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Scientific Knowledge and Attitudes towards Native Plants among Students of the Faculty of Education at Al-Asmarya Islamic University

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Abstract

This study aimed to identify the level of scientific knowledge and attitudes towards native plants among students of the Faculty of Education at Al-Asmarya Islamic University, Zliten, Libya, during the fall semester of the 2025/2026 academic year. The study investigated the level of awareness concerning plants in general and the concept of "plant blindness," which refers to a lack of interest in plants. The descriptive-analytical approach was used to describe the intellectual and emotional state of the study sample, which consisted of 231 female students from the Faculty of Education at Al-Asmarya Islamic University, selected using stratified sampling. A scientific knowledge test and an attitude scale based on the Likert scale were used to collect the required data. Several statistical methods were used to analyze the data, including frequencies, percentages, means, and standard deviations, in addition to the independent-samples t-test to compare specializations in the sciences and humanities. The results showed that attitudes towards the preservation of native plants were high, with a mean of 3.79. There was no significant difference in attitudes towards native plants based on academic specialization in the sciences and humanities. There was also no statistically significant difference in scientific knowledge or attitudes towards native plants based on academic year at the 0.05 level.

Keywords: Al-Asmarya Islamic University, attitudes, Faculty of Education, native plants, scientific knowledge.

INTRODUCTION

The relationship between people and their environment is profound and goes beyond the physical environment alone. One of the pillars of sustainable development is environmental awareness. This is especially important in our modern world, which continues to face climatic changes. Research carried out by Al-Falous and Al-Ammari (2015) revealed a gap in environmental awareness and participation in Libya.

In the town of Zliten, native plants have played a very important role in combating desertification and balancing ecological and economic interests. The native plant environment in the region is declining. It is important to establish how aware people in general, and university students in particular, are of this issue. University students represent the future generation and therefore need to be aware. A gap exists between what students know and what they do. Previous studies have mainly focused on pollution and global warming. There is also a bias towards animals and a lack of atten-

tion given to plants, even though plants form the foundation of all life. According to Wandersee (2019), plants form the basis of all life. The problem of this study concerns what students at the Faculty of Education at Al-Asmarya University know and feel about native plants. University students are the primary agents who will pass this information on to future generations.

Study Problem

This study belongs to the body of research concerned with the phenomenon of lack of awareness of, or interest in, plants, which is known in biology as "plant blindness." It is a global phenomenon that indicates a lack of interest in, and awareness of, plants and their environmental and economic importance (Al-Omari et al., 2013). In this context, many scientific studies, both Arab and international, have confirmed the existence of a clear gap in scientific knowledge related to plants among university students. Bani et al. (2024) indicated that students consider animals more important than plants.

Based on the foregoing, the current research seeks to investigate knowledge and attitudes towards native plants among students of the College of Education to determine whether the globally observed gap (plant blindness) extends to the local environment. Previous studies have yielded varying results because of differences in regional and curricular contexts. This led to defining the study problem in the following main question:

What is the level of scientific knowledge and attitudes towards native plants among students of the Faculty of Education at Al-Asmarya Islamic University?

The following sub-questions arise from this question:

1. What are the prevailing attitudes among students of the Faculty of Education in Zliten towards preserving native plants?
2. Are there statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants attributable to the specialization variable (scientific, literary)?
3. Are there statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants attributable to the academic-year variable?

Study Objectives

The objectives of the study are as follows:

1. To identify the prevailing attitudes among students of the Faculty of Education in Zliten towards preserving native plants.
2. To determine whether there are statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants attributable to the specialization variable (scientific, literary).
3. To determine whether there are statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants attributable to the academic-year variable.

Importance of the Study

The significance of this study can be summarized in several key ways:

A. Theoretical Importance:

Enhancing theoretical frameworks: This research has the potential to increase understanding of scientific knowledge and attitudes towards native flora, a subject that, to the researcher's knowledge, has not been extensively explored in Libya.

- Establishing a reference base: This study can serve as a reference for future studies that address the same context.

B. Practical Importance:

- Contributing to the preservation of biodiversity: The results of this study may help determine the level of scientific knowledge and attitudes among students, thereby helping relevant authorities, such as research centers and universities, establish awareness programs aimed at preserving endangered native plant species.
- Promoting environmental sustainability: The study aims to support efforts to build a university generation that possesses sufficient awareness of native plant resources, enabling their effective participation in sustainability issues and the preservation of local natural resources.

Theoretical Framework and Literature Review

Study Terms

To define and clarify the terms used in the study, the researcher defined the main concepts theoretically and operationally as follows:

Term	Theoretical Definition	Operational Definition
Scientific Knowledge	A body of knowledge consisting of facts, terms, and laws that have been reached through the scientific method and is characterized by objectivity and verifiability (Huwaidi, 2017).	The amount of information, terms, and facts that students of the Faculty of Education at Al-Asmariya University possess about the characteristics of local plants in the municipality of Zliten and their environmental and economic role, which is assessed by the grade obtained by the students in the scientific knowledge test prepared for this study.
Attitudes	A relatively stable, acquired emotional predisposition that inclines individuals towards certain subjects, making them accept and prefer them or reject and be repelled by them (Amasha, 2009).	The state of psychological inclination and acceptance among students of the College of Education towards preserving native plants, as determined by the score obtained by the student in the questionnaire prepared for that purpose.
Native Plants	All types of native plants that exist naturally, whether currently or historically, and grow without human intervention (US Department of Agriculture).	A group of plants that grow without human intervention in the city of Zliten and are considered part of the local plant diversity of the municipality, such as jujube, wormwood, and thyme.
Plant Blindness	The inability of a person to see or notice plants in the surrounding environment (Wandersey, 2019).	

Scientific Knowledge: Concept and Importance

Scientific knowledge is a major goal of education and is characterized by "a deep understanding of laws that govern the universe" (Huwaidi, 2017). In terms of environmental awareness, it should extend beyond theoretical facts and become a "problem-solving tool for environmental issues. In this regard, the literature shows that a gap exists in this area at both global and regional levels. For example., Al-Samadi (2016) indicated that "the level of environmental awareness among university students is at a moderate level." At the local level, Al-Falous and Al-Ammari (2015) revealed a critical weakness in environmental knowledge among Libyans, i.e., 9.83%, and indicated that "educational levels may not be a reliable measure of environmental awareness. The researcher believes that scientific knowledge within the framework of environmental awareness must play a greater role and should not be limited to a set of facts and concepts; rather, it should reach the level of procedural knowledge through which students can apply theories and laws to solve environmental problems. Focusing on theory and accumulation does not achieve the intended purpose of the teaching process. A shift away from this pattern is inevitable, and this knowledge must become an effective tool in the hands of students to form continuous environmental behavior.

Trends and Attitudes towards the Environment

An attitude is a psychological state that affects human behavior and has cognitive, affective, and behavioral components (Fayyad, 2014). Educational systems usually overemphasize the cognitive aspect, ignoring the need for an emotional connection.

Studies conducted by Al-Zahrani (2021) showed that specialized educational programs, such as STEM education, are very effective in developing not only cognitive concepts of plants but also attitudes towards them. This is supported by the idea that "systematic" knowledge is a major factor in building environmental attitudes. In contrast, Al-Samadi (2016) showed that, without such education, attitudes towards natural elements are usually moderate, reflecting the "mind-behavior gap," where knowledge alone is not enough (Kollmuss and Agyeman, 2002).

In this context, the researcher agrees with the view that educational systems tend to overemphasize the cognitive aspect at the expense of the affective and psychomotor aspects. This is not limited to local observation but represents a general challenge in the field of environmental education. The study by Hungerford and Volk (1990) indicates that the traditional assumption that "knowledge necessarily leads to behavior" is incorrect; environmental knowledge alone will not change behavior unless it is complemented by environmental belonging, which is a completely independent affective component. Furthermore, Kollmuss and Agyeman (2002), in what is known as the “mind-behavior gap,” argue that this excessive reliance on theoretical knowledge and its ease of measurement in traditional tests has led to the neglect of emotional aspects, which are the real drivers of belonging to the local environment.

Native Plants and Their Importance

Native plants are part of the nation's heritage and a source of biodiversity. They provide habitats for wildlife and assist in carbon sequestration. Despite their medical and economic benefits, they are often ignored. This is referred to as "plant blindness" (Wandersee, 2019).

According to the literature, environmental awareness of native plants differs depending on the course of study. Lashhab and Mubarak (2018) indicated that environmental awareness is higher among students of specialized courses, such as botany, than among others. This is supported by a study by Al-Amin (2024) at Sirte University, which indicated that scientific courses excel in environmental awareness compared with humanities courses.

Native plants are an important part of the national heritage that must be preserved and cared for. Students in schools and universities should be guided towards this by including native plants in the curriculum, involving students practically in afforestation campaigns, and adding agriculture as a subject in the weekly schedule. The values of native plants include the following:

- Preserving biodiversity: Native plants serve as reservoirs for the genetic resources of a large number of agricultural crops, provide habitats for animal breeding, and contribute to the preservation of ecological diversity (Arab Organization for Agricultural Development, n.d., p. 15).
- Environmental resilience: Native plants contribute to soil fertility and the preservation of water flow in valleys. They also play an important role in absorbing carbon dioxide and filtering the air. By their nature, they adapt to environmental conditions such as drought and high temperatures, making them an ideal choice for farmers.
- Medical and economic value: Local flora has traditionally been used for both medicinal and industrial purposes. Local plants have played an important role in the development of traditional medicine and various industries. The researcher further points out that the value of local

flora cannot be limited to environmental and economic benefits; it must also include a sense of belonging to the environment.

These plants represent an integral part of the nation's identity and must be preserved and protected, not replaced by introduced plants, regardless of the reasons. Losing them signifies a loss of local environmental identity and consequently weakens the emotional connection of future generations to their environment.

The Role of Faculties of Education

Faculties of education have the responsibility of training future generations of teachers who will transfer these values to the next generation They form the core through which sustainable development can take place by embedding the concept of biodiversity within the curriculum.

The success of these institutions in bridging the knowledge gap has been a subject of academic debate. While stagg (2025) found that the level of knowledge may rise with academic year, other researchers, such as Al-Falous and Al-Ammari (2015), found that existing educational curricula may not yet be effectively connected to the environment. This points to the need for faculties of education to move from the theoretical domain to the practical domain and to promote a sense of "belonging."

Protecting the environment is a shared responsibility among individuals, groups, and institutions at all formal and informal levels. To enable individuals to understand and be informed about their environment, environmental education is necessary so that this understanding becomes a guiding principle and a method for interacting with environmental elements. Many entities can help spread awareness of environmental issues among people Among these entities are colleges of education, which bear a significant responsibility for increasing environmental knowledge and attitudes, given that their students will be the teachers of the future. Therefore, colleges of education should play a leading role in this issue, which can be summarized as follows:

Incorporating environmental concepts

Including concepts of biodiversity and native plants in curricula such as science, geography, and other subjects.

Developing practical skills

Working to qualify and train students in the skills of belonging to and preserving the environment and encouraging them to participate in and carry out various activities that align with the curriculum and educational objectives so that students can, in turn, pass these values on to their future students.

The researcher emphasizes that the College of Education is a cornerstone in achieving sustainable development, given its profound impact on shaping the character of student teachers. Therefore, developing colleges of education, whether through their curricula or educational programs, to strengthen the connection between native plants and students is a vital investment in the future of the environment and society.

Study Population and Sample

In this study, the researcher employed a descriptive-analytical approach, deemed suitable for the nature of the study, which aimed to uncover students' existing knowledge and attitudes without interfering with or attempting to influence them. Accordingly, the method involved the use of a survey to collect data from a representative number of students within the same timeframe, with the main aim of obtaining a clear picture of students' knowledge and understanding of native plants and

their attitudes towards them. The results obtained were also statistically analyzed to identify differences in students' knowledge or understanding associated with different disciplines.

Study population: The study population consisted of all 1,000 female students in the Faculty of Education at Al-Asmarya Islamic University, Zliten

Study sample: A stratified sample was used to ensure that each specialization (scientific and literary) was represented proportionately to its size in the study population. The total number of participants was 231 female students, as shown in Table 1.

Table (1). Distribution of the Study Sample by Specialization

Specialization	Number (N)	Percentage
Scientific specialization	146	63.2%
Literary specialization	83	35.9%
Total	231	100%

Study Variables

Independent variables

- Specialization: It had two levels (scientific and literary).
- Academic year: Since the study system at the College of Education is based on semesters, the researcher combined two consecutive semesters to represent one academic year (for example, the first and second semesters represent the first year, and so on). This procedure was taken to ensure a sufficient number of responses in each category and to achieve statistical balance.

Dependent variables

- Scientific knowledge of native plants.
- Attitudes towards native plants.

Study Tools

To gather the required information, a questionnaire was designed in two sections:

- Section One: Included objective questions to assess the level of scientific awareness of native plants.
- Section Two: Included items measured using the Likert scale, expressing attitudes towards plants, their importance, and the environment.

Validity and Reliability

To ensure the validity of the study instrument (questionnaire and test) and its suitability for measurement purposes, the researcher adopted content validity and face validity through the following methodological procedures:

Instrument evaluation: The tool, in its initial design, was presented to a committee of five expert reviewers holding PhD and Master's degrees in specialized fields such as science curriculum and teaching methods. The aim of this process was to benefit from expert opinions on the suitability of the instrument for the research purposes and the characteristics to be measured in the research sample. The study instrument was reviewed, and its validity was confirmed by the reviewers, as was its suitability for the purpose for which it was built, according to the following criteria:

- Relationship to objectives: The extent to which each item reflects its corresponding axis and its ability to measure the targeted variable.

- Clarity of linguistic expression: This includes the grammatical correctness of the phrases and their freedom from confusion or ambiguity.
- Scientific accuracy: The accuracy of the scientific concepts and terminology used in the tool.
- Suitability of alternatives: The extent to which the answer choices (Likert scale) are appropriate to the nature and complexity of the questions.

Instrument reliability: Cronbach's alpha coefficient for the attitude scale was 0.527. Although this is not high value, it is considered acceptable in exploratory social studies of this type, which measure different dimensions of feelings, with the need for caution in interpreting and generalizing the results.

Statistical Analysis

To achieve the study's objectives and analyze the data, the researcher used SPSS version 26. The researcher applied a few statistical procedures according to the nature of the data and the study's objectives, as described below:

- Frequencies and percentages: Used to show the characteristics of the study sample and determine how its members were distributed according to the specialization variable.
- Arithmetic means: Used to determine the level of scientific knowledge and attitudes about native plants among students.
- Standard deviation: Used to calculate the extent to which the scores of the sample members differed from their averages.
- T-test: Used to test the significance of differences in knowledge level and attitudes according to the specialization variable (scientific, humanities).
- Cronbach's alpha coefficient: Used to verify the reliability of the research instrument or survey.

This section should be concise but should provide sufficient details of the materials used, equipment, and procedures followed to allow the work to be repeated by others.

The sources of the laboratory procedures should be cited, and any changes made must be noted. Information on the equipment model, manufacturer's name, and address, including the city, province/state, and country, should be provided. The procedures should be written in the past tense.

RESULTS

Results and Discussion

This section presents a detailed overview of the findings of this study, which aimed to analyze the scientific knowledge gap among students of the Faculty of Education at Al-Asmarya Islamic University in Zliten regarding native plants and their environmental importance. The results are presented according to the sequence of the study questions, with statistical and scientific interpretation.

Answer to the First Question: Prevailing Attitudes

The first question was: "What are the attitudes of students at the Faculty of Education in Zliten towards preserving native plants?"

To answer this question, the mean and standard deviation were calculated for the sample responses on the attitude scale, as shown in Table 2.

Table (2). Arithmetic Means and Standard Deviations of the Attitude Scale Items (n = 231)

No.	Paragraph (Phrase)	Arithmetic Mean	Standard Deviation	Attitude Level
1	I take care not to disturb the wild vegetation during field trips.	4.15	0.90	High
2	Wild plants contribute to preserving the environmental and heritage identity of the city of Zliten.	4.18	0.90	High
3	I actively participate in environmental protection initiatives or planting local trees.	3.99	1.03	High
4	I believe that native Libyan plants possess an aesthetic value comparable to ornamental plants.	3.95	1.01	High
5	It is essential to integrate "local plant culture" as part of university science curricula.	3.95	1.02	High
6	It is best to plant native plants in public gardens because they conserve water.	3.71	1.09	High
7	Scientific knowledge of local plant classification is important.	3.38	1.15	Moderate
Overall Mean	-	3.79	-	High

The results show that the students had a high level of positive attitudes towards preserving native plants, with an overall mean of 3.79. The item that received the highest rating was "Wild plants contribute to preserving the environmental and heritage identity of the city of Zliten" (mean = 4.18), indicating a strong emotional and cultural connection to native flora.

Answer to the Second Question: Differences in Knowledge by Specialization

The second question was: "Are there statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants attributable to the specialization variable (scientific, literary)?"

To answer this question regarding scientific knowledge, a t-test was used to compare the mean knowledge scores according to the specialization variable, as shown in Table 3.

Table (3). Results of the T-test for Differences in Knowledge of Native Plants According to Specialization

Specialization	Number	Arithmetic Mean	Standard Deviation	T-value	P-value	Statistical Significance
Literary	83	4.77	1.12	-0.56	0.574	Not significant
Scientific	146	4.64	1.18			

As shown in the previous table, there was no statistically significant difference in knowledge of native plants between students specializing in applied sciences and humanities, as the p-value was 0.574, which is higher than the statistical significance level of 0.05.

It follows that knowledge of native plants, within this framework, may not be limited to, or related only to, specialized courses, but may also be due to life experience, general knowledge, and interaction with the environment. This result indicates the importance of reviewing how local environmental concepts are integrated into applied science curricula, especially biology, to ensure that students in scientific disciplines are provided with field knowledge that distinguishes them from others in this aspect. This is consistent with what Al-Falous and Al-Ammari (2015) stated, namely that environmental awareness does not always depend on theoretical curricula.

Answer to the Second Question: Differences in Attitudes by Specialization

To answer this question regarding attitudes, a t-test was used to compare the mean attitude scores according to the specialization variable, as shown in Table 4.

Table (4). Results of the T-test for Differences in Attitudes towards Native Plants According to Specialization

Specialization	Number	Arithmetic Mean	Standard Deviation	T-value	P-value	Statistical Significance
Literary	83	3.75	1.21	-0.40	0.224	Not significant
Scientific	146	3.81	1.15			

The table above shows no significant difference in students' attitudes towards native plants, regardless of their field of study, whether scientific or humanities. The p-value was 0.224, indicating that academic disciplines had no significant impact on this attitude. Therefore, it can be said that, overall, students had a positive attitude towards preserving indigenous plants, regardless of the discipline chosen. To clarify further, the researcher explains that attitudes tend to be mainly emotional in nature and could be more influenced by the local value system in Zliten than by academic major."It has been established in the literature that awareness and attitudes toward plants generally pose a challenge to undergraduate students. Even in instances when specialization in academics is meant to contribute positively, research conducted by scholars like Schussler&Olzak (2008) indicate that even students specializing in the life sciences and biology are still faced with the problem of lacking adequate attention towards plants (Plant Blindness) as opposed to other species, indicating that poor awareness and attitudes towards plants are a general problem that needs a broad-based solution."

Answer to the Third Question: Differences by Academic Year

The third question was: "Are there statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants that can be attributed to the academic-year variable?"

Table 5 shows the results of the one-way ANOVA used to reveal differences between academic years in the level of knowledge and attitudes.

Table (5). One-way ANOVA Results for Differences in Knowledge and Attitudes by Academic Year

Variable	Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-value	Sig.	Statistical Significance
Knowledge	Between groups	13.68	3	4.56	0.50	0.685	Not significant
	Within groups	2157.32	236	9.14			
	Total	2171.00	239				
Attitudes	Between groups	0.90	3	0.30	1.23	0.300	Not significant
	Within groups	57.50	236	0.24			
	Total	58.40	239				

As shown in the table above, the one-way analysis of variance did not reveal any statistically significant differences in students' knowledge of native plants ($p = 0.685$) or their attitudes towards them ($p = 0.300$). This indicates that as students progress through their university studies, there is no substantial change in their knowledge of or attitudes towards native plants.

The absence of differences may be due to the nature of the curriculum that guides students in their studies at the College of Education. It may not contain sufficient information regarding native plants. Knowledge and attitudes acquired from year to year may not increase substantially if the focus remains at the same level. They are likely to remain static. Another contributing factor may be that university life alone may not adequately develop this knowledge and these attitudes. They may require special programs designed for this purpose. This contrasts with the notion that an increased academic level means increased knowledge and awareness, as postulated by .

Summary of Study Results

• Students at the Faculty of Education in Zliten showed very positive attitudes towards preserving native plants, with an average rating of 3.79. The item discussing the importance of wild plants in preserving the environmental and heritage identity of the city of Zliten received the highest rating among all items.

• No differences were observed in the level of knowledge about native plants between the specialized group (scientific and humanities) and the other group. This indicates that knowledge acquisition is not directly related to academic background.

• There were no significant differences in attitudes towards native plants between science-track students and humanities-track students, confirming that attitudes towards the environment in society are determined by the prevailing values in Zliten and its value system.

• There were no statistically significant differences at the 0.05 significance level in the level of scientific knowledge and attitudes towards native plants that could be attributed to the academic-year variable.

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