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Is the Concept of Sustainable Development Meaningful for Teacher Candidates?

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Abstract

The way to achieve sustainable future indicators is through teacher candidates, and in this case, there is a need for research on how sustainability outcomes are supported. To respond to these factors, the opinions of teacher candidates were obtained to raise a sustainable society and develop solution-oriented approaches to environmental-based problems. So, this research is depending on identifying the concerns and possible solutions that teacher candidates have regarding sustainability. In this study, a semi-structured interview form was used as a data collection tool and interviews were conducted with 72 teacher candidates from six different departments. This research is important for the literature in terms of examining the significant level of sustainability impact, determining the opinions of teacher candidates, who will guide future generations on supporting sustainability-oriented studies regarding the concept of sustainable development. As a result of the research, the teacher candidates have negative views on sustainability and real-life applications, and the path to sustainable development goals is through raising educated individuals, and that in-class and out-of-school teaching practices play an important role at this point. In addition to all these, the future of humanity is either directly or indirectly linked to the sustainable future, and therefore it is necessary to take action together with sustainable generations for a sustainable future.

Keywords: Sustainability, Sustainable development goals, Sustainable future, Education

Introduction

Sustainability is a multifaceted concept that can be interpreted in various ways depending on the specific context. It encompasses different aspects such as biodiversity, global health, and more (Murillo-Vargas et al., 2020). The concept of sustainability, which has a conceptual history, has managed to stay on the agenda, especially after the 1970s in line with developments in the world such as industrialization, migration, and population growth (Yüzüak, 2021). As a topic, sustainability has a wide range of contexts which refers to a complex of economic, environmental, and social conditions, often referred to as sustainability's "three pillars" or "components". The definition of sustainability and sustainable development has changed over time to reflect a larger understanding of how nature and humans are intertwined, connecting environmental progress to social and economic advancement (Mathiasson and Jochumsen, 2022). Sustainable development has emerged as a vital route for society to adapt to changing circumstances and resource limitations. It was first defined in the Brundtland report of 1987 as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987). Long-term economic and environmental stability is the main objective of sustainable development and it can only be attained by acknowledging and integrating social, environmental, and economic factors at every stage of the decision-making process (Emas, 2015).

Sustainable development means different things to different people. (Redclift, 1991). Although the concept of sustainability has emerged to draw attention to our contemporary society's duties and responsibilities, as well as to raise awareness about the use and management of basic vital resources, the importance of social and economic needs is undeniable. Thus, the main focus of sustainable development is the global spread of a standard of living and average quality of life that we can guarantee, comprising of three important basic vital relations, which are environmental, economic, and social oriented (Özgen, 2019). These three

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aspects of sustainability are multidimensional, raising the question of how to balance and evaluate goals. Each of the three domains is referred to as a system, and each has its logic: economic systems, environmental systems, and social systems (Harris, 2000). Although the concept of sustainable development is constantly evolving and changing, there are three fundamental dimensions: environmental, social, and economic. (UNESCO, 2006; Ciegis, Ramanauskiene & Martinkus, 2009; Bilgili, 2017; Kılıç, 2012; Arya, Srivastava & Jaiswal, 2020):

Environmental Dimension

This dimension is primarily concerned with the protection of nature and the environment (Pawłowski, 2008). Thus, the biological and physical order should be maintained in a balanced way. The goal is to adapt ecosystems to ever-changing environmental conditions. An environmentally sustainable system involves the planned consumption of renewable and non-renewable resources, keeping the resource base stable (Tıraş, 2012). An environmentally sustainable system should provide a stable resource base by avoiding overuse or environmental degradation functions of renewable resource systems and by consuming non-renewable resources. This includes the conservation of biodiversity, atmospheric stability, and other ecosystem functions that are not normally classified as economic resources (Harris, 2000). This dimension includes fundamental issues related to the "environment/nature theme such as air/atmosphere, land, sea/ocean, soil, water, and biodiversity (global climate change, deterioration of air quality and forest areas, intense urbanization, drought, natural disasters, natural and human pollution, migration and ecosystem degradation)" (Özgen, 2019: 4).

Social Dimension

Humans are at the center of the social dimension. A socially sustainable system is a system that requires adequate and equal social services such as education, health and security, gender equality, responsibility as a citizen, and participation. (Tıraş, 2012). Education, health, livelihood, security, justice, population, political, participation, administration, social, and cultural policies are the main issues associated with this dimension. It is the implementation of necessary political, social, and cultural policies to end poverty, ensure justice, improve nutrition, livelihood, and human living conditions, preserve and protect cultural values, and raise the level of education in all layers of society (Özgen, 2019). For a system to be socially sustainable, there must be broad equality, sufficient access to social services like health and education, gender equality, political responsibility, and political engagement (Harris, 2000). Conversely, deterioration of the social environment can occur like that of the natural environment. Numerous elements make up the environment in issue, including living arrangements, interpersonal connections, culture, customs, and spirituality. It is necessary to balance human-nature connections with the social dimension since all forms of environmental activities are mediated by socio-cultural paradigms in a given community (Pawłowski, 2008).

Economic Dimension

According to Harris (2000), an economically sustainable system must be able to continuously create products and services, offer affordable government and external loans, and stay away from excessive sectoral imbalances that would negatively impact industrial or agricultural output. A system that enables the use of natural resources and the environment to be presented in a fashion akin to that of 'normal' economic activity—that is, in financial terms—needs to be implemented. This is because the economic dimension is crucial to sustainability (Pawłowski, 2008). Economic activity includes the production and consumption patterns that exist in almost all societies, and the policies related to this order also include basic issues related to the economic dimension. This dimension covers fair sharing, profit order, R&D activities, stability, growth targets, social financial situation, income per capita, industry and service production, infrastructure, energy consumption, waste generation, and management practices (Özgen, 2019).

As previously stated, the concept of sustainability is complex and multidimensional, but it is generally defined through three basic structures: economic, environmental, and social (Strezov, Evans & Evans: 2017; Berglund & Gericke: 2016; Ciegis et al., 2009). Sustainable development dimensions and principles are inextricably linked to each other, integrating in unity (Barak and Avcı, 2022). Undoubtedly, these dimensions have an irreplaceable and indispensable place within themselves (Kılıç, 2012). To clarify this situation, the relationship between sustainable

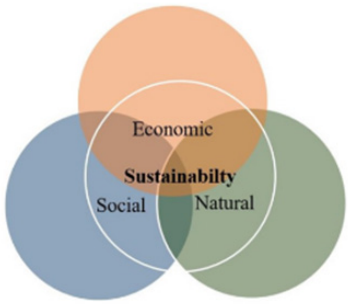

Fig. 1: Relationship Between the Dimensions of Sustainability (Shallcross and Robinson, 2007)

development dimensions is given in Figure 1.

The interactions between different components of sustainable development are depicted in two widely used visualizations: Three overlapping circles, which stand for the economy, society, and environment as the three pillars of sustainable development, are represented by one of them. The other depicts the economy immersed in the environment and developed inside society. In the second, the importance of the environment to human society and, by extension, the economy is discussed (Nevin, 2008 as cited in Yalçınkaya, 2013). The interaction of these dimensions, both within and between them, could be associated on a consistent and planned basis for the above three dimensions to be sustainable. This relationship sees sustainability as three overlapping circles representing social, economic, and nature (Figure 1). Where these circles intersect is the place sustainability exists. The other connection to sustainability is a series of concentric circles and they have inseparable parts (Shallcross & Robinson, 2007). On the other hand, sustainable development is classified with principles in the triangle of society, economy, and environment.

Sustainable development and education is a lifelong process of enhancing human well-being. In this context, education for sustainable development is fundamentally concerned with the links between human awareness of nature as a whole and the social systems that support it, as well as the health of our planet and the responsibilities of the present and future world (Haque, 2013). Education is critical in encouraging individuals to adopt more sustainable lifestyles as well as the necessary attitudinal and behavioral changes (UNESCO, 2015). Alexandru et al., (2013) stated that schools should include education for sustainable development in their curricula. Despite the United Nations' broad policies, there is a scarcity of qualified research on how education for sustainable development is implemented in curricula and how it affects the classes (Nazir et al., 2011; Læssøe et al., 2009). UNESCO has issued five recommendations to legislators on how to incorporate education for sustainable development at the national level: "policy development, management and resources, program development, educator quality, and public awareness" (UNESCO, 2015).

According to Finnveden et al. (2019), societal aspirations for sustainable development are greatly aided by higher education. In this regard, educating teachers is essential to ensuring that future generations are raised with sustainable ideals and practices. Real-world application of sustainability may be challenging if it is not prioritized in faculty and teacher education programs (Elliott and Inwood, 2019). In addition to instructors, prospective teachers play a critical role since classroom practices are believed to impact students' experiences and involvement in sustainable development goals outside of the school setting (Öhman & Sund, 2021). There is a need for research on sustainable development indicators among teacher candidates and how these correlates to sustainability outcomes. This highlights the originality and importance of the present study in assessing the competencies of prospective teachers who will shape the next generation. The acquisition of knowledge is the foundation for a society's capacity to advance to a higher degree of growth and prosperity. Societies that have a strong understanding of sustainable development are also capable of social, economic, and environmental advancement. Our primary objective is to educate the person during the construction of this complete system. Education may help the issue by increasing an individual's awareness of the availability of knowledge at any time and place and equipping them with the necessary skills to participate in sustainable development and so teacher candidates have a lot of responsibility currently. It is believed that bettering oneself beforehand will help future educators create mindful and aware people (Eröz, Günay & Coşkun, 2023). Therefore, in this research, it was aimed to examine the functional and meaningful level of sustainability effect and determine the views of teacher candidates on the sustainable development concept. The following research questions guide this study:

1. What are teacher candidates' knowledge and opinions about "sustainability and real-life applications"?
2. What are teacher candidates' views about the "sustainable development in the education"?
3. What are the teacher candidates' opinions about the "sustainability and future of the humanity"?

Method

Research Design

The research design of the study was conducted based on the qualitative method. To get more information about the concept, phenomenology was preferred to use in this study. With the help of this strategy, more detailed and rich interpretations can be made. Phenomenology technique indicates how people understand and interpret their experiences (Creswell, 2002; Creswell & Poth, 2016; Patton, 2014).

Participants

Study group of the study composed of the 72 teacher candidates who are the students at six different departments of the faculty of education. Categorized version of them are represented with the descriptive table in accordance with the education department of the faculty, gender type and grade level as a demographic feature below.

Table 1: Descriptive Table of Study Groups' Demographic Features

Name of the Department	*Gender Type*		*Grade Level*		
	Female (F)	*Male (M)*	*2nd*	*3rd*	*4th*
Science Education (Sci)	24	10	13	1	20
Primary Education (Pri)	7	1	2	3	3
Social Studies Education (Soc)	4	2	1	0	5
Mathematics Education (M)	5	0	0	1	4
Turkish Education (T)	8	3	0	2	9
Guidance and Psychological Counselling (G)	4	4	1	1	6
	52	20	17	8	47
Total					72

In the table 1, they are presented that the department name, gender type and grade level as coded version. Each one of the participants will be showed as coded. As an example, one of them was explained. The first letter part is for the department; secondly, the number is about grade level; and the last one represents the gender type of the participants (i.e. M4M: Mathematic education, 4th grade, male).

Data Collection Tools, Data Collection Procedures and Data Analysis

Semi-structured interviews were performed to investigate the teacher candidates' views on sustainable development. The interview form includes three items to evaluate the demographic characteristics of the working group and eight questions in total. These were categorized under six themes, which were sustainability and real life, importance, aim, education, technology, and future. Concepts and relations among the concepts are revealed via content analysis. Groups were created according to the similarity of expressions in the analysis of student opinions. MAXQDA 20 data analysis program was used for a code map of qualitative data. Data were coded using the program and themes were created and organized thereby finding the common aspects among the codes, and the findings were completed and interpreted. Besides, those expressions deemed important were directly quoted to explain the opinions of students about how they evaluate the process, and they were presented by the tables in the findings part (Creswell, 2007). Some of the interview questions that were developed in the pursuit of this research were given below.

1. Explain your practices and efficiencies regarding global practices in the field of sustainable development in 2030.
2. How can the feasibility and sustainability of your teaching profession be better integrated into your lessons?
3. Is it sustainable to choose what kind of activities to do in your lessons within the scope of sustainability by building your teaching profession?
4. How do you evaluate technological developments towards sustainable development? Explain with reasons.

Reliability and Ethics

Ethical permission was received (2024-SBB-0153). Miles & Huberman (1994) use persuasiveness for internal validity and transferability and suitability concepts for external validity. Internal validity has to do with to what extent the observations and interpretations of a surveyor regarding a condition reflect reality. As for the external reality, it has to do with the generalizability of survey results. The suggestions of Miles & Huberman (1994) were considered to ensure internal validity. According to this, study findings were tried to be evaluated in a manner proper to the environment where data were obtained for internal validity. Findings are consistent and meaningful within themselves. The data obtained were substituted by different sources of data. The findings obtained comply with the conceptual framework created earlier. As to the external validity, it was tried to define the method of interview in detail. It tried to define what has been done about data collection, processing, analysis, interpretation, and the issue of reaching the results. The scope of the records was tried to be explained in detail as regards the methods and procedures followed during the interview. Raw data from the study were kept so that they could be analyzed by others.

To increase reliability in qualitative research, techniques including member verification, prolonged participation, expert evaluation, and the utilization of various data sources are frequently employed. To reduce risks to validity and increase credibility, several measures were implemented in this investigation. The participants were first interviewed in person to guarantee sufficient participation, and the time and location were set up following their preferences. Second, experts assessed a draft interview form for content validity, and after considering their input, the final semi-structured interview form was developed. The pilot data set was not

included in the study. The study's principal participants were then the focus of the last round of interview questions. The participants decided on a time and place for the interviews, which were held there.

The degree to which study findings may be applied to different contexts or circumstances is known as transferability, and it is a crucial factor in qualitative research. External validity refers to the ability to extrapolate results from one set of circumstances to another set of circumstances that are comparable. The research report must provide detailed information on the study's participants and background to guarantee external validity. The reader must, however, adapt the study's conclusions to different circumstances. Purposeful sampling techniques, including criteria sampling, were used in this study to identify the participant group to improve external validity. To secure consent forms and participant support, the researcher spoke with the participants orally about the study and asked for their signatures. One strategy to improve descriptive validity is to include several researchers in the process of gathering and interpreting data (Christensen et al., 2015). The responses from the participants were cross-checked against the themes created by the researcher and field experts (n=3) to preserve descriptive validity and make sure that no response was missed.

Findings

After researchers have interviewed with the teacher candidates, they categorized the opinions of them under five categories: sustainability and real life, importance, aim, education, technology, and future. Figure 2 shows the categories and codes.

In Table 2, the codes obtained under sustainability and real-life themes were presented. The findings mentioned above are evaluated, and it can be stated that teacher candidates have unfavorable opinions about sustainability. On the below, Table 2 shows the categories and codes with quotes from teacher candidates' opinions.

When Table 2 is evaluated, as a finding regarding the first sub-problem of the research, it is stated that the opinions of the teacher candidates are that sustainability practices are not put into action sufficiently in real life. It is seen that using renewable energy sources and choosing recyclable products are considered as basic sustainability activities in daily life by teacher candidates. In Table 3, the codes obtained under the importance of sustainability were presented. When the findings mentioned above are examined, it can be stated that teacher candidates have an awareness of the need for sustainability. On the below, Table 3 shows the categories and codes with quotes from teacher candidates' opinions.

In Table 4, the codes constructed under the goal of sustainability were presented. If the findings that are presented on the map are evaluated, it can be stated that most of the teacher candidates are aware of the goals of sustainability. They emphasized that they were able to justify the importance of sustainability studies and that the main reason why sufficient importance is not given is due to lack of social awareness. Table 4 below contains the categories and codes with quotes from the opinions of teacher candidates.

In Table 5, the codes constructed under education were presented. Findings that are presented on the map are evaluated most of the teachers are candidates for education

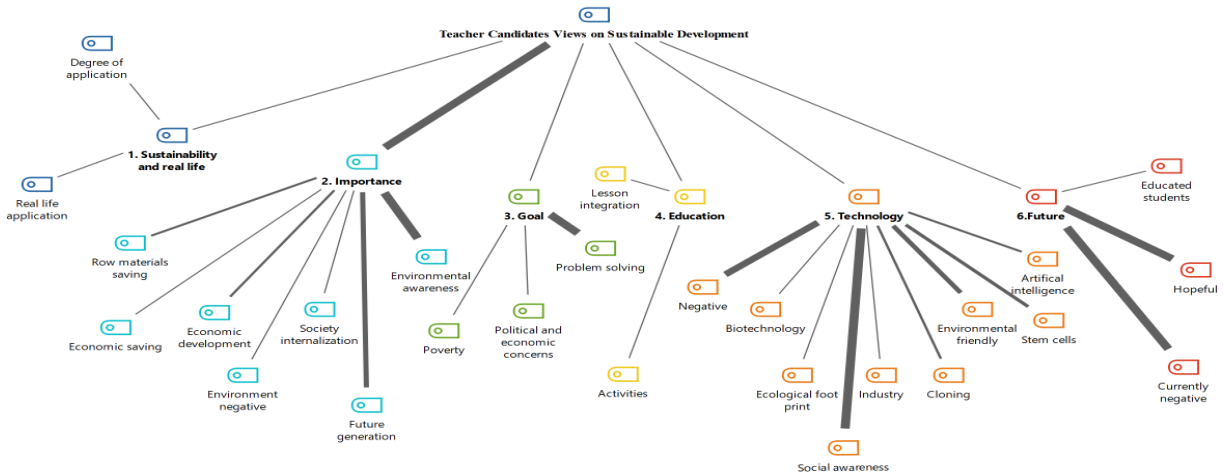

Figure 2: Teacher Candidates' Views on Sustainable Development

Table 2: Qualitative Results for Sustainability and Real-Life

Theme	Codes	Subcodes	Quotes
Sustainability and real life	Degree of application	Low	Pri4F: "I think that sustainability cannot be implemented in real life. Because the negative effect of the industrial developments is increasing day by day and necessary precautions aren't taken against these."
		Negative	P46M:"Nowadays, sustainability doesn't have importance, because people are selfish, and they just give importance to themselves."
	Real-life application	Focusing renewable energy source	Soc4M: "Renewable energy sources should be preferred, and we should direct people to them."
		Biotechnological applications	G4M: "To protect and obtain sustainable foods, people use biotechnological techniques."
		Not using extra product	T3F: "Not buying extra products can be helpful for sustainability."
		Usage of glass product	T3F: "It can be the solution to use renewable glass-made products rather than plastics."
		Decreasing usage of plastic products	T3F: "Plastic-based products shouldn't be used. Instead of plastic, we should prefer glass."
		Wind roses	G4M: "Wind roses should be preferred, and filters can be useful for the prohibition of the smoke from factories."
		Solar panels	Pri2M: "Solar panel fields can be shown as an example."
		Zero waste project	T4F: "Zero waste product projects can be told as an example, in this way, sources can be saved."
		Examples	T4F: "For example, to prevent the excess usage of plastic bags, nowadays they are sold for money."

Table 3: Qualitative Results for the Importance of Sustainability

Theme	*Codes*	*Quotes*
Importance	Raw material saving	Soc4F: "We must use our resources in education, health, population, and shelter without wasting them."
	Economic saving	T3F: "Sustainability is important in terms of saving and reducing economic expenses."
	Economic development	Pri4F: "It can support economic development, so it is very important in this respect."
	Environment negative	Soc2M: "Yes, it is important, I think it is important in a way that poses a life-threatening risk, and the reason is simply that water problems and air pollution are the most important problems for people."
	Society internalization	Pri2M: "We must impose this on society, and they must internalize it so that we can leave a beautiful world to future generations."
	Future generation	Soc4M: "It is extremely important for a society to maintain the existence of the country and even the world and to leave it on to future generations."
	Environmental awareness	T3F: "We must be environmentally conscious parents and we should not make the greens and blues turn to the black, so that our children can see the clean sky."

for sustainability. On the below, Table 5 shows the categories and codes with quotes from teacher candidates' opinions.

In Table 6, the codes constructed under education were presented. Findings that are presented on the map are evaluated; it can be seen that most of the teacher candidates have thoughts about the negative and positive effects of technology on sustainability. On the below, Table 6 represents the categories and codes with quotes from teacher candidates' opinions.

Table 4: Qualitative Results for Goals of Sustainability

Theme	*Codes*	*Quotes*
Goal	Poverty	T4F: "There were goals such as an end to poverty and equality. If these goals can be fully implemented, a more spacious quality of life can be offered for both humanity and the environment."
	Political and economic-concerns	T3F: "If all the decisions taken in the co-policy documents were implemented, our future would be green, but unfortunately the administrators think more about their political and economic concerns."
	Problem-solving	T4F: "There is a goal of saving energy, and I think this is a very meaningful goal. Because we live in a world that is already developing and whose population is rapidly increasing, it is very important to save resources and act with this in mind. Another goal is to find recyclable elements and integrate them into every aspect of our lives. Because, in this way, the circulation that occurs allows us to achieve a more efficient world."

Table 5: Qualitative Results of Education for Sustainability

Theme	*Codes*	*Subcodes*	*Quotes*
Education	Lesson integration	Raising Environmental Awareness	T4F: "First of all, I try to raise awareness among my students. Since I will be a role model for them, I take care to use recyclable items. I also design a meaning of the activities we do regarding environmental awareness."
		Community service	G4M: "Community service projects can be carried out."
		Nature Activity	Soc4M: "I introduce the technique of learning by doing and experiencing, and I explain these to my students by taking them to recycle facilities and having them do it in the open field."
		Field trip and observation	Sci4F: "To ensure that sustainability activities can be carried out at the student level, I try to develop interest and attitude on this subject firstly, then talk about its place and importance in our daily lives and prepare trips related to the subject."
	Activities	Seminar	G4M: "While doing my job, I plan to organize seminars to increase the environmental awareness of students, teachers, and parents."
		Zero waste project	T4F: "In my teaching profession, I use zero project work to raise students' awareness and I will try to make them apply this concept in every aspect of their lives."
		Garbage collection	T4F: "For example, we can go on a trip to a forest or a national park in that area and organize a garbage collection activity with the students."
		Recycling projects	T4F: "In my teaching profession, I think that I will prefer to do activities such as ensuring the participation of students in awareness-raising conversations on this subject, carrying out project studies, and recycling activities."
		Beach cleaning	T3F: "Activities such as beach cleaning, collecting acorns, and making items we can use in daily life from paper rolls and fabrics at home can be organized."
		Planting tree	T4F: "Environmental sensitivity can be increased; tree and sapling planting activities can be carried out in the same way."

In Table 7, the codes obtained under future were presented. Findings that are presented on the map are evaluated; it can be stated that teacher candidates have some future expectations about sustainability. On the below, Table 7 represents the categories and codes with quotes from teacher candidates' opinions.

Drawing from the findings of Table 2, while some of the teacher candidates think that the degree of application of sustainability studies is low, some of them think that it is rarely implemented, and this is because of the insensitive people's activities. Then, when we look at the real-life application of

Table 6: Qualitative Results of Technology Effect on Sustainability

Theme	*Codes*	*Quotes*
Technology	Negative	G3M: "Technological developments have positive and negative aspects, for example, machines in recycling factories are also a product of technology, but we can also consider cars as a product of technology and exhausting them has a negative the impact on environment."
	Artificial intelligence	G4F: "Mechanization in agriculture with advanced technology, mechanization in sustainability, the use of artificial intelligence facilitates the transfer of information to people, and at the same time facilitates sustainability."
	Biotechnology	G4M: "While technology has increased consumption and caused excess product output, harming the environment, positive results can be achieved with biotechnological applications."
	Ecological footprint	T4F: "Some aspects of technological developments negatively affect sustainable development; unnecessary purchases are one of them and increase our ecological footprint"
	Social awareness	Pri2F: "As technology develops, machines can be produced to reduce environmental pollution, and to increase awareness, ads can be made on social media."
	Industry	M4F: "Along with industrialization, the negative effects of harmful waste on nature have increased, and consumption has accelerated with the development of technology."
	Environmentally friendly	T4M: "As the technology improves, it also facilitates recycling and thus more environmentally friendly products are produced."
	Cloning	Soc4F: "Nowadays, cloning is very effective for the future of humanity, the sustainability of living life without needing nature."
	Stem cell	M3F: "The method of stem cell therapy developed with the advancement of technology is very effective in the treatment of chronic diseases."

Table 7: Qualitative Results of Sustainable Future

Theme	*Codes*	*Quotes*
Future	Educated students	T3F: "If we provide our students with environmentally friendly human beings, sustainability in our future will be meaningful."
	Hopeful	Pri2M: "I am hopeful for the future if we care about and implement sustainable development." Pri4F: "If we become environmentally conscious societies that understand the importance of recycling and apply it well, the future of humanity will be positively affected in terms of sustainability."
	Currently negative	Pri2M: "Unfortunately, I see the current situation as bad. I see that even though we try to do something individually, the policies made by the state remain only in words."

sustainability, we can see in teacher candidates are aware of sustainable development studies. Moreover, Table 3 shows us that most of the teacher candidates think that sustainability is necessary and important for future generations. Participants also line up with sustainable development goals in Table 4. They are for the thought that environmental problems can be solved if sustainable development goals are reached by implementing and supporting the community. When we go at Table 5, it is seen that teacher candidates know how they can integrate sustainability into their classes and impose it on their students. In addition to these, they are aware of the negative and positive effects of technological developments on sustainability studies. As a prospective teacher, most of them think that the only way to provide sustainability for the future is based on educated students. According to their opinions, if they can raise conscious individuals who are aware of the need for sustainability, hope can dominate in the future. That is, in light of the views and suggestions of the participants, it is clear to understand that sustainability has already taken an important place in our lives.

Discussion

Essentially, the main goal of this study was to investigate teacher candidates' knowledge and opinions about sustainability and to discover how they conceptualize sustainable development. In light of findings obtained from the study and based on many other study results that support this conclusion (Demirbaş, 2015; Omowunmi Sola & Michael, 2016; Şahin, Ertepınar ve Teksöz, 2009), it can be argued that the concept of sustainable development, regarding teacher candidates' understanding, observations, experiences and evaluations in education faculty departments has high awareness.

When the map (Figure 2) given in the findings part is re-evaluated, it is seen that teacher candidates' views are categorized under five themes, which are, sustainability and real life, importance, goal, education, technology, and future. All of them also have subcodes that represent how teacher candidates conceptualized and internalized sustainability into their lives. Teacher candidates have optimistic thoughts toward environmental issues by showing awareness and developing skills that will enable appropriate behaviors to occur. This finding shows that teacher candidates show high consciousness about the concept of sustainability (Akca, 2019). It is necessary to develop appropriate strategies for future teachers to enlighten society raise awareness, and develop and implement new methods for sustainable development (Saka ve Uysal, 2014). in this context, it is difficult to have a holistic understanding of sustainable development without appropriate training on the subject in the teacher training program (Borg et al., 2014). In this regard, environmental education topics are beginning to appear in many nations' curricula.

The significance and influence of three fundamental areas in education have been evident, particularly in the last thirty years. Education for sustainable development, education for the environment, and education for sustainability are these three domains. Environmental education may be defined as a process of learning that aids in the development of several environmental-related abilities, attitudes, behaviors, and knowledge kinds. To preserve the ecosystem, each person has to be knowledgeable. People who care about the environment understand how important it is to recycle products like paper, glass, and plastic in addition to preserving the natural world. Environmental awareness is crucial in encouraging recycling in this way (Dönmez & Gülen, 2023). In this context, depending on the common understanding of sustainable development by teacher candidates, the general view is in line with the ecological dimension. Thus, most of the pre-service teacher opinions were justified based on environmental problems caused by unconscious community activities. Especially having children raised by the family, which is the most basic building block of society, with environmental awareness can have a strong impact on the protection of the environment, while on the other hand, if they are raised unconsciously, it may cause an increase in problems (Saka and Uysal, 2014).

Conclusion

Kuusalu et. al, (2023), in their study with university language students, concluded that the ecological aspects of sustainability are well known, and that people can relate them to their actions. This outcome can be explained by the fact that environmental education is the first kind of education that focuses on sustainability and aims to alter people's attitudes about the natural world. This is encouraging for education since it highlights the value of using a variety of holistic techniques in the classroom and encourages the adoption of an inclusive approach to sustainability (Sinakou et. al, 2019). In other words, it can be said that teacher candidates are required to learn about environmental literacy and offer solutions to environmental issues while instructing students in environmental education (Artun, Uzunöz & Akbaş, 2013). By these, while responding to interview questions, teacher candidates have constructed sub-dimensions, especially for the importance and technology categories. After they have asserted the importance of sustainability, they have also emphasized the importance of sustainability in social, economic, and environmental dimensions. Teacher candidates pointed out that from a technological point of view, there are not only positive but also negative effects on sustainable development. Based on the responses they have given, they think that with the help of technology, it gets easier to reach the purpose of spreading sustainable developmental studies, while on the other hand, it is also the barrier in front of sustainability studies, in terms of causing the excess amount of consumption. "While it is generally agreed that teachers can shape student learning outcomes, it remains considerable debate on how national policies and training programs can best support teacher education to address sustainable development challenges" (Manasia, Ianos, and Chicioreanu, 2019:1). When it comes to the goals of the sustainability, teacher candidates are mostly conscious about it, yet they lack knowledge of what the goal topics are about.

In addition to these, if we look into the education part, they mostly prefer to integrate the sustainability concept into their classes, and they aim to impose the idea of sustainability on students by carrying out various environmentally friendly activities. For future of the sustainability, teacher candidates' views show that educated students will shed light on future

generations. Because of their high degree of self-efficacy and capacity for solution-focused thinking, teacher candidates—those who we envision as educators of the future—have strong views of sustainable development (Akca, 2019).

Kuusalu et al. (2023) suggest that including a more comprehensive perspective on sustainability in teacher education programs and ongoing professional development would be extremely advantageous. To defend their rights, enjoy their benefits, and get assistance, educators like teachers ought to be union members. After analyzing the participants' motives for joining the community for sustainability, it becomes clear that joining the dominant union is essential to avoid management pressure or interview issues, which can lead both unions and teachers to stray from their goals. Simultaneously, the politics and inefficiency of the unions can be significant contributing elements when analyzing the causes for non-membership, as they can make instructors feel alone in their struggles and either leave the union or join a new one (Erkoç, Öztaban & Ulutaş, 2023). Additionally, efforts should be made to adapt teacher education in different settings to foster the development of competencies that aid in sustainable activities. Prospective teachers must have the required training and hands-on teaching experience to meet the expectations for teacher education within the framework of education for sustainable development (Santone, Saunders, & Seguin, 2014). Universities are continuously trailing behind in the adoption of sustainable development, despite integrative measures (Keinonen et al., 2016). To create a reliable base in teacher education it is vital to focus on the teacher candidates' conceptual understanding of sustainability development (Eilks, 2014). Based on this idea, in this research, it was reached to the conclusion as opinions of the teacher candidates show that they have the knowledge and the awareness about the need for sustainability issues. And teacher candidates have also conceptualized sustainability with the recycling and zero-waste topics. In addition to this, from the perspective of teacher candidates' views, a sustainable future can be obtained by raising conscious students with the help of sustainable education programs. The findings of this study indicate that the participants primarily associate sustainable development with a nation's economic expansion and progress, with education, social, ecological, environmental, and technical themes coming in second and third. In a study involving teacher candidates at Kastamonu University Faculty of Education, Faiz & Bozdemir (2019) discovered that the students' levels of awareness regarding sustainable development were above the medium level; additionally, they found a significant difference favoring classroom instruction in terms of the department variable and a significant difference favoring female students in terms of the gender variable. demonstrated the existence of a difference. It is concluded that teacher candidates should cultivate their lifelong learning inclinations and broaden their understanding of sustainable development because of the study and review of related research. People have access to knowledge throughout their life to help them stay current. The basis of social and individual development is to benefit by gaining awareness of sustainable development. These concepts, which the individual must develop from the moment he is born until he dies, are reinforced, and imparted by teachers. For this, first of all, teacher candidates must reach a sufficient level.

When the findings obtained from the research were evaluated, it can be concluded that the opinions of the teacher candidates regarding sustainability and its applications in real life were not expressed positively. Moreover, real life applications were not carried out sufficiently, public awareness had not yet reached a sufficient level in order to fully achieve the sustainability goals, and initiatives should be taken to increase environmental awareness at the social level. Another important finding is that education has a crucial role in activities on sustainability and environmental awareness, development and improvements in the awareness level of individuals. For this reason, in addition to the importance of including sustainability issues in classroom and out-of-school teaching practices, it is emphasized that the bases of all positive and negative behaviors, that shape the future of humanity and all other living things, in the environmental and vital dimensions, have been laid today.

Suggestion

The majority of the teacher candidates had a one-dimensional understanding of sustainable development, based on the findings of the research. The high adoption rate of almost all of the proposed solutions to prevent environmental degradation can be interpreted as participants being ready to transition to a sustainable lifestyle. However, this degree of disapproval of their living practices shows that they are not very inclined to demonstrate sustainable living practices. This confirms the disconnection between "being aware" and "putting into practice" that frequently occurs in environmental education practices and research (Özdemir, 2018). The economic, environmental, and social components of sustainable development should all be taken into account holistically, and education factor is essential for guiding people in general and society as a whole toward a sustainable future. It can be suggested to the readers that sustainability studies should be supported at the national level to provide a desirable sustainable future for both human generations and the nature. It is thought that the data obtained from this study will provide input and guidance for future studies.

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