mostly studies conducted in social fields. In the field of science, studies on values have only recently started to be conducted. This situation may lead to different perceptions among pre-service teachers. A science course contains many values due to its nature. Patriotism is one of these values. We can easily state that people who do not protect nature and the environment,

do not produce science and technology for the development of their country, do not fulfill their responsibilities in recycling, and do not use the resources of their country correctly are far from having a sense of patriotism.

5. Findings for sub-objectives

Table 6. Pre-service science teachers' opinions on whether to go beyond the official program when teaching the value of patriotism

Deviating from the official curriculum when teaching the value of patriotism	f	%
Should be done	80	80
Should not be done	20	20

When we look at the opinions of pre-service science teachers about whether to go out of the official program when teaching the value of patriotism in the science course based on the results of the interview form applied to pre-service science teachers, many pre-service science teachers (n = 80) think that it is necessary to go out of the official program when necessary. The fact that pre-service science teachers have this opinion is necessary and important in terms of value teaching. Because practices are only included in the official program, an understanding based on teaching more subjects may occur. However, although it is not written in the program, the teacher's own design of some practices that he or she believes will be beneficial to his or her students can give effective results in terms of instilling the value of patriotism.

In the science curriculum that was renewed in 2018, ten core values were identified and associated with the learning outcomes. However, it is not clearly stated in which acquisition these values are included or how they should be given. When other explanations in the program are examined, it is stated that teachers who want to teach this value to their students can include their own practices. As a matter of fact, this situation offers various opportunities to the prospective teacher who wants to teach the value of patriotism to his or her students effectively. When awareness of this and the pre-service teacher's desire to teach that value are combined, it can produce good results for students.

6. Findings for sub-objectives

Table 7. The teaching methods that pre-service science teachers think to use the most when teaching patriotism

Theme	Code	f
Value Analysis	Case study	17
Action Learning	Travelling	33
	Drama	40
Value Analysis	Straight narration	6
	Question and answer	4

When we look at the opinions of the pre-service science teachers about which methods they think to use while teaching the value of patriotism based on the results of the interview form applied to the pre-service science teachers, it is seen that they will mostly prefer student centers. When we take into consideration that drama (n = 40) and excursion (n = 33) methods are the most considered methods, pre-service science teachers tend to prefer methods based on internalizing the value of patriotism rather than explaining it to the child.

The action learning approach, which is one of the value teaching approaches and has been much preferred recently, argues that it is more important to reflect that value in behaviors rather than say that one has that value. In other words, action is more important than discourse. Although pre-service teachers do not have much information about value teaching approaches, they think they should teach the value of patriotism according to the action learning approach. It is important for values to be seen in behaviors in terms of permanence and internalization. The fact that pre-service teachers have this view shows a predictive feature for students to learn it effectively in the future.

The opinion of the pre-service science teacher with the code T.31 about the teaching method he used the most while teaching the value of patriotism is as follows:

If we are going to teach the value of patriotism to children, we cannot do this by lecturing in the classroom. Just as the Japanese start by organizing a trip to the place where the atomic bomb was dropped to instill a sense of patriotism in children who have just started school, we need to start by showing Çanakkale and other historical locations to children in the same way. If the child feels that historical texture in his or her skin when he or she goes there, he or she will learn this value more meaningfully. While teaching the value of patriotism to children in the science course, the sense of patriotism can be instilled by organizing trips to scientific and technological places and making children feel the importance of such places in ensuring the development of the country.

The opinions of some of the other pre-service science teachers about the teaching method they use the most while teaching the value of patriotism are as follows:

T4: I bring sample cases or examples to the class and teach through discussing them.

T13: I plan plenty of scientific trips.

T28: I organize a drama environment to allow them to feel.

T35: I teach through lived events.

T44: I try to make it permanent by practicing and experiencing.

T57: I organize activities in which they take an active role.

T63: I talk about the struggle of Turkish scientists for their country.

T79: I make them feel the situation on the spot by taking them to places where science fairs are held.

T84: I put them in the place of scientists so that they could experience the event during the drama.

T98: I create scientific environments by organizing trips to universities.

7. Findings for sub-objectives

Table 8. Teaching materials that pre-service science teachers think they should use the most when teaching the value of patriotism

Theme	Code	f
Based on feelings	Documentaries	27
	Films	37
	Videos	1
	Novels	19
Based on teaching	Sagas	10
	Poetry	5
	Written materials	1

When we look at the opinions of the pre-service science teachers about which materials they think to use while teaching the value of patriotism based on the results of the interview form applied to the pre-service science teachers, it is seen that they will mostly prefer materials based on making them feel. Among these materials, films (n = 37) and documentaries (n = 27) come first.

Given that the materials that appeal to many sensory organs will provide more meaningful and permanent learning, the fact that the pre-service teachers stated that they would prefer these materials shows that they believe that the value of patriotism should be learned by experiencing that feeling, not by being told and read. The constructivist education concept defends that the student is at the center, learning should be provided by doing and experiencing, and the student should reach the information himself or herself. In this context, the fact that both the methods and materials used are student-centered shows that they will be more effective in teaching the value of patriotism.

The opinion of the pre-service science teacher with the code T.5 about the teaching material that he thought to use the most while teaching the value of patriotism is as follows:

When teaching the value of patriotism in the science course, I try to impress students emotionally by showing them some films about the contributions of scientists to their countries. We are emotional people as a country. We are very affected by the films we watch. In this respect, I think the best way to influence students is to make them watch films.

The opinions of some of the other pre-service science teachers about the teaching material they thought to use the most while teaching the value of patriotism are as follows:

T8: I think they will be very impressed by documentaries about technology.

T12: I encourage them to watch many films.

T24: I found some films about the feeling of patriotism.

T39: I make them read scientific novels.

T41: A documentary about the invention of science and its contribution to the country would be effective.

T55: I show videos about science and emphasize the value of patriotism.

T68: I make them watch documentaries about the lives of scientists.

T76: I teach the value of patriotism through films.

T84: I influence them by using documentaries and associating them with patriotism when appropriate.

T96: I foster a sense of empathy through scientific films.

8. Findings for sub-objectives

Table 3. Pre-service science teachers' opinions on how they evaluate the contributions of scientists to humanity in the context of patriotism

Associating the contributions of scientists to humanity with patriotism	f	%
Should be associated	78	78
Should not be associated with	22	22

When we look at the opinions of pre-service science teachers about how they evaluate the contributions of scientists to humanity in the context of patriotism based on the results of the interview form applied to pre-service science teachers, we see that most of them stated that this can be directly associated with patriotism. The pre-service teachers who associated it with patriotism stated that the inventor would contribute to the progress of his or her country and that he or she would experience a greater sense of belonging.

The sense of belonging and the perception of pride are value judgments that direct people's behaviors in the affective sense. People who have this feeling will enjoy doing something for their country and homeland in terms of patriotism. People who are loyal to their country and have gained a sense of loyalty will certainly fulfill their responsibilities to contribute more to their homeland.

The pre-service science teachers who do not associate this situation with it have the idea that scientists should do their scientific studies not only for the people in their own country but also for all humanity. It can be thought that this idea is also related to having humanist values. However, here we can see another value judgment other than patriotism.

9. Findings for sub-objectives

Tablo 4. The opinions of pre-service science teachers on how people with a sense of patriotism would affect their scientific studies

The dimension of the effect of people with a sense of patriotism on their scientific studies	f	%
It has an effect	84	84
It does not have an effect	16	16

When we look at the opinions of the pre-service science teachers about the effect of people with a sense of patriotism on their scientific studies based on the results of the interview form applied to the pre-service science teachers according to the table above, most of the pre-service science teachers ($n = 84$) think that this will be directly effective.

Pre-service science teachers think that a person who loves his or her homeland will certainly work harder for the development and progress of the homeland and will make himself or herself more willing to do scientific studies. No one has any doubt that patriotic people will do everything they can for the sake of their homeland in the best way possible. As a matter of fact, patriotic people often think of their homeland more than themselves. People with this thought have a positive feeling that their country will improve in every aspect by doing more scientific studies.

10. Findings for sub-objectives

Table 5. Pre-service science teachers' conviction that students can acquire the feeling of patriotism

Conviction that students can gain a feeling of patriotism	f	%
I am convinced	82	82
I am not convinced	18	18

When we look at the opinions of the pre-service science teachers about whether they can make their students gain a sense of patriotism based on the results of the interview form applied to the pre-service science teachers according to the table above, it is seen that most of the pre-service science teachers ($n = 82$) believe in themselves in this regard. It is seen that the pre-service teachers who believe in themselves have the opinion that it will not be very difficult to gain the feeling of patriotism if the person wants, believes, and becomes a model.

From another point of view, the believer pre-service teachers think that they can teach this value very easily if the person is conscious of this issue and gives it the necessary importance.

In value teaching studies, as much as the value to be taught, the fact that the person who will teach has that value, has a positive attitude about that value, and has a belief in himself or herself that he or she can teach it is also significantly effective. A person will not be very willing to teach something that he or she does not believe in, does not care about, or does not believe in its benefits. From this point of view, the fact that most pre-service teachers have a positive belief that they will teach the value of patriotism contributes to our inference that their students will learn this value in the desired direction.

Discussion

The following conclusions were reached based on the findings obtained from the research conducted to reveal the views of pre-service science teachers on the teaching of patriotism within the scope of a science course:

In this study, the views on teaching patriotism were revealed in the interviews with pre-service science teachers. As a matter of fact, the teacher's attitude towards a value will certainly affect the way he or she teaches that value. If the awareness levels of prospective teachers towards values are increased while they are studying at the faculty and they are provided with education in this direction, a more conscious understanding of value teaching will be formed. In this respect, the results of this study are also important for other studies.

When we look at the opinions of pre-service science teachers about teaching patriotism value, it is seen that most pre-service science teachers do not have much knowledge about value teaching approaches (indoctrination, value clarification, value analysis, moral dilemma, etc.). They consider patriotism as consciousness, responsibility, sacrifice, and a sense of unity and solidarity. They think that the value of patriotism is not sufficiently included in the curriculum. They have almost half and half different opinions about the effectiveness of the science course in teaching the value of patriotism. When teaching this value, it is necessary to go beyond the official curriculum when necessary. It was concluded that they would mostly use methods such as excursions and drama while teaching values, that they would mostly prefer materials such as films and documentaries while teaching values, that they had the opinion that scientists would want to serve their own countries more in the context of patriotism, and that most of the pre-service teachers had high beliefs about teaching the value of patriotism.

The other important result obtained in the study is that although pre-service science teachers' awareness levels about value teaching approaches are low, it is seen that their perspectives on the teaching of patriotism and their views on this value are positive. The fact that pre-service science teachers' views are in this direction gives clues that the generation to be raised can learn the value of patriotism in the desired way.

Another result of the research is the fact that pre-service science teachers did not encounter environments where they could gain much awareness about value teaching during their education at the faculty. If pre-service science teachers encounter activities related to value teaching directly or indirectly, their level of awareness will increase. If the awareness of pre-service teachers can be increased in this regard, we should not forget that the value of patriotism, which we want individuals to have, will be settled more easily.

As well as increasing the awareness levels of pre-service science teachers, starting to conduct value teaching research in the science course can contribute to the development of more positive attitudes towards the teaching of these values in terms of the next process (Candarlı Arıkoğlu, 2020; Şentürk, 2020; Yaman, 2019; Tok, 2019; Türker, 2019; Çelik, Çamlıbel, & Duygu, 2016; Herdem, 2016; Yüce, 2011).

The opinions of pre-service science teachers on the teaching of patriotism value show that value teaching studies, which have not been done much in the science course so far, will not be very easy at once. Value teaching studies, which have been carried out mostly in social fields so far, contribute to the formation of an understanding, but at the same time, they also lead us to a belated discussion on whether value teaching should be done in science courses.

As a matter of fact, it will be questioned how to try to make value teaching more functional with the start of such research on teaching patriotism in the field of science. In this study, the views of pre-service science teachers on the teaching of patriotism were determined and compared with other studies in the literature, and the missing questions in the literature were tried to be answered.

Pre-service science teachers thought of patriotism mostly as a sense of duty, service, risking everything, protection, responsibility, diligence, commitment, struggle, holiness, valuing, sacrifice, and a sense of unity and solidarity. In the study conducted by Avcı and İbret (2016), pre-service teachers explained the concept of patriotism with the categories of loving, belonging, protecting, being responsible, and being a good citizen. Again, in the study conducted by Çelikkaya and Öztürk Demirbaş (2013), pre-service teachers saw patriotism as protection and sacrifice, and in the study conducted by Ersoy and Öztürk (2015), pre-service teachers saw patriotism as loving and being loyal to the country, fulfilling their duties and responsibilities, and making efforts for the development of democracy and human rights.

The results of the studies in the literature and the perception of patriotism of pre-service science teachers in this study are similar. Thus, we see that patriotism is more centered around loving, valuing, protecting, and performing duties towards the country. In other words, the phenomenon of patriotism can be evaluated in the sense of risking everything for something loved.

Given the view that pre-service science teachers' perceptions of the value of patriotism will also affect the way they teach this value, it shows that when they start to teach patriotism, they will adopt methods such as action learning and value analysis, which are student-centered and based on learning by doing and experiencing, making the student active and making the student assimilate the value more. This situation supports the view that indoctrination and preaching will no longer be very effective in value teaching. Pre-service science teachers indicated that they would prefer to use travel, drama, and case study methods while teaching the value of patriotism, indicating that they think that student-centered approaches are important.

Similarly, while teaching the value of patriotism, pre-service science teachers stated that they would mostly use teaching materials such as documentaries and films. It is seen that they would not prefer textbooks and other written materials. Documentaries and films offer more concrete experiences to students (Yıldız, 2018, Demircioğlu, 2007). In other words, it appeals to more sense organs and provides meaningful, permanent learning. According to the constructivist education approach, primary data sources are more useful for students and motivate them more. The fact that pre-service teachers mostly use methods such as excursions, drama (Gündüz, Aktepe, & Mertol, 2019), and case studies as methods supports this situation in terms of materials. If method and material compatibility are ensured in learning and teaching processes, it will be easier to achieve the desired goals. We can teach a subject such as patriotism, which is difficult to perceive and teach because it is in the affective domain, only with more concrete materials and methods based on making students feel.

Another important issue is that the teacher has important duties while teaching values in schools, as well as whether the teacher has these values himself or herself, his or her level of knowledge on this subject, the meaning he or she attributes to this value, his or her personality, communication, and being a role model for students (Ada, Baysal, & Korucu, 2005).

Conclusion and Recommendations

Patriotism value has become a subject that has been researched more recently (Açık, 2020; Tarhan, 2019; Karaderili, 2019; Bilginer, 2019; Gündüz, 2018, Yıldız, 2018, Avcı, İbret, & Avcı, 2017, Gümüş, 2016, Gündüz, Keçe, & Gündüz, 2016; Avcı & İbret, 2016; Elban, 2011; Yong-jun, Xiao-bo, & Lan, 2009).

Since patriotism is an affective-based subject, its teaching is not like other subjects. In other words, it is more difficult to teach and measure. The fact that the affective domain is affected by many components or has a constantly changing structure naturally makes value teaching, especially the teaching of patriotism, difficult. If we consider that patriotism is an emotion formed in a long process for individuals living in a society, the events faced by the society in this process and the situation of people being affected by these events continue to affect patriotism in various dimensions. However, considering that the affective domain is as important as other domains, although it seems difficult to teach this domain, it should not be ignored.

As a result, this study has shown that, according to the views of pre-service science teachers, it is necessary to use student-centered methods and effective materials to teach the value of patriotism. Action learning and the value analysis method also support this view. In this sense, it is also important that pre-service science teachers want to use visual and multisensory materials, such as documentaries and films, while teaching this value.

However, it should not be forgotten that for pre-service science teachers to teach the value of patriotism effectively, they should encounter value teaching studies both in the curriculum dimension and throughout their education life in the faculty to increase their awareness levels about this value.

Based on the findings of the study, the following suggestions have been developed:

- This study was conducted with prospective science teachers studying at Süleyman Demirel University, Faculty of Education. The value of patriotism can also be investigated in cultural and geographical regions by taking into consideration the teacher candidates in different regions of Turkey. More detailed analyses can be made if different variables are included in the research.
- This research was conducted with pre-service science teachers. Teachers who are on duty can also be included in the research, and comparison-style data can be obtained.
- Value education activities should be organized to raise awareness among faculty members and especially teacher candidates.
- Longitudinal studies should be conducted to reveal the change in patriotism's value over the years and the situations in which it is affected, and healthier determinations should be made about the problems encountered.
- In order to make the teacher candidates studying at the faculty better understand the importance of patriotism in science lessons, field trips should be organized to show how important science and technology are in the development of the country.
- Pre-service teachers should be offered opportunities to develop projects consisting of science, technology, and patriotism during their education at the faculty.
- In order to increase the level of awareness of teacher candidates and make them feel the value of patriotism, scientific journals that include Turkish scientists and include their contributions to the country and where they can follow the developments in science and technology should be recommended.
- While pre-service teachers do internships at schools, practices that teach students the value of patriotism should also be included.

Author (s) Contribution Rate

The contribution rates of the authors are equal.

Conflicts of Interest

There is no conflict of interest.

Ethical Approval

This article was produced from the master's thesis completed in 2021 under the supervision of Mevlüt GÜNDÜZ. Since ethics committee approval is not required in the year in which the thesis data is collected, the application permission obtained from the department chair is included here. Letter of the Department of Mathematics and Science Education dated 21.01.2020 and numbered 84616602-044-E.11829

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