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Research Article

Education for Sustainable Development in Pre-Service Teacher Education: An Assessment of Prospective Teachers' Knowledge and Skills in a B.Ed. Four-Year Program.

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ABSTRACT

This study was designed to assess the increased knowledge of prospective teachers about education for sustainable development while completing their B.Ed. four-years program. The objectives of this study were to assess the gained knowledge of prospective teachers about ESD and the extent to what extent knowledge is given to prospective teachers about SDGs. Also, the level of pedagogical competency is developed during pre-service training. Utilizing a descriptive research design, data were collected from 243 prospective teachers in their 7th and 8th semesters across six public universities in Rawalpindi, Islamabad, and Multan. The purposive sampling technique was employed, and the prospective teachers of only the 7th and 8th semester B. Ed four-year program were selected. A five-point Likert scale questionnaire was employed for data collection. The results indicate that prospective teachers possess general awareness about SDGs that were introduced in B.Ed. programs, rather than explaining each goal along with sub-parts in-depth. More than half of the prospective teachers reported that they learned the concept of ESD during their B.Ed. four-year program. The majority of respondents (prospective teachers) considered that the B. Ed four-year degree program was effective in enhancing their pedagogical skills. Nevertheless, a small number of prospective expressed concerns regarding the integration of ESD in the B.Ed. four-year program, as they didn't consider this program very helpful in developing comprehensive ESD-related knowledge. Based on these findings, this study recommends that Education for Sustainable Development should be part of the B.Ed. programs, as Pakistan is a developing country facing multiple challenges such as poverty, climate, and inequality. So, integration of ESD into a B.Ed four year program is essential for promoting future sustainability.

Key Words: Prospective Teachers, Education for Sustainable Development, Sustainable Development, B.Ed four-year Elementary Program, Teacher Education.

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INTRODUCTION

Education for sustainable development (ESD) is a teaching method that encourages students to upgrade Sustainable Development (UNESCO, 2005). The United Nations (UN) adopted the Education for Sustainable Development (ESD) concept in 1987, which was matured and adopted in the UN committees from 1987 to 1992. The first concept of ESD was written in Agenda 21 and in Chapter 36. The ESD focuses on boosting education and training, as well as increasing public knowledge about ESD. The 4th sustainable development goal is to ensure inclusive and adequate access to high-quality education for everyone to encourage continuous learning opportunities (UN 2015). Goal 4 encompasses various targets,

but the most captivating and demanding target is 4.7. This aim signifies:"By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through Education for Sustainable Development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development."

ESD is based on the concept that "education enables society for everyone to live sustainably and fairly by upgrading changes in knowledge, skills, and values. The goal of ESD is to equip both present and future generations to fulfill their requirements through a comprehensive and harmonious strategy that addresses different aspects, such as environmental, social, and economic. According to (Muller et al., 2021; Nurtanto et al., 2019), education for sustainable development is expected to help society transform toward a more sustainable lifestyle, working, and conceptualizing (Ali & Jabeen, 2015).

Prospective Teacher Knowledge about Education for Sustainable Development

Teachers are essential to implementing education for sustainable development in schools, colleges, and universities. A teacher always provides SD content and action to attain sustainable development goals (SDGs) and facilitate the competence of skills (Ferguson et al., 2021; Yuniarti et al., 2019). The expertise and skills of educators are crucial for reorganizing the education process and institutions to ensure long-term viability (Peedikayil et al., 2023; Rieckmann, 2018). Also, teachers play a crucial role in advancing sustainable development by fostering social change and finding a balance between development and sustainability. "

ESD involves incorporating critical topics such as poverty reduction, sustainable consumption, climate change, catastrophe risk reduction, and biodiversity into the educational curriculum to promote sustainable development. Additionally, it requires instructional techniques that actively include the learner and enable them to modify their behavior, as well as inspire them to independently pursue sustainable development. ESD cultivates several proficiencies in learners, such as "analytical reasoning, seeing future scenarios, and collectively formulating judgments". This definition, as mentioned above, has two essential features, first deals with content, and the second deals with pedagogy. "Content" covers these diverse disciplines like climate change, poverty reduction, and consumption, whereas "pedagogy" focuses on developmental skills and action competencies for sustainability.

Now in the 21st century, new inventions are being discovered, which is why the boundaries of knowledge have also extended, and the teaching method and boundaries are also changing. So, teachers should be aware of new knowledge and skills. According to Louis et al. (2010), the desired objective of education can be achieved when the teacher is fully trained and has command over pedagogy. The teacher education program (TEP) is a significant aspect of creating awareness about ESD. It is key for prospective teachers and teacher educators to implement ESD in schools, colleges, and university levels. So that education can make a real contribution to achieving SD. Therefore, this present study was designed to assess prospective teachers' knowledge about education for sustainable development while completing their pre-service teacher education program.

The Rationale of the Study

Pakistan is facing several sustainability challenges, such as water scarcity, environmental degradation, low literacy levels, and socio-economic inequality. UNDP (2020) stated that Pakistan is among the countries highly vulnerable to climate change, while the World Bank (2019) reported that due to poor water management practices and low public awareness, Pakistan is approaching water stress conditions. Similarly, less knowledge of environmental issues and sustainable practices among citizens contributes to unsustainable consumption patterns and social problems. Montie l- Hernández et al. (2024) stated that at first, the emphasis was only on the environment, but now sustainable development increasingly focuses on multiple dimensions, including social, economic, political, and cultural aspects too. Therefore, education is an essential instrument for addressing such sustainability challenges. Higher education institutions are the right hand to provide a clear understanding at the school and the college level through the prospective teacher.

Teachers play crucIal role in shaping pupil attitude, values, and practices (Rieckmann, 2018).

UNESCO (2020) stated that ESD fosters environmental awareness, responsible behaviour, and informed decision-making in individuals. Unfortunately, the ESD concept is not properly added to the pre-service teacher education program. In Pakistan, there is no focus on the implementation of this concept at the school level, and very few studies have been found on sustainable development for quality education (Farinha et al., 2020). Also, sustainable development is not part of education policy, whereas Pakistan is one of the signatories of the Sustainable Development Goals. Like other developing countries, Pakistan is also consistently confronted with a multitude of

issues stemming from a dearth of understanding about ESD. Jumani& Abbasi (2015) stated that for capacity building and prospective teacher training, SD knowledge is essential, but unfortunately, this concept (ESD) is not included in the curriculum of pre-service teacher education programs. However, Kalsoom& Qureshi (2021); Nousheen et al. (2022) also shared that ESD integration in pre-servive program is limited. As a result, prospective teachers are not prepared to integrate sustainability concepts into their classroom instruction. The lack of organized training in the B.Ed program weakens the capacity of future teachers to teach students about sustainable development practices, which affects community awareness and the country's progress towards sustainable development. To determine whether education programs in Pakistan are capable of addressing the country's sustainability challenges through education, it is crucial to evaluate prospective teachers' knowledge, skills, and attitudes about ESD. Therefore, this study was designed to determine how much prospective teachers are knowledgeable about education for sustainable development concepts.

Problem Statement

In 2018, UNESCO (In the report "Progress in ESD and Education for Global Citizenship) highlighted the need for building sustainable societies by improving teacher education. According to (Ozturk, 2017; Joseph, 2019), ESD is a chance to gain knowledge, values, and skills related to the development of an equitable lifestyle, resulting in long-term positive societal transformation. Education for sustainable development, adding key sustainable issues in the teaching and learning, i.e., poverty reduction, sustainable consumption, climate change, disaster risk reduction, and biodiversity. It also empowers and motivates the students to change their behaviors and take the initiative for sustainable development by using participatory teaching and learning methods. ESD enhances different competencies, such as critical thinking skills, collaboratively making decisions, and imagining future scenarios. Now in the 21st century, resources are decreasing day by day, while their consumption is also increasing. Sustainable development is challenged in this perspective. Similarly, Pakistan is also facing the emergent challenges of climate change, poverty, tolerance, peace, and other issues. So, it's more important to consider different issues like climate change, disaster risk reduction, biodiversity, economic development, and population growth. However, students and teacher educators should be thoroughly equipped with knowledge of sustainable development and ESD. Keeping this in view, this study was designed to assess the prospective teachers' increased knowledge about ESD while completing their B.Ed. four-year program.

Purpose Statement

The present study was designed to assess the prospective teacher's knowledge about ESD. It also examined the extent to which prospective teachers increase their knowledge about Education for Sustainable Development during the four-year B.Ed. program.

Objectives of the Study

The objectives of the study are to:

1. Evaluate to what extent knowledge is given to the prospective teacher about SDGs while completing their pre-service teacher education program.
2. Evaluate prospective teachers' competency level in the ESD concept while completing their pre-service teacher education program.
3. Evaluate the understanding level of prospective teachers regarding education for sustainable development while completing their four-year teacher education program.

Research Questions

The research questions of this study are:

1. What extent is knowledge given to the prospective teachers about SDGs in teacher education programs?
2. Which pedagogical approaches and teaching methodologies help B. Ed students to promote ESD in their future classroom?
3. What is the attitude of the B.Ed students about ESD?
4. What is the level of understanding of prospective teachers regarding education for sustainable development while completing their four-year teacher education program?

Significance of the Study

The significance of this study emerges from the role of education in promoting sustainable development and achieving the SDGs of Agenda 2030. Education for sustainable development is an educational approach that enables individuals to obtain knowledge, diverse skills, attitudes, and values necessary for creating a future that is environmentally, socially, and economically sustainable by integrating key aspects of SD, such as poverty reduction,

sustainable consumption, climate change, catastrophe risk reduction, and biodiversity, into the process of teaching and learning. Therefore, this study was crucial for investigating the competency level of prospective teachers about ESD. This study is essential to explore the extent of knowledge given to prospective teachers during their four years of B.Ed. program because prospective teachers are the future teachers who will be powerful agents in providing awareness at the school level. There is an urgent need to implement ESD at primary, secondary, and tertiary levels. Therefore, education can make a real contribution to achieving sustainable development.

LITERATURE REVIEW

Education for sustainable development is crucial for attaining sustainable development, which prioritizes societal well-being by maintaining a harmonious equilibrium between economic advancement, environmental preservation, effective governance, and social integration (Sachs, 2012). The UN endorsed ESD in 1987. UN committees debated this phrase from 1987 until 1992. Chapter 36 Agenda 21 introduced ESD by educating and training the people. However, non-educational organizations have launched ESD education. The discussion and understanding of ESD showed that education is essential for sustainable development (McKeown, 2006).

According to UNESCO (2020), ESD equips learners with knowledge, skills, attitudes, and values to make well-informed choices and responsible actions for environmental integrity, economic viability, and social justice, and this approach empowers every individual of all genders for current and future generations while honoring cultural diversity. Its goal is to empower and equip both current and future generations to meet their needs. ESD is expected to help society adopt a more sustainable mindset, approach, and lifestyle (Müller et al., 2021; Nurtanto, 2019). Tedesco et al. (2011) proposed that Education for Sustainable Development (ESD) may encompass various educational domains, such as civic and citizenship education, health education, values education, education for HIV and AIDS prevention, human rights education, gender equality, environmental education, and ICT. The pursuit of ESD is most effectively achieved through formal, non-formal, and informal methods that target all levels of education and sectors within society.

At the tertiary level, ESD is crucial due to the ability of higher education institutions to actively promote public awareness and education, act as exemplars of sustainability for society at large, and carry out project- and community-based ESD and sustainability initiatives that apply to the communities and society served by these institutions. This space serves as a platform for important engagements with analytical thinking, thought-provoking inquiries, and innovative concepts on our existing modes of progress and our capacity to create novel lifestyles. Ryan & Tilbury (2013) argued that higher education is essential for sustainability engagement. Universities must also recognize their role in shaping national and local sustainability because they shape managers, decision-makers, and teachers (Harpe& Thomas, 2009; Nosheen et al., 2021). However, Pakistan has made a deliberate and coordinated attempt to integrate the concept of sustainable development (SD) into its education system. Nevertheless, there is a lack of effort in implementing ESD-related courses into the curriculum (Kalsoom& Khanam, 2017; Kalsoom& Qureshi, 2021; Nousheen et al., 2022; Ali & Ali, 2017). In 2009 Government of Pakistan's national education strategy paid attention to encouraging civic responsibility, social cohesiveness, and a tolerant society, whereas ESD was missing. The provincial education sector plan does not directly include ESD (Government of Pakistan, 2009).

Durrani et al. (2021) in the article “Perceptions of teacher educators about integration of (ESD) in elementary teacher education program” researched the B.Ed. four-year elementary program. This was quantitative research, which also included surveys.

The sample size of this study was 127 teacher educators of education departments from public universities of Pakistan who were offering B.Ed. Four-year elementary program. The data were randomly collected through the questionnaire with a 5-point Likert scale from teacher educators. Teacher educators believe that ESD must be incorporated into the pre-service teacher training curriculum because teachers are powerful social agents who bring positive change in the attitudes and behavior of individuals. The student’s learning on education for sustainable development may not be successful if teacher educators are not properly trained in ESD. The findings of this study recommend that the component of ESD must be included in the curriculum of B.Ed. four-year elementary program. Atmaca (2017) in his study stated that to give awareness to pre-service teachers about ESD concepts, practical activities related to ESD must be included in the teaching practice of teachers. Evans and Ferreira (2020) stated that education for sustainable development must be included as an integrated part of teaching practices research, emphasizing the interaction between pedagogy and curriculum in teacher education programs.

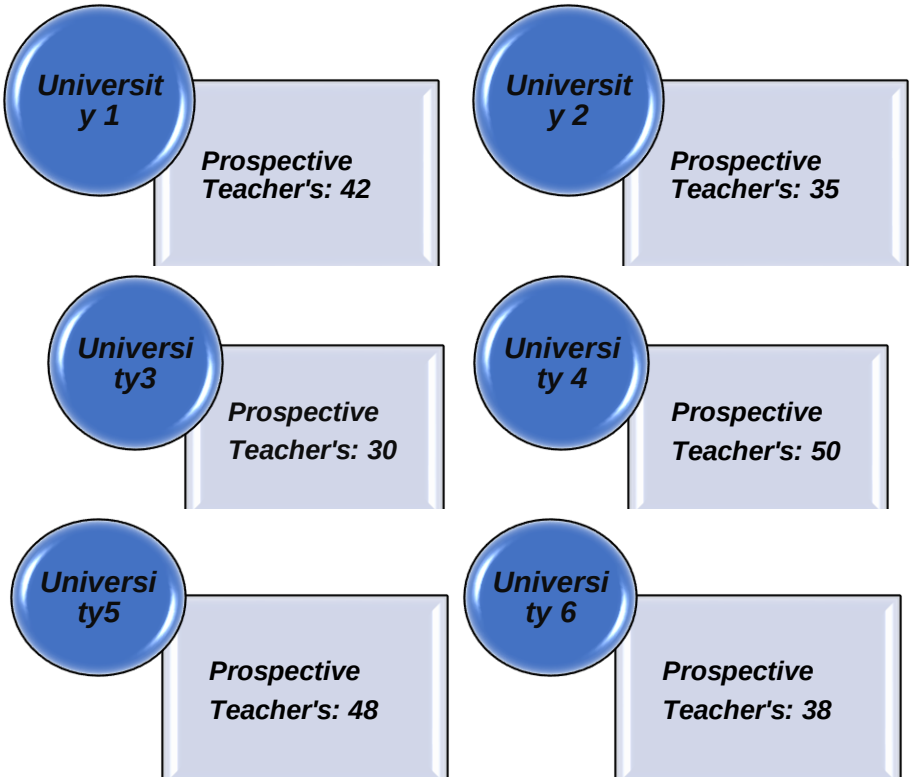
RESEARCH METHODOLOGY

This present study employed a quantitative research approach to measure prospective teacher knowledge, skills, and attitudes regarding Education for Sustainable Development. A descriptive research design was used to measure the skills, attitudes, and existing and increased knowledge of prospective teachers regarding Education for Sustainable Development while completing their B.Ed. four-year program. Creswell (2014) stated that descriptive research involves collecting data to provide an accurate representation of a population or a phenomenon. The population of this study was the public universities of Rawalpindi, Islamabad, and Multan, which offer a B.Ed. (Hons.) elementary program.

Jinnah Women University, Rawalpindi.
PMAS-Arid Agriculture University, Rawalpindi.
International Islamic University, Islamabad.
University of Education. Multan.
Bahauddin Zakariya University (BZU), Multan.
The Women University, Multan.

The population can be defined as the entire group you want to conclude about. According to Kindy et al. (2016), the population is the total number of units, including items, objects, events, individuals, or organizations from which the researcher selects a sample for measurement. The sample of this was the Prospective teachers of the 7th and 8th semesters of the B.Ed. 4-year programs of the Education department.

Detailed samples and population are mentioned in the figure given below:



The purposive sampling technique was used because this technique was useful for selecting prospective teachers of the 7th and 8th semesters of the B.Ed. A four-year program to assess their knowledge and understanding of ESD while completing their B.Ed. four-year program. The purposive sampling technique was used to choose only the 7th and 8th semesters because they had completed their 6 semesters and most of the courses in which ESD components could be integrated were taught in these initial semesters. So, they can give authentic data about how much prospective teachers gain knowledge about ESD while completing their B.Ed. four-year program.

Instrument, Data Collection, and Analysis

The data was collected through questionnaires. This planned questionnaire was based on the Five-Point Likert Scale to obtain the prospective teachers' knowledge, skills, and attitudes about ESD, and how much prospective teachers increase their knowledge and understanding about ESD while completing their B.Ed. four-year program. This questionnaire consisted of the five-point Likert scale, which ranges from strongly disagree (1), disagree (2), neutral

(3), agree (4), and strongly agree (5), and was broken into three sections. The first section consists of demographic information of the respondents, such as name, gender, semester, institution name, etc. The second section has 33 items that examine the prospective teacher's knowledge, skills, and attitude about ESD. Additionally, the third section consisted of a few open-ended questions that were used to check how much their institution engages students in activities related to sustainable development. The pilot testing of the developed questionnaire was conducted on a sample relating to the actual sample. The respondents from one university were selected from the Rawalpindi division. The prospective teacher questionnaire was distributed among the respondents for responses. Pilot testing was conducted on 35 prospective teachers.

Reliability of Questionnaire

Cronbach's Alpha internal consistency method was used to check the (prospective teacher) questionnaire's reliability. The response collected from the prospective teacher was coded and put into SPSS to assess the reliability. After analysis, .968 was the Cronbach Alpha value for the questionnaire tool.

Table 1. Reliability of survey questionnaire

Questionnaire	N of Respondents	Number of Items	Reliability Coefficient
ESD Questionnaire	35	33	.968

To collect data, an online Google form along with a hard form questionnaire was developed and sent to the prospective teachers of the 7th and 8th semesters of the B.Ed. A four-year program in every university. In a few universities, the questionnaire was filled out on the spot. Statistical Packages for Social Science (SPSS) was used to analyze the gathered quantitative data.

Ethical Consideration

For conducting research, several factors were ensured for ethical consideration. Firstly, the researcher obtained a university support letter to collect data from the public. Secondly, the consent form was developed and sent to every participant to show their willingness to participate in the research. Every aspect was explained along with the time duration.

ANALYSIS OF THE DATA

Gender Representation

The following table 3.2 shows the quantitative gender representation.

Table 2. Gender Representation

Gender	Frequency	Percentage
Male	62	25%
Female	181	74%
Total	243	Total: 100%

Prospective Teachers Survey Questionnaire

This study assessed prospective teachers' knowledge, skills, and attitudes about ESD, and how much prospective teachers increase their knowledge and skills about ESD while completing their B.Ed. Four-year Elementary program. This survey questionnaire consisted of three parts; the first one covered prospective teachers' increased knowledge during B.Ed. program, the second one finds how much prospective teacher enhance their skills, and the last one finds prospective teachers' attitudes about ESD integration, i.e., whether ESD is a good initiative and should be integrated into the curriculum at school levels or not. After analysis, the results obtained are given below:

A. Prospective Teacher's knowledge about ESD

Table 3. Prospective teachers' knowledge about ESD (N= 243)

S. No.	Statements	SD%	D%	N%	A%	SA%
1.	I can understand the concept of sustainable development.	14	4	14	43	20
2.	I have a clear understanding of the 17 Sustainable Development Goals.	11	18	16	38	13
3.	I already knew the term "ESD" (Education for Sustainable Development).	12	14	20	39	10
4.	I have clearly understood the education for sustainable development concepts while completing my B.Ed. degree.	11	14	16	40	14

5.	Education for Sustainable Development mainly teaches information about climate change, disaster risk management, consumption of resources, poverty, tolerance, and human rights for sustainability.	10	8	18	38	21
6.	I know that Education for Sustainable Development is essential for the SDGs targeted to be achieved by 2030.	6	12	18	40	19
7.	I know various policies related to sustainable development goals.	8	16	23	37	12
8.	Education for Sustainable Development encourages learners to look at the roots of an issue before acting.	10	8	16	41	20
9.	Education for sustainable development associates these different ecological, social, cultural, and economic dimensions.	11	8	12	47	18
10.	Education for Sustainable Development promotes solidarity, equality, democracy, respect, tolerance, and social justice.	9	8	19	36	22
11.	Education for Sustainable Development enhances competencies such as critical thinking skills, collaboratively making decisions, and imagining future scenarios.	9	10	18	39	20
12.	ESD mostly teaches about the natural surroundings, i.e., preservation of water and natural resources.	10	12	16	41	17
Mean Percentage		10%	11%	18%	41%	18%

The results of Table 3 conclude that 59% of respondents (agreed + strongly agreed) that their knowledge about ESD was increased during their B.Ed. four-year elementary program. Further, results showed that they have developed an understanding of the different SDGs, and ESD and recognize the importance that ESD is too much essential for achieving the target of SDGs by 2030. While 22% of the respondents (disagreed + strongly disagreed) said that their knowledge about ESD did not increase during the B.Ed. four-year elementary program. Whereas 18% of the respondents were unsure whether they had increased or not increased their knowledge about ESD during B.Ed. four-year elementary program and whether they had learned anything new about ESD. By explaining the knowledge about the previous policies on SDGs. 24% of respondents showed that they did not know about the different SDGs policies. Almost only 49% percent of respondents indicated that they know about policies in which the sustainability components were more focused on sustainable development. While 23 percent of the respondents were not sure about different policies regarding SDGs.

B. Pedagogical Skills About ESD

Table 4. Pedagogical skills about ESD(N=243)

S. No.	Statements	SD%	D%	N%	A%	SA%
1.	I can apply the learning strategies required for active students after completing the Teacher Education Program.	8	7	16	46	18
2.	After completing the Teacher Education Program, I can develop a collaborative learning environment for the assumption of day-to-day resources.	7	7	14	47	20
3.	After completing the Teacher Education Program, I am proficient in using multiple technology platforms to deliver digital learning for quality education.	7	8	19	40	21
4.	I also involved students in Education for Sustainable Development activities during my teaching practicum.	7	11	22	36	20
5.	I can incorporate sustainable development issues within the subject at the school level.	6	11	26	38	13
6.	I can use active learning strategies regarding education for sustainable development at the school level.	6	8	17	44	21
7.	I am always guiding students toward Education for Sustainable Development.	6	14	14	44	16
8.	I can address sustainable development challenges in the classroom.	7	11	23	42	12

9.	I can promote sustainability competencies among students.	4	8	24	46	14
10.	I can develop a student-centered learning approach after completing the Teacher Education Program.	8	8	11	53	16
11.	I can use interactive patterns to promote good listening and expression skills because it enhances collaboration with diverse field students.	5	9	12	49	20
Mean Percentage		7%	9%	19%	46%	18%

The results of Table 4 show that the majority of the participants, 64% of the respondents, have learned different pedagogical skills during their B.Ed. four-year elementary program. They have learned about different pedagogical skills to incorporate ESD components at the school level or college, such as interactive patterns, student-centered learning approaches, active strategies, and proficient use of ICT. Further explained that they have tried to use these pedagogical skills during their teaching practicum. A small percentage of 16% did not increase their pedagogical skills that can be used to incorporate ESD components at the school level. 19 % of respondents might be unsure about their increased level of pedagogical skills.

C. Prospective Teachers' Attitude About ESD

Table. 5. Prospective teachers' attitude about ESD(N=243)

S. No.	Statements	SD%	D%	N%	A%	SA%
1.	I am not bothered about Education for Sustainable Development.	12	22	24	26	11
2.	I think education for sustainable development integration is a waste of time and effort.	15	36	14	24	5
3.	Other departments are interested in implementing the Education for Sustainable Development concept, but it doesn't concern me.	12	21	26	27	9
4.	I am interested in receiving and organizing environmental awareness through seminars, trainings, and workshops.	7	5	25	40	18
5.	I also promote respect for the environment to address sustainable practices aligned with gender equality, social justice, and human rights.	5	8	21	42	20
6.	I also practice Education for Sustainable Development in daily life.	8	12	22	41	11
7.	I am also looking for information or self-study about Education for Sustainable Development.	8	12	18	39	18
8.	I am collaborating with colleagues on Education for Sustainable Development.	7	14	25	34	15
9.	I am collaborating with the community to discuss Education for Sustainable Development.	8	17	19	37	14
10.	I prefer to teach education for sustainable development components within the subject at the school level.	9	8	16	45	18
Mean Percentage		9%	16%	22%	37%	14%

Table 5 shows that the majority of the participants, 51% respondents (agree + strongly agree), showed that ESD should be integrated at the school level, and it is not a waste of time, as they have expressed that they are interested in organizing and receiving different workshop training and seminars about ESD. More than half of the respondents showed a positive attitude toward integrating ESD at the school and university levels. While 26% of respondents chose to (disagree + strongly disagree) and were not very receptive to ESD integration in the B.Ed. four-year program, they did not understand ESD clearly. Further, respondents showed that they did not collaborate with colleagues and communities for ESD. However, moderate respondents chose 22% as the neutral option because

they have no strong opinion about ESD. Whether they want to conduct seminars or workshop training, neither are they shown that ESD integration in schools is either a good initiative or it is a waste of time.

Analysis of Open-Ended Questions

In response to the few open-ended questions, all of the prospective teachers have no idea about the 12 key issues of ESD. The majority have mentioned sustainable development challenges that ESD addressed, like climate change, poverty, etc. Further, prospective teachers mentioned that their institutions provide some extended career counseling in the sustainability development area (N: 92). Moreover, the majority of the respondents shared thatinstitutions never allow them to collaborate with other institutions or diverse field students for sustainability initiatives (N: 147). However, a few of the participants showed that our institutions support us in collaborating with other departments for SDGs initiatives. Further, participants shared that their institutions provide little awareness campaigns about sustainability, but must provide different day celebration opportunities regularly, such as Earth Day (N: 87), Sports Day (N: 156), Culture Day (N: 123), Go Green Day (N: 179), and World Cleanup Day (56). The majority of the participants shared that they must celebrate Go Green Day for the planting of flowers and trees. However, a few of the participants mentioned they celebrate Breast Cancer Awareness Day, Cultural Diversity Day, and Peace Day.

FINDINGS

Findings from the Close-ended Questionnaire

- After analysis of the closed-ended questionnaire, the results explained that during their four-year B.Ed. program, prospective teachers develop an understanding of the SDGs, but not about ESD extensively. A clear gap was observed here: However, a few components are included in B.Ed. four-year program, not paying attention specifically to the ESD concept.
- Further results conclude that prospective teachers have learned different pedagogical skills during their four-year program and acquired proficiency in using information communication technology (ICT). This proficient use of ICT helps teachers to deliver digital learning for quality education.
- Moreover, most prospective teachers show positive attitudes toward ESD, are interested in attending different training and workshops about ESD, and show that ESD is a good initiative that must be integrated at the school, college, and university levels.

Findings from the Open-ended Questionnaire

- After analysis of the open-ended questions, all of the prospective teachers shared that they had no idea about the 12 key issues of ESD. The majority have mentioned sustainable development challenges that ESD addressed, like climate change, poverty, etc. Prospective teachers mentioned that their institutions provide some extended career counseling in the sustainability development area.
- Moreover, the majority of the respondents shared that their institutions never allow them to collaborate with other institutions or diverse fields for sustainability initiatives. However, a few of the participants showed that our institutions support us in collaborating with other departments for SDGs initiatives.
- Furthermore, the majority of participants shared that their institutions provide awareness campaigns about sustainability by celebrating different days such as Earth Day, Sports Day, Culture Day, Go Green Day, and World Cleanup Day. whereas the majority of the participants shared that they must celebrate Go Green Day for the planting of flowers and trees. However, a few of the participants mentioned they also celebrate Breast Cancer Awareness Day, cultural diversity, and Peace Day.

DISCUSSION

Education for sustainable development (ESD) is a powerful tool for developing a sustainable future, and ESD empowers individuals to address interconnected challenges that our planet faces and become more responsible citizens to enable them to live a better life in society. Khan & Haseeb (2017) stated that ESD promotes different skills, such as critical thinking and problem-solving skills, and enables individuals to find complex sustainability issues and make informed decisions. In educational literature, SDGs along with ESD occupy a larger area because they contribute to a healthier planet, improve livelihood, and a more peaceful society. Teacher educators are the essential components to raise awareness about ESD. Different studies were conducted on student and teacher knowledge about SDGs. Previous studies show that, across the region, youth have limited knowledge and awareness about SDGs (Mawonde & Togo, 2021; Odelami & Fasakin, 2019; Zamora-Polo et al., 2019; Polese et al., 2018; Vambe, 2018). In contrast, after analysis, this present study found that the majority of the teacher educators were aware of

the 17 SDGs. They know about different SDGs, and they must incorporate this concept into the B. Ed Four Year Elementary Program. Also, the majority of the prospective teachers show an understanding of SDGs. Pakistan is a developing country and is facing a lot of challenges that are directly linked with ESD knowledge, such as economic instability, energy crises, poverty and inequality, education and health care, and climate change. Samuelsson & Kaga (2008) stated that to overcome these problems, Education for Sustainable Development is an ideal option. After analysis, the data show that the majority of prospective teachers said that they don't know about ESD extensively, they have a little bit of understanding about ESD, and all of them express their understanding of ESD. As another study stated that most of the students never explained a single definition of ESD, although most students know about climate change, recycling, etc., because they practiced these activities in daily life (Yusof et al., 2012). The further results show that the ESD is not integrated as a separate concept or separate subject in the B.Ed. four-year program, but ESD components are directly and indirectly included in their B.Ed. Four-Year Elementary Program, for example, environmental education, gender equality, social justice, fundamental human rights, and SDGs understanding.

Maidou, Plakitsi, &Polatoglou (2019) support the idea of the inclusion of environmental issues in all subjects, and teachers should be aware of the ESD importance in the curriculum. After analysis, prospective teachers shared that ESD is not part of prospective teachers' initial training, and also shared that it depends on the country and the specific teacher education program. In Pakistan, it is not a part of the initial training as a separate subject. Our results are in line with the findings of Jumani & Abbasi (2015), who stated that ESD is never reflected in B.Ed. four-year elementary program, even missing in the prospective teacher's curriculum. Another study (Manisha & Nandita, 2019) stated that, especially in teacher education programs, ESD is still in the nascent stage. After analysis, prospective teachers stated that they had not attended any training particularly related to ESD. Further, the findings of this present study are in line with the previous results that the teachers were not competent to teach ESD because they had not attended any training particularly related to ESD (Velasquez et al., 2005; Uitto & Saloranta, 2007; Ortega & Fuentes, 2015).

Collaborative learning has become a core method of ESD learning where every partner is accountable for outcomes. After analysis, the majority of the participants shared that they never collaborated with other institutions to promote the ESD specifically. However, according to Seema & Gupta (2019), when ESD is approached collaboratively, it requires a shift from teaching to learning and requires the active participation of every member to find solutions through critical thinking. They advocate a sustainable future and collaborative learning in educational settings across all educational levels from local to global, fostering more positive and diverse relationships. This approach fosters supportive educational environments for ESD. After analysis, results show that the majority of the prospective teachers were interested in receiving different workshops or training regarding ESD. Green & Somerville's (2015) study shows a positive attitude toward ESD integration within the existing subject. The findings of this present study revealed that most participants wanted ESD incorporation within the subjects, instead of separate subjects, because ESD is a holistic approach that connects to various aspects of life, making it more relevant and meaningful when integrated into existing subjects. In support, Borg et al. (2014) and Uitto&Saloranta (2017) stated that ESD integration should be within the existing subject because ESD integration as a separate subject may overload the timetable. Further, previous research stated that "the initiative on the inclusion of ESD-related courses in the curriculum is scarce" (Kalsoom& Khanam, 2017; Kalsoom& Qureshi, 2021; Nousheen et al., 2022). According to UNESCO (2021), these days (Tree Planting Day, Go Green Day, Culture Day, and Earth Day) are essential to support environmental issues and community engagement, and also provide platforms for education. These days make a sense of responsibility toward plants and enable individuals to act for sustainability. The results of this present study show that prospective teachers increase their knowledge about the environment through different day celebration campaigns. Further, prospective teachers shared that they mostly celebrate special days such as Tree Planting Day, Go Green Day, Culture Day, and Earth Day. The prospective teacher also shared that our institution raises awareness and promotes action on sustainable issues through special day celebrations, to foster community involvement and promote positive actions toward sustainable development and social well-being. In contrast, Goulgouti et al. (2019) stated that prospective teachers' knowledge about the environment was very low, but they know a lot about waste management.

CONCLUSIONS

This study concluded that prospective teachers have no extensive knowledge about ESD, but during their four-year program, their pedagogical skills were increased. In response to the prospective teachers' attitude about ESD, a few

prospective teachers are reluctant to accept the ESD integration in the B.Ed. four-year program, whereas the majority of prospective teachers are interested in ESD integration from the school level to the tertiary level.

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