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Prospective teachers' understanding of sustainable development concept: A qualitative study

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Abstract

This study aims to determine the prospective teachers' understanding of the concept of sustainable development (SD). This study used a qualitative research method. A total of 22 prospective teachers were included in this study. The participants were chosen using the purposeful sampling method. The research data were collected through a test of three open-ended questions developed by the researchers. The prospective teachers were asked the following questions: what are the reasons of the emergence of the concept of SD, what are the goals of the concept of SD and what are the criticisms of the concept of SD. They were required to answer the questions in writing and the written answers were analysed via content analysis. The findings obtained through content analysis were divided into categories related to the concept of SD, and then the themes were defined. Prospective teachers' understanding of the concept of SD was categorised into three (namely general reasons, environmental reasons and social reasons).

Keywords: Content analysis, prospective teachers, sustainable development, understanding, qualitative study.

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1. Introduction

Sustainable development (SD) is a complex concept due to different interpretations (Berglund & Gericke, 2016). Therefore, the widely accepted and shared definition of the concept of SD has not been offered yet. However, the definition, 'the process of meeting today's needs without making compromises with meeting the needs of next generations', made by the World Commission on Environment and Development (1987) was generally accepted. In practice, SD can be defined as the need for considering the implications of economically profitable activities for humans and for the environment before starting those activities (Karpudewan, Hj Ismail & Mohamed, 2009). Indeed, SD draws attention to considering the importance of eliminating poverty, protecting our world, satisfying individuals' basic needs, preventing inequalities between generations and between the individuals of a generation, preserving the relationships between a sound economy and a sound environment and of the bearing capacity of the environment (World Commission on Environment and Development, 1987). There is a consensus in the literature that SD is conceptualised in at least three aspects: environmental, economic and social (Giddings, Hopwood & O'Brien, 2002; Summers, Corney & Childs, 2004). Yet, the concept of SD is complex and controversial because it is difficult to make a definition which can be accepted by interest groups in environmental, economic and social (including educational and political) areas with the emergence of the concept of SD (Summers et al., 2004).

SD is regarded as a way of securing the sustainability of societies. Fundamental and transformative change is needed in all leaders', professionals' or rather in all individuals' thoughts, values and behaviours for the adoption of the SD paradigm (Segalas, Ferrer-Balas & Mulder, 2008). Universities, in particular, play effective roles in reducing environmental problems and in securing SD. University lecturers' awareness of the ecological conditions of the world and of the sustainable use of natural resources demonstrates the obligation of universities to lead in the prevention of global environmental problems (Tuncer, Tekkaya & Sungur, 2006). Therefore, SD education has come into prominence at all levels of education, including higher education, in recent years (Cotton, Warren, Maiboroda & Bailey, 2007). In particular, universities are becoming increasingly significant in their efforts and strategies to bring about students with sustainable behaviours worldwide and to develop sustainable approaches (Tuncer, 2008). However, it is very important that SD is not fully integrated into the higher education system (Mulder et al., 2015). One of the biggest obstacles to this problem is that academics, teachers and students' awareness, understandings and interests related to SD are not sufficient (Thomas, 2004; Verhulst & Lambrechts, 2015).

Education is the basic instrument in attaining sustainability. Societies today accept that the trends in economic development are not sustainable and that social awareness and education are the ways which lead societies to sustainability (Hopkins & McKeown, 2002). It is determined in the literature that education has positive effects on SD (Kennelly, Taylor & Maxwell, 2008; Nousheen, Zai, Waseem & Khan, 2020; Olsson, Gericke & Chang Rundgren, 2016). Education plays important roles in students' developing positive attitudes towards the environment due to the fact that the world is exposed to significant environmental changes as a result of human's negative effects on the environment, especially in the process of development (Spiropoulou, Antonakaki, Kontaxaki & Bouras, 2007). Yavetz, Goldman and Pe'er (2009) stated that teachers should receive formal training in teacher education programmes, in order to carry out an effective sustainability education. Therefore, it is believed that identifying prospective teachers' understanding of the concept of SD by setting out the social aspect of the concept will put forward findings that are important to educators, politicians and employees in Turkey and also in other countries (Bernatonyte, Ciburiene, Simanaviciene & Startiene, 2019). The reason being teachers are the direct implementers of curricula. Insufficient knowledge of teachers about sustainability (Symons, 2008) will not contribute to the development of sustainable behaviours and attitudes. Therefore, inclusion of the concepts/subjects related to SD in curricula and transferring them to students successfully will be possible with their understanding of the issue.

1.1. The aim of the study

This study aims to determine prospective teachers' understanding of the concept of SD.

2. Method

This study used a qualitative research method, which was incorporated interviews (semi-structured interviews), as a tool for data collection and also to clarify and discover the themes and categories related to prospective teachers' understanding of SD. A qualitative research method is useful in describing or understandings the perspectives of a participant or group towards events, beliefs of practices (Gay & Airasian, 2000).

2.1. Study group

A total of 22 prospective teachers participated in this study. These prospective teachers were voluntary participants who were enrolled in an undergraduate environmental protection course in the 2019–2020 academic year. The selection of prospective teachers was determined by using a purposeful sampling method that allows the researchers to ensure in-depth exploration of cases, and thus to illuminate better questions that a study focuses on (Patton, 2002). Prior to the study, pre-service teachers were informed of the content, evaluation of the data and confidentiality of their names.

2.2. Data collection tool

A test which included three open-ended questions developed by the researchers was used as a data collection tool. These questions were prepared by reviewing the studies available in the literature. Each prospective teacher required 25 minutes to respond to the questions in the test. The prospective teachers were asked the following questions: what are the reasons for the emergence of the concept of SD, what are the goals of the concept of SD and what are the criticisms of the concept of SD. They were required to answer the questions in writing.

2.3. Analyses of the data

The content analysis was carried out to identify the categories and themes related to sustainability development. Content analysis is a widely used qualitative research technique to reach the concepts and relations that can explain the collected data (Oyetero, Grace & Adesina, 2019; Yildirim & Simsek, 2011). First, the codes were determined in the study. Then, the categories were determined from the codes and then the themes were categorised. Two coders examined the raw data independently and reviewed and obtained different and similar codes. Expert opinion was used to provide and raise internal validity in analysing the qualitative data. Two coders' different and similar codes were compared and the inter-rater reliability was found to be 89%. Reliability above 70% was considered adequate in qualitative studies (Miles & Huberman, 1994; Yildirim & Simsek, 2011).

3. Findings

The findings obtained through content analysis are shown in Tables 1–3.

Table 1. Content analysis findings related to reasons for the emergence of the concept of SD

Theme	Categories	Codes	f
Reasons for the emergence of SD	General reasons	Industrialisation	10
		Mentality of fast production and consumption	9
		Population growth	6
		Competition of economic development	5
		Globalisation	3
		Urbanisation	1
	Environmental reasons	Increase in environmental problems	14
		Depleting natural resources unconsciously	10
		Natural resources' coming to the point of depletion	5
		Not caring about the bearing capacity of nature	5
		Disturbing ecological balance	4
		Environmental problems changing into global problems	2
	Social reasons	Destroying nature for humans' interests	2
		Shrinking in green areas	1
		Concerns about next generations	6
		Unfair distribution of resources	3
		The need for having balance between humans and nature	2
		Social injustice	2

Prospective teachers' understanding on the reasons for the emergence of the concept of SD was divided into three categories. Reasons, such as industrialisation (46%), mentality of fast production and consumption (41%), population growth (27%), competition of economic development (23%), globalisation (14%) and urbanisation (4.5%), stated by prospective teachers were considered in the category of general reasons. The reasons stated by prospective teachers in the category of environmental reasons included factors such as increase in environmental problems (64%), depleting natural resources unconsciously (46%), natural resources' coming to the point of depletion, not caring about the bearing capacity of nature (23%), disturbing ecological balance (18%), environmental problems changing into global problems, destroying nature for humans' interest (9%) and shrinking in green areas (4.5%). The category of social reasons included statements such as concerns about next generations (27%), unfair distribution of resources (14%), the need for having balance between humans and nature and social injustice (9%; Tasar, 2019).

Table 2. Content analysis findings related to the goals of the concept of SD

Theme	Categories	Codes	f
The goals of SD	Goals on the basis of countries	Not making the mistakes that developed countries did while developing	6
		Developing countries' desire to improve in economic, social and cultural contexts	2
		Developed countries' helping developing countries to develop	1
	Goals on the basis of next generations	Not depleting the resources that next generations will need	19
		Leaving a liveable world to next generations	5
		Setting up ties between this generation's welfare and next generation's welfare	1
		Protecting natural resources	9
		Respecting nature's speed of renewing itself	6
	Environmental goals	Inclining towards green economy	3
		Internalising environmental ethics	2
		Making environmental policies which hinder harm to nature	2
		Preserving biodiversity	1
		Inclining towards renewable resources	1
		Balancing ecological and economic development	11
		Economic goals	Securing development in a way to prevent environmental problems
	Social goals	Making development sustainable	1
		Having balance between humans and nature	11
		Avoiding injustice in the distribution of resources	4
		Reducing the negative sides of globalisation	3
Eliminating inequalities between countries and within the country		2	
	Societies' and institutions' taking on responsibilities jointly	1	

Prospective teachers' understandings on the goals of SD were divided into five categories. Accordingly, the prospective teachers mentioned goals such as not making the mistakes that developed countries did while developing (27%), developing countries' desire to improve in economic, social and cultural contexts (9%) and developed countries' helping developing countries to develop (4.5%) in the category of goals on the basis of countries. The goals such as not depleting the resources that next generations will need (86%), leaving a liveable world to next generations (23%) and setting up ties between this generation's welfare and next generation's welfare (4.5%) were mentioned in the category of goals on the basis of next generations (Keser & Erdem, 2019). The prospective teachers listed goals such as protecting natural resources (41%), respecting nature's speed of renewing itself (27%), inclining towards green economy (14%), internalising environmental ethics (9%), making environmental policies which hinder harm to nature (9%), preserving biodiversity and inclining towards renewable resources (4.5%) in the category of environmental goals. They also listed goals such as balancing ecological and economic development (50%), securing development in a way to prevent environmental problems (36%) and making development sustainable (4.5%) in the category of economic goals of SD. The prospective teachers mentioned having balance between humans and nature (50%), avoiding injustice in the distribution of resources (18%), reducing the negative sides of globalisation (14%), eliminating inequalities between countries and within the country (9%) and societies' and institutions' taking on responsibilities jointly (4.5%) in the category of social goals.

Table 3. Content analysis findings related to the criticisms of the concept of SD

Theme	Categories	Codes	f	
Criticisms of SD	Relations on the basis of countries	Developed countries' suggesting the concept	15	
		Hindering the development of developing countries	13	
		Developing countries' financial inadequacies in using environment-friendly technologies	7	
		Developed countries burdening the load of their wastes to undeveloped countries	6	
		Developed countries demand that developing countries protect the environment	5	
		Developed countries violating the requirements of the concept	4	
		Developed countries' neglecting the environment for their economic development	3	
		Developed countries search for profits in the sector of environment-friendly technologies	3	
		Injustice in the distribution of resources between countries and within the country	3	
		Social	Social inequalities between countries	2
		Vagueness in the relationship between generations	Vagueness in cooperation/responsibility between generations	8
		Economy–environment relations	Incompatibility between the concepts of improvement and SD	7
			Perceiving the concept as economic development	7
			Emphasis laid on economy in the economy–environment relationship	5
		Ethical approach	Support on the conception of human-centred ethics	9
			Indirect support on the conception of environment-centred ethics	2
	Minding nature for humans	2		

Prospective teachers' understandings on the criticisms of the concept of SD were divided into five categories. Accordingly, developed countries' suggesting the concept (68%), hindering the development of developing countries (59%), developing countries' financial inadequacies in using environment-friendly technologies (32%), developed countries' burdening the load of their wastes to undeveloped countries (27%), developed countries demand that developing countries protect the environment (23%), developed countries' violating the requirements of the concept (18%), developed countries neglecting the environment for their economic development and developed countries' search for profits in the sector of environment-friendly technologies (14%) were the criticisms stated by prospective teachers in the category of relations on the basis of countries. The prospective teachers mentioned criticisms such as injustice in the distribution of resources between countries and within the country (14%) and social inequalities between countries (9%) in the category of social criticisms. On the other hand, the criticism about vagueness in cooperation/responsibility between generations (36%) was the criticism mentioned in the category of vagueness in the relationship between generations. The prospective teachers mentioned criticisms such as incompatibility between improvement and SD, perceiving the concept as economic development (32%) and emphasis laid on economy in the economy–environment relations (23%) in the category of economy–environment relations. They listed criticisms such as support on the conception of human-centred ethics (41%), indirect support on the conception of environment-centred ethics and minding nature for humans (9%) in the category of ethical approach.

4. Discussion and conclusion

Prospective teachers' responses to the open-ended questions were evaluated using content analysis in this study. Efforts were made to identify their understanding of SD by distinguishing categories as a result of the analyses. Thus, their understanding of the concept of SD was divided into three categories (namely general reasons, environmental reasons and social reasons). An examination of the categories demonstrated that approximately half of the prospective teachers listed reasons such as industrialisation, mentality of fast production and consumption, increase in environmental problems and unconscious depletion of natural resources as the reasons for the emergence of SD. The prospective teachers' understandings on the goals of SD were divided into five categories (goals on the basis of countries, goals on the basis of next generations, environmental goals, economic goals and social goals). The majority of them stated the goal of SD is not depleting the resources for the next generations. Almost half of them listed goals such as protecting natural resources, balancing ecological and economic development and having balance between humans and nature. The views stated by them in relation to criticism of SD were divided into five categories (relations on the basis of countries, vagueness in relations between generations, social, economy–environment relationship and ethical approach). The argument that the concept was suggested by developed countries to hinder the development of developing countries was the criticism stated by most of the prospective teachers. When the results of the study are analysed, it is revealed that prospective teachers generally had some information on SD, although they are not sufficient. From this point of view, it can be said that the results of this study are in line with the results of the studies in the literature. For example, a study conducted by Tuncer (2008) revealed that university students have a high perception of SD, wherein the students expressed that they will be able to make changes in their own lives in terms of protecting natural resources for future generations. But they also stated that they need to gain a wider perspective in order to be able to move towards more sustainable choices about their lives. In another study conducted by Kagawa (2007), in which university students' SD perceptions were examined, it was determined that university students associated sustainability more with environmental aspects rather than economic and social aspects. In a study conducted by Msengi et al. (2019), 95.8% of university students were found to be aware of sustainability. However, it is determined that the number of students, who know what sustainability is, is also low. Sinakou, Boeve-de Pauw and Van Petegem (2019) stated that teachers and students do not have a holistic understanding of the combined 3D concept of SD: environment, economy and society.

Although the fact that prospective teachers stated views on the reasons for the emergence of the concept of SD, on the goals of the concept and on the criticisms of the concept could be interpreted as a positive result on evaluating the results obtained in general, the number of prospective teachers stating the views was small. They listed industrialisation, mentality of fast production and consumption, increase in environmental problems and depletion of natural resources unconsciously as the reasons for the emergence of the concept of SD; and they mentioned goals such as not depleting the resources that next generations will need, protecting natural resources, balancing ecological and economic development and having balance between humans and nature as the goals of the concept. The statements can be interpreted to mean that prospective teachers have an awareness and understanding of the concept. In addition, they stated the criticism of the concept was suggested by developed countries to hinder the development of developing countries. Azapagic, Perdan, and Shallcross (2005) found that the students of engineering faculty assumed that SD was important, despite the fact that they had little knowledge about the issue. Malik et al. (2019) stated that 71% of the 159 university students studying at public universities in Pakistan do not have an awareness related to the concept of sustainability in their respective fields, but 17% are able to define sustainability in general. In the same way, Tuncer et al. (2006) reported that prospective teachers suggested the concept of SD as a way of solving environmental problems. In a study on teachers, Borg, Gericke, Høglund and Bergman (2014) determined that teachers have a different level of awareness about the three dimensions of SD, but they do not have a holistic understanding. In general, the level of teachers' awareness is listed on as ecological, economic and social aspects. The majority of teachers

who participated in the study stated that they needed training on SD. The above-mentioned results are remarkable wherein they indicate the necessity for including more courses in environmental education which contain the concept of SD, especially in teacher's training programmes.

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