

The Reality of Educational Applications for Sustainable Development in High Schools from the Perspective of Principals

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Abstract:

The aim of this study is to examine educational applications for sustainable development in high schools in the Tlemcen region as reflected in the perspectives of education administrators.

The theoretical framework addresses the concept of sustainable development, its goals and dimensions, as well as the significance of high school education. It also explores the link between sustainable development and the educational process through related applications in high school settings.

On the practical side, data were collected using a questionnaire designed by the researcher and administered to a purposive sample of 61 high school principals in the Tlemcen region. Analysis of the responses yielded the following findings:

There is a high level of contribution from teachers, school leadership, the curriculum, the school environment, and educational activities in implementing sustainable development principles in high schools, according to the principals.

No significant differences were found in principals' views based on their academic specializations.

The five dimensions, ranked from highest to lowest, are: the role of school management, teachers, school environment, educational activities, and finally, the curriculum.

These findings were discussed in relation to existing literature in the field.

Keywords: Sustainable Development; Educational Process; High School Education; Educational Applications; High School Principals.

Introduction

Sustainable development is one of the most prominent issues occupying the attention of the international community in the modern era. Achieving a balance between the demands of economic growth, environmental protection, and ensuring social justice has become a global priority. The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, provide a global framework aimed at improving the quality of life on Earth for both current and future generations.

In this context, educational institutions play a vital role in spreading sustainability concepts. Schools are not just places for academic education but are dynamic environments that contribute to shaping the values, beliefs, and behaviors of students. From this perspective, the importance of the school's role in promoting sustainable development concepts emerges, teaching future generations how they can be part of the solutions that ensure long-term environmental and social sustainability. Schools are the ideal setting to instill values of sustainability, such as resource conservation, environmental awareness, and encouraging community participation.

High school are also a critical turning point in students' educational journeys, as it is during this stage that critical thinking skills are developed, and awareness of environmental and social issues is enhanced. Therefore, introducing sustainable development concepts into the Highschool education system is an essential step towards educating a generation capable of addressing contemporary challenges.

As school principals represent the institutional leadership overseeing the implementation of policies and programs, their role in evaluating the application of sustainable development principles in schools is crucial. This process requires a deep understanding of the school's needs, a comprehensive analysis of the available resources, and the ability to identify the challenges and opportunities that may arise in implementing these principles.

Research Problem

This study aims to assess the reality of sustainable development applications in high school by analyzing the perspectives of school principals regarding the extent to which these principles are implemented in schools. The focus will be on the practices followed in schools and the degree of integration of sustainability concepts into school life through the contributions of teachers, school administration, the educational curriculum, the school environment, and educational activities. This will be explored through the following main research question:

What is the reality of educational applications for sustainable development in high schools as reflected in the perspectives of education administrators in Tlemcen?

The following sub-questions arise from this main question:

- Does the teacher contribute to the implementation of sustainable development principles in high school as reflected in the perspectives of education administrators?
- Does the school administration support the implementation of sustainable development principles in high school as reflected in the perspectives of education administrators?
- Does the educational curriculum contribute to instilling sustainable development values in high school as reflected in the perspectives of education administrators?
- Does the school environment contribute to promoting sustainable development principles in high school as reflected in the perspectives of education administrators?
- Do educational activities contribute to raising awareness of sustainable development in high school as reflected in the perspectives of education administrators?

Research Objectives

- To identify the extent of the teacher's contribution to the application of sustainable development principles in high school as reflected in the perspectives of education administrators.
- To examine the extent of educational management's contribution to the application of sustainable development principles in high school as reflected in the perspectives of education administrators.
- To assess the extent of the contribution of educational curricula to the application of sustainable development principles in high school as reflected in the perspectives of education administrators.
- To determine the extent of the contribution of the educational environment to the application of sustainable development principles in high school as reflected in the perspectives of education administrators.
- To evaluate the extent of the contribution of educational activities to the application of sustainable development principles in high school as reflected in the perspectives of education administrators.

Through this assessment, the study aims to provide insights and practical suggestions that contribute to improving the application of sustainable development in high school and enhance the ability of educational institutions to

create a sustainable learning environment that supports future generations in building a more sustainable future.

Research Importance

The significance of the current research is attributed to the following reasons:

- It aligns with the global trend of making education contribute to achieving sustainable development, as emphasized by UNESCO in its declaration of the Decade of Education for Sustainable Development.
- The study addresses a topic that concerns the Highschool education stage, which is considered a cornerstone for achieving sustainable development in our country.
- The educational applications of sustainable development directed towards Highschool education students have a lasting impact on their future lives, through acquiring new skills such as critical thinking, problem-solving, and teamwork.

Research Boundaries

- Subjective Boundaries: The current study is limited to the examination and analysis of the reality of educational applications for sustainable development in high school as reflected in the perspectives of education administrators, using a questionnaire for data collection.
- Spatial Boundaries: The study is confined to high school in the Tlemcen region.
- Temporal Boundaries: The study will be conducted during the second semester of the academic year 2023/2024.
- Human Boundaries: The study targets official principals responsible for managing high school.

Research Terminology

Educational Applications for Sustainable Development:

Terminological Definition: Educational applications refer to “a set of concepts, facts, knowledge, principles, and attitudes that learners are required to apply scientifically and consciously, and to experience in a way that enhances their ability to perform academically well, helps them form positive behaviors, habits, and attitudes, and works to develop their inclinations and meet their needs in a positive manner to achieve a well-rounded character of a good person in light of the Islamic perspective” (Al-Farabi & Others, 1994, p. 272).

Thus, Educational applications for sustainable development encompass strategies and practices that embed sustainability concepts into education. This integration

involves the teacher's role, curricula, school activities, administration, and environment, aiming to equip students with the knowledge, skills, and values required for environmental, economic, and social sustainability.

Literature Review

To the best of the researcher's knowledge, a review of relevant literature on sustainable development and education has identified the following key studies:

- Jallad Study, Hala Ibrahim Mohamed (2018): Values of Sustainable Development Among High school Students: This study aimed to assess the current state of sustainable development values among high school students and evaluate the role of high school education in fostering these values. It also sought to identify the primary obstacles impeding these educational efforts. Employing a descriptive methodology, the researcher surveyed a sample of 400 students using a self-designed questionnaire. The study yielded several key findings, including:
 - There are some shortcomings in the practices carried out by schools to develop some sustainable development values among high school students.
 - A lack of awareness among those responsible for Highschool education regarding the importance of sustainable development values in preparing high school students for life and higher education.
 - Limited time available to focus on the development of sustainable development values, with all efforts being confined to helping students achieve the highest grades for university admission.
- Mansouri Study, Mouna (2020): Education and Its Role in Achieving Sustainable Development in Algeria: This study aimed to highlight the state of learning in Algeria and its role in achieving sustainable development. The researcher relied on the descriptive-analytical method and concluded that while Algeria has made significant efforts, despite achieving the goal of universal education and making substantial progress in enrollment rates, especially for women and girls, it still lags behind in terms of quality and access to high-quality education. The results achieved have not met expectations, emphasizing the need to develop the Algerian education system to align with the achievement of sustainable development goals.
- Lukman, Adam, and Ya'qub, Abu Bakr (2020): Incorporating the Dimensions of Sustainable Development into Educational Curricula: A Content Analysis Study of the Book "Science in Our Life" for the Eighth

Grade in Basic Education in Sudan. The study used a descriptive analytical approach with content analysis. The study sample consisted of the book "Science in Our Life" for the eighth grade in basic education, and a content analysis card was used. The study included dimensions of sustainable development, and the results showed the availability of sustainable development dimensions in the book in varying percentages: (57.5), (28.2), and (14.3) percent.

- Mujahid, Naha Adel (2020): Enhancing Community Responsibility for Egyptian High school Students to Achieve Sustainable Development Requirements. The study sought to explore the concept and requirements of sustainable development, define community responsibility and its connection to sustainability, and evaluate the role of high school education in Egypt in promoting community responsibility among students. A proposed framework was developed to support this goal. Using a descriptive approach, the researcher administered a situational test to a sample of 400 public high school students. The findings revealed low levels of community responsibility across its three dimensions. The study emphasized the need to strengthen the roles of families, schools, teachers, academic activities, curricula, religious institutions, and media in fostering students' sense of responsibility to support societal improvement and meet sustainable development goals.

Commentary on Previous Studies

By reviewing the previous studies relevant to this research, it becomes evident that these studies have emphasized the urgent need to focus on sustainable development and its various dimensions. All of them affirmed the necessity of applying and developing the concept of sustainable development within the educational system at all its stages. This is precisely the goal of the current study, which aligns with previous research in clarifying the relationship between education and sustainable development. It also concurs with the studies of (Al-Jallad, 2018) and (Mujahid, 2017), both of which focused on Highschool education, except for the studies of Luqman and (Abkar, 2020) and (Mansouri, 2020).

However, the current study specifically focuses on evaluating the reality of applying sustainable education practices in high school as reflected in the perspectives of education administrators.

Benefits the Research Gained from Previous Studies

- Expanding the researcher's understanding and awareness of the variables related to the research topic.
- Contributing to enriching the theoretical framework of the current research.
- Assisting in the design of the research tool for the current study.

1- Theoretical Framework

1-1 Concept of Sustainable Development

The concept of sustainable development has undergone several developments, starting with the focus on the rights of future generations and evolving to encompass all dimensions necessary for achieving sustainability. Several terms have been used to refer to sustainable development, including continuous development, connected development, or sustainable and maintainable development.

The International Strategy for Environmental Conservation report defines it as: "The continuous pursuit of improving the quality of human life, while considering the capacity of the ecosystem that supports life and its potential."

Nonetheless, the World Commission on Environment and Development's 1987 report, *Our Common Future*, defines sustainable development as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Al-Zahrani M. b., 2016, p. 35).

This latter definition is the most widely recognized and accepted within academic and professional circles, as well as in developmental thinking. However, these definitions only outline the general framework for sustainable development, which calls for equality between generations in terms of meeting essential needs. The Food and Agriculture Organization defines it as: "The preservation and sustainability of multiple resources in the environment to meet the current social and economic needs of humans, using available science and technology, while ensuring the continuity of resources for the well-being of future generations." (Abbas, 2010, p. 352).

1-2 Sustainable Development in the Educational Process

Sustainable development in education is a fundamental idea guiding the whole educational process; it goes beyond the incorporation of environmental issues in courses. It means designing an educational system that equips students with the required knowledge, tools, and values to create a sustainable future by addressing the linked environmental, social, and economic issues. By including sustainability into many fields—such as handling climate change in science, carbon footprint assessments in mathematics, and responsible consumption in citizenship education—curricula are quite important. By implementing sustainable

practices—including energy and water conservation, recycling projects, and school gardens encouraging environmental involvement—schools can help to strengthen these values even more. Such policies help students to act responsibly toward their communities and the planet and make education more pertinent to practical problems.

2- Educational Applications of Sustainable Development in Highschool education

2.1- The Teacher's Contribution to Sustainable Development in Highschool education

The teacher is the expert appointed by society to achieve its educational goals. On one hand, they are the guardian of cultural heritage, and on the other, they play a significant role in renewing and reinforcing this heritage (Al-Rashdan & Ja'nini, 2002, p. 291).

The teacher is considered an essential and significant element in the educational process. The cognitive and emotional characteristics they possess play a prominent role in the effectiveness of this process, as they constitute one of the crucial educational inputs that affect the learning outcomes on various levels—cognitive, psychological, performance-based, and emotional. (Malhem, 2006, p. 456).

2.2- The Role of Teachers and School Administration in Sustainable Development

The teacher's role in education and upbringing, within curricula, environments, and activities that contribute to success, requires them to engage students' interest in sustainable development. This involves selecting topics, phenomena, and issues that motivate students to study and participate in resolving them. Additionally, it involves organizing students into working groups according to their individual circumstances, ensuring that their roles integrate and work together to achieve valuable principles in society (Al-Zahrani M. b., 2016, p. 354).

Such practices, among others, encourage students to engage in activities addressing environmental and developmental issues, training them to identify these issues and make decisions to resolve them.

2.3-The Contribution of School Management to Sustainable Development in Highschool education

Through planning, organization, assessment, and student direction, school management significantly influences the educational process by helping to establish a supportive learning environment. This improves results, lowers dropout rates, and has a good impact on student and teacher performance. Schools

have to go beyond conventional teaching by interacting with their larger social, economic, and environmental settings, spotting community needs, and working with other organizations to create solutions if they are to fulfill sustainable development goals (Al-Zahrani M. b., 2016, p. 359).

2.4- The Contribution of School Curricula to Sustainable Development

School curricula occupy a central role in the educational process to the extent that they can be described as the backbone of the education system. Given this importance, any educational system must adopt a specific curriculum that reflects the attitudes of the society in which it operates in order to educate and train individuals based on well-studied scientific foundations. This is achieved through the curriculum's components, which include objectives, content, teaching methods, and assessment tools.

2.5- The Contribution of the School Environment to Sustainable Development

The educational or school environment represents the setting in which the educational process takes place effectively, thereby improving the quality of education. This makes the school environment highly significant for sustainable development, as long as its design is aligned with the educational philosophy and the educational goals outlined in the educational policy. Furthermore, the necessary resources must be provided. The high school can promote the principles and goals of sustainable development by utilizing its resources and contributing to environmental developmental activities within the school's local environment. In this way, the school becomes a means and a center for spreading the concepts of sustainable development (Jamil, 2008: p. 12).

2.6- The Contribution of School Activities to Sustainable Development in High School

School activities are varied. There is what is known as the curricular or classroom activity, which aims to deepen the scientific concepts and principles that students study in their academic courses. There is also the extracurricular activity, which aims to create educational situations in which students are better prepared to face their daily lives.

In light of the challenges of the 21st century and for the sake of sustainable development, classroom and extracurricular activities must contribute to equipping high school students with a range of life skills to develop a productive and responsible citizen who actively and positively contributes to the development and growth of their country. These include: manual work skills, technological skills, in addition to social, informational, scientific,

communication, critical and creative thinking skills, problem-solving skills, and others (Al-Zahrani M. b., 2016, pp. 371-372).

3- Methodological Procedures for the Field Study

- Exploratory Study: Building the Study Tools: This study relied on a primary tool for data collection, which is the questionnaire, designed to measure the opinions of high school principals regarding the reality of sustainable development applications in their educational institutions. The questionnaire was designed based on a review of the study literature and previous studies, as well as expert opinions to ensure its validity and reliability.

3.1- Description of the Study Tool

Comprising 35 questions, the survey covers several aspects of sustainable development projects in high schools. Its organization into parts addresses general knowledge—including the name of the school and principal's area of expertise—as well as the contributions of teachers, school administration, curricula, the school environment, and school activities.

3.2- Evaluation of the Scale

The questionnaire was presented to a panel of six professors from the faculty of the University of Djilali Liabes in Sidi Bel Abbes, all holding the rank of Full Professor in various psychology disciplines. They were asked to assess the relevance of each item to its domain, its linguistic formulation, scientific accuracy, and clarity. Based on their feedback and observations, all the items received their approval, with some revisions made to certain items.

3.3- Pilot Study

Sample of the Pilot Study: The sample for the pilot study consisted of 21 school principals.

Application Procedures: The questionnaire was distributed to a sample of high school principals to assess their understanding of the questionnaire's instructions, the clarity of the items, and the time required to answer all sections. Additionally, the psychometric properties of the instrument were evaluated. A total of 21 principals participated in the pilot application.

3.4- Psychometric Properties of the Current Study's Questionnaire

- Validity through Internal Consistency: This was calculated by finding the correlation coefficient between each statement and the total score. The following table illustrates these correlations:

Table 1. Internal Consistency Validity of the Questionnaire Items with Subdimensions and Total Score

| Dimension | P.N | C with Dimension | C with Overall Test | P.N | C with Dimension | C with Overall Test |
|------------------------------------|-----|------------------|---------------------|-----|------------------|---------------------|
| Teacher Contribution | Q1 | 0.82** | 0.75** | Q5 | 0.87** | 0.83** |
| | Q2 | 0.83** | 0.68** | Q6 | 0.87** | 0.84** |
| | Q3 | 0.85** | 0.73** | Q7 | 0.73** | 0.71** |
| | Q4 | 0.71** | 0.71** | | | |
| School Administration Contribution | Q1 | 0.71** | 0.43 | Q5 | 0.93** | 0.77** |
| | Q2 | 0.93** | 0.80** | Q6 | 0.91** | 0.87** |
| | Q3 | 0.90** | 0.78** | Q7 | 0.88** | 0.78** |
| | Q4 | 0.89** | 0.84** | | | |
| Educational Curricula Contribution | Q1 | 0.87** | 0.88** | Q5 | 0.81** | 0.67** |
| | Q2 | 0.85** | 0.81** | Q6 | 0.90** | 0.90** |
| | Q3 | 0.80** | 0.62** | Q7 | 0.94** | 0.85** |
| | Q4 | 0.89** | 0.73** | | | |
| School Environment Contribution | Q1 | 0.88** | 0.81** | Q5 | 0.92** | 0.90** |
| | Q2 | 0.78** | 0.76** | Q6 | 0.95** | 0.89** |
| | Q3 | 0.94** | 0.90** | Q7 | 0.95** | 0.90** |
| | Q4 | 0.92** | 0.92** | | | |
| School Activities Contribution | Q1 | 0.95** | 0.82** | Q5 | 0.97** | 0.86** |
| | Q2 | 0.94** | 0.88** | Q6 | 0.86** | 0.71** |
| | Q3 | 0.98** | 0.84** | Q7 | 0.95** | 0.79** |
| | Q4 | 0.91** | 0.79** | | | |

Significant at 0.01 Level

P.N = Paragraph Number; C = Correlation.

It is evident from Table (1) that the items of the scale were significant at the 0.01 level. Therefore, it can be concluded that the scale demonstrates good validity.

- Discriminant Validity (End-group Comparison): This is done by arranging the participants according to their scores, either in ascending or descending order, and then forming two groups: the upper 27% and the lower 27%. The differences between the means of the two groups in each dimension are examined separately. The goal is to determine whether the test has the ability to distinguish between the two extremes of the characteristic.

Table 2. illustrates the discriminant validity of the questionnaire on the exploratory sample (N=21)

| Statistical Technique | | | | | |
|-----------------------|-----------|------|------|--------|-------------|
| S. Level | "t "Value | S.D | Mean | Number | |
| Significant at 0 | 12.85 | 5.84 | 76.8 | 6 | Lower Group |
| | | 11.4 | 144 | 6 | Upper Group |

What is noticeable from Table (2) is that using the "t" test for independent samples, significant differences were found between the upper and lower groups, with the "t" value estimated at (12.85), which is significant at the (0.00) level. The differences were in favor of the upper group, who scored higher on the scale. Therefore, the scale has good discriminative validity.

- Self-Validity: Self-validity is calculated by determining the square root of the reliability coefficient.

Table 3. illustrates the self-validity of the questionnaire

| Variable | Reliability Coefficient | Square Root |
|--------------------|-------------------------|-------------|
| Principals' Survey | 0.98 | 0.99 |

From Table (03), it is observed that the Cronbach's alpha reliability coefficient was high, indicating that the questionnaire has good reliability

Reliability:

The reliability of the questionnaire was calculated using Cronbach's alpha. The following table illustrates the results:

Table 4. Reliability of the Questionnaire

| Variables | Cronbach's Alpha |
|---------------|------------------|
| A | 0.91 |
| B | 0.95 |
| C | 0.94 |
| D | 0.96 |
| E | 0.97 |
| Overall Scale | 0.98 |

Main Study

- Study Methodology: The researcher used the descriptive method, which relies on describing the current reality and then analyzing the data collected through the questionnaire.

- Study Population: The original population of the current study consists of the principals who were assigned the supervision and management of high school education institutions under the Directorate of Education of Tlemcen Province, totaling (61) principals.
- Study Sample: The sample was selected using the purposive sampling method due to the small number of high school principals. However, only (40) questionnaires were returned from the (61) sent via email to the schools. The characteristics of the sample members can be explained according to the following table:

Table 5. shows the characteristics of the study sample according to the specialization variable

| Specialization | Frequency | Percentage |
|----------------|-----------|------------|
| Literary | 13 | 32.50% |
| Scientific | 16 | 40% |
| Technological | 11 | 27.50% |
| Total | 40 | 100% |

It is evident from the table that the percentages were nearly similar. The majority of the sample consisted of individuals with a scientific specialization, representing 40% of the total sample. Following them were those with a literary specialization, making up 32.5%, while those with a technological specialization accounted for 27.5%.

3.5- Presentation and Analysis of Results

First Partial Question: Does the teacher contribute to the application of sustainable development principles in high schools from the perspective of the principals?

To answer this question, the researcher compared the arithmetic mean with the theoretical mean of the scores regarding the teacher's contribution to the application of sustainable development principles in high schools from the principals' perspective. This was done using a one-sample t-test. The following table illustrates the results:

Table 6. The Teacher's Contribution to the Application of Sustainable Development Principles in High schools from the Perspective of the Principals

| V. | A. M | S. D | T. M | t- Value | D. F | S. Level |
|---------|-------|------|------|----------|------|---------------------|
| Teacher | 22.85 | 5.9 | 18 | 5.19 | 39 | Significant at 0.00 |

A. M = Arithmetic Mean. D. T.M = Theoretical Mean; F = Degrees of Freedom.

Through the results of Equation (T) related to the significance of differences for a single sample on the variable of the teacher's contribution to the application of sustainable development principles in high schools as reflected in the perspectives of education administrators, we observe that the arithmetic mean was (22.85), while the theoretical mean was (18). It is evident that there are differences. The calculated t-value was (5.19), and it was significant as it did not exceed the significance level of 0.00. Therefore, there is a high level of teacher contribution to the application of sustainable development principles in high schools from the perspective of the school principals in the study sample, as the arithmetic mean was greater than the theoretical mean. Thus, the hypothesis was confirmed (Al-Zahrani, 2016, p. 350-351).

Therefore, after the 1980s, education in the country has undergone a qualitative shift from prioritizing quantity—particularly in employment—toward emphasizing quality and efficiency. This transformation included reforming teacher training policies by restructuring content, programs, and duration. As a result, teachers were encouraged to deepen their knowledge and professional competencies. Sustainability became a core component of teacher training through expert-led workshops and courses, enabling teachers to adapt to educational developments and address pressing issues such as climate change and pollution. Teachers increasingly view themselves as agents of behavioral and attitudinal change, successfully engaging high school students in sustainability-focused activities. The results align with the study by (Mona Sakit Munadi, 2022), which found that social studies teachers in high schools have a very high awareness of the principles of green economics in their teaching practices. The findings also somewhat align with Al-Ruethi's study (2021), which concluded that natural science teachers engage in teaching practices supportive of education for sustainable development at a moderate level across all dimensions. Additionally, the study by (Azab & Mortaja, 2015) showed that high school students moderately agree that teachers play a role in raising awareness about the requirements of sustainable development.

Partial Question Two: Does school management contribute to the implementation of sustainable development principles in high schools as reflected in the perspectives of education administrators?

To answer this question, the researcher compared the mean score and the theoretical mean score of the variable "the contribution of school management to supporting the implementation of sustainable development principles in high

schools" from the perspective of principals, using the one-sample t-test. The following table illustrates this:

Table 7. Illustrates the contribution of school management to supporting the implementation of sustainable development principles in high schools from the perspective of principals

| Variable | A. M | S. D | T. M | t- Value | D.F | S.Level |
|-----------------------|-------|------|------|----------|-----|---------------------|
| School Administration | 22.92 | 5.77 | 18 | 5.39 | 39 | Significant at 0.00 |

From Table (07) related to the results of Equation (T) for testing the differences in a single sample for the variable "Contribution of school management in supporting the application of sustainable development principles in high schools from the perspective of the principals," it is observed that the mean score was (22.92), while the theoretical mean was (18). This indicates that there are significant differences. The calculated T-value was (5.39), which is statistically significant as it did not exceed the significance level of 0.00. Therefore, there is a high level of contribution from school management in supporting the application of sustainable development principles in high schools from the principals' perspective in the study sample, as the arithmetic mean was higher than the theoretical mean. Thus, the hypothesis was confirmed.

The Ministry of Education and supervisory agencies' focus on ongoing training for administrators and the strengthening of professional supervision explains these results. Choosing high school principals according to contemporary standards has also helped to improve leadership abilities, increase awareness among teachers, students, and the broader society, and better knowledge of sustainable development issues. This has helped the high school system to move toward community-based education for sustainable development.

These results align with the study by (Al-Dossary, 2024) where the findings concluded that school management plays a significant role in achieving sustainable professional development for teachers in all aspects. The study by (Al-Mouji & Al-Mubaideen) found that school management utilizes various essential methods for sustainable development. The results are also somewhat in line with the study by (Azab & Mortaja, 2015), which indicated that high school students moderately agree on the school management's role in raising awareness about sustainable development requirements. Additionally, the study by (Al-Mahdi, Lasheen, & Al-Balushi, 2023) showed that the practice of sustainable leadership was moderately evaluated from the teachers' perspective.

Third Partial Question: Does the educational curriculum contribute to instilling the values of sustainable development in high schools from the perspective of the principals?

To answer this question, the researcher compared the arithmetic mean with the theoretical mean of the scores regarding the contribution of the educational curriculum in instilling the values of sustainable development in high schools from the principals' perspective. This was done using a one-sample t-test. The following table illustrates the results:

Table 8. The Contribution of the Educational Curriculum in Instilling the Values of Sustainable Development in High schools from the Perspective of the Principals

| Variable | A. M | S. D | T. M | t- Value | D. F | S. Level |
|------------------------|-------|------|------|----------|------|---------------------|
| Educational Curriculum | 20.82 | 6.38 | 18 | 2.8 | 39 | Significant at 0.00 |

Through the results of Equation (T) related to the significance of differences for a single sample on the variable of the educational curriculum's contribution to instilling the values of sustainable development in high schools as reflected in the perspectives of education administrators, we observe that the arithmetic mean was (20.82), while the theoretical mean was (18). It is evident that there are differences. The calculated t-value was (2.80), and it was significant as it did not exceed the significance level of 0.00. Therefore, there is a high level of contribution from the educational curriculum to instilling sustainable development values in high schools as reflected in the perspectives of education administrators in the study sample, as the arithmetic mean was greater than the theoretical mean. Thus, the hypothesis was confirmed.

Emphasizing environmental education, these findings reflect the state's attempts to include sustainable development into courses. Algerian Law No. 03-10 supports this by requiring the incorporation of environmental ideas in education to foster sustainability and environmental protection. The results are consistent with the study by (Allaan, 2024), which revealed the contribution of officially adopted educational programs in raising environmental awareness among students, and somewhat with the study by (Al-Zahrani N. M., 2022), which indicated that the role of high school curricula in raising awareness about the requirements of sustainable development and Saudi Arabia's Vision 2030 was moderate.

Partial Question Four: Does the school environment contribute to promoting the principles of sustainable development in high schools as reflected in the perspectives of education administrators?

To answer this question, the researcher compared the mean score and the theoretical mean score of the variable "the contribution of the school environment to promoting the principles of sustainable development in high schools" from the perspective of principals, using the one-sample t-test. The following table illustrates this:

Table 9. Illustrates the contribution of the school environment to promoting the principles of sustainable development in high schools from the perspective of principals

| Variable | A. M | S. D | T. M | t-Value | D. F | S. Level |
|--------------------|-------|------|------|---------|------|---------------------|
| School Environment | 22.82 | 6.29 | 18 | 4.85 | 39 | Significant at 0.00 |

From Table (09) related to the results of Equation (T) for testing the differences in a single sample for the variable "Contribution of the school environment in promoting sustainable development principles in high schools from the perspective of the principals," it is observed that the mean score was (22.82), while the theoretical mean was (18). This indicates that there are significant differences. The calculated T-value was 4.85, which is statistically significant as it did not exceed the significance level of 0.00. Therefore, there is a high level of contribution from the school environment in promoting sustainable development principles in high schools from the principals' perspective in the study sample, as the arithmetic mean was higher than the theoretical mean. Thus, the hypothesis was confirmed.

These findings are connected to the 2002 partnership between the Ministry of Environment and the Ministry of Education, formalized by a protocol intended to enhance environmental education and sustainable development in schools. Revised in 2019, this accord resulted in the establishment of more than 10,000 environmental clubs at all educational levels, including high schools, with 2,500 clubs armed with technology tools to assist awareness campaigns. These initiatives draw attention to the important part the school setting plays in promoting sustainable development and environmental education among students. However, these results did not align with the study by (Al-Saud & Al-Mulla, 2021), where the findings indicated the lack of technical standards related to the development and design of a sustainable educational physical environment from the teachers' perspective.

Fifth Question: Do educational activities contribute to enhancing awareness of sustainable development in high schools from the perspective of the principals? To answer this question, the researcher compared the arithmetic mean with the theoretical mean of the scores regarding the contribution of educational activities in enhancing awareness of sustainable development in high schools from the principals' perspective. This was done using a one-sample t-test. The following table illustrates the results:

Table 10. The Contribution of Educational Activities in Enhancing Awareness of Sustainable Development in High schools from the Perspective of the Principals

| Variable | A. M | S. D | T. M | t Value | D. F | S. Level |
|------------------------|-------|------|------|---------|------|---------------------|
| Educational Activities | 22.72 | 6.46 | 18 | 4.62 | 39 | Significant at 0.00 |

Viewed by principals, the outcomes of the one-sample t-test evaluating the role of educational activities in increasing awareness of sustainable development in high schools revealed an arithmetic mean of 22.72 against a theoretical mean of 18. Indicating a strong contribution of educational activities to sustainability awareness, the computed t-value of 4.62 is statistically significant at the 0.01 level. This verifies the theory. The influence of environmental clubs created under the cooperation protocol between the Ministry of Environment and Renewable Energy and the Ministry of National Education explains these results. Environmental education has been greatly advanced by these clubs and awareness seminars. Furthermore, school activities have helped students improve their social integration, expression, and communication skills, so fostering a more sustainable and unified society.

The results align with (Allaan, 2024), which highlighted the reliance of Algerian school teachers on extracurricular activities to support positive environmental behaviors among students. These results are also somewhat consistent with the study by (Al-Rasbiya & Al-Matari, 2023), which showed that the actual role of student activities in achieving sustainable development goals in post-basic education schools in the Eastern Province was moderately realized.

Presentation of the General Question Result: What is the reality of educational applications of sustainable development in high schools from the perspective of the principals?

To answer this question, the researcher calculated the arithmetic mean and standard deviation for each dimension.

Table 12. shows the arithmetic mean and standard deviation for each dimension

| Variables | Sample Size | A. M | S. D | Rank | Degree |
|------------------------|-------------|--------|-------|------|------------|
| Teacher | 40 | 22.85 | 5.9 | 2 | Large |
| School Administration | 40 | 22.92 | 5.77 | 1 | Very Large |
| Educational Curriculum | 40 | 20.82 | 6.38 | 5 | Very Weak |
| School Environment | 40 | 22.82 | 6.28 | 3 | Average |
| Educational Activities | 40 | 22.72 | 6.64 | 4 | Weak |
| Overall Test | 40 | 112.15 | 25.19 | | |

It is evident from Table (12) that the school administration dimension ranked first with an arithmetic mean of 22.92, followed by the teacher dimension with a mean of 22.85 in second place. The school environment dimension came third with a mean of 22.82, while the educational activities dimension ranked fourth with a mean of 22.72. Lastly, the educational curriculum dimension ranked lowest with a mean of 20.82.

Based on principals' views, the table ranks high schools' dimensions of contribution to sustainable development. Probably because the sample was directly engaged in administrative duties, school administration came out on top. Administrative support is vital for the execution of any associated projects, thus principals see themselves as main engines of sustainability activities. Teachers ranked second, given their role in conveying concepts and shaping student awareness and behavior, though under administrative oversight. The school environment came in third, indicating the opinion that a good environment, molded by administrative choices, strengthens sustainability. Often extracurricular and reliant on student drive and school support, educational activities came in second to last. Though they are acknowledged vital, curricula rated lowest because of their little inclusion of sustainability material and absence of recent changes.

These findings align with the study by (Al-Ghaibar, 2018), which found a very high assessment of the role of educational institutions in developing the concept of environmental education among high school students, with similar rankings for the roles of administration and teachers. However, it differed in the ranking of the remaining three dimensions. The results also contrast with the study by (Al-Jallad,

2018), which revealed some shortcomings in the practices carried out by schools to foster certain values of sustainable development among high school education students.

Recommendations and Suggestions

- Emphasizing the necessity of directing education to serve the purposes of sustainable development and actively contribute to it.
- Including the objectives of educational curricula from the pre-primary level to higher education, and adopting curricula and educational content that incorporate the principles of sustainable development, its areas, and the role of humans in it.
- Bringing about a qualitative shift in educational and training programs by enhancing the efficiency of educational systems and teaching methods, and increasing their effectiveness to achieve outcomes aligned with the requirements of sustainable development.
- Promoting cooperation between the Ministry of Education and other relevant ministries, clubs, and associations to serve the goals of sustainable development.
- Paying attention to the preparation, selection, training, and development of school management, while granting them more decentralization in decision-making within the field of education.
- Giving more attention to the care of students in general, and high school students in particular, by guiding their behavior and thoughts, developing their interests and talents, and building correct concepts. Additionally, their energy should be utilized, directed, and their achievements recognized both internally and externally.

Referencing and Bibliography:

- Abbas, Salah. 2010. *Sustainable Development in the Arab World*. Alexandria: Shabab Al-Jameaa Foundation.
- Abkar, Yaqoub Adam Luqman. 2020. "Integrating the Dimensions of Sustainable Development in Educational Curricula: A Content Analysis Study of the Science in Our Life Textbook for Grade Eight in Basic Education in Sudan." *Abhat Journal* (16): 157–177. doi:<https://doi.org/10.37375/abhat.vi16.475>.
- Al-Dossary, Falah bin Baz. 2024. "The Reality of the Role of School Administration in Achieving Sustainable Professional Development for

- Secondary School Teachers in the Kingdom of Saudi Arabia." *Egyptian Periodicals Journal* 125 (4): 1011–1038.
- Al-Farabi, Abdel Latif, and Others. 1994. *Dictionary of Educational Sciences: Terms of Pedagogy and Didactics*. Casablanca: New Success Printing House.
- Al-Ghaibar, Huda bint Mohammed bin Abdullah. 2018. "The Role of the Educational Institution in Developing the Concept of Environmental Education among Grade 5–6 Basic Education Students in the Sultanate of Oman." *Scientific Journal of the Faculty of Education, Assiut University* 34 (4): 373–411.
- Al-Jallad, Hala Ahmed Ibrahim. 2018. "Sustainable Development Values among High School Students." *Journal of the Faculty of Education, Al-Azhar University* 37 (9): 465–532.
- Allaan, Anissa. 2024. "The Role of Algerian Schools in Developing Environmental Awareness among Students: A Sociological Analytical Reading in the Anthropology of Education." *Arab Journal of Contemporary Anthropological Studies* 10 (1): 164–177.
- Al-Mahdi, Yasser Fathy, Mohamed Abdel Hamid Lasheen, and Asya Hassan Ali Al-Balushi. 2023. "The Degree of Sustainable Leadership Practice among Basic Education School Principals in the Sultanate of Oman: An Applied Study on South Al Batinah Governorate." *Jordanian Journal of Educational Sciences* 19 (4): 981–995.
- Al-Mouji, Kawthar Al-Saeed Mahmoud, and Ra'd Kamal Suleiman Al-Mubaideen. n.d. "Evaluating the Role of School Administration in Achieving Sustainable Development Goals for Physical Education Teachers in the Hashemite Kingdom of Jordan." *Scientific Journal for Physical Education and Sports Sciences* 98 (3): 384–408.
- Al-Rasbiya, Amina bint Rashid, and Ali bin Said Al-Matari. 2023. "The Role of Student Activities in Achieving Sustainable Development Goals among Post-Compulsory Education Students in South Al Sharqiyah Governorate in the Sultanate of Oman." *Scientific Development Journal for Studies and Research* 4 (16): 377–404.
- Al-Rashdan, Abdullah, and Naeem Ja'nini. 2002. *Introduction to Education and Teaching*. 2nd edition. Amman: Dar Al-Shorouk.
- Al-Saud, Khaled Mohammed, and Mohammed Abdul Latif Al-Mulla. 2021. "The Extent of Availability of Technical Design Standards for Developing a

- Sustainable Educational Environment from the Perspective of Art Education Teachers." *Journal of Educational Sciences* 25 (3): 375–414.
- Al-Zahrani, Muajeb bin Ahmed Muajeb. 2016. *Sustainable Development and Its Educational Applications*. 1st. Amman: Dar Kunooz for Publishing and Distribution.
- Al-Zahrani, Nawal Mohammed bin Abdullah. 2022. "Evaluating the Role of High School Curricula in Raising Awareness of the Requirements of Sustainable Development and Saudi Arabia's Vision 2030." *Saudi Journal of Educational Sciences* 30 (5): 207–265.
- Azab, Mohamed Ali, and Ahed Mahmoud Mortaja. 2015. "The Role of High School in Developing Students' Awareness of the Requirements of Sustainable Development." *Journal of Educational and Psychological Studies, Faculty of Education, Zagazig* 2 (27): 337–374.
- Malhem, Sami Mohamed. 2006. *Psychology of Learning and Teaching: Theoretical and Practical Foundations*. 2nd. Dar Al-Masirah for Publishing, Distribution, and Printing.
- Mansouri, Mona. 2020. "The Role of Education in Achieving Sustainable Development in Algeria." *Arsad Journal for Economic and Administrative Studies* 3 (3).
- Mona Sakit Munadi, Al-Anzi. 2022. "The Level of Awareness among Secondary School Social Studies Teachers of Green Economy Principles in Their Teaching Practices." *Journal of the Faculty of Education, Assiut University* 38 (2): 45–49.
- Mujahid. 2017. "Promoting Social Responsibility among Egyptian High School Students to Meet the Requirements of Sustainable Development." *Published Master's Thesis, Cairo University*. Cairo: Cairo University.