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Posted Date: 29 May 2024

doi: 10.20944/preprints202405.1910.v1

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Article

How Students' Well-Being, Education for Sustainability, and Sustainable Development Relate: A Theoretical Model

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Abstract: This study investigates how students' well-being relates to sustainable development and education for sustainability at Prince Mohammad Bin Fahd University, Saudi Arabia. The authors endeavor to answer the question "How Does Students' Well-Being Relate to Sustainable Development Via Education for Sustainable Development?" and four sub-questions. Primary data were collected by semi-structured interviews exploring the viewpoints of twenty female and male students (n=26) aged between 18 and 26. The content analysis results have identified additional well-being and education for sustainability factors that influence sustainable education and, therefore, sustainable development. These antecedents include workload, transparency, grading criteria, fairness, belonging, work-life balance, mental health support, missing emotional intelligence factors, factors related to Education for Sustainable Development, such as instructors' role models, institutional commitment, leadership, and collaboration with government. In addition, the study developed a theoretical model for the relationship between antecedents for Education for Sustainable Development, Education for Sustainable Development, and Sustainable Development in the Saudi context. Finally, the study answers four research questions: What factors contribute to education for sustainable development? What are the antecedents of education for sustainable development? How do university educators contribute to sustainable education? How do the antecedents of education for sustainable development, education for sustainable development, and sustainable development relate?

Keywords: sustainable education; sustainability in education; education and sustainable development; students' well-being

1. Introduction

In this study, Sustainability refers to meeting current and upcoming generations' environmental, social, and economic requirements [1]. Sustainability Education (SE) is usually called Education for Sustainable Development (ESD). UNESCO defined ESD as "education that helps people to gain the skills, attitude, attitudes, learning, wisdom, and values essential to frame a sustainable future environmentally, economically, and socially." [2] Research applying the UNESCO definition has shown that education institutions, such as universities and colleges, are deemed to play an essential role in the advancement and promotion of Sustainability and Sustainable Development (SD) in society as a whole via providing students with necessary values, knowledge, attitudes, and skills necessary to shape sustainable development. UNESCO has always emphasized the importance of ESD, recognizing and understanding the antecedents of Sustainability in education, which has become necessary for researchers, educators, business leaders, and policymakers for economic, social, and environmental reasons [2]. Economically, eco-systems and sustainable practices can create a safer, healthier, more efficient, effective, and productive environment. Socially, daily sustainable practices can aid in strengthening community bonds and relationships, improve the quality of everyone's life, and provide hope and assurance of a better future for the next generations.

Environmentally, sustainable development equips humans to preserve an ecological consonance in the globe's untouched atmosphere and preserve raw resources to sustain the well-being of present and forthcoming generations. Other than UNESCO in 2012, several other stakeholders, such as businesses, government organizations, and nongovernment organizations (NGOs), are part of the drive towards sustainable organizations. In that regard, universities, colleges, and research institutions are not exempt from stakeholders' legitimate expectations. However, this can only be achieved when barriers are eliminated and challenges are overcome. Responding to UNESCO's call in 2012 highlighting the importance of Education for Sustainability and Sustainable Development, this exploratory study aims to investigate how the undergraduate students of Prince Mohammad Bin Fahd University (PMU), as representatives of Saudi Universities, perceive the concepts of Sustainability and sustainable education in their institution, their well-being, the role of university education for sustainable development, the challenges and obstacles they face throughout their education journey at PMU. In Addition, the study tries to answer the question "How Does Students' Well-Being Relate to Sustainable Development Via Education for Sustainable Development?" and four sub-questions. These four sub-research questions are: What factors contribute to education for sustainable development? What are the antecedents of education for sustainable development? How do university educators contribute to sustainable education? How do the antecedents of education for sustainable development, education for sustainable development, and sustainable development relate?

Primary data were collected using semi-structured interviews. This article explores the perspectives of twelve focus groups of female and male students _ seven to eight students in each (n=84 - 86 students) group of students at Prince Mohammad Bin Fahd University aged between 18 and 25. The authors used content analysis techniques to analyze the datasets.

The results showed that many students need to be fully aware of the concept of Sustainability). This research highlighted the importance of conceptual and organizational change in education institutions, notably by identifying more organizational flexibility, more extensive mission statements, customized educational curriculum, life-long learning, internship programs, dedication to internationalization, and strategic managing of human resources. This study contributes to the literature by deliberating on how educational institutions can promote education for Sustainability and sustainable development and how higher educators understand and enhance schooling for sustainable development in Saudi Arabia universities

2. Literature Review

Based on UNESCO's definition, ESD means considering fundamental sustainable development problems in learning by students and teaching by instructors; for instance, biodiversity, sustainable consumption, climate change, poverty reduction, social responsibility, and disaster risk reduction [1]. ESD also demands participatory schooling and understanding aspects that empower and motivate students to transform their Sustainability manners and take steps forward for sustainable development. Educating residents, especially young citizens, within the traditional education system is expected to enhance SD [2]. This hope guided the takeoff of the United Nations (UN) Decade of Education for Sustainable Development (DESD) initiative, supervised by UNESCO, which shows how ESD relates and links to sustainable development. During the DEST (2005 to 2014), ESD was established as a teaching and understanding method fostering SD [3]. ESD has evolved from a notion into a transnational movement [4]. It advances competencies like envisioning forthcoming scenarios, critical thinking, and collaborative decision-making (UNESCO, 2012). ESD stresses the necessity to incorporate all three sustainability measurements (i.e., economic, environmental, and social) and concentrate on their interaction and interrelationship in the future and globally [5]. The holistic viewpoint of sustainable development acknowledges that cultural and social factors are constantly the reason for environmental issues, and there is frequently a conflict of interest between the environmental, social, and economic goals of people and communities [6]. Hence, in teaching and learning for effective ESD, connecting economic, social, and environmental factors of sustainable development issues, integrating their present, future, and past implications, and concentrating on

their global, regional, and local nature is necessary. The second paramount element of ESD is coping with learning and teaching, deemed the most challenging part. By definition, ESD concentrates on expanding skills and activity competence for Sustainability [7]. However, these skills and competencies still need to be identified and applied, which hinders instructors from knowing how to teach them. Lack of identification and application has challenged instructors and academics seeking to execute ESD [8]. Hence, the interviews in this study helped the authors overcome some of these challenges by identifying several antecedents of ESD and other factors that constitute ESD.

Previous studies concentrated on educational agendas focusing on environmental problems, school leadership participation, understanding, attitudes, motivations, manners, and other eco-school credential programs (Refs). However, the studies did not consider the factors that contribute to education for sustainable development and the antecedents of ESD. In addition, researchers such as [9,10], and [11] focused on the benefits of imparting scientific reasoning skills to university students as a pillar of Education for Sustainable Education. However, the researchers should have paid more attention to sustainable projects, sustainable infrastructure, research on Sustainability, and raising awareness. On the other hand, [12] documented that mobile learning (M-learning) and behavioral preferences benefit ESD and long-term Sustainability. Also focusing on behavior, a Turkey-focused study on the role of the competencies of principals in assuring sustainable education [13] affirms the influence of positive and negative behaviors on Education for Sustainability.

Furthermore, other researchers have examined varied factors believed to influence ESD from different points of view [7,13]. In this respect, [14] studied four factors that can equip policymakers with a marked sense of mandate when they carry on the challenge of promoting sustainable education, leading to a successful, sustainable educational system. The factors are fostering teachers' and students' intrinsic motivation, engaging students and educators in the continuous advancement of learning and instruction, inspiring teamwork, and All-ness (referring to the inclusion of all students and teachers). Equal opportunity and diversity have also influenced inclusive, sustainable education systems [15]. Taylor et al. [16] discussed the influence of politics and regeneration, alignment of curriculum, teaching, and resources, the perceived state of education for Sustainability, and how Instructors' professional growth determines the state of education for sustainability performance and success. Bukhari and Khanam [17] revealed that educational performance is highly negatively correlated with depression, which jeopardizes students' well-being, and particularly positively with happiness, which promotes students' well-being. Student well-being is a significant factor contributing to ESD; hence, researchers have paid more attention to it [18] highlighted 33 investigations on student well-being in academic periodicals between 1989 and The studies identified four methods of conceptualizing learning well-being: eudaimonic, Hedonic, integrative (i.e., incorporating both eudaimonic and hedonic), and others. Their results highlighted eight overarching realms of student well-being: Purpose at school, Relationships, Negative Emotion (i.e., lack of emotion), Positive emotion, Engagement, Accomplishment, Contextual/External factors, and Intrapersonal/Internal factors. Hossain, O'Neill, and Strnadová [18] called for further qualitative research on learner well-being based on learner-learner experiences and for research studies to be executed in a non-western context. Hence, the authors argue that student well-being factors (i.e., manageable workloads, transparency, grading criteria, fairness, sense of belonging, work-life balance, and mental health support) identified via the interviewee's responses make sense since they impact students' happiness on campus. Prior studies have neither identified all ESD factors (i.e., sustainable practices, sustainable projects, sustainable infrastructure, and research on Sustainability) nor identified all antecedents for Education for Sustainability (i.e., manageable workloads, transparent, grading criteria, fairness, sense of belonging, work-life balance, and mental health support) and other factors that relate to ESD such as instructors' role models, institutional commitment, leadership towards Sustainability, and collaboration with government. In addition, prior research has yet to develop a theoretical model for the relationship between the abovementioned factors. Hence, this study tried to fill these gaps by proposing a comprehensive education for sustainable development model and identifying ESD factors and antecedents in the Saudi context at PMU. In doing so, the study answers the following research questions: 1) What

factors contribute to education for sustainable development? 2) What are the antecedents of education for sustainable development? 3) How do university educators contribute to sustainable education? 4) How do the antecedents of education for sustainable development, education for sustainable development, and sustainable development relate? The antecedents include manageable workloads, transparent, grading criteria, fairness, sense of belonging, work-life balance, mental health support, missing factors of emotional intelligence, and other factors that relate to ESD such as instructors' role models, institutional commitment, leadership towards Sustainability, and collaboration with government. Other challenges have been identified in the implementation of ESD in the context of standard education in Saudi Arabia represented by PMU are what it is believed to constitute ESD education for sustainability factors (i.e., sustainable practices, sustainable projects, sustainable infrastructure, and research on Sustainability).

3. Theoretical Framework and the Study Propositions

Theories used to study ESD include Transformative Learning, Place-based Education, Global Citizenship Education, Ecological Literacy, Social Learning, and Systems Theory. Transformative Learning avers that education is a potential catalyst that, through fostering critical reflection, self-awareness, and empathy, can transform individuals and societies towards being more conscious of the importance of sustainability [19]. Place-based education posits that social context must underpin education [20]. Global Citizenship Education promotes a shared global responsibility that makes learners act like informed citizens [21]. Ecological Literature promotes decision-making based on appreciating ecological factors such as environmental stewardship [22]. Social Learning posits that sustainability awareness is fostered by collaborative and participatory learning processes that have room for solving problems collectively and shared decision-making [23]. The highlighted approaches have limitations as they represent partial aspects of the complex nature of ESD. Systems theories present a more comprehensive perspective.

Researchers have used systems theories to understand ESD [24,25]; Zhang et al. [26]. Chen and Stroup [27] provided a detailed description of system theory, highlighting that its core is conceptualizing a system as a combination of intermingling parts that display behavior different from the parts that constitute it. Further, a system can be social, physical, biological, or even symbolic, and it can also be a combination. The system can, in time, transform through change but still retain its identity. Changes observed in the system's state (such as growth and decay) are characterized by goal-directed behavior. In that regard, a system is intentionally organized in line with the goal. Feedback mediates the relationship between the system's behavior and the goal. Time serves as a central variable in systems theory as it serves as a reference point for dynamics in the system. The system has a boundary that separates the system from the environment and other sub-systems. The interaction between the system and the environment is the input and output of information, matter, and energy. Furthermore, the system's relationship with the environment can be open, closed, or semi-permeable.

A systems approach to exploring, analyzing, and seeking to understand sustainable development has been used in various studies, including in higher education settings [28]. Underpinned by a systems approach, Pappas [28] posited that sustainability has five contexts: social/cultural, economic, environmental, technical, and individual. Because the contexts interact and influence each other in complex ways, understanding the contexts is a complicated process as it is possible that what is, for example, economically sustainable may not be environmentally sustainable or may be at variance with social-cultural or ethical norms. Pappas [28] argues that of the five contexts, individual sustainability has the most significant influence on the success of sustainability activities because an individual can transfer their understanding of the complexities of sustainability contexts to the rest of the systems. In the context of the current study, Pappas' [28] conceptualization of giving due regard to individual factors suggests that focusing on student-related aspects can influence ESD within the university education sector.

Further, at the university level, Pappas [28] advocates for methods of instruction that integrate thinking from across the five sustainability contexts as part of a multi-faceted approach. Several

studies support a multi-faced and multi-disciplinary systemic approach to understanding sustainability and facilitate an appreciation of the interconnectivity of the economic, political, social, and ecological issues central to developing sustainability [29]. Further, the approach lends itself to a more holistic appreciation of sustainability.

Based on systems theory, Porter and Córdoba [30] developed functionalist, complex adaptive systems, and interpretive perspectives as three broad approaches to systems thinking. According to the functionalist perspective, systems have a hierarchical and decomposable macrostructure so that the whole is equal to the sum of its pieces, neither more nor less [31]. Any system may be comprehended by analyzing the individual characteristics of each constituent, and the system's behavior is explained by the interaction of all the elements [32]. According to functionalists, the sustainability issue is primarily technical, and its methodologies revolve around problem identification, solution generation, cost-benefit analysis, and selection of the best option. From a functionalist perspective, educating for sustainability involves understanding that organizations and the environmental, social, and economic factors cannot be separated so that systems design and optimization incorporate desired parameters [30]. The functionalist perspective was found unsuitable for analyzing ESD, given Chen and Stroup's [27] view of a system as a combination of intermingling parts that display behavior different from the parts that constitute it.

From the perspective of Complex Adaptive Systems, systems are densely connected networks of agents, self-organization, and emergence where there is continual Learning and evolution from the bottom up. Complexity theory, Non-linear systems, and Complex adaptive systems are the main applicable theories to analyzing complex systems. The basis for the complexity theory is that for a system to survive in its dynamic environment, it must maintain its wholeness and be part of the environment in which it subsists, to which it contributes, and competes for resources [33]. A system is considered sustainable if it survives, as shown by its ability to maintain its totality as a fundamental part of the more extensive system. Education goals and skills applied to the complex adaptive systems perspective can separate each system perspective, identify areas of leverage, empower Learning, design incentives, win trust, and build consensus [30]. Such practices lend themselves to accepting various perspectives and an interpretive approach.

Given that there is no universal formula for sustainability, ESD has various interpretations in different parts of the world [28], and given Porter and Córdoba's [30] three broad approaches to systems thinking, an interpretive perspective is satisfactory. The choice is influenced by the fact that one of the aims of interpretive inquiry is understanding the mental models and meaning-making processes of embedded actors and how they interact to create a shared reality [34]. According to the interpretive perspective, meaning is subjective, socially constructed, and not self-evident; in that regard, systems require critical inquiry as they cannot be understood by just analyzing the individual characteristics. Theories that apply to the interpretivist approach include Symbolic interactionism, Soft systems theory, and Critical systems thinking. Sustainability issues can be handled through awareness raising, self-reflection and appreciation of systems, collaborative stakeholder decision-making, and coordinated action. Educational goals and requisite skills enhance self-understanding, understanding one's worldview, identifying stakeholders, and facilitating revisiting functional plans to align them to collaboratively reached decisions.

An interpretive approach uses symbolic interactionism and critical social theory. In sociology, symbolic interactionism is a micro-level theoretical framework and worldview that examines how people repeatedly engage with one another to form and preserve society [35]. It deals with how people create meaning and identity in their social contexts and how their goals, actions, and social relationships are affected by their socially enacted meanings. Symbolic interactionism presupposes multiple or conflicting interpretations of a phenomenon [30]. Symbolic interactionism enables the integration of different perspectives, providing a more comprehensive and nuanced explanation of factors contributing to ESD, its antecedents, and how university educators contribute to it. Critical systems thinking, as seen through critical social theory, on the other hand, investigates contradictions, structures, practices, ideologies, relations, and political praxis in order to understand the role of power, domination, and exploitation in society [36]. In that regard, a critical theory of

sustainability proposes that unsustainability in society emanates from a combination of the dominative, exclusionary, destructive, and exploitative nature of global capitalism, together with dominating forces such as racism, nationalism, patriarchy, and dysfunctional industrialism [36].

From a systems perspective, antecedents of ESD are multi-dimensional, including, but not limited to, environmental, economic, and social. For students, the antecedents are a combination of environmental, economic, and social aspects relating to students’ wellbeing, instructors as role models, the commitment of the educational institutions, leadership towards sustainability, and collaboration with the government. Combining these antecedent factors results in ESD through knowledge, skills, attitudes, and values, adoption of sustainable practices, projects, and infrastructure, research on sustainability, and increased awareness. A combination of the antecedents and the associated ESD leads to sustainable development. Given the preceding discussion, the authors developed the following propositions regarding Education for Sustainable Development and attaining Sustainable Development:

- Proposition 1: Students’ wellbeing is an antecedent of ESD.
- Proposition 2: Instructors’ role models, institutional commitment, leadership towards sustainability, and collaboration with government institutions affect ESD.
- Proposition 3: ESD influences future environmental, economic, and social sustainable development.
- Proposition 4: Education for Sustainable Development (ESD) mediates the relationship between the antecedents for ESD and sustainable development (SD).
- Proposition 5: Many university and college students in Saudi Arabia need to be made aware of ESD. Hence, their awareness will improve ESD and, therefore, SD.
- Proposition 6: Some universities and college instructors must be aware of ESD and SD factors and implementation; their awareness will improve ESD and, therefore, SD.

Figure 1 presents the study’s theoretical framework that will guide answers to the research questions stated:

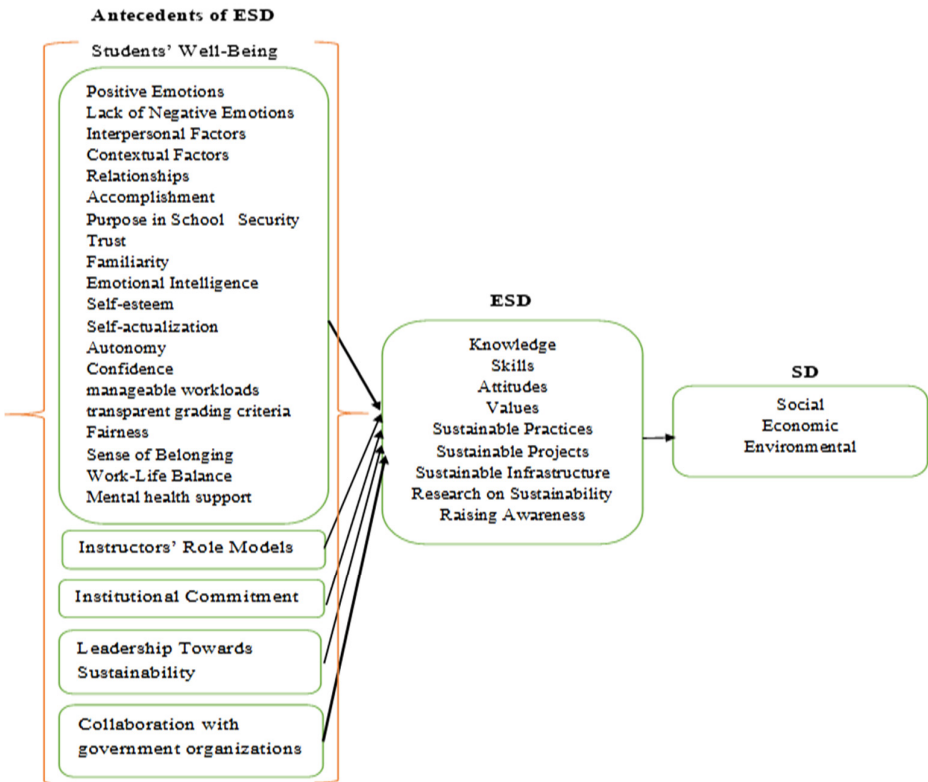


Figure 1: Theoretical Framework for the Relationship between the Antecedents of Education for Sustainable Development (ESD), Education for Sustainable Development (ESD), and Sustainable Development (SD).

Figure 1. This is a figure. Schemes follow the same formatting.

“What factors contribute to education for sustainable development?”

“What are the antecedents of education for sustainable development?”

How do university educators contribute to sustainable education?”

“How do the antecedents of education for sustainable development, education for sustainable development, and sustainable development relate?”

Figure 1 shows that an interplay of factors serves as an antecedent of ESD and explains its associated behaviors and the realization of environmental, social, and economic SD. Antecedents of Education for Sustainable Development, Education for Sustainable Development, and Sustainable

4. Method of Data Collection

This study aimed to investigate how PMU undergraduate students, as representatives of other Saudi Universities, perceived the concepts of sustainability and sustainable education in their institution, the role of education in University for sustainable development, and the challenges and obstacles to implementing sustainability initiatives in the Saudi Arabian Education Institutions. Through a qualitative approach, the authors used semi-structured interviews (focus groups) to collect primary data. The study sample comprised male (n=84) and female (n=86) PMU students aged between 18 and 25 years in January 2024. The selection was based on students' time on campus and their experiences with different instructors over three to four years.

Data collection was in four stages: First, the authors prepared fourteen questions that covered the topic. The questions were reviewed and agreed upon by the second author. These fourteen questions are available in Appendix 1 (Part 1: Ethical Sustainable Education (University Level) Interview Questions for Focus Group) and Appendix 2 (Part 2: Analysis of the Determinants of Student Well-being: Focusing on the causal effects of a Stress-free and comfortable studying environment) Second, the authors informed the students about the focus group interviews, explained the purpose of the research and why students needed to participate in the interviews, emphasizing the confidentiality of the information given. Students were assured that their responses would be kept confidential, ensuring their comfort and security. The authors also requested the consent of the interviewees which was obtained through completing an informed consent form before commencing the focus group interviews. Third, interviews were conducted. The students were divided into 12 groups of male and female students, each group having at least seven to eight participants with one student assigned as a group leader responsible for leading the interviews. The interviews were audio recorded. Fourth, the interviews were transcribed within a week of completion and kept confidential for further analysis.

4.1. Data Analysis

Data captured in interview transcripts was meticulously analyzed using the content analysis technique, a method that systematically classifies data using coding to identify its key categories and themes. The analysis was a comprehensive four-step process. In the first step, the authors carefully read the twelve groups' responses twice, immersing themselves in the interviewees' answers to understand what has been said and what has been implied in the content. The second step involved grouping the interviewee's answers based on the identified themes and subthemes. In the third step, coding was used to identify the key categories of issues. In the fourth step, the authors linked the themes and subthemes to develop six propositions. Finally, the authors refined the originally proposed framework (Figure 1) of the relationship among the antecedents of ESD, ESD, and SD (Figure 2).

Below is an example of coding extracted from the interviewee's answers. The extracted codes are italicized.

Question: “How do university educators contribute to sustainable education?”

Interviewee 1:

"University educators contribute significantly to sustainable education by fostering a culture of critical thinking, ethical responsibility, and environmental awareness among students. One key way they do this is by incorporating sustainability themes into their teaching materials and discussions, providing students with the knowledge and tools to analyze complex issues through a sustainability lens." "For instance, a history professor might explore the historical roots of environmental challenges, helping students understand the long-term impact of human actions on the planet. Likewise, an engineering instructor might incorporate sustainable design principles into their coursework, guiding students to develop solutions that minimize environmental impact."

"Moreover, educators contribute to sustainable education by encouraging student involvement in sustainability initiatives on campus. They may facilitate student-led projects, such as community gardens, waste reduction campaigns, or renewable energy projects. By involving students in hands-on sustainability efforts, educators empower them to apply theoretical knowledge to real-world challenges, fostering a sense of responsibility and agency." "University educators contribute to sustainable education by instilling a sense of environmental consciousness, ethical responsibility, and critical thinking skills that prepare students to address the complexities of a rapidly changing world."

Question: "How can university students actively contribute to sustainability?"

Interviewee 2:

"There are several ways that university students may support sustainability: Education and Awareness: Students may educate their peers and the larger community about sustainability-related concerns. To encourage sustainable habits and lives, they might plan events, seminars, and educational initiatives."

"Sustainable Lifestyle Options: Students may incorporate sustainable practices into their daily life by cutting back on trash, taking public transportation or carpooling, saving electricity and water, and engaging in sustainable consumption."

"Research and Innovation: Students can work on sustainability-related research projects, such as creating technology for renewable energy, examining the effects of climate change, or investigating sustainable farming methods. Their discoveries and inventions have the potential to support sustainable development."

"Advocacy & Activism: Students who support environmental justice and sustainability might start or join student-led campaigns or groups. They might participate in demonstrations, petition drives, and lobbying campaigns to affect legislative changes and advance sustainable practices in their campuses and communities."

"Volunteering & Community Involvement: Students can participate in volunteer projects related to sustainability, such as organizing clean-up drives, planting trees, or collaborating with nearby non-governmental organizations and environmental groups."

"Academics and Curriculum: Students can push to add courses and modules on sustainability to the university curriculum. They can interact with academics and administrators to support multidisciplinary approaches to sustainability and integrate sustainability ideas into many fields."

"Campus Initiatives: Students can work with the university's administration to establish sustainable programs on campus. These programs can include encouraging recycling, lowering building energy consumption, introducing sustainable transportation options, and supporting local and organic food initiatives."

"Collaboration and Partnerships: To create sustainable projects and activities, students can collaborate with teachers, staff, and other stakeholders. They can actively engage in sustainability committees, task groups, and initiatives to offer their thoughts and viewpoints."

"It is crucial to remember that these are only a few instances of how college students contribute to sustainability. Depending on their interests, abilities, and the chances available, each person may find their special method to have a good effect."

Question: "How can universities contribute to sustainable education? What factors facilitate the implementation of sustainable initiatives in PMU or Saudi Arabian Education Institutions?"

Interviewee 3:

“Universities play a critical role in sustainable education by incorporating environmental and social responsibility into their curricula. This role entails interrelated courses on sustainability, environmental science, and ethical practices. Additionally, interdisciplinary cooperation is one way that universities can improve sustainable education. This role entails promoting collaboration amongst departments so students may explore the relationship between sustainability and their field of study. For instance, a business and environmental science student might work together on a project investigating sustainable company practices”.

Interviewee 4

“I agree [with Interviewee 3]. Additionally, universities can promote eco-friendly activities such as recycling programs, energy-efficient infrastructure, and lowering carbon footprints through responsible resource management on their campuses.” “Universities should participate in community outreach initiatives to help advance sustainable education. This participation entails collaborating with neighborhood organizations and carrying out initiatives dealing with neighborhood environmental issues. This collaboration reinforces the value of sustainability outside of campuses by giving students real-world experience and positively affecting the community.”

Question: “What factors facilitate the implementation of sustainable initiatives in PMU or Saudi Arabian Education Institutions?”

Interviewee 3:

“Strong leadership commitment is one of the important variables supporting implementing sustainable initiatives in our institution. Leaders who value sustainability set the tone for the entire organization. This dedication cascades down, ensuring that policies, resources, and support are in place to propel long-term efforts ahead. Collaboration between departments and stakeholders is also essential. We can pool skills and resources by developing a teamwork culture and implementing sustainable initiatives that are more successful and complete. Our institution has discovered that involving students in decision-making is critical. Engaging students in sustainability efforts provides them with new insights and instills a sense of ownership. This involvement cultivates a strong mindset among the student body, leaving an impression that lasts beyond their academic years. Establishing clear communication channels guarantees everyone is aware and motivated to contribute to long-term goals.”

Interviewee 4:

“Collaboration with government organizations and the corporate sector is critical for obtaining support and resources for long-term projects. Furthermore, implementing sustainable concepts into national education regulations might help institutions accept and implement green initiatives. Cultural understanding and compatibility with local values are important in Saudi Arabian educational institutions. Adapting long-term activities to conform to cultural norms and values aids in gaining support and acceptability. Furthermore, financial incentives and government assistance are required. Institutions are more inclined to invest in environmentally friendly practices when some clear incentives and regulations favor sustainability. Government support, whether in the form of financing or legislation, offers a solid platform for the successful execution of long-term initiatives in the education sector.”

Question: “What do you know about sustainability and sustainable education institutions?”

Interviewee 5

“Sustainability encompasses meeting present needs while ensuring the ability of future generations to meet their own needs. Sustainable education institutions embrace sustainability as a foundational principle and integrate it into their operations. They recognize the interconnections between social, environmental, and economic dimensions of sustainability. Such institutions adopt sustainable practices within their physical infrastructure, such as energy-efficient buildings, waste reduction strategies, and responsible resource management. Their policies and practices also prioritize social equity, diversity, and inclusion. Sustainable education institutions promote sustainability education as a core component of their curriculum, research, and community engagement efforts. They offer interdisciplinary programs that address sustainability challenges and equip students with the knowledge, skills, and values necessary for sustainable development. These institutions foster a culture of sustainability, engaging students, faculty, staff, and the broader community in

sustainable initiatives and dialogue. By modeling sustainable practices and values, they inspire and empower individuals to become responsible global citizens committed to creating a more sustainable future”.

Question: “What factors facilitate the implementation of sustainable initiatives in PMU or Saudi Arabian Education Institutions?”

Interviewee 6

“Elements that tend to contribute to the success rate of implementing sustainability-focused initiatives within educational systems, particularly in the Kingdom of Saudi Arabia, are:

a. A strong foundation established through the commitment and ongoing leadership skills displayed by positions within the system, such as a management team(s) that are keen on creating an environment based on given sustainability objectives, which in turn provides purpose for those within an educational environment which can be done through the usage of regulations and resource allocation. In addition, it promotes a culture of obligation toward sustainability.

b. To encourage diversity, inclusion, and sustainability, it is crucial to dynamically involve the community, faculty and staff, and students in sustainability activities; therefore, strong connections built with stakeholders (like partnerships, government-funded establishments, and non-profit organizations) are vital to educational systems both within the Kingdom and worldwide to promote sustainability efforts”.

Interviewee 7

“The strong institutional commitment and leadership toward sustainability play a key role in supporting long-term objectives. Illustrating sustainability and implementing the provided resources and guidance. For instance, institutions encourage growth and awareness of sustainability and invest in certain eco-friendly behaviors promoted and enhanced by encouragement inside the institution. This commitment reflects, inspires, and encourages the support of sustainability and students to participate in certain activities that promote what is beneficial for us and the environment”.

Question: “What are some of the conditions that help create a stress-free and comfortable studying environment that can increase subjective well-being and suppress depressive symptoms for students in university?”

Interviewee 8

“Promoting a stress-free and comfortable studying environment that enhances subjective well-being and reduces depressive symptoms in university students requires certain conditions. These conditions include having a supportive social network where students can seek guidance and emotional support from friends, classmates, professors, and university staff. The physical environment should be well-designed with ergonomic furniture, good lighting, and minimal distractions to enhance comfort and concentration. Also, a well-structured academic system with clear expectations, transparent grading criteria, and manageable workloads helps students effectively manage their time and reduce anxiety. Furthermore, access to comprehensive support services, including counseling and mental health resources, is crucial. Encouraging a healthy work-life balance through participation in extracurricular activities and providing recreational facilities promotes relaxation and social connections. Lastly, fostering a culture of inclusivity and respect ensures that all students feel valued and supported”.

Interviewee 9

“Creating a positive social environment among students is essential for promoting a sense of belonging and lowering feelings of loneliness. Furthermore, providing ideally constructed study areas and physical comfort, in conjunction with adaptable learning environments, is crucial for improving focus and lowering stress levels. Good time management instruction helps students manage their academic responsibilities without going overboard. A calmer learning atmosphere is facilitated by accessing mental health support resources, communicating expectations clearly, and allocating the workload and assessments fairly. Moreover, the promotion of an inclusive and diverse culture, the encouragement of healthy habits, and the cultivation of a positive learning culture all work together to create a nurturing environment that actively supports university

students’ success and mental health in addition to preventing harm to their subjective well-being caused by academic demands”.

Table 1. Themes and Sub-themes extracted from the Interviewees’ Responses.

Theme 1: Antecedents for ESD factors	Theme 2: ESD factors	Theme 3: SD factors
Theme 1: Well-being Positive Emotions Lack of Negative Emotions Interpersonal Factors Contextual Factors Relationships Accomplishment Purpose in School Security Trust Familiarity Emotional Intelligence Self-esteem Self-actualization Autonomy Confidence manageable workloads transparent grading criteria Fairness Sense of Belonging Work-Life Balance Mental health support	Knowledge Skills Attitudes Values Sustainable Practices Sustainable Projects Sustainable Infrastructure Research on Sustainability Raising Awareness	Social Economic Environmental
Sub-Theme 1: Instructors’ Role Models		
Sub-Theme 2: Institutional Commitment		
Sub-Theme 3: Leadership Towards Sustainability		
Sub-Theme 4: Collaboration with government organizations		

Note: ESD denotes Education for Sustainable Development; SD denotes Sustainable Development.

4.1.1. Results

The study results from the content analysis technique show additional identified ESD (Figure 2) factors that influence ESD and, therefore, future SD. The results also identified more ESD factors that need to be considered to provide learners with ESD and SD. In addition, the study results reveal three different themes and four sub-themes that helped in coming up with the following six propositions:

Proposition 1: The antecedents for ESD, including manageable workloads, transparency, grading criteria, fairness, sense of belonging, work-life balance, and mental health support, are not only crucial for learners’ well-being but also influence ESD. These factors, often overlooked, can significantly enhance the effectiveness of ESD.

Proposition 2: Other factors that relate to Education for Sustainable Development (ESD), including instructors’ role models, institutional commitment, leadership towards sustainability, and collaboration with government institutions, affect ESD.

Proposition 3: Education for Sustainable Development (ESD) influences future sustainable development environmentally, economically, and socially.

Proposition 4: Education for Sustainable Development (ESD) mediation the relationship between the antecedents for ESD and sustainable development (SD).

Proposition 5: The potential impact of Education for Sustainable Development (ESD) on university and college students in Saudi Arabia is immense. By raising their awareness, we can

significantly improve ESD and, consequently, SD. This proposition holds the promise of a more sustainable future.

Proposition 6: Some universities and college instructors must be aware of the factors and implementation of Education for Sustainable Development (ESD) and sustainable education (SD). Their awareness will improve ESD and, therefore, SD.

5. Discussions

The study's advanced propositions are consistent with previous research in one way or another. These previous studies include UNESCO in 2015, which relates ESD to SD; Mogensen's [37] concentration on the expansion of skills and activity competence for sustainability; and Hossain, O'Neill, and Strnadová's [18] claim that student well-being is one of the significant factors that contribute to the antecedents of education for sustainable development. In this study, the results show that student well-being influences ESD and, therefore, SD. Hossain, O'Neill, and Strnadová [18] study results recognized eight overarching realms of student well-being: Purpose at school, Relationships, Negative Emotion (lack of emotion), Positive emotion, Engagement, Accomplishment, Contextual/External factors, and Intrapersonal/Internal factors. All these factors were also found to influence ESD in this study's results.

Moreover, the results are consistent with Semin's [13] competencies of principals in assuring sustainable education. The competencies identified as manageable workloads, transparent grading criteria, fairness, sense of belonging, work-life balance, and mental health support are the positive and negative behaviors affecting education for sustainability. Furthermore, this study's results are consistent with Van den Branden's [7] and Fullan's [14] studies, who claimed four factors that lead to a successful sustainable educational system that can equip policy-makers with a marked sense of mandate when they carry on the challenge of promoting sustainable education. Finally, the study results of Bukhari and Khanam [17] revealed that educational performance is highly negatively correlated with depression, which jeopardizes students' well-being; this study's results confirm that in the Middle Eastern context, learners' well-being influences ESD. Hence, the authors argue that the student well-being factors identified through interviews incorporating manageable workloads, transparency, grading criteria, fairness, sense of belonging, work-life balance, and mental health support make sense since they impact students' happiness on campus.

5.1. Theoretical Implications

At a theoretical level, the study confirms the need for a holistic or integrated approach to ESD that incorporates not just the economic, environmental, and social factors but also acknowledges the complexities of the Saudi complex where such factors are underpinned by religion. According to Borg et al. [6], a holistic viewpoint of sustainable development acknowledges socio-cultural factors, influence on environmental factors, and the associated conflict of interest in a society with a high level of religious homogeneity, as is the case in Saudi Arabia, there may be either less conflict of interest among the factors, or the conflict may take different forms. The differences imply that Western-based theories of ESD and their associated learning and teaching processes may present fit challenges in the Saudi context, demonstrating a need for theories that guide instructors' and academics' contextualization of methods of implementing sustainable ESD.

5.1.1. Practical Implications

A practical implication of this study is the guidance it provides first to educational institutions and policymakers on the apparent need to link student well-being inside and outside the classroom, institutional and leadership commitment, and ESD as part of achieving a non-fragmented approach towards national-level SD.

5.1.2. Research Limitations

The study has limitations mainly relating to its exploratory methodology. While the study revealed student well-being as a factor that influences Education for Sustainable Development and, by implication, Sustainable Development, the extent of the influence could not be ascertained because of the qualitative nature of the study. Future research may explore the relationship between the identified well-being factors and education for sustainable development.

5.1.3. Future Research

The propositions advanced by this study present opportunities for future research using both qualitative and quantitative designs. For a start, a quantitative study could establish the relationship between manageable workloads, transparency, grading criteria, fairness, sense of belonging, work-life balance, mental health support, absence of emotional intelligence, and the establishment or practice of ESD.

The proposition that instructors' role models, institutional commitment, leadership towards sustainability, and collaboration with government institutions influence ESD needs further investigation for a nuanced understanding and, therefore, a clear way forward for both educational institutions and the country.

The proposition that ESD influences future sustainable development environmentally, economically, and socially has implications for the curriculum in learning institutions. It opens the need to qualitatively interrogate the meaning of economic, social, and environmental aspects in Saudi Arabia and how they can be integrated into the education system.

Finally, Proposition 4's suggestion that ESD mediates the relationship between the antecedents for ESD and sustainable development needs to be tested through a quantitative study.

4. Discussion

The study's advanced propositions are consistent with previous research in one way or another. These previous studies include UNESCO in 2015, which relates ESD to SD; Mogensen's [37] concentration on the expansion of skills and activity competence for sustainability; and Hossain, O'Neill, and Strnadová's [18] claim that student well-being is one of the significant factors that contribute to the antecedents of education for sustainable development. In this study, the results show that student well-being influences ESD and, therefore, SD. Hossain, O'Neill, and Strnadová [18] study results recognized eight overarching realms of student well-being: Purpose at school, Relationships, Negative Emotion (lack of emotion), Positive emotion, Engagement, Accomplishment, Contextual/External factors, and Intrapersonal/Internal factors. All these factors were also found to influence ESD in this study's results.

Moreover, the results are consistent with Semin's [13] competencies of principals in assuring sustainable education. The competencies identified as manageable workloads, transparent grading criteria, fairness, sense of belonging, work-life balance, and mental health support are the positive and negative behaviors affecting education for sustainability. Furthermore, this study's results are consistent with Van den Branden's [7] and Fullan's [14] studies, who claimed four factors that lead to a successful sustainable educational system that can equip policy-makers with a marked sense of mandate when they carry on the challenge of promoting sustainable education. Finally, the study results of Bukhari and Khanam [17] revealed that educational performance is highly negatively correlated with depression, which jeopardizes students' well-being; this study's results confirm that in the Middle Eastern context, learners' well-being influences ESD. Hence, the authors argue that the student well-being factors identified through interviews incorporating manageable workloads, transparency, grading criteria, fairness, sense of belonging, work-life balance, and mental health support make sense since they impact students' happiness on campus.

Author Contributions: Conceptualization, XXXXXXXX. and YYYYYYYY.; methodology, XXXXXXXX.; software, XXXXXXXXXX.; validation, XXXXXXXX., and YYYYYYYY.; formal analysis, XXXXXXXXXX; investigation, YYYYYY; resources, XXXXXXXX.; data curation, YYYYYY.; writing—original draft preparation, XXXXXXXX; writing—

review and editing, YYYYYYYY.; visualization, XXXXXXXX.; supervision, XXXXXXXX.; project administration, XXXXXXXX.; funding acquisition, N/A. All authors have read and agreed to the published version of the manuscript. Authorship is strictly limited to those who have contributed substantially to the work reported.

Funding: This research received no external funding. So far, the authors of this manuscript received no monetary aid for the study preparation, authorship, and journal publication of this paper.

Institutional Review Board Statement: The animal study protocol was approved by the Institutional Review Board (or Ethics Committee) of PINCE MOHAMMAD BIN FAHD UNIVERSITY.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study and kept confidential.

Data Availability Statement: Data is unavailable due to privacy or ethical restrictions. The authors informed the interviewees that their data would not be revealed or accessed by anyone other than the researchers, which gave them assurance and protection from any current or future potential harm due to their honest answers on a sensitive topic. The authors agreed with that assurance because they look to make the interviewees feel secure and comfortable and provide honest answers without fear from anyone. The authors tried hard to know what the interviewees said and did not say. However, their language, tone, and body gestures or reactions can tell us. The authors understand the cultural norms of the conservative society. We study the topics of well-being, sustainable education, and sustainable development.

Acknowledgments: The authors acknowledge the support from the Learning Support Center (LRC) at PMU for providing the study with unique quiet rooms to interview the study interviewees whenever we asked for them.

Conflicts of Interest: The authors of this manuscript, with utmost integrity, have stated no possible conflicts of interest concerning the study, authorship, and publishing of this paper. Hence, the authors declare no conflicts of interest that inappropriately influence the representation or interpretation of reported research results. No funder and no one has any role of the funders in the design of the study, in the collection, analysis, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results to be declared in this section. In other words, no funders had a role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results”.

Appendix A

- Part 1: Ethical Sustainable Education (University Level) Interview Questions for Focus Group:
- 1) What is the meaning of sustainability in education?
 - 2) Why would you think sustainable education is critical nowadays?
 - 3) How can universities contribute to sustainable education?
 - 4) How do university educators contribute to sustainable education?
 - 5) How can university students contribute to sustainability?
 - 6) What do you know about the concepts of sustainability and sustainable education institutions?
 - 7) What do you think is the role of education in University towards contributing to sustainable development?
 - 8) What are the factors that facilitate the implementation of sustainable initiatives in your institution or Saudi Arabian Education Institutions?
 - 9) What are some of the conditions that help to create a stress-free and comfortable studying environment that causally increases subjective well-being and suppresses depressive symptoms for students in university?
 - 10) How comfortable studying setting prevent harm to their subjective well-being normally caused by increased studying obligations, assignments, projects, and commitment to multiple assessment tasks?
 - 11) How do each of the following (Domain) from Table (5) below affect your well-being of you as a student at the University?

Appendix B

Part 2: Analysis of the determinants of student well-being: Focusing on the causal effects of a Stress-free and comfortable studying environment:

1) What are some of the conditions that help to create a stress-free and comfortable studying environment that causally increases subjective well-being and suppresses depressive symptoms for students in University?

2) How comfortable studying setting prevents harm to their subjective well-being usually caused by increased studying obligations, assignments, projects, and commitment to multiple assessment tasks

3) How do each of the following (Domain) from Table (5) below affect your well-being of you as a student at the University?

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