The Availability of Green Consumption Values in Primary School Textbooks in the Kingdom of Saudi Arabia

Nouf Fahad Alzuhair[1], Khalid Mohammed Alkhuzaim[2] and Asmaa Muhammad Al-Qutaim[3]

Abstract

This study aims to identify and evaluate the incorporation of green consumption values into primary school textbooks in the Kingdom of Saudi Arabia. Specifically, it seeks to determine suitable green consumption values for primary-grade students and assess the extent to which these values are integrated into mathematics, science, and English language textbooks. Adopting a descriptive approach and employing content analysis methodology, the research analyzed all primary-grade textbooks in the country, totaling nine books. The findings reveal nine pertinent green consumption values for primary school students. Science textbooks demonstrated the highest prevalence of green consumption values, followed by mathematics and English language textbooks. Key values frequently cited include the development of vegetation, air and sea conservation, environmental awareness, and promotion of environmental sustainability. However, notable gaps were identified, particularly in mathematics and English language textbooks, indicating room for improvement in integrating green consumption values across primary-grade curricula in Saudi Arabia.

Keywords: *Green Consumption, Primary Education, Primary Stage, Saudi Arabia*

INTRODUCTION

Environmental sustainability is considered one of the paramount global concerns that the world strives to achieve and preserve, given the myriad challenges that endanger environmental life on planet Earth. This urgency is amplified by significant technological advancements across various fields, coupled with persistent efforts to manipulate and control nature in pursuit of elevated standards of well-being, often without due consideration for the potential ramifications, such as pollution and environmental degradation (Wardat et al., 2021).

In the context of global interest in this matter, the Sustainable Development Goals (SDGs) have emerged as a pivotal framework outlined in the World Plan for Sustainable Development 2030, comprising 17 goals established by the United Nations. These overarching goals are interconnected, each encompassing specific sub-goals, totaling 169 targets. Covering a wide array of social and economic development issues, the SDGs serve as a comprehensive roadmap for global progress. While not legally binding, governments worldwide take ownership and develop national frameworks to achieve these goals. Consequently, countries bear the primary responsibility for monitoring and evaluating progress at the regional and national levels, thereby contributing to global follow-up and review processes. In this context, the Kingdom of Saudi Arabia has demonstrated a commendable commitment to advancing the sustainable development agenda through diligent and transparent efforts. These efforts are meticulously detailed through the unified Saudi national platform, which serves as a comprehensive repository of government services and information for the Kingdom (Government Information Guide for the Kingdom of Saudi Arabia, 2022).

While the Kingdom of Saudi Arabia has long prioritized ecological conservation, being recognized as one of the proactive nations committed to preserving the environmental cycle, its efforts are notable. The Kingdom has embarked on initiatives to promote the adoption of clean energy, incentivize the construction of green

---

[1] Associate Professor, Department of curriculum and instruction, College of Education Imam Mohammad Ibn Saud Islamic University (IMSIU). Email: nfalzuhair@imamu.edu.sa, https://orcid.org/0000-0002-3109-0972

[2] Professor, Department of curriculum and instruction, College of Education Imam Mohammad Ibn Saud Islamic University (IMSIU). E-mail: kmkhuzaim@imamu.edu.sa, https://orcid.org/0000-0002-1180-1917

[3] Associate Professor, Department of Educational Sciences, College of Education, Majmaah University. E-mail: a.alqutaim@mu.edu.sa, https://orcid.org/0009-0005-8895-2712

buildings, and allocate significant investments toward establishing comprehensive recycling projects aimed at achieving efficient waste management. Furthermore, concerted endeavors have been made to mitigate desertification, combat pollution in its various forms, and transition towards optimal utilization of water resources (Hidayat & Wardat, 2023.)These initiatives include rationalizing water consumption, investing in desalination and water treatment technologies, and implementing projects with positive environmental impacts (Sustainable Development Goals Report - First National Review of the Kingdom of Saudi Arabia, 2018, pp. 130, 138, 164).

The Kingdom of Saudi Arabia's Vision 2030 represents a forward-looking initiative aimed at achieving economic and environmental harmony. Central to this vision is the cultivation of environmental awareness among individuals, fostering positive attitudes, and instilling values that prioritize the preservation of the nation's developmental achievements and the provision of resources for future generations (Al Farhan, 2019, p. 287 ; Gningue et al.2022).

In light of the Kingdom of Saudi Arabia's significant commitment to environmental conservation, it launched the "Saudi Green Initiative" in October of the year 2021. This initiative encompasses a range of goals spanning clean energy, environmental preservation, ocean conservation, climate action, waste recycling, vegetation development, consumption rationalization, and the promotion of green industries. A comprehensive package of 60 initiatives is outlined within the framework of the Green Saudi Arabia initiative. His Royal Highness, the Crown Prince, Prime Minister, and Chairman of the Supreme Committee for Green Saudi Arabia, also declared the Kingdom's ambition to achieve net-zero emissions by the year 2060 through the adoption of circular carbon economy principles, aligning with the nation's overarching development plans (Alneyadi et al., 2023 ;Green Saudi Initiative, 2021; Tashtoush et al.,2023).

Despite the issuance of numerous legal regulations aimed at curbing human activities contributing to environmental degradation and the emergence of penalties, laws and regulations alone have proven insufficient to safeguard the environment. Effective environmental protection requires a foundation built upon environmental awareness, values, and ethical standards guiding individual consumer behavior towards the environment. The process of fostering awareness of sustainable consumer values marks the initial step towards achieving sustainable green consumer behavior within the environment. Consumer values represent a crucial aspect of contemporary societal culture, encompassing prevailing trends and ideas that align with human consumption patterns. These values are acquired through various socialization institutions such as family, educational institutions and their curricula, media, and other societal bodies (Ben Yahia and Belaour, 2018). Consequently, numerous studies advocate for the importance of cultivating sustainable consumer values among young individuals from early stages of education. This can be achieved through integrating curricula and courses that instill and develop principles of rational sustainable consumption and foster awareness of environmental responsibility on Earth. Educational institutions, with their diverse curricula, are regarded as key in producing environmentally-conscious consumers aligned with sustainable development objectives (Al-Muzain, 2020 ; AlAli & Wardat, 2024).

Based on the aforementioned context and the prevailing global and local interest in environmental sustainability, this study aims to assess the extent of integration of green consumption values within primary-grade textbooks at the primary education level in the Kingdom of Saudi Arabia.

Research Questions

The study aims to address the following inquiries:

What are the most pertinent green consumption values suitable for primary school students?

To what extent are green consumption values available in first-grade primary school books in the Kingdom of Saudi Arabia?

How prevalent are green consumption values in second-grade primary school books in the Kingdom of Saudi Arabia?

What is the extent of green consumption values' availability in third-grade primary school books in the Kingdom of Saudi Arabia?

Research Objectives

The study endeavors to achieve the following objectives:

Identify the optimal green consumption values tailored for primary school students in the Kingdom of Saudi Arabia.

Assess the accessibility of green consumption values in first-grade primary school books within the Kingdom of Saudi Arabia.

Evaluate the prevalence of green consumption values in second-grade primary school books across the Kingdom of Saudi Arabia.

Determine the degree of availability of green consumption values in third-grade primary school books within the Kingdom of Saudi Arabia.

The Importance of the Study

The significance of this study can be underscored through two fundamental dimensions:

Theoretical Importance

Alignment with the Kingdom of Saudi Arabia's Vision 2030.

Consistency with the Saudi Green Initiative.

Contribution to the Kingdom's efforts towards achieving sustainable development goals.

Support for the initiative of the Deanship of Scientific Research at Imam Muhammad bin Saud Islamic University in promoting research within the realm of sustainable urban and human development.

Practical Importance

Enhancement of primary-grade curricula in the Kingdom of Saudi Arabia.

Introduction of a robust scientific tool, the content analysis card, with demonstrated validity and reliability, which can be utilized or further developed by researchers.

Anticipated benefit for educators teaching primary grades by providing appropriate green consumption values tailored to students' needs, thereby reinforcing these values among students.

Limitations of the Study: The current study operates within the following boundaries

Objective Limits

Exploration of green consumption values suitable for primary school students in the Kingdom of Saudi Arabia.

Examination of primary-grade books for the "Science, Mathematics, and English Language" courses, 2023 edition, excluding other courses, as they are adapted from the international "McGraw Hill" series.

Spatial Borders

Confined to the Kingdom of Saudi Arabia.

Time Constraints

Determined by the publication dates of the textbook editions, specifically the 2023 edition.

Study Terminology

Green Consumption Values: Researchers operationally define green consumption values as ethical principles, ideas, and habits that steer students toward positive, sustainable consumer behavior. These values advocate for

consumption practices that align with environmental preservation, emphasizing the responsibility of student consumers in addressing environmental issues. Examples include using organic products, opting for renewable energy sources, seeking products from environmentally conscious companies, engaging in recycling efforts, supporting vegetation and marine cover development, and incorporating eco-friendly products into various aspects of life.

Initial Grades of the Primary Stage: Researchers procedurally define the initial grades of the primary stage as encompassing the first, second, and third grades. These grades mark the commencement of primary education in the Kingdom of Saudi Arabia, catering to students aged 6 to 9 years old.

THEORETICAL FRAMEWORK

Green Consumption Values

Green consumption values encompass principles and beliefs that guide individuals towards environmentally responsible behavior. Values, as defined by scholars across various fields, are generalized mental and emotional judgments regarding people, things, meanings, and aspects of activity. They serve as standards against which one can assess goodness, ugliness, permissibility, desirability, and other aspects, creating a collective opinion within a group. Values influence behavior significantly, not only in personal life but also in the actions of individuals and groups as a whole (Shehata, Al-Najjar, Ammar, 2011).

Additionally, values are considered principles, levels, or characteristics that are deemed valuable or desirable. They aid in discerning between good and bad, right and wrong, useful and useless, and important and unimportant matters, whether they pertain to ideas, decisions, people, actions, or things (Al-Laqani and Al-Gamal, 2013). Throughout various disciplines, it is universally acknowledged that values play a pivotal role in shaping human behavior and are crucial to instill from an early age through education.

Environmental issues and the importance of environmental sustainability have become prominent concerns in our modern era (Song, 2019). Numerous studies have highlighted that current consumption patterns pose significant threats to the environment, endangering future generations (Zavali & Theodoropoulou, 2018). Despite efforts to address environmental problems, individuals' reluctance to change their consumption behavior continues to exacerbate these issues (Tripathi & Singh, 2016).

In response to these challenges, the concept of green consumption has emerged, defined by Al-Muzain (2020) as consumption closely aligned with sustainable development or sustainable consumer behavior. Green consumption involves practices that protect the environment both presently and for future generations, emphasizing consumers' responsibility to address environmental issues. Such behaviors include using organic products, opting for renewable and clean energy sources, and choosing goods from companies with minimal environmental impact (Zakariya &Wardat , 2023).

To foster green consumption behavior, it is crucial to instill values associated with environmental protection. These values, as defined by Haws et al. (2014), reflect individuals' inclination to prioritize environmental conservation in their purchasing and consumption habits. Emotional values are linked to consumers' feelings towards green products, often influenced by factors such as color or aesthetic appeal (Biswa & Roy, 2015). Functional value pertains to consumers' preference for green products based on their expected benefits, including price, quality, performance, and environmentally friendly ingredients (Norazah, 2013). Cognitive value represents consumers' awareness of green products and their evaluation of the benefits derived from their usage (Hassan, 2017), such as energy conservation, resource reduction, and pollution prevention (Khalil et al., 2023).

As awareness of environmental issues and the importance of sustainability grows, there is a corresponding increase in demand for green products. This shift in consumer behavior has led to the emergence of a new category of consumers known as "green" consumers, characterized by their environmentally conscious purchasing decisions (Zavali & Theodoropoulou, 2018).

From the discussion above, it's evident that green consumption values play a crucial role in shaping consumer behavior towards sustainability, making them a vital component of achieving sustainable development goals.

These values encompass responsibilities such as ensuring the sustainability of environmental resources, prioritizing the consumption of green organic products, relying on renewable and clean energy sources, promoting green recycling practices, embracing green technology, fostering a sustainable green economy, and actively supporting environmentally-friendly purchasing behavior.

Primary grade curricula and green consumption values

The school curricula, especially those in the primary stages, serve as the cornerstone for instilling various values, as values serve as the guiding principles for human behavior (Al-Khaloufi, 2021). Throughout history, curricula have played a pivotal role in shaping values and beliefs for successive generations, adapting to the evolving needs and innovations of each era (Tawfiq, 2019).

To effectively instill these values in young learners, curricula are designed to ensure integration and consistency across different levels of values. One of the most widely used classifications in this regard is Krathwohl's taxonomy, particularly renowned in the emotional domain (Attiya, 2015). Krathwohl's taxonomy categorizes values as follows:

The initial stage, preceding the formation of values, comprises two sub-levels: reception and response.

The intermediate stage encompasses three levels of value: acceptance, preference, and commitment.

The final stage, following value establishment, consists of two levels: organization and internalization.

Regarding the acquisition of environmental values, particularly green consumption values, the process unfolds across the following levels:

Acceptance of Value: At this stage, the learner demonstrates the capacity to attribute value to environmental topics or green consumer behavior. This signifies the ability to express personal preferences concerning various environmental issues, particularly those related to green consumerism. Conscious acceptance of positive alternatives characterizes this stage.

Preference of Value: Moving beyond mere acceptance, this stage involves a heightened level of importance and clarity. The learner exhibits a desire to engage with and prioritize topics associated with a particular value. Preference is evident when the learner assigns significance to a specific value when confronted with relevant consumer scenarios, making it the preferred option.

Commitment to Value: At the highest level, the learner develops unwavering conviction regarding the correctness of their assessment of environmental consumer issues. They display a profound commitment to green consumer behavior, demonstrating sincerity and dedication to the goals of green consumption and its associated environmental, social, global, and economic benefits. Furthermore, they actively advocate for these principles, endeavoring to convince others and promote a culture of sustainability.

The Vision of the Kingdom of Saudi Arabia 2030 and the Vision of the Saudi Ministry of Education 2030 seek, in particular, to support values in young people through public education curricula, especially the values of green consumption. This receives significant attention within the Kingdom of Saudi Arabia's global orientation and the Green Saudi Initiative. It is certain that instilling environmental values in the hearts of students is not limited to educational curricula alone. Considering the importance of developing a positive relationship between the learner and their environment and providing them with knowledge and skills that develop their behavior and positive attitude towards the environment they live in, it's essential to direct their consumer behavior towards green consumer behavior. This includes concern for the sustainability of the environment, preserving its balance, protecting it from pollution, and conserving its natural resources. This necessity makes it imperative for science curriculum developers to include a sufficient number of green consumption values in their various fields. This effort aims to provide young people with the desired environmental values in a way that achieves the goals of sustainable development, preserves the integrity of the ecosystem, and aligns with the environmental and value philosophy that society believes in and seeks to reflect positively in the behavior of its members (Saleh et al., 2023).
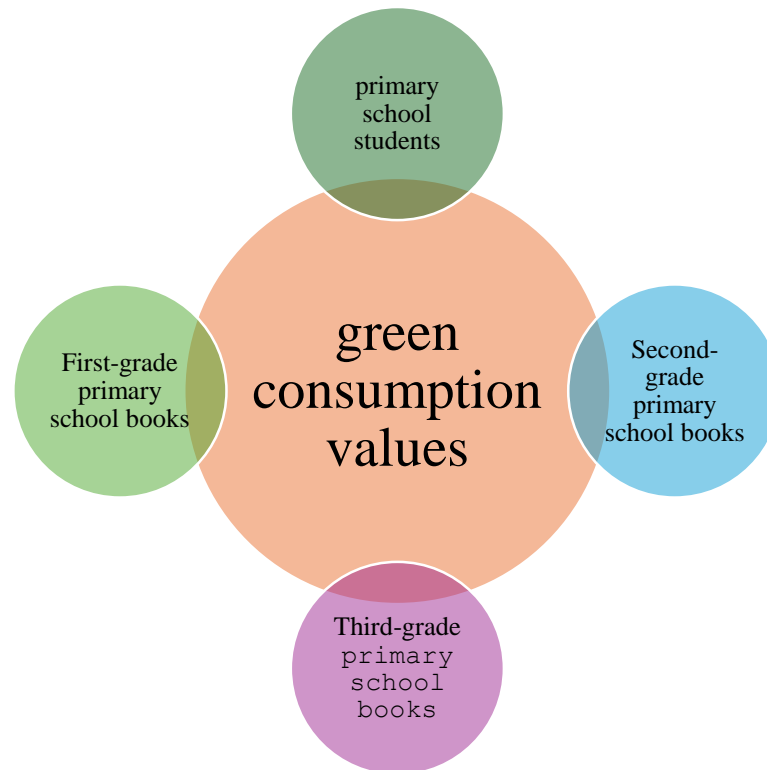
Figure 1. *Conceptual Framework of the investigate availability of green consumption values in primary school textbooks in the Kingdom of Saudi Arabia*

LITERATURE REVIEW

The study by Kim et al. (2012) applied a measure of green consumer behavior consisting of four dimensions, which included green consumption behavior concerned with health, green consumption behavior concerned with resources, green socially conscious consumption behavior, and green consumption behavior concerned with the environment, on a sample of consumers in Korea. The results showed that the effectiveness of consumer perception, reference persons, and perceived market situation are important determinants of green consumption behaviors. However, the environmental concern factor had a limited impact on their green behaviors.

Regarding Bukhodna's study (2015), the results indicated that consumers exhibit a generally acceptable level of knowledge and interest in environmental issues and sustainable development, as well as environmental values. However, in reality, these factors do not uniformly affect their environmental behaviors. Statistical tests revealed that consumers' environmental behavior is influenced by environmental knowledge, values, and personal characteristics.

The study conducted by Al-Sabti et al. (2017) confirmed that environmental awareness impacts environmental behavior through the cognitive dimension only, without significant involvement from the emotional dimension. Furthermore, demographic variables were found not to affect the level of environmental awareness in both its emotional and cognitive dimensions.

Ali's study (2018) concluded that there is a positive and significant relationship between attitudes, interest, knowledge, environmental education, and perceived environmental advertising on purchasing behavior towards environmentally friendly products. However, there was no effect of attitudes on demographic characteristics, and purchasing behavior was not influenced by demographic differences, except for age.

On the other hand, Bin Ahmed's study (2018) found that an individual's environmental responsibility significantly impacts their green purchasing behavior, whereas the level of knowledge of environmental issues has no impact.

The study by Mehri and Mehri (2019) revealed moderate levels of environmental awareness and environmental consumer culture among university professors and students in the eastern states of Algeria. It also demonstrated their readiness to engage in responsible green consumer behavior, with a significant portion of the sample classified as green consumers.

The results of Dowidar's (2019) study revealed that environmental awareness has a significant impact, accounting for 49% of the intention and willingness to engage in environmental behaviors, and 42.4% on actual environmental behaviors. Furthermore, the study concluded that there are notable differences in the level of environmental consumer behavior attributed to gender, with females exhibiting higher levels, and nationality, where females and non-Saudis demonstrate higher levels. Additionally, non-Saudis showed variances in the level of environmental awareness based on academic rank, with females and non-Saudis displaying higher levels compared to their counterparts.

Al-Saadani's study (2019) aimed to determine the impact of green consumption values on the intention to continue purchasing organic food products, and to explore the role of environmental awareness as a mediating variable in this relationship. Additionally, the study sought to ascertain the influence of gender on these variables.The study employed a descriptive approach and collected primary data using survey lists, individual in-depth interviews, and focus group interviews. These methods were applied to a quota sample of students enrolled in public universities in Egypt.The results concluded that there is a positive relationship between green consumption values and the intention to continue purchasing, with environmental awareness playing a mediating role in this relationship. Furthermore, the study found that the type of product also influences this relationship. However, the study did not find evidence to support the influence of gender on the relationship between green consumption values, environmental awareness, and the intention to continue purchasing.

Suleiman's study (2021) aimed to identify the theoretical foundations of planning for digital green education, introduce applied technology schools and their goals, outline planning requirements to enhance digital green education skills among their students, and propose a future vision for planning to improve these skills. The study utilized a descriptive approach along with a five-year strategy, and employed an electronic questionnaire distributed to a random sample of 100 students from applied technology schools.The study's results underscored the necessity of planning to bolster digital green education skills, leveraging green technology, raising awareness about electronic waste, and accommodating individual differences among students. Moreover, it highlighted the importance of providing an interactive learning environment. Ultimately, the study concluded by formulating a proposed future vision for planning aimed at enhancing digital green education skills among students in applied technology schools.

The study conducted by Abdul Latif et al. (2021) aimed to assess the effectiveness of a science program grounded in green education in enhancing the future thinking skills of middle school students. The research sample consisted of 30 male and female students from the second intermediate grade in Cairo. The researcher developed a science program incorporating principles of green education and utilized the Future Thinking Skills Scale to measure outcomes.

The results of the study revealed a statistically significant difference between the average scores of the students in the research sample before and after the implementation of the program, with higher scores observed post-application. Based on these findings, the researcher recommends the integration of green education into all schools and curricula across various educational levels.

Omar's study (2022 AD) aimed to identify the dimensions of environmental citizenship that should be promoted in pre-university education schools, determine the requirements and principles of green education to be considered in those schools, and emphasize the importance of green education practices in fostering and developing environmental citizenship. Additionally, the study sought to evaluate the extent to which the School of Excellence in Minya incorporates science and technology in meeting the requirements, practices, and principles of green education to support environmental citizenship from the perspective of school students. Furthermore, the study aimed to present proposals to enhance the role of outstanding schools in science, technology, engineering, and mathematics (STEM) in incorporating the principles of green education to support environmental citizenship.

The research employed a descriptive approach, utilizing a questionnaire administered to 56 students at the Outstanding School of Science and Technology in Minya to assess the extent to which these aspects were considered. Several results were obtained, indicating a noticeable deficiency in the practices and activities of the school in integrating the requirements and principles of green education supporting environmental citizenship. It was also observed that the school, including its design, facilities, and staff, was inadequately prepared to implement such practices, necessitating redirection and attention from the Ministry's Outstanding Science and Technology STEM Unit.

The study concluded by presenting a set of recommendations and proposals to enhance the role of STEM schools in incorporating the principles of green education to support environmental citizenship. These recommendations included the establishment of specific standards to measure the performance of these schools, fostering a culture that prioritizes the application of green education principles supporting environmental citizenship, and providing continuous and appropriate training programs and activities for all school staff members to adopt green education concepts and practices throughout the school year.

The study conducted by Azzam and Abu Bakr (2023) aimed to assess the effectiveness of a proposed program grounded in green education in enhancing environmental concepts, academic buoyancy, and evaluative thinking among science teachers enrolled in postgraduate studies. To achieve this objective, a quasi-experimental approach utilizing a pre-test one-group design was employed. Measurement tools, including the environmental concepts test, the academic buoyancy scale, and the evaluative thinking test, were prepared for assessment.The measurement tools were administered as pre-tests to the research sample comprising 24 male and female science teachers enrolled in postgraduate studies at the College of Education during the academic year 2022/2023. Subsequently, the treatment material, which included the utilization of an educational platform as a requirement for green education, was applied experimentally. Following the conclusion of the experiment, the measurement tools were reapplied.The research findings indicated the effectiveness of the proposed program based on green education in enhancing environmental concepts and evaluative thinking skills among science teachers enrolled in postgraduate studies. However, the program did not demonstrate effectiveness in improving academic buoyancy among the participants.

The study conducted by Al-Maraghi (2022 AD) aimed to introduce an awareness-raising guidance program based on green learning to enhance the awareness of industrial technical education students regarding future green jobs. To achieve this objective, the researcher compiled a list of the most significant green jobs projected for the future and developed content for the awareness-raising guidance program centered on green learning. Additionally, a measure of awareness regarding future green jobs was prepared. Employing a descriptive analytical approach, the research concluded that the awareness-raising program had a notable effect in enhancing the awareness of industrial technical education students about future green jobs. Specifically, the pre- and post-application assessments among students of the first experimental group indicated a significant increase in awareness post-application. Furthermore, the study highlighted a substantial impact of the awareness-raising guidance program based on green learning in elevating the level of awareness regarding future green jobs among students of the second experimental group, who were exposed to the program after the first experimental group.

The study conducted by Abdeen et al. (2021) aimed to formulate a proposed strategy for enhancing the Egyptian agricultural secondary education system, specifically the three-year system, in alignment with the principles of the green economy. This objective was pursued by analyzing both the internal and external environments of agricultural secondary education in light of green economy requirements.The research employed a descriptive approach and utilized the SWOT analysis method as a primary strategic planning tool. This approach facilitated the identification of various strategic alternatives and enabled their comparison to select the most suitable one.The research findings revealed numerous strengths and weaknesses within the internal environment of secondary education concerning the fulfillment of green economy requirements. Additionally, various opportunities were identified that could be leveraged, alongside several threats posed by the external environment, which could hinder the achievement of green economy objectives within agricultural secondary education.In conclusion, the study developed a proposed strategy for enhancing Egyptian

agricultural secondary education in line with the principles of the green economy, taking into account the findings and insights obtained through the analysis of both internal and external environments.

The study conducted by Al-Shami et al. (2021) aimed to investigate the levels of both environmental responsibility and green consumer behavior among students at Taif University's College of Design and Applied Arts. The researchers utilized a purposive sample comprising 313 male and female students from scientific departments. The study also sought to analyze the impact of various demographic factors on environmental responsibility and green consumption, identifying the most influential factors.To achieve these objectives, the researchers employed a descriptive analytical approach and developed two questionnaires: one to assess the sense of environmental responsibility and another to measure green consumer behavior.

One of the key findings of the study was the positive relationship observed between the level of environmental responsibility and green consumer behavior among the participants. This suggests that individuals with a stronger sense of environmental responsibility are more likely to engage in environmentally friendly consumer practices.Based on their findings, the researchers offered several recommendations. These included advocating for revisions to educational programs and the development of formal and informal curricula at the college level to promote environmental responsibility among students and faculty members. Additionally, they emphasized the importance of fostering green environmental behavior practices within the college community.In summary, the study underscores the significance of promoting environmental responsibility and green consumer behavior among university students, highlighting potential avenues for intervention and education within academic institutions.

The study by Willa Louw (2021) aimed to build bridges between educational institutions, used the descriptive approach and the case study method, and reached a set of results, including the necessity of developing a sustainable green curriculum and applying it by looking at the standards applied in other institutions of higher education in order to begin giving guidelines for such... This endeavor is to become a sustainable educational institution. It also reached a set of recommendations, the most important of which is focusing on how to transform the current curricula into a green curriculum concerned with the sustainability of the educational institution.

Comment On Previous Studies

The current study aligns with previous research in its utilization of the descriptive approach, with the exception of Azzam and Abu Bakr's (2023) study, which employed an experimental approach, and Al-Maraghi's (2022) study, which utilized both experimental and descriptive methodologies.

All preceding studies focused on education, except for those conducted by Kim et al. (2012), Boukhdna (2015), Al-Sabti et al. (2017), Ali (2018), and Bin Ahmed (2018).

The studies were conducted in various countries. Notably, Dowidar (2019) and Al-Shami et al. (2021) conducted their research in the Kingdom of Saudi Arabia, aligning with the current study's geographical context.

METHODOLOGY

The study relied on the descriptive approach, employing the content analysis method. **population**

  The study population comprised all mathematics, science, and English language books designed for primary grades within the primary stage. This population encompassed a total of 27 books, distributed as follows:

Table 1: Detailed Presentation of the Study Population

	First semester	Second semester	Third semester	Total
Mathematics	3	3	3	9
Sciences	3	3	3	9
English language	3	3	3	9
the total	9	9	9	27

Sample

A comprehensive survey method was employed, wherein the researchers analyzed all the books within the study population.

Study tool

The study utilized a content analysis card, which contained a compiled list of green consumption values tailored for mathematics, science, and English language books intended for primary grades at the primary level. These values were sourced from various references, including:

Scientific literature such as books and research studies.

The Kingdom's Vision 2030.

Insights gathered from specialists in teaching mathematics, science, and the English language.

The primary green consumption values identified amounted to nine distinct values, namely:

Table 2: Green consumption values in their initial form

1.	Environmental sustainability
2.	Relying on renewable and clean energy
3.	Use organic products
4.	Use products that have no negative impact on the environment
5.	Waste Recycling
6.	Developing vegetation, marine and air cover
7.	Use environmentally friendly products
8.	Protecting renewable resources
9.	environment protection

To ensure the validity of the tool, it was presented to a group of 10 arbitrators specialized in teaching mathematics, science, and the English language. Based on the arbitrators' comments, the wording of two paragraphs was modified, a paragraph was deleted, and a paragraph was added. As a result, the list of green consumption values in its final form became as follows:

Table 3: Green consumption values in their final form

1.	Promoting environmental sustainability
2.	Relying on renewable and clean energy
3.	Use organic products
4.	Waste Recycling
5.	Developing vegetation, marine and air cover
6.	Use environmentally friendly products
7.	Protecting renewable resources
8.	Environmental awareness
9.	Energy efficiency

Reliability

To assess reliability, a random sample of mathematics, science, and English language books for first-grade primary school students was selected, specifically targeting the first semester. The Holsti equation was employed to calculate reliability using the following formula:

Reliability = (2 x number of agreed-upon categories) / sum of the number of categories at the two times of analysis

The reliability coefficients for the analysis of mathematics, science, and English language books were as follows:

Mathematics books: 88.89%

Science books: 77.78%

English language books: 100%

The overall reliability coefficient for the analysis was calculated to be 88.89%, indicating a high level of reliability.

Unit of Analysis

The researchers adopted the idea as the unit of analysis, aligning with the nature and objectives of the study. Additionally, the lesson (topic) served as the category of analysis. This approach allowed for a focused and systematic examination of the content within the selected textbooks.

Data Analysis

During the analysis phase, the researchers adhered to the following steps:

Thorough Examination: The researchers engaged in a meticulous review of all lessons, including exercises, activities, questions, pictures, figures, tables, and drawings present within the textbooks.

Unit of Recording: Green consumption values were identified as the primary unit of recording throughout the analysis process.

Extraction of Values: The researchers systematically extracted green consumption values embedded within each lesson across the science, mathematics, and English language textbooks.

Recording: For each identified green consumption value, the researchers recorded the number of lessons within which the value was present. This meticulous recording process allowed for the quantification of the prevalence of each green consumption value across the curriculum.

Procedures

The researchers conducted the following procedures:

Review of educational literature and previous studies addressing green consumption values.

Construction of a list of green consumption values suitable for mathematics, science, and English textbooks for lower grades of primary school, subsequently converting it into a content analysis card.

Content analysis of mathematics, science, and English language textbooks for lower grades of primary school, with a focus on green consumption values.

Recording and statistical processing of the results.

Statistical Methods: The study employed the following statistical methods:

Frequencies and percentages.

Holsti equation.

Analysis and Discussion of Results: For the first research question—"What green consumption values are appropriate for primary school students?"—the researchers utilized:

Scientific literature, including books and studies.

The Kingdom's Vision 2030.

Insights from specialists in teaching mathematics, science, and English.

The identified green consumption values included:

Promoting environmental sustainability.

Relying on renewable and clean energy.

Using organic products.

Waste recycling.

Developing vegetation, marine, and air cover.

Using environmentally friendly products.

Protecting renewable resources.

Environmental awareness.

Energy efficiency.

Details regarding the construction of the green consumption values list were outlined in the procedure for developing the study tool.

The second question: What is the level of availability of green consumption values in first-grade primary school books in the Kingdom of Saudi Arabia?" To address this inquiry, the researchers conducted a thorough analysis of the content within mathematics, science, and English language textbooks intended for first-grade primary school students. The results of this analysis are presented in Table 4, which outlines the frequencies and percentages representing the availability of green consumption values in these textbooks.

Table 4: Frequencies and Percentages Across Mathematics, Science, and English Language Books

Value	Mathematics books Total number of lessons = 84		Science books Total number of lessons = 31		English language books Total number of lessons = 84	
	Frequency	percent	Frequency	percent	Frequency	percent
Promoting environmental sustainability	0	%0	23	%74.19	0	%0
Relying on renewable and clean energy	1	%1.19	1	%3.23	0	%0
Use organic products	0	%0	3	%9.68	0	%0
Waste Recycling	0	%0	4	%12.90	0	%0
Developing vegetation, marine and air cover	19	%22.62	22	%70.97	12	%14.29
Use environmentally friendly products	0	%0	4	%12.90	0	%0
Protecting renewable resources	4	%4.76	6	%19.35	0	%0
Environmental awareness	15	%17.86	26	%83.87	0	%0
Energy efficiency	1	%1.19	3	%9.68	0	%0

It is evident from Table (4) that science books exhibit the highest availability of green consumption values in first-grade primary school curriculum, followed by mathematics books and then English language books.

Moreover, the analysis reveals that the most prevalent values present in science books for first-grade primary school students are "environmental awareness" with a rate of 83.87%, followed by "promoting environmental sustainability" at a rate of 74.19%. Conversely, the least available value in science books is "reliance on renewable and clean energy" with a rate of only 3.23%.

In contrast, mathematics books predominantly feature "developing vegetation, marine, and air cover" with a rate of 22.62%, followed by "environmental awareness" at 17.86%. However, values such as "promoting environmental sustainability," "using organic products," "recycling waste," and "using environmentally friendly products" are entirely absent from mathematics books.

In English language books, the primary value observed is "developing vegetation, marine, and air cover" with a rate of 14.29%, while other values are notably absent.

Question Three: What is the level of availability of green consumption values in second-grade primary school books in the Kingdom of Saudi Arabia? To address this inquiry, the researchers analyzed the content of mathematics, science, and English language books designed for second-grade primary school students. The findings of this analysis are summarized in Table (5), which presents the frequencies and percentages representing the availability of green consumption values across mathematics, science, and English language textbooks for second-grade primary school.

Table (5): Frequencies and Percentages Across Mathematics, Science, and English Language Books

Value	Mathematics books Total number of lessons = 104	Science books Total number of lessons = 36	English language books Total number of lessons = 84

	Frequency	percent	Frequency	percent	Frequency	percent
Promoting environmental sustainability	0	%0	26	%72.22	0	%0
Relying on renewable and clean energy	0	%0	7	%19.44	0	%0
Use organic products	0	%0	0	%0	0	%0
Waste Recycling	0	%0	2	%5.56	0	%0
Developing vegetation, marine and air cover	12	%11.54	24	%66.67	36	%42.86
Use environmentally friendly products	8	%7.69	0	%0	3	%3.57
Protecting renewable resources	0	%0	18	%50	0	%0
Environmental awareness	10	%9.62	33	%91.67	4	%4.76
Energy efficiency	0	%0	6	%16.67	0	%0

It is evident from Table (5) that science books exhibit the highest availability of green consumption values in the second grade of primary school, followed by mathematics books and then English language books.

Furthermore, the analysis reveals that the most prevalent values present in science books for the second grade of primary school are "environmental awareness" at a rate of 91.67%, followed by "promoting environmental sustainability" at a rate of 72.22%. Conversely, values such as "use of organic products" and "use of environmentally friendly products" are never available in science books.

In contrast, mathematics books predominantly feature "developing vegetation, marine, and air cover" at a rate of 11.54%, followed by "environmental awareness" at 4.76%. However, values like "promoting environmental sustainability," "relying on renewable and clean energy," "using organic products," "waste recycling," "protection of renewable resources," and "energy efficiency" are never found in mathematics books.

In English language books, the primary value observed is "developing vegetation, marine, and air cover" at a rate of 42.86%, followed by "environmental awareness" at 9.62%. However, values such as "promoting environmental sustainability," "relying on renewable and clean energy," "use of organic products," "waste recycling," "protection of renewable resources," and "energy efficiency" are entirely absent from English language books.

Question Four: What is the level of availability of green consumption values in third-grade primary school books in the Kingdom of Saudi Arabia? To address this question, the researchers conducted an analysis of mathematics, science, and English language textbooks designed for third-grade primary school students. The findings of this analysis are summarized below:

Table (6): Frequencies and percentages of the availability of green consumption values in mathematics, science, and English language books for the third grade of primary school.

Value	Mathematics books Total number of lessons = 72		Science books Total number of lessons = 36		English language books Total number of lessons = 99	
	Frequency	percent	Frequency	percent	Frequency	percent
Promoting environmental sustainability	0	%0	28	%77.78	0	%0
Relying on renewable and clean energy	0	%0	10	%27.78	0	%0
Use organic products	0	%0	2	%5.56	2	%2.02
Waste Recycling	1	%1.39	1	%2.78	0	%0
Developing vegetation, marine and air cover	32	%44.44	31	%86.11	56	%56.57
Use environmentally friendly products	3	%4.17	0	%0	0	%0
Protecting renewable resources	0	%0	23	%63.89	0	%0
Environmental awareness	12	%16.67	36	%100	3	%3.03
Energy efficiency	0	%0	6	%16.67	0	%0

It is evident from Table (6) that science books have the highest availability of green consumption values in the third grade of primary school, followed by mathematics books and then English language books.

Furthermore, the analysis reveals that the most prevalent values present in science books for the third grade of primary school are "developing vegetation, marine, and air cover" at a rate of 86.11%, followed by "promoting environmental sustainability" at a rate of 77.78%. However, values such as "using environmentally friendly products" are not available in science books.

In contrast, mathematics books predominantly feature "developing vegetation, marine, and air cover" at a rate of 44.44%, followed by "environmental awareness" at 16.67%. However, values like "promoting environmental sustainability," "relying on renewable and clean energy," "using organic products," "renewable resource protection," and "energy efficiency" are entirely absent from mathematics books.

In English language books, the primary value observed is "developing vegetation, marine, and air cover" at a rate of 56.57%, followed by "environmental awareness" at 3.03%. However, values such as "promoting environmental sustainability," "relying on renewable and clean energy," "waste recycling," "protection of renewable resources," and "energy efficiency" are entirely absent from English language books.

DISCUSSION

The study's findings highlight notable differences in the availability of green consumption values across science, mathematics, and English language textbooks for primary grades in the Kingdom of Saudi Arabia. Environmental awareness and promoting environmental sustainability emerge as the most prevalent values across all grades, particularly in science textbooks. This emphasis may be attributed to the inherent focus of the science curriculum on environmental topics, aligning with the Kingdom's Vision 2030 goals of enhancing environmental awareness and sustainability.

In contrast, mathematics and English language textbooks prominently feature the value of "developing vegetation, marine, and air cover." This emphasis reflects the alignment of curricula with Vision 2030 initiatives, particularly the Green Saudi Initiative, which prioritizes environmental conservation and ecosystem preservation. Additionally, the simplicity of expressing this value through visuals such as pictures and drawings makes it accessible to primary grade students.

The study's findings corroborate previous research by Al-Sabti et al. (2017) and Ali (2018), emphasizing the importance of supporting the cognitive dimension to influence green consumer behavior. By incorporating values such as environmental awareness into textbooks, educators can instill environmental consciousness in students from a young age, shaping their future consumer choices.

However, the study also reveals significant gaps in the availability of certain values across all textbooks. Values like using environmentally friendly products, promoting environmental sustainability, and relying on renewable energy are notably absent. These findings underscore the importance of implementing recommendations from previous studies, including Suleiman (2021), Omar (2022), Dowidar (2019), Willa Louw (2021), and Al-Maraghi (2022), which advocate for the inclusion of these values in education curricula. Integrating these values can foster a more comprehensive understanding of environmental responsibility among students, aligning with national sustainability goals (Wardat et al., 2024).

Overall, the study underscores the importance of curriculum alignment with environmental objectives and the need for continuous efforts to enhance environmental education in primary schools, ultimately fostering a generation of environmentally conscious citizens in Saudi Arabia.

The lack of availability of the remaining values in mathematics and English language books may be attributed to several factors:

Specialized Nature of Subjects: Mathematics and English language textbooks typically focus on their respective subjects' core concepts and skills, such as arithmetic and language proficiency. These subjects may not naturally lend themselves to incorporating broader environmental values like reliance on renewable energy or waste recycling.

Common Dimension of Values: While values are integral to education, each subject may prioritize different aspects of character development. Values related to green consumption may be distributed across various subjects to ensure a balanced curriculum. Overloading mathematics and English language courses with additional content could detract from their primary objectives.

Adaptation Processes in Curriculum Development: The modification of content, sentences, and illustrations during the curriculum development process may inadvertently lead to the omission of certain

values. This adaptation process aims to enhance clarity and relevance but may inadvertently overlook some green consumption values. These challenges may also extend to science curricula, where deficiencies in incorporating green consumption values persist.

Challenges in Representation: Some green consumption values may be challenging to represent effectively through pictures and drawings, which are primary tools for conveying concepts to students in primary grades. Given students' limited reading comprehension abilities at this stage, visual aids play a crucial role. Values that are abstract or complex may be particularly challenging to illustrate effectively.

In summary, the absence of certain green consumption values in mathematics and English language textbooks can be attributed to the specialized nature of these subjects, the need for balance in curriculum content, adaptation processes during curriculum development, and challenges in effectively representing values through visual aids. Addressing these factors may require a holistic approach to curriculum design and development, ensuring that values education remains integrated across subjects while considering students' cognitive development levels.

RECOMMENDATIONS

Based on the findings of the study, the researchers offer the following recommendations:

Incorporating Green Consumption Values in Curricula:

The study underscores the importance of integrating the identified green consumption values into science, mathematics, and English curricula for primary grades. These values have been overlooked and warrant inclusion to foster environmental awareness among students.

Integration into General Education Curricula:

The researchers advocate for the utilization of the green consumption values list in the development of general education curricula for primary grades. By incorporating these values across subjects, schools can promote holistic environmental education.

Enhancing Presentation of Green Consumption Values:

There is a need to reconsider the presentation of green consumption values in primary grade textbooks. Developing engaging activities, illustrations, and graphics that emphasize these values can enhance student understanding and retention.

Suggestions for Further Research:

Extending Analysis to Other Primary Levels:

Future studies could explore the availability of green consumption values in curricula books for different primary grade levels. By examining a broader scope, researchers can provide comprehensive insights into the integration of environmental values across primary education.

Proposing Vision for Curriculum Integration:

Researchers could propose a comprehensive vision for integrating green consumption values into primary grade curricula. This forward-looking approach could offer actionable strategies for curriculum developers and policymakers to enhance environmental education in schools.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of at Imam Mohammad Ibn Saud Islamic University (IMSIU) code ERS_2023_6900 and date of approval was 21 October 2023.

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

Data Availability Statement: The data for this study is not publicly available, however, it can be made available upon genuine request to authors.

REFERENCES

Abdeen, Asmaa Abu Al-Majd Ibrahim, Abdel-Wahab, Iman Jumah Muhammad, & Ali, Nadia Hassan Al-Sayed. (2021). A proposed strategy for developing Egyptian agricultural secondary education in light of the requirements of the green economy. College of Education Journal, 32(127), 222-256.

Abdul Latif, Maha, Rashid, Ali, & Hassanein, Amani. (2021). The effectiveness of a science program based on green education to develop environmental values for middle school students. Educational and Social Studies, 27(11), 79-108.

Al Farhan, Ibrahim Ahmed. (2019). The effect of using a proposed strategy based on TRIZ theory in teaching the environmental education course on developing environmental awareness and attitudes toward environmental issues among students of the College of Education at King Khalid University. Umm Al-Qura University Journal of Educational and Psychological Sciences, 10(2), 283-333.

AlAli, R., & Wardat, Y. (2024). How ChatGPT Will Shape the Teaching Learning Landscape in Future?. Journal of Educational and Social Research, 14.

Ali, Aladdin Abbas. (2018). Factors affecting the purchasing behavior of the final consumer towards environmentally friendly products: An applied study on energy-saving lamps in Egypt. Scientific Journal of Commercial Research, 5(4), 39-118.

Al-Khaloufi, Muhammad. (2021). Environmental values, goals, and objectives of education. Journal of Humanities and Social Sciences, 7(1), 263-273.

Al-Laqani Ahmed Hussein, & Al-Jamal Ali Ahmed. (2013). Dictionary of Educational Terms Defined in Curricula and Teaching Methods (1st edition). Cairo: World of Books.

Al-Maraghi, Hamdi. (2022). An awareness-raising program based on green learning to develop industrial technical education students' awareness of the green jobs of the future. Educational Technology - Studies and Research, No. 52, 233-285.

Al-Muzain, Wafa Abdulnabi Muhammad Hussein. (2020). A proposed vision to activate society's role in spreading the culture of green consumption. Educational Creativity Magazine, 13, 9-12.

Alneyadi, S., Wardat, Y., Alshannag, Q., & Abu-Al-Aish, A. (2023). The effect of using smart e-learning app on the academic achievement of eighth-grade students. Eurasia Journal of Mathematics, Science and Technology Education, 19(4), em2248. https://doi.org/10.29333/ejmste/13067

Alneyadi, S.; Abulibdeh, E.; Wardat, Y. The Impact of Digital Environment vs. Traditional Method on Literacy Skills; Reading and Writing of Emirati Fourth Graders. Sustainability 2023, 15, 3418. https://doi.org/10.3390/su15043418

Al-Saadani, Nermin. (2019). Green consumption values among university youth and their role in increasing environmental awareness and intention to continue purchasing organic food products. Scientific Journal of Business Research, 34(3), 183-222.

Al-Sabti, Jribi, Boukhadna, Amna, & Ben Khadija, Moncef. (2017). The impact of environmental awareness on consumer behavior towards environmentally friendly products: A study of a sample of university professors in eastern Algeria. Journal of Economic and Administrative Sciences, 18(2), 87-103.

Al-Shami, Manal Morsi Al-Desouki, Hassanein, Elham Abdel Aziz Muhammad, Saqr, Nourhan Muhammad Ali Al-Sayed, Shiha, Hana Ahmed Shawqi, & Alwan, Rasha Abdullah Abdel Razek. (2021). The sense of environmental responsibility among Taif University students and its relationship to their green consumer behavior. Journal of Research in the Fields of Specific Education, 37, 511-570.

Attia, Mohsen Bin Ali. (2015). Modern Curricula and Teaching Methods. Amman: Dar Al-Manhaj for Publishing and Distribution.

Azzam, Mahmoud, & Abu Bakr, Al-Zahraa. (2023). The effectiveness of a proposed program based on green education in developing environmental concepts, academic buoyancy, and evaluative thinking among science teachers enrolled in postgraduate studies. Journal of the College of Education, 20(117), 333-384.

Bin Ahmed, Asia. (2018). The impact of consumer orientation towards green products on purchasing behavior: A field study on Algerian university students. Journal of Business and Financial Economics, No. 5, 83-99.

Biswas, A., & Roy, M. (2015). Leveraging factors for sustained green consumption behavior based on consumption value perceptions: Testing the structural model. Journal of Cleaner Production, 95, 332-340.

Boukhadna, Amna. (2015). Consumer environmental behavior as an input to achieving sustainable development: A field study of consumer behavior in Guelma state. Unpublished doctoral thesis, Faculty of Economic, Commercial, and Management Sciences, University of May 8, 1945, Guelma: Algeria.

Dowidar, Mahmoud Muhammad Awad. (2019). The impact of green advertising on environmental awareness and consumer behavior toward green products: An applied study on a sample of faculty members at Shaqra University. Public Administration, Q. 60, No. 1, 3-62.

Gningue, S.M.; Peach, R.; Jarrah, A.M.; Wardat, Y. The relationship between teacher leadership and school climate: Findings from a teacher-leadership project. Educ. Sci. 2022, 12, 749. https://doi.org/10.3390/educsci12110749

Hassan, Z. (2017). Impact of Social, Epistemic and Conditional Values on Customer Satisfaction and Loyalty in Automobile Industry: A Structural Equation Modelling. Journal of Marketing and Consumer Behaviour in Emerging Markets, 1(5), 29-44.

Haws, K., Winterich, K.P., & Naylor, R.W. (2014). Seeing the world through GREEN-tinted glasses: Green consumption values and responses environmentally friendly products. Journal of Consumer Psychology, 24(3), 336-354.

Hidayat, R., Wardat, Y. A systematic review of Augmented Reality in Science, Technology, Engineering and Mathematics education. Educ Inf Technol (2023). https://doi.org/10.1007/s10639-023-12157-x

Khalil, I., Hashim, R., Wardat, Y., & Alasmari, N. (2023). Exploring Primary School Mathematics Teachers' Strategies for Enhancing Students' Mathematical Writing Skills. JESR, vol. 13, no. 4, p. 196, Jul. 2023, https://doi.org/10.36941/jesr-2023-0102

Khan, T. I., Kaewsaeng-On, R., & Saeed, I. (2019). Impact of workload on innovative performance: Moderating role of extrovert. Humanities & Social Sciences Reviews, 7 (5), 123-133.

Kim,S. Y., Yeo, J. S., Sohn, S. H., Rha, J. Y., Chios, S., Choi, A. Y., & Shin, S. (2012). Toward a Composite Measure oh Green Consumption: An Exploratory Study Using a Korean Sample. Journal of Family and Economic Issue,33(2), 199-214.

Norazah, M.S. (2013). Consumer ecological behaviour: Structural relationships of environmental knowledge, healthy food, and healthy way of life. Journal Sustainable Science and Management, 8(2), 100-107.

Omar, Alaa. (2022). The extent to which STEM schools take into account the requirements and principles of green education that supports environmental citizenship: The Excellence School for Science and Technology in Minya is an example. College of Education Journal, 32(3), 81-139.

Saleh, S.; AlAli, R.; Wardat, Y.; Al-Qahtani, M.; Soliman, Y.; Helali, M. Structural Relationships between Learning Emotion and Knowledge Organization and Management Processes in Distance Learning Environments: "An Applied Study". Eur. J. Investig. Health Psychol. Educ. 2023, 13, 1569-1589. https://doi.org/10.3390/ejihpe13090114

Samira Ben Yahia & Tahar Belaour. (2018). The culture of consumption and its impact on the environment. Afaq Science Magazine, Zian Achour University in Djelfa - Algeria, 13, 339-348.

Saudi Green Initiative. (2021). Retrieved from https://www.saudigreeninitiative.org/ar/about-saudi-green-initiative/

Shafiqa, M., & Amal, M. (2019). Environmental awareness and determinants of responsible consumer consumption: A field study of a sample of consumers in eastern Algeria. Afaq Journal of Science: Zian Ashour University of Jaffa, No. 16, 196-213.

Shehata, Hassan, Al-Najjar, Zainab, & Ammar, Hamed. (2011). Dictionary of Educational and Psychological Terms (2nd edition). Cairo: Egyptian Lebanese House.

Song, Y., Qin, Z., & Yuan, Q. (2019). The Impact of Eco-Label on the Young Chinese Generation: The Mediation Role of Environmental Awareness and Product Attributes in Green Purchase. Sustainability, 11(4), 1-18.

Suleiman, Enas. (2021). Planning requirements to enhance digital green education skills among students in applied technology schools: A future vision. Educational Journal, 91, 2959-3017.

Tashtoush, M. A., Wardat, Y., & Elsayed, A. M. (2023). Mathematics Distance Learning and Learning Loss During COVID-19 Pandemic: Teachers' Perspectives. Journal of Higher Education Theory and Practice, 23(5). https://doi.org/10.33423/jhetp.v23i5.5933

Tawfiq, Bashaer Mouloud. (2019). Values and their importance in school curricula. Journal of Arts, No. 129, 263-294.

The unified Saudi national platform for government services, government information guide for the Kingdom of Saudi Arabia. Sustainable development. (2022 AD). Available at: https://www.my.gov.sa/wps/portal/snp/content/SDGPortal

Tripathi, A., & Singh, M. P. (2016). Determinants of sustainable/green consumption: review. International Journal of Environmental Technology and Management, 19(3-4), 316-358.

Varshneya, G., Pandey, S. K., & Das, G. (2017). Impact of social influence and green consumption values on purchase intention of organic clothing: a study on collectivist developing economy. Global Business Review, 18(2), 478-492.

Wardat, Y., Jarrah, A. M., & Stoica, G. (2021). Understanding the meaning of the equal sign: a case study of middle school students in the United Arab Emirates. European Journal of Educational Research, 10(3), 1505-1514. https://doi.org/10.12973/eu-jer.10.3.1505

Wardat, Y., Tashtoush, M., AlAli, R., & Saleh, S. (2024). Artificial Intelligence in Education: Mathematics Teachers' Perspectives, Practices and Challenges. Iraqi Journal for Computer Science and Mathematics, 5(1), 60-77.

Zakariya, Y.F., Wardat, Y. Job satisfaction of mathematics teachers: an empirical investigation to quantify the contributions of teacher self-efficacy and teacher motivation to teach. Math Ed Res J (2023). https://doi.org/10.1007/s13394-023-00475-9

Zavali, M., & Theodoropoulou, H. (2018). Investigating determinants of green consumption: evidence from Greece. Social Responsibility Journal, 14(4), 719-736.