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## The Sustainability Trend In Education in All Its Aspects: A Meta-Synthesis Investigation of Studies In Turkey

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### Abstract

In this study, which aims to examine all of the articles and theses in the field of education in Turkey on the basis of the concepts of sustainability, environmental sustainability and sustainable development, and to address sustainability in all its dimensions, the data were analyzed by meta-synthesis (thematic content analysis). Within the scope of the research, 232 study and education subject areas accessed from the Turkish Higher Education Institution National Thesis Center and DergiPark databases were discussed in the context of the key concepts of "sustainability, sustainability, sustainable development, sustainable environment, environmental sustainability". In the data analysis process, the subject of the research, its method, data collection tools, sample, data analysis, results and suggestions were examined. In most of the studies examined, it is aimed to measure attitudes, perception, awareness and competence towards sustainability and it is seen that the most quantitative method is preferred. While the most educators are selected as the sample group, the size of the study group is between 301 and 1000. Likert-type questionnaires were used in quantitative research and semi-structured interviews were used in qualitative research. While inferential analyzes were preferred the most from quantitative analyzes, content analysis was preferred from qualitative analyzes. It has been observed that there are many studies that increase belief, attitude, perception, awareness, value and tendency in studies where trainings are given within the scope of sustainability. It is seen that there are themes such as curriculum review, scale development and institution review. Recommendations are grouped and presented to researchers, educators, politicians and parents. Based on these results, it can be said that the studies are trying to measure the awareness and awareness of educators and prospective educators about sustainability and to reveal to what extent they can transfer this to future generations.

**Keywords:** Sustainable, Sustainability, Sustainable Development, Sustainable Environment, Environmental Sustainability, Meta-synthesis, Education.

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2023, 12 (3), 1435-1473 | Araştırma Makalesi  
Tüm Yönleriyle Eğitimde Sürdürülebilirlik Eğilimi: Türkiye'deki  
Çalışmalara Dair Bir Meta-Sentez Çalışması

Zeynep ERGÜN<sup>4</sup> Nurgün GENÇEL<sup>5</sup> Esra KABATAŞ MEMİŞ<sup>6</sup>

Öz

Türkiye'de eğitim alanında yapılan makale ve tezlerin tamamının sürdürülebilirlik, çevresel sürdürülebilirlik ve sürdürülebilir kalkınma kavramları temel alınarak incelenmesi, sürdürülebilirliğin tüm boyutlarıyla ele alınmasının amaçlandığı bu çalışmada veriler meta sentez (tematik içerik analizi) ile analiz edilmiştir. Araştırma kapsamında eğitim öğretim konu alanında, "sürdürülebilir, sürdürülebilirlik, sürdürülebilir kalkınma, sürdürülebilir çevre, çevresel sürdürülebilirlik" anahtar kavramları bağlamında Yüksek Öğretim Kurumu Ulusal Tez Merkezi ve DergiPark veri tabanlarından ulaşılan 232 çalışma ele alınmıştır. Verilerin analizi sürecinde kodlama yapılırken çalışmanın konusu, yöntemi, veri toplama araçları, örneklemi, veri analizi teknikleri, sonuç ve önerileri incelenmiştir. İncelenen çalışmaların büyük çoğunluğunda amaçların sürdürülebilirlik konusunda tutum, algı, farkındalık ve yeterliliğinin ölçülmesi hedeflenmiş, en çok nicel yöntemin tercih edildiği görülmektedir. En çok eğitimciler örneklem grubu olarak seçilirken, 301 ila 1000 arası çalışma grubu boyutuyla çalışılmıştır. İncelenen nicel çalışmalarda en çok likert tipi anket, nitel araştırmalarda da yarı yapılandırılmış görüşmeler kullanılmıştır. Nicel analizlerden en fazla çıkarımsal analizler tercih edilirken, nitel analizlerden de içerik analizi tercih edilmiştir. Çalışmalara etki eden değişkenler incelendiğinde en fazla cinsiyet ve akademik başarı, etkisiz değişkenlerde ise cinsiyet tespit edilmiştir. Sürdürülebilirlik içeriğinde eğitimler verilen çalışmalarda ise inanç, tutum, algı, farkındalık, değer ve eğilimde artış olan oldukça fazla çalışma olduğu gözlemlenmiştir. Müfredat inceleme, ölçek geliştirme, kurum inceleme gibi temalarda oluştuğu görülmektedir. Öneriler araştırmacılara, eğitimcilere, politikaçılara ve velilere yönelik olacak şekilde gruplandırılarak sunulmuştur. Çıkan bu sonuçlardan yola çıkılarak çalışmaların eğitimcilerin ve eğitimci olmaya aday bireylerin sürdürülebilirlik bilinç ve farkındalığını ölçerek bunu gelecek nesillere ne dereceli aktarabileceklerini ortaya çıkarmaya çalıştığı söylemek mümkündür.

**Anahtar Kelimeler:** Sürdürülebilir, Sürdürülebilirlik, Sürdürülebilir Kalkınma, Sürdürülebilir Çevre, Çevresel Sürdürülebilirlik, Meta-sentez, Eğitim-Öğretimç

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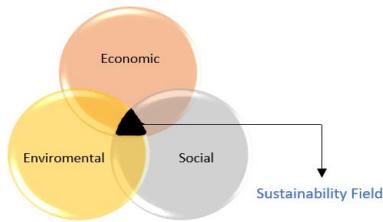
## Introduction

Since the existence of the world, the ecological system has been acting in an orderly manner. Since human existence, it has kept up with this system and continued its life for generations. However, over time, the increase in the number of people and the consequent increase in consumption has disrupted the balance of the ecological system (Bengtsson, et al., 2018). There are many studies that think that it is possible for the ecosystem is sustainable (Blasiak, et al., 2017; Reed, et al., 2013). Therefore, at the beginning of the concepts that affect the vital future of both the world and people in the current century; sustainable environment and sustainable development (Harris, 2000). Even if the most common use in the vital sense is emphasized by these two concepts, the word sustainability is pronounced in many areas today.

Sustainability literally means "being permanent" (Wikipedia, 2023). In the Brundtland Report (1987) published by the United Nations (UN), it is stated that today's people can meet their own needs without consuming the resources of future people. Over time, the use of different concepts (sustainable environment, sustainable development, sustainable education, etc.) has become widespread. This is due to the fact that sustainability is not just a term related to the environment. In other words, sustainability is not just environmentalism. Embedded in most definitions of sustainability are social equity and economic development (McGill, 2023). In this context, when looking at the starting point of sustainability, it is possible to go up to the transition periods to the industrial society.

Although the exact date is not clear, there is a general opinion that the history of sustainability dates back to the 1700s (Yalçıntaş, Gülmez & Özeltürkay, 2021). There are opinions that the idea of sustainability dates back to the Middle Ages (Campbell, 1996) and goes further and is found in Greek mythology (Bozdoğan, 2005). However, official records first drew attention to environmental sustainability by pointing out the links between the conservation of natural resources, social welfare and economic growth with the UN Declaration at the end of the Stockholm Conference in 1972 (Rotondo, Giovanelli & Ezza, 2023). (The concept of sustainable development was mentioned in the Brundtland Report (United Nations, 1987) which was prepared by the UN Commission on World Environment and Development in 1987. In this report, which is called "Our Common Future", it is mentioned that poverty can be eliminated by achieving the future goals of all humanity with sustainable development. In the next 20 years, many countries could not meet their own needs and started to import resources from other countries. Despite this negative trend, public awareness has led to more sustainable living options and the introduction of the first alternative renewable energy sources such as wind turbines, hydroelectricity, solar and wind power plants have gained importance (Future Learn, 2023). In 2016, the UN published 17 sustainable development goals (United Nations, 2016). These 17 sustainable development goals include many important elements for societies, from environmental problems to social and economic equality.

Sustainability has three dimensions: environmental, economic and social (Harris, 2000; Holmberg & Sandbrook, 1992; Islam, Munasinghe & Clarke, 2003; Kaypak, 2011) as given in Figure 1. Three dimensions are related to each other in terms of both environmental, economic and social aspects. For example, the realization of economic sustainability will be possible by ensuring environmental and social sustainability. Each dimension is related to other dimensions in this way, and the intersection point in its three dimensions is sustainability (Hermans & Reid, 2002).

**Figure 1** *The three dimensions of sustainability (Hermans & Reid, 2002)*

Considering that sustainable development is a phenomenon that can be taught in a social perspective, it is possible to say that education is at its center. For example, higher education is very important for societies to adopt the principles of sustainable development and to create the necessary awareness and for each individual to internalize this concept (Rotondo, Giovanelli & Ezza, 2023). Similarly, starting from preschool, which is the first stage of education, it is of great importance to establish this awareness. Therefore, it may be possible to have a short and lasting impact on the sustainable economy by touching national education policies. For this reason, UN heads of government and senior officials and civil society representatives came together in September 2015 to adopt the Sustainable Development Goals for the education of future generations (UNESCO, 2023). These goals are designed to ensure the development of society through a sustainable development programme (UNESCO, 2023). In the Sustainable Development Goals published by the UN in 2016, Article 4 includes education for sustainable development. In general, this article states that education is inclusive of everyone and that everyone should be given the right to lifelong education (United Nations, 2016). At the basis of sustainability are the goals of future generations in the studies carried out for their own vital activities. In order for these goals to become widespread, it is necessary to reach today's young generations in the first place.

In recent years, educational activities have gained momentum in the name of environmental sustainability. The main reason behind it is that it seems as important that education is the only way out in order to end the environmental disasters caused by people with changes in their behaviors and attitudes (Özdemir, 2007). UNESCO declared 2005-2014 as the "Decade of Education for Sustainable Development" in order for countries to spread sustainability education at all levels (Alkış & Öztürk, 2007). Recognizing this, as a result of the importance of sustainability, many countries have gone the way of making innovations in their education systems (Laurie et al., 2016; Mula et al., 2017; Sarabhai, 2015; UNESCO, 2020). In Turkey, on the other hand, sustainability is taught in environmental awareness courses in primary school and biology, geography and science courses in middle school and high school. In higher education, more than half of the universities have a study on environmental sustainability (Tanç et al., 2022). However, sustainable education emphasizes a systemic change beyond environmental education (Yalçın, 2022). In this context, it is important to raise awareness of sustainability not only in educational institutions but also in all institutions and organizations through studies in this direction (Atmaca, 2018). In order to direct these activities, scientific studies on sustainability have visibly increased in recent years. With the increase in studies carried out on the theme of sustainability, some meta-synthesis studies published in

Turkey also contribute to the literature. As a result of the examinations, analysis studies examining different dimensions of sustainability in the field of education were reached. Yıldırım (2020) reached 39 theses and 32 articles with the keyword "sustainable" and carried out a descriptive analysis of these studies. Öney (2022) examined 24 master's and doctoral theses on environmental literacy by associating them with sustainability and including the results and recommendations of the studies. More explanation is needed as to how the current study is broader than the existing studies (Yıldırım, 2020; Öney, 2022) cited in the text. For this reason, in this meta-synthesis research, all of the articles and theses made in the field of education in Turkey were examined on the basis of the concepts of sustainability, environmental sustainability and sustainable development and the following questions were answered.

Studies based on sustainability, environmental sustainability and sustainable development carried out in the field of education in Turkey;

1. How was the distribution by year?
2. What are the research aims or objectives?
3. What methods were used?
4. What are the sample group characteristics and sizes?
5. What data collection tools were used?
6. What are the quantitative and qualitative results obtained?
7. What are the recommendations made as a result?

## Method

In this study, the data were analyzed by meta-synthesis (thematic content analysis). Meta-synthesis is a methodological approach that enables interpretive analyses of findings from qualitative research and the development of new knowledge (Aspfors & Fransson, 2015). Meta-synthesis studies can be defined as the evaluation of evaluation (Patton, 2014). Meta-synthesis is a type of integration study in which qualitative research findings are combined (Sandelowski & Barroso, 2003). Meta-synthesis researches are studies that aim to interpret and evaluate the qualitative findings of the studies carried out in a certain field, to reveal similar and different aspects and to make new inferences (Polat & Ay, 2016). In this study, the thesis conducted by the researchers in Turkey on the subject of sustainability and the articles published in the DergiPark database were analyzed with qualitative methods to determine the trend in the field literature.

## Data Collection and Inclusion Criteria in the Research

Within the scope of this research, certain keywords were used for screening in the field of education and training. These keywords are: "sustainable, sustainability, sustainable development, sustainable environment, environmental sustainability". The studies to be included in the research were accessed from the National Thesis Center of the Higher Education Institution and the databases of DergiPark. As a result of the search in the database of YÖK National Thesis Center, 197 theses were reached (as of 05.12.2022). Within the scope of the research, 186 permissioned theses were included in the study. 2 theses without access permission and 9 theses that do not comply with the scope of the study but include the words specified in the key concept are not included in the scope of the study. In addition, as a result of the search in the DergiPark database, 50 articles were

reached (as of 27.01.2023). 4 articles that were reached during the search but did not comply with the purpose and scope of the study were not examined. A total of 232 studies were considered in this study.

### Validity and Reliability of the Research

In order to avoid any errors during coding, the studies were analyzed within 1 month after being downloaded from the YÖK thesis center and DergiPark database. Then, in line with the research questions, an Excel table was produced and codings were performed. In order to be reliable for the codes, another researcher simultaneously reanalyzed a certain number of studies and then determined that the codes were consistent with each other.

### Analysis of Data

In the process of analyzing the data, the studies to be examined first have been downloaded and made ready for examination. The relevant sections of each thesis and article included in the research were examined in detail and recorded in computer environment. During coding, the subject, method, data collection tools, sample, data analysis, results and suggestions of the study were examined. The theses and articles examined within the scope of this research are presented in the form of tables or graphs in accordance with the purpose of the themes. By presenting the data in this way, it is aimed to ensure that readers have a comprehensive idea about the studies. Statistically, only frequencies are included in the tables and graphs. After a general explanation is made under each table or graphic, the remarkable parts of the thesis studies are explained.

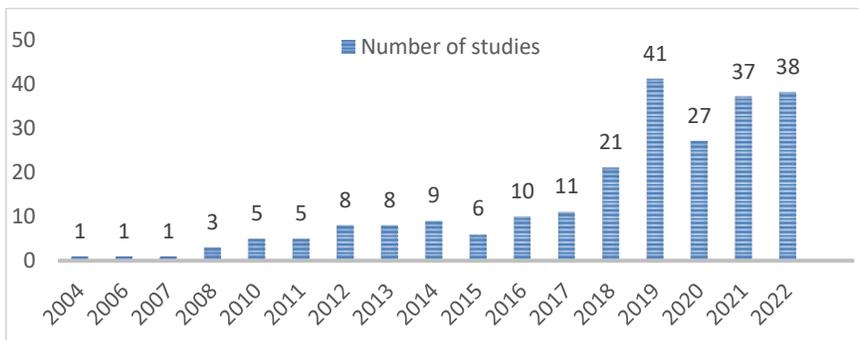
## Results

The studies were examined in the context of sustainable development, sustainability and environmental sustainability and it was seen that the studies on sustainable development were more. However, in order to ensure data integrity, the studies on the three subjects were examined together. In this section, the findings obtained as a result of the analysis of the data are presented under separate headings according to each sub-problem.

### 1. Distribution of studies by year

The distribution of the studies according to years is presented in Figure 2. When the graph is examined, it is seen that the studies show an increasing process starting from 2004 and most studies were done in 2019. It is followed by 2022, 2021 and 2020. In short, it is noticeable that the number of studies on sustainability has increased after 2019.

**Figure 2** *Distribution of Studies by Year*



## 2. Objectives of the Studies Examined

The aims of the studies examined within the scope of the research were examined and themes and sub-themes were created. The findings are presented in Table 1.

**Table 1** Findings Regarding the Objectives of the Examined Studies

Theme	Sub-theme	Frequency
Attitude/ Perception Awareness Behavior Competence studies		80
Teaching	Attitude, perception, awareness, consciousness, motivation	41
	Success	9
	Method	5
	Problem-solving skills, high-level thinking skills, social skills, critical thinking skills	4
	Development towards sustainable development	3
	Pedagogical field knowledge	2
	Level of environmental citizenship	1
	Sustainable attention	1
Opinion determination		19
Review a curriculum		16
Learning	Learning style	8
	Success	7
	Ecological footprint calculation	1
Eco school/Institution review		10
Scale development		9
Sustainable leadership, Sustainable management and Organizational sustainability		7
Research method development		4
Type of field scan		4
Sustainability of Teacher Education and Professional Development		4
Material Study		3
Sustainable school mental perception and Sustainable school-family collaboration		2
Education in the context of sustainable growth / Sustainable education		2
General educational problems		2
International document and policy review		2
To determine the level of system literacy and systemic thinking skills withi scope of sustainable development		2
Concept analysis		1
Analysis of theses written in the field		1
Environmental literacy		1
Sustained attention		1
Sustainable responsibility		1

When the objectives of the examined studies are analyzed, it is seen that the most studies are directed towards attitude, perception, awareness, behavior and competence. The fact that the number of studies in this field is quite high compared to others shows that sustainability and sustainable development studies are especially focused on attitude, perception and awareness. Based on this focus, studies on the effect of any teaching, method, technique and training processes on attitude, perception and awareness are also quite high. In these studies, it is seen that attitude, perception, awareness, consciousness and motivation as well as the effect of teaching on success, thinking skills and pedagogical field knowledge are examined. At the same time, it is seen that the studies in the field of sustainability, environmental sustainability and sustainable development are aimed at determining opinions. It is seen that the schools where educational activities are carried out in our country and the curriculum used in these schools are examined in terms of sustainability. It can be said that studies for sustainability are handled in a multidimensional manner. In addition, there are scale development studies for the scales that are thought to be deficient in the literature.

### 3. Methods used in studies

The findings regarding the methods of the studies examined within the scope of the research are given in Table 2.

**Table 2** Data on the Methods of the Examined Studies

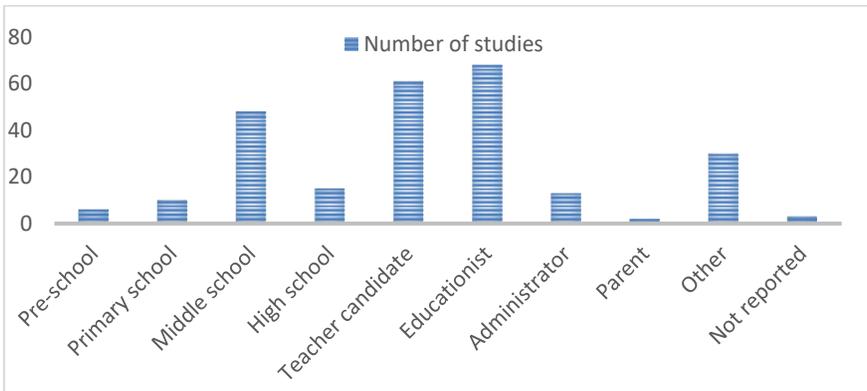
Method	f	
Quantitative (107)	Survey	83
	Experimental	24
	Case study	26
	Phenomenology	21
	Qualitative scanning	14
Qualitative (81)	Document analysis	6
	Meta-synthesis	5
	Conceptual analysis	2
	Other	2
	Action research	3
	Ethnography	2
Mixed	46	
Other	3	
Not reported	14	

In the studies examined, it is seen that quantitative approaches are taken as the basis. The most quantitative methods were screened studies. Here, it is seen that screening studies aimed at determining the attitudes, perceptions, beliefs, values and competencies of any sample towards sustainable development are predominant. Following quantitative approaches, the number of qualitative studies in which opinion determination studies for sustainability or sustainable development are intensive is also quite high. Comprehensive studies on sustainability were carried out by conducting studies in which both qualitative and quantitative methods were considered together. In addition, it is seen that the number of quantitative and qualitative methods is close to each other.

#### 4. The working group in which the studies examined are carried out and its size

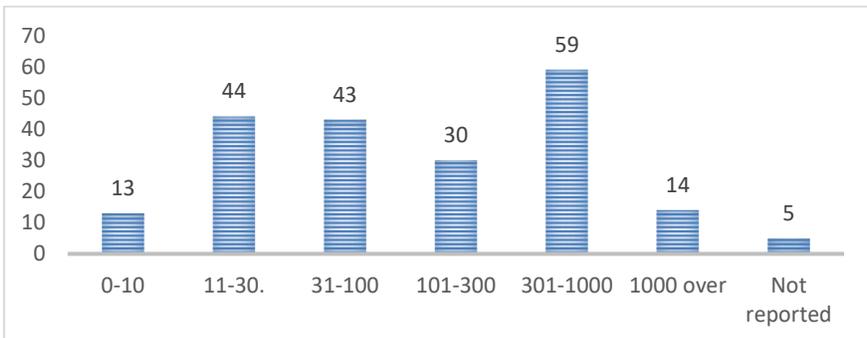
The majority of the studies examined within the scope of the research were carried out with educators. Data for the working group are given in Figure 3. When the Figure 3 is examined, it is seen that the studies are carried out mostly with educators, teacher candidates and secondary school students. Due to the fact that different sample groups are included together in some studies, the total number of studies in the graph is more than the number of studies.

**Figure 3** Working Group



In addition to the teaching level of the study group, the dimensions of the study group were also evaluated. The size of the working group was coded separately as 0-10 people, 11-30 people, 31-100 people, 101-300 people and 301-1000 people. The findings regarding the size of the study group are presented in Figure 4.

**Figure 4** Workgroup Size



When the data are examined, it is seen that the size of the study group in which the most of studies are carried out is in the range of 301-1000 people. It can be said that the large number of screening studies has an effect on the selection of the working group in large size.

### 5. Data collection tools used in the studies examined

Information on the data collection tools used in the theses examined within the scope of the research is given in Table 3. When the data collection tools used are examined, it is seen that the scales of attitude, perception, value, belief and awareness, etc. are used the most. In addition, it is seen that interviews and surveys are also used. It was aimed to determine the opinions regarding the education and training process carried out for sustainability by conducting interviews.

**Table 3** *Data Collection Tools Used*

Data collection tool	Frequency(f)	
Survey (110)	Likert	79
	Open-ended	14
	Multiple choice	14
	Other	3
Achievement test (36)	Multiple choice	18
	Other	10
	Open-ended	8
Scales (180)	Scale of attitude, perception, value, belief, awareness, etc.	120
	Behavior scale	15
	Other	10
	Environmental awareness scale	8
	Qualification scale	5
	Organizational sustainability, identification and fairness scale	4
	Leadership scale	4
	Skill scale	3
	Environmental literacy scale	3
	Scale of familiarity and understanding	2
	Interest scale	1
	Motivation scale	2
	Metaphor	2
	Trend scale	1
	Scale of sustainable school-family cooperation teachers' expectations from parents	1
	Learning organizations survey	1
	Environmental education survey	1
	Inventory of multiple intelligences	1
	Survey of factors affecting the use of teacher research in professional development	1
	Ecological footprint calculation questionnaire	1
Carbon footprint calculation questionnaire	1	
Interviewing (83)	Structured	6
	Semi-structured	63

Focus group	7
Other	7
Documents	48
Observation	24
Alternative Assessment tools (student diary, concept map, self-assessment form, opinion form)	9
Cleaning information form	1
Drawing	9
Other	6
Video and audio recording	4
Web-based tools and tests (ecological footprint calculation machine)	3
Story	1
Word attribution test	1

## 6. Data analysis techniques used in the studies examined

The data analysis techniques used in the studies examined are given in Table 4. In the studies examined, it is seen that inferential statistics are used the most. It is seen that the most inferential statistics are used in analyses such as t test, ANOVA, factor analysis.

**Table 4** Data analysis techniques

Data analysis technique	Frequency	
Descriptive Statistics (93)	Frequency-percentage table	60
	Central trend measures	22
	Chart-table	10
	Frequency analysis	1
Inferential statistics (241)	t test	79
	ANOVA/ANCOVA	52
	Correlation	32
	Factor analysis	28
	Non-parametric	27
	Regression	12
	MANOVA/MANCOVA	7
	SWOT analysis	2
	Chi-square test/ YEM analysis	1
	Qualitative analysis (133)	Content analysis
Descriptive analysis		34
Swot analysis/ Inductive analysis		2
Difference analysis / Systematic analysis // needs analysis / Document analysis / Frequency analysis / pattern coding		1
Unspecified		3
Other analytics	5	

## 7. Results obtained in the examined theses

In the results of the studies examined, there are many results such as positive effects on the results of education and training, and the scale has been successfully developed as a result of scale development studies. The results obtained are presented in detail in Table 5.

**Table 5** *Results*

Theme	Sub-theme	Result	f
Faith/ attitude/ value/ perception/ awareness	Leveling	High	18
		Sufficient/Positive	9
		Insufficient/Negative	9
		Miscarriage	7
		Middle	5
	Affecting variables	Gender	20
		Level/Academic level	13
		Take an environmental class/follow an environmental broadcast	6
		Membership in an environmental organization	5
		Age	4
		Seniority year/length of service	4
		Branch factor	4
		Department/university/program of study	3
		Father's education level	2
		Place of residence/level of development of the city where you live	2
	Ineffective variables	Parental education level/ Environmental sensitivity/ Income level/ Interest in plants and animals in childhood	1
		Gender	15
		Family monthly income	7
		Faculty graduated	5
		Level/academic level	5
Maternal education level		4	
Parental education level		4	
Place of residence/region of duty		4	
Seniority		3	
Department/department of study		3	
	Branch factor	2	
	Education / training status	2	
	Father's education level	2	
	Autobiographical/demographic factors	2	

	Marital status	2
	School type/ School service area	2
	Follow publications about the environment / become a member of an environmental organization	2
	Taking an undergraduate environmental science course/in-service training	2
	Hand-face washing and bathing frequency	1
Training provided	Increase in belief/attitude/awareness/perception/consciousness/tendency	64
	Increase in level of knowledge/conceptual comprehension/academic achievement	11
	Increase in behavior	4
	Positive increase in the view towards sustainable development	2
	Increased motivation	2
	Increase in self-sufficiency/ Decrease in ecological footprint/ Increase in the level of global citizenship/ Development in high-level skills/ Ensuring the sustainability of education	1
Related studies	Attitude-competence/self-efficacy/awareness/belief/behavior relationship	7
	Perception-belief/organizational sustainability level/productivity/professional development relationship	4
	Attitude, behavior, awareness score-carbon footprint total score/ Attitude-parent education level/ Attitude-academic success/ Belief-perception relationship/ Environmental literacy-socio-demographic knowledge relationship/ Attitude-socio-demographic knowledge relationship/ Intelligence field-attitude/ Number of courses taken about the environment-level of matching sustainable development indicators/ Department-academic success/ Branch-sustainable development association/ Competence-knowledge relationship	1
	Alignment of goals/achievements	4
	Program is inadequate/needs to be improved	2
Review a curriculum	Giving more weight to some dimensions of sustainable development/ Differences in the distribution of goals on a class-by-class basis/ Not giving enough space to sustainable development in the aims and content of the course/ Providing learning opportunities/ Course duration is insufficient/ Unbalanced distribution of goals/ Not giving sufficient intensity to skills/ Not containing specific concepts	1
	To provide more sustainability environment/practices in private schools	2
	Shared leadership/ Ensuring physical sustainability/ Emergence of different leadership qualities/ Belief in the importance of sustainable development education	1
Scale development	Develop a valid and reliable scaling tool	9
Analysis of theses	Maximum number of interview forms/documents as a data collection tool	2
	Working with the most higher education students/teacher candidates/ Highest use of the mixed approach	1

In the studies carried out, it is seen that beliefs, attitudes, perceptions, values, awareness and tendencies are determined for sustainable development, sustainability and environmental sustainability. In the placement studies, high level results were mostly reached. Variables that are effective and not effective in belief, attitude, perception, value, awareness studies are discussed. Effective variables include gender, academic level/level, taking environmental courses/following a publication about the environment. When the ineffective variables are examined, gender, family monthly income, faculty and academic level come first. It is noteworthy here that gender comes first in both influential factors and non-influencing factors. Another theme is the application, method, technique and results of the training provided. In these studies, the number of studies in which an increase in beliefs, attitudes, perceptions, awareness, values and tendencies is mostly discussed is quite high. In addition, the training provided increased the level of knowledge, conceptual understanding and academic success of the working group. Another theme is associated work. In the studies on this theme, the relationship between different variables is examined. Here, the most focus is on the relationship between attitude and competence, self-efficacy, awareness, belief. Then come the studies that examine the relationship between perception and belief, organizational sustainability, productivity and professional development.

Another theme reached in the studies examined is the theme of curriculum review. In this theme, the curriculum, achievements, in short, the studies in which the curriculum is examined. Here, it was concluded that the sustainable development goals and the achievements in the program were compatible with each other but still insufficient. Then, according to the results obtained in the studies where environment-based schools such as eco schools and any institution were examined in terms of sustainability, it was concluded that leadership was shared in institutions and physical sustainability was ensured. In addition, it has been concluded that practices and environments related to sustainability in private schools have been put into more services. The last themes are scale development and studies in which theses are examined. In the theme of the analysis of theses, where the validity and reliability studies of the scale developed in the scale development studies are carried out, the most used method, study group and data collection tools are included.

## 8. Recommendations made in the studies examined

The recommendations made in the study results examined are grouped for educators, researchers and politicians and presented in Table 6.

**Table 6**

### *Recommendations*

Recommendations for researchers	Working with different samples	75
	Increase sample size	44
	Working with different variables	37
	Application of different research methods	33
	Use of different data collection tools	21
	In different schools	12
	More in-depth research	7

	Longer-term studies	7
	Interdisciplinary studies	6
	Repeating the work with different participants in different contexts	6
	Application in different units	5
	Measurement tool should be developed and used in different studies	4
	More work	3
	In different cultures	1
Recommendations for educators	Conferences, trainings, seminars, information activities and in-service trainings	77
	Enrichment of the educational environment	37
	Information studies on the basis of university	6
	Increasing the activities of environmental clubs in schools	4
	Expansion of the course scope	3
	Creation of out-of-school learning environments	3
	Out-of-class apps	2
Recommendations for politicians	Motivate students	1
	Adjustments to curriculum/curriculum and textbooks	71
	Creation of practical trainings	36
	Addition of sustainable development to the curriculum as a compulsory or elective course	29
	Holistic consideration of the social, economic and environmental dimensions of sustainable development	9
	Ensuring teacher qualification	8
	Developing a sustainability-oriented education policy	6
	Increasing the number of science course hours	2
	Making sustainable development a state policy	2
	Developing and implementing awareness projects for sustainable development	1
Recommendations for parents	Adding gains towards sustainability	1
	Increasing the number of eco-schools	1
	Parent involvement	21
	Ensuring school-family cooperation	7
	Public information	7
Other	Digital resource development	6
		2

When the suggestions are evaluated, it is recommended to use different research methods and data collection tools by considering different variables, increasing the sample size with different samples. It is recommended to implement conferences, seminars, in-service trainings for educators and to enrich the educational environment. For politicians, it is recommended to make arrangements in the curriculum, curriculum, textbooks, to create practical trainings, and to add sustainable development to the curriculum as a compulsory or d elective course. For parents, the school is in the direction of providing family cooperation and parent participation.

## **Conclusion and Discussion**

In parallel with the increase in the world population, the encounter of environmental problems has pushed humanity to look for solutions in this regard. There are many studies on sustainability, which is one of these solutions, in a wide variety of sectors. The aim of this study is to create a perspective for national educational sustainability by examining the studies carried out in the field of education on sustainability, sustainable development and environmental sustainability by considering the three dimensions of sustainability. As a result of the examination carried out between 2004-2022, it can be said that the number of studies in the field of "Sustainable Development and Education" in Turkey has increased in Turkey as well as in the world (Hallinger & Chatpinyakoop, 2019). Although there is a decline in 2020, it is thought that this is due to the global pandemic period. In this study, data were evaluated in the context of sustainable development, sustainability and environmental sustainability. In our country, when it comes to sustainable education, environmental education comes to mind first, but as a result of the examination, it is seen that the number of sustainable development studies is higher. Many international analysis studies are consistent with this conclusion (Bornmann et al., 2019; Huang, Wu & Chiu, 2015; Ramayah, Yeap & Ignatius, 2017;).

In the majority of the studies examined, it was observed that the objectives were aimed at measuring attitude, perception, awareness and adequacy of sustainability in terms of sustainability. Apart from this, most of the participants are the studies on determining their opinions on the subject, examining the sustainability situations of existing institutions and sustainability issues in training programs. There are also scale development studies on the subject. In the light of these findings, it can be said that sustainability will be realized not only by using existing technologies but also by changing the perspectives of societies on the subject and even shaping their lives accordingly, and the majority of the studies are carried out on attitude, perception and awareness issues for this reason. The results of the analysis study conducted by Rodríguez Aboytes and Barth (2020) support the findings of our study and in both studies, the most common goal of the studies in the field of sustainability was determined as students' understanding of sustainability.

In the studies examined, it is seen that the most quantitative method is preferred. Quantitative methods were also preferred the most screening method. Since sustainability is a broad concept, quantitative methods are thought to be more effective in terms of data collection, data analysis and reporting of results. In the studies, the most educators were selected as the sample group.

This result is consistent with Yıldırım's (2020) study. This is followed by teacher candidates and secondary school students respectively.

In general, 30 were studied with a working group size of 1 to 1000. In the quantitative studies examined, the Likert type questionnaire was used as a data collection tool. Among the scales, the most attitudes are perception, value, belief, awareness, etc. scale, followed by the behavior scale. As a qualitative data collection tool, the most semi-structured interviews were conducted. Secondly, the number of incoming document analysis studies is also quite high. In the studies examined, inferential statistical methods of quantitative analysis were mostly used. It can be said that this is due to the evaluation of scales in case studies. Later, it is seen that the frequency-percentage table, one of the descriptive statistical methods, is in the content of the study. In qualitative analyses, it was revealed that descriptive analysis was used the most content. When the results of the studies were examined, it was found that positive effects were seen in general and the studies to develop scales resulted in success.

When the variables affecting the studies were examined, it was observed that gender and academic success were affected. When the ineffective variables were examined, gender was determined as the most ineffective variable. In this case, gender has been identified as both an effective and an ineffective variable.

According to the purpose of this research, gender may be effective in some cases but may be ineffective in others, that is, the effect on behaviors or attitudes related to sustainability issues may vary depending on individual factors and environmental conditions. In the studies where trainings were given in the context of sustainability, it was observed that there were quite a lot of studies with an increase in belief, attitude, perception, awareness, value and tendency. In addition, the training provided increased the level of knowledge, conceptual understanding and academic success of the working group.

In the studies where the relationships of different variables on sustainability are examined, the relationship between attitude and competence, self-efficacy, awareness and belief is mostly focused. Another theme that draws attention in the studies examined is the theme of curriculum review. In these studies, which aim to make sustainability education more accurate and comprehensive, results such as the compatibility of achievements and the inadequacy of the program have emerged. In addition, it was concluded that the achievements of the sustainable development goals and the program were compatible with each other but still insufficient. Another theme found in the study is institutional review.

Institutions were examined on sustainable leadership or sustainability of the corporate environment and it was determined that leadership was shared in institutions and physical sustainability was achieved.

In the studies conducting a sustainable environment review, it was concluded that the practices and environments related to sustainability of private schools were offered to more services. This can be explained by the fact that private schools have a larger budget and can allocate more resources. It can also allow them to develop more customized and effective programs on sustainability, as their student numbers are smaller.

Another result of the studies examined is that the validity and reliability studies of the developed scales were carried out, and in the theses analyzed, the interview form was used as the maximum data collection tool. When the results are examined, it is stated that the researcher should work with different samples, increasing the sample size and different variables. For educators, there are suggestions that training, seminars, information activities should be carried out mostly for students and in-service training activities should be carried out for teachers. Secondly, the most repeated proposal is to enrich educational environments.

There is a suggestion for politicians that education programs should be regulated the most. In addition, there are many suggestions for giving it as practical training. In the suggestions for parents, it was reiterated that cooperation should be made with the school the most. Based on these results, it is possible to say that the studies try to determine the degree to which educators and individuals who are candidates to become educators can measure sustainability awareness and awareness and how much they can transfer this to future generations. These studies support UNESCO's (2023) sustainable education plans. In particular, the degree to which sustainable awareness, attitude and awareness can be increased thanks to the training to be given systematically with the situation studies and scales used has been revealed.

## **Suggestions**

As a result of the analysis work carried out, the following suggestions can be made;

- Although there are many studies that analyze sustainability studies, the number of those who examine them in terms of results and recommendations is insufficient. In this context, the number of studies should be increased.
- Many of the theses participating in the study are master's theses. In this context, the number of doctoral theses should be increased.
- This study includes an evaluation in which Turkish articles and theses are examined in the criteria of Turkey. A more comprehensive screening should be carried out in future studies.
- In future studies, the number of studies that perform in-depth examination should be increased by using the qualitative method in addition to the quantitative method.
- In particular, the number of sustainability studies on preschool students has been insufficient. The number of studies for this group and other educational students should be increased.

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