Building a Training Program According to Green Economy Strategies for Biology Teachers and its Impact on the Environmental Decision-Making of their Students

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Research Objective: The research aims to build a training program for biology teachers according to the strategies of the green economy and know the impact of the program on the environmental decision-making of their students. And to achieve the second research objective, the following null hypothesis was formulated: There is no statistically significant difference between the level (0.05) the average scores of the students of the experimental group whose teachers were subjected to the training program according to green economy strategies, and the average scores of the students of the control group who did not submit their teachers to the training program in the environmental decision-making scale.

Research Summary: The researchers adopted the experimental design with partial control for the experimental and control groups, with a (post-test) environmental decision-making test for students, as the experimental group was subjected to the training program, while the control group did not, and the research community represented all the students of the fourth scientific-grade for the academic year (2021/ 2022 AD) affiliated to the Center of the General Directorate of Al-Qadisiyah Education. The sample of students consisted of (400) male and female students distributed equally among the two groups as well, and the students amounted (to 200) male and female students for the experimental group, and (200) male and female students for the control group and the sample of students for each teacher was determined by calculating the percentage (10%) of the total number of students that the teacher teaches, as the number of males reached (98) students, while the number of females reached (102) for the experimental group, and for the control group, the number of males reached (92) students, and the number of females reached (108) female students. These students are selected by a simple random sampling method. The researcher conducted the equivalence of the sample of the students, they were rewarded in the following variables (chronological age, previous achievement, intelligence, environmental decision making). The training program was built according to four stages (the planning stage, the design stage, the evaluation stage, and the feedback), and the research tool

was represented by the environmental decision-making test, in its final form, consisting of (16) environmental problems, and each environmental problem included two paragraphs (two environmental situations), meaning that the test was From (32) environmental situations, its apparent validity, construct validity, discrimination coefficient, difficulty, and the effectiveness of alternatives for this test were calculated. As for the reliability of the test, it was extracted by two methods of split-half, as it reached after correction with the Spearman-Brown equation (0.86), as well as according to the Alpha Cronbach equation, and it amounted to (0.91).
The application of the training program was extended for ten days for the period from Sunday (11/11/2021) to Thursday (2/12/2012), with two sessions per day for an hour and a half. After the end of the experiment, the researcher used the statistical package for social sciences (20- SPSS) and (Microsoft Excel) program in data processing, and after analyzing it statistically, the researchers reached:
The students of the experimental group teachers outperformed the students of the control group teachers in the environmental decision-making test. In light of the results of the current research, the researchers recommended the possibility of adopting the training program prepared according to green economy strategies and including it in the training courses held by the Department of Preparation and Training in the governorate, to train teachers to teach according to him, to conduct similar studies to the current research in other disciplines such as chemistry and physics, to conduct a similar study on other samples, such as teachers of stages other than the fourth scientific stage.

Research Problem: Rehabilitating the teacher and preparing him correctly will lead to the preparation of an integrated generation for life capable of facing the enormous changes in all areas of life, including the environmental changes that have led to the emergence or exacerbation of many environmental problems in the past few years, including the increase in desertification and drought rates, the abundance of dust storms and the increase in consumption Environmental resources, environmental pollution, and others, and that the use of traditional teaching methods in our schools is inconsistent with these serious environmental changes that our countries are facing. The researchers noted with their modest experience of about (17) years and more in the field of teaching at various intermediate and preparatory school levels, and through consultations, dialogues, and records conducted by the researchers with many of his fellow teachers and they visited many schools that most students have a weakness in environmental decision-making, especially Fourth Scientific class students, and the need to address this weakness through teachers' adoption of modern and appropriate environmental teaching methods, methods and strategies because it enables the students to learn more about their environmental issues and to know the serious violations that occur against them and to find the best solutions to solve the problems facing the environment, thus enabling students to choose the correct and sound environmental decision. And to stay away from wrong choices, the researchers obtained a book to facilitate a task and directed a questionnaire to several biology teachers for the fourth scientific grade, who are affiliated with the Directorate of Education of Al-

Qadisiyah Governorate in Al-Diwaniyah District, who amounted to (16) teachers and schools, to identify their answers to the questions directed to them.

After reviewing and quantifying their answers, the researchers concluded the following: (100%) of Biology teachers have no prior knowledge of green economic strategies, and they have not used them in their biology teaching. Also, (74%) of Biology teachers are not sure that their students have the right to make environmental decisions.

Thus, the research problem was determined by: "What is the impact of building a training program according to green economy strategies for Biology teachers and making environmental decisions for their students".

Research Importance: Based on the foregoing, the researchers can summarize the importance of the current research in the following points:

- Directing those in charge of the educational process to pay attention to training programs prepared by educational theories and modern teaching strategies to train teachers during service, thus contributing to their scientific and professional development.
- Biology teachers need training programs according to education for the green economy to keep pace with environmental scientific development and build a training program according to education for the green economy for biology teachers for the preparatory stage.
- Draw the teachers' attention to the focus on employing education strategies for the green economy and the educational activities involved in teaching; To assist students in acquiring environmental decision-making. Officials and specialists in the Curriculum Directorate can benefit from it in developing a biology book for the fourth Scientific Class.
- Knowing the impact of the training program on each of the students of the research sample teachers through the environmental decision-making test for their students.
- The first research deals with a training program according to education for the green economy (according to the researcher's knowledge) and the environmental decision-making variable for their students.

Research Goal: The current research aims to build a training program according to the strategies of the green economy and to identify the impact of the training program on environmental decision-making for their students.

Research Hypothesis: To verify the aim of the research, the researchers put the following null hypothesis: There is no statistically significant difference at the level (0.05) between the mean scores of the students of the experimental group whose teachers were subjected to the training program according to the strategies of education for a green economy and the average scores of the students of the control group who did not submit their teachers to the program Practical Environmental Decision Making Exam.

Research Limits: The search was limited to:

- Human limits: fourth-grade science students whose teachers will undergo the training program according to the strategies of the green economy.
- spatial boundaries: Secondary and middle schools affiliated to the General Directorate of Education in Qadisiyah.
- Time limits: the academic semester of the academic year (2021-2022).
- Objective limits: Biology book for the fourth grade of science (2021-2022) (11th edition)

Research Terminology: The following is a definition of the terms that were mentioned in the research, as follows:
Training program: Defined by (Al-Sakarneh, 2011) As it is a planned, organized, and continuous process that aims to develop the skills and capabilities of the individual, increase his information, improve his behavior and attitudes, and enable him to perform his job effectively and efficiently. (Al-Sakarneh, 2011: 19).

As for the theoretical definition, the training program is a set of pre-prepared experiences and activities on which the trainees are trained according to a specific period aimed at developing their abilities and skills and increasing their knowledge.

The procedural definition of the training program is a set of previously planned training sessions with specific goals for biology teachers for the fourth scientific grade and with a specific period to train them and develop their knowledge, expertise, skills, and scientific trends according to green economy strategies.

The Green economy is defined as a new economic model that requires the greening of all professions and focusing on goods and services that will need more specific changes to improve energy efficiency and reduce resource use, and university education has an important role to maintain this model. (Oana& Pop, 2011: 1023).

As for the theoretical definition of green economy strategies, it is a variety of teaching strategies that enable biology teachers to teach their students how to adopt clean, environmentally friendly energy away from pollution and its problems.

The procedural definition of green economy strategies is a set of strategies (discussion and dialogue, cooperative learning, problem-solving, project, concept maps, exploration, brainstorming, decision-making strategy) on which the experimental group of the research sample of biology teachers for the fourth scientific-grade was trained within A training program has been prepared for this purpose.
Environmental decision-making: defined by (Al-Senussi, 2012) is choosing the best alternative from among the available alternatives to solve an environmental problem, according to the decision-makers' knowledge of environmental facts and values that require resolving this problem. (Al-Senussi, 2012: 147)

(Murad and Kawthar, 2016) Choosing the best alternative from the available alternatives to solve an environmental problem, according to the decision-makers

knowledge of environmental facts and values, represents what is right about environmental protection. (Murad and Kawthar, 2016: 619-618)

The researcher defines environmental decision-making theoretically as the ability to issue a judgment to choose the most appropriate best, and best alternative among a group of available and available alternatives to solve an environmental problem or an environmental situation after the decision-maker has been informed of all the information related to that problem.

And as procedurally, enables the student of the research sample to issue a judgment or solution to any environmental problem or environmental situation he faces, as measured by the degree he obtains when responding to the environmental decision-making test prepared by the researcher for the current research.

Theoretical Background:

Green economy concept The idea of the green economy emerged as a reaction to the fossil or brown economy, which constitutes a major obstacle to renewable energies and the environment economy, as there is great support for the brown economy estimated at billions of dollars, and once transferring or replacing part of this support can solve the problem of moving towards a green economy and this is done from By changing financial policies, reducing material, legal, commercial and market support for the brown economy, reducing environmentally harmful subsidies and directing investments to green sectors. By promoting greater international cooperation, the greening of the economy does not prevent the building of enormous wealth, does not block job opportunities, and does not hinder investments. All that is required is the process of transferring investment to new sectors.
https://www.maan-ctr.org/magazine/Archive/Issue45/manber.php

The requirements of the green economy in the field of education require the following:

- Improving education, strengthening training programs, and vocational retraining.
- Linking between innovation research, and development systems through coordinating relations between all research institutions and the private sector.
- Making changes in the practice of business with the participation of the private sector, provided that educational programs and university degrees benefit from the new vision of development and the establishment of rules related to the green economy.(Amayrah, 2019: 15-16)

Green Economy Characteristics: The characteristics of a green economy include:

- The green economy is growing faster than the traditional economy in the long run.
- Conserves natural resources and encourages the improvement of resource and energy efficiency.
- Uses clean, sustainable energy instead of fossil fuels.

- One of the characteristics of the green economy is that it supports social justice and equality, achieves job opportunities, and alleviates poverty (Al-Mutairi, 2019: 521).

Green Economy Goals: The United Nations Environment Program (UNEP) for the year 2011 stated that the objectives of the green economy are:

- Realizing the value of natural capital (natural resources and wealth) and investing in it.
- Creating job opportunities, supporting social equality, and reducing the problem of poverty.
- Replacing fossil fuels (black fuels) with sustainable energy and low carbon technologies.
- Improving resource and energy efficiency.
- Making urban life more sustainable and carbon-emitting.

Faster growth in the long term when investing in a green economy than in a black-brown, or traditional economy (Abu Alyan, 2017: 60-61).

Dimensions of the green economy: The green economy includes a set of dimensions that interact and integrate among themselves to form the green economic system. These dimensions are the religious dimension, the technological dimension, the environmental dimension, the social dimension, and the economic dimension.

The importance of the green economy

- **Facing environmental challenges:** by improving resource efficiency management, reducing gas emissions, reducing waste volumes and managing them better, and stopping the depletion of forests and fisheries.
- Stimulating economic growth: green investments lead to accelerating global economic growth, especially in the long run, to outpace the growth rate that could result from the prevailing scenario. (Amayrah, 2019: 13)

As for the importance and benefits of the green economy in education, they are evident in the following:

- Training teachers and students to use technological innovations in an environmentally sound and successful manner while saving time and effort.
- Providing an appropriate and appropriate environment that is active in the educational process.
- Using techniques to rationalize energy consumption resulting from the use of computers, lighting, air conditioning, and others.
- Training students on continuous leadership and providing them with decision-making skills, because it focuses on learning by practice.
- Increasing students' self-confidence, their willingness to move to higher levels of thinking, and linking students to the local environment.
- The role of the teacher in developing and activating the work spirit of teamwork among the general students leads to the reduction of violence phenomena in the school.
- The green economy calls for the computerization of curricula and textbooks and the adoption of E-learning.
- Develop calendar methods using digital calendar tools.

- Activating the role of parents, and enhancing their participation in the educational process by developing the level of electronic communication and continuous communication between the school, the home, and community institutions. (Mujahid, 2020: 181-182)

Research Methodology and Procedures: Experimental Design; the researchers will adopt the experimental design with partial control for the experimental and control groups and the post-test of the future thinking skills of biology teachers and environmental decision-making for their students, as shown in Scheme (1).

The group		Parity	The Independent Variable	Dependent Variable	Measurement of the dependent variable
1	Experimental group students	Chronological age previous collection intelligence Environmental decision making	Trained teachers according to the program	Environmental decision making	Environmental decision-making Test
2	Control group students		Untrained teachers		

Scheme (1) Experimental design for two groups of teachers and two groups of students.

Research Community and sample:

Research Community: As for the research sample, it is a part of the society in which the study is being conducted. (Daoud and Abd al-Rahman, 1990: 67)

The research community consists of: the student community, which consists of fourth-grade scientific students whose teachers are included in the research sample for the experimental and control group, as their number reached (11813) male and female students, (5607) male and (6206) female students distributed between middle and secondary schools in the center of Al-Qadisiyah Governorate.

The research sample: Student Sample. A random sample was selected from the fourth scientific-grade students in middle and secondary schools in the center of Al-Qadisiyah Governorate who are affiliated with the Directorate of Education in Al-Qadisiyah Governorate for the academic year (2021-2022 AD), as their number reached (400) male and female students, by taking a sample of (10%) of the class students The fourth scientific for each teacher of biology, the research sample.

Third: Adjustment procedures: Exactly means fixing all the factors and determining them, except for the factor whose effect is to be known. (Raouf, 2001: 158)

Despite the random testing of the sample members of the experimental and control groups, the researchers were keen to identify and install all other variables and factors that affect the dependent variable.

Internal Safety: The researchers took into account the need to generalize the results of their research outside the sample of their experiment so that they are honest in similar situations, that is, through the possibility of generalizing the results reached by the researchers in the experiment to other groups and other environments. The researcher considered the following:

- The experimental procedures do not affect the feelings and attitudes of the trainees so the training becomes artificial. Rather, the training procedures proceed naturally and the trainees interact with the researchers and with each other, as well as with the sample of students.
- The researchers made sure that the trainees did not undergo any training process or any other experience during the period that they underwent during their training, and it was also confirmed concerning the sample of students.
- The researchers deliberately did not specify and clearly describe the independent variable; Which leads to the difficulty of re-experimenting again for the trainees to ensure the correctness of the results as well.

Student sample equivalence: The two researchers in his two research groups (student sample) were sufficient with several variables that are believed to affect the effectiveness of the independent variable, and thus its uniqueness in influencing the dependent variables).

External Safety: The researchers were aware of the need to control the extraneous variables that are likely to affect the integrity of the experiment, and these variables are experimental extinction, maturity, measurement tool, selection of sample members, and experimental procedures.

Training Program: The researchers will choose the systems approach in building the training program. The researchers believe that the components of the training process according to the systems curve are integrated systems because it provides a general framework that combines the external and internal factors affecting any particular activity and works to link them into an integrated formation. The system's entrance works to segment the basic components of the system into Sub-systems and also provides a holistic view that allows thinking about the components and parts of the system to reach solutions to problems and this is better than if these parts were studied separately.

Environmental Decision Test: The two researchers prepared the environmental decision-making test for the fourth-grade students according to the steps of the preparation. Preparing an initial list of environmental problems for environmental decision-making. The researchers benefited from his knowledge of many tests and

measures of environmental decision-making and by reference to the theoretical definition of environmental decision-making. The researchers suggested, in agreement with the supervisor, to provide the specialists with a questionnaire about the most important main and sub-paragraphs that should be included in the environmental decision-making test. (environmental) indicated in the questionnaire. After reviewing the tests, advanced standards, and classifications, the researchers noticed that there was a diversity of environmental problems, and the arbitrators agreed on a set of specific environmental problems. Therefore, the aforementioned questionnaire was prepared, which included a number of the main problems mentioned above, and each of them includes a group of sub-problems, which the researchers see as comprehensive for most of what was mentioned in those classifications, in addition to presenting it to a group of arbitrators to determine its suitability for the research tool and its validity or not with deletion or addition Or merging or modifying the naming of some environmental problems as they see fit, and in light of the arbitrators' observations and suggestions, the researchers modified only part of them without any deletion. The researchers relied on the percentage and the value of the chi-square (Ka2) at the degree of freedom (1) and the significance level (0.05) to analyze the arbitrators' responses about the validity of these environmental problems and their suitability for research purposes. That is, the problems that were agreed upon by (17) arbitrators were accepted, and more than the total number of arbitrators, which numbered (20) arbitrators. As for the problems that receive a percentage of less than (82%), they are deleted and no problem was deleted because they did not obtain that percentage, and it was the value of (K2) for all problems is statistically significant at the degree of freedom (1) and the significance level (0.05) as the calculated value is greater than the tabular value (3.841).

Preparing the initial form of the test: Determining the main and sub-environmental problems, the test paragraphs were formulated and may include in their initial form (16) environmental problems with a (2) environmental position for each problem. The total number of items (environmental attitudes) for the test was (32) of a multiple-choice type, and it included various and varied environmental situations. The researchers were very keen that the selected environmental situations should be appropriate for the age stage of the fourth scientific-grade students, as well as preparing instructions for students explaining how to answer the questions. Test paragraphs and choose the best and most appropriate solution.

Test correction: While presenting the test in its initial form to the arbitrators, the researcher asked them to arrange the answer alternatives for the test paragraphs from the most correct to the least correct, and so on, to determine the correction criterion for the paragraphs, and based on the opinions of the arbitrators, it was decided to give (3) degrees to the student who chooses the best and most appropriate alternative, and (2) A score when the student chooses the correct alternative that follows the correct alternative and is given (1) one point when choosing the last alternative in the order

according to the opinion of the arbitrators, and thus the test score ranges from (32 to 96 degrees).

The apparent validity of the test: The initial version of the test was presented to a group of arbitrators with expertise and experience in the field of science teaching methods to give their guidance and opinions regarding the test items and assess their validity, by judging on the ease of achieving the desired goal to solve the environmental problem, its suitability for the age group that is studying decision-making It is environmentally friendly, low in cost and does not require high material costs, and does not cause other problems when applied. In light of the arbitrators' observations and suggestions, the researchers modified and re-drafted some of the test paragraphs. The researcher adopted the percentage and value of chi-square (Ka2) for the degree of freedom (1) and at the significance level (0.05) to analyze the arbitrators' responses to the test items, where all the items obtained approval from the specialized arbitrators on their validity to measure what they were set to measure at a rate of (86%) or more. Also, the value of chi-square (Ka2) was statistically significant at the degree of freedom (1) and the significance level (0.05) because the calculated value is greater than the tabular value (3.841), which kept the test items (32) items.

First survey application: After completing the verification of the apparent validity of the test, it was applied for the first time to a sample of (30) male and female students equally from the fourth scientific-grade students in the Shafia High schools for girls and Ibn Al-Haytham High School for boys, respectively, on Monday (1/11/2021) to Thursday (4/11/2021) to know the extent of the clarity of the test instructions, the clarity of its paragraphs, as well as to know the appropriate time for the answer. And clear in terms of meaning and wording, and the average answer for the test items was (45) minutes, and this was done by calculating the total time taken by the first five students and the last five students divided by (10).

Second survey application: After verifying the clarity of the test's instructions and paragraphs and knowing the time to answer it, the test was applied to a second exploratory sample consisting of (100) male and female students (equally) from the fourth scientific class at Al-Ruwad Mixed Secondary School and the Keysa'a Secondary School on Monday (8/11). / 2021) until Thursday (11/11/2021) to extract the psychometric characteristics of the test, and the researchers themselves supervised the application of the test in cooperation with the subject teachers in these two previously mentioned schools.

Determining the Psychometric Properties of Environmental Decision-Making Test: After the second exploratory application of the test, the students' responses were corrected according to the form prepared for the answer. Then the final scores of the students were arranged in descending order and divided between two groups, a high group, and a low group, at a rate of (27%) of the total to represent the two peripheral

groups, where the number of members of the two groups reached (54) students. And by (27) students per group, to extract the following:

Building validity: The researcher verified the validity of the building for the environmental decision-making test through the following:

- **The correlation coefficient of the item's score (environmental situation) with the total score of the test:** To verify the existence of a correlation between the degree of each item (environmental situation) and the total score of the test, the researchers adopted for all test items the (Person Correlation Coefficient), as the results showed that all correlation coefficients are statistically significant at the level of significance (0.05), as the correlation value The calculated (r) ranged between (0.31 - 0.55), that is, all of them were greater than the tabular correlation (r) value of (0.205) at a significance level of (0.05) and a degree of freedom (98), and thus the test items are true to what they were designed to measure.
- **The correlation coefficient of the degree of the paragraph (environmental situation) with the total degree of the domain (environmental problem) to which it belongs:** To verify the existence of a correlation between the degree of each paragraph (environmental situation) and the total degree of the domain (environmental problem) to which it belongs, the researchers adopted for all test paragraphs the(Person Correlation Coefficient), as the results showed that all correlation coefficients are statistically significant at the level of significance (0.05), as the calculated value of the correlation coefficient (r) ranged between (0.241_0.570) greater than the tabular correlation (r) value of (0.205) at the level of significance (0.05) and the degree of freedom (98), and thus the test items are considered true for what they have been developed. to measure it.

Correlation Coefficient of the Total Score of the Field (the environmental problem) with the total score of the test: To find the correlation between the students' scores on each domain (the environmental problem) and the total score of the test, the researchers adopted the Pearson Correlation Coefficient for all test items, and it became clear that all the calculated correlation coefficients are a function Statistically at the significance level (0.05) and the degree of freedom (98).

Paragraph difficulty coefficient: The test paragraphs should not be too easy so that all students can answer them, and not so difficult so that all students fail to answer them. The difficulty of each paragraph was calculated by adopting the difficulty equation and found that it ranged between (0.29 - 0.63), that is All test items are acceptable, where all test items are acceptable and good if their difficulty coefficient is between (0.20 - 0.80).

Paragraph discrimination coefficient: To calculate the coefficient of discrimination of the test items, the researchers adopted the relevant equation. The results showed that the value of the discrimination coefficient of the test items ranged between (2.44-8.92), so all test items were distinct because their discrimination coefficients of less than (0.20) are weak and it is recommended to delete them.

Test stability: The test reliability was calculated in two ways:

- **The split-half method**: The stability coefficient between the two halves of the test (odd and even items) was extracted by using the (Pearson Correlation Coefficient) and it was (0.83), and it was corrected by the Spearman-Brown equation, so the stability coefficient after the correction was (0.86), which is a high stability coefficient.
- **Internal consistency by adopting (Cronbach's Alpha):** The stability was extracted to test environmental decision-making by adopting Coefficient Cronbach's Alpha, where the stability coefficient was (0.91), and it is a good stability coefficient as in the table (2).

Method	Constancy
Pearson Correlation Coefficient	0.83
The Cyberman-Brown Correction	0.86
Alpha Cronbach	0.91

Table (2) The stability values of the future thinking test

Final Formula for Environmental Decision-Making Test: After completing all the procedures related to honesty, stability, difficulty coefficient, discrimination coefficient for test items, as well as the effectiveness of wrong alternatives and the adoption of statistical methods, the environmental decision-making test is ready to be applied in its final form, which consists of (32) environmental positions by (2) environmental positions. For each environmental problem, the test (16) deals with an environmental problem, as well as prepares a key for the correct answer to the environmental decision-making test.

Presentation and interpretation of the results: First: Presentation of the results: The following is a presentation of the results reached by the researchers in the light of the research objectives, which are as follows: (Null hypothesis): to verify the first null hypothesis which states that (there is no statistically significant difference at the level (0.05) between the mean scores of the students of the experimental group whose teachers have undergone the training program according to the green economy strategies and the mean scores of the students of the control group whose teachers have not undergone the training program in the environmental decision-making test). The researchers adopted the (T-test) for two independent samples, to show the differences between the average scores of the two groups on the scale of post-environmental decision-making for the experimental group, and Table (3) illustrates this.

The group	**Number of students**	**Arithmetic Average**	**Standard Deviation**	**Degree of freedom**	**T-Value**		Statistical significance at the level (0.05)
Experimental group	**200**	**73.59**	**12.43**	**398**	**Calculated**	**Tabular**	

Control group	**200**	**63.82**	**13.52**		**7.51**	**1.96**	**function**

Table (3) Results of the (T.Test) for two independent samples of the two research groups on the environmental decision-making test.

Table (3) above shows that the arithmetic average means the value of the scores of the experimental group students according to the post-environmental decision-making test was (73.59), while the standard deviation was (12.43), while the arithmetic means of the scores of the control group students was (63.82) with a standard deviation of (13.52).

, and the calculated t-value was (7.51) which is greater than the tabular t-value of (1.96) at the degree of freedom (398) and the level of significance (0.05), which means that there is a statistically significant difference in favor of the experimental group in the environmental decision-making test, and thus the hypothesis is rejected.

Impact size: To calculate the effect size of the independent variable on the dependent variable, the researchers used the effect size equation (d) for the independent variable in the dependent variable. Table (4) shows the size of the effect of the independent variable on the environmental decision-making variable.

Independent variable	Dependent variable	Impact size value (d)	Effect Size Amount
Training program according to green economy strategies.	**Environmental decision-making.**	**0.75**	**Above average**

Table (4) The impact size of the independent variable on environmental decision-making.

And by extracting the value of the effect size, which amounted to (0.75), it is an appropriate value to explain the size of the effect and an amount above the average for the variable of the training program according to the strategies of the green economy in environmental decision-making for students according to the gradient set by (1988) (Cohen, which sees it as an above-average effect size according to what he explained (Catherin, 2012) (Catherin, 2012: 7).

Figure (1) shows the effect of the training program according to green economy strategies on environmental decision-making among the students of the experimental group compared to the students of the control group.

Figure (1) Comparison of averages for the two experimental and control groups of students in the environmental decision-making test.

Figure (3) shows the mean scores for the experimental and control groups in the environmental decision-making test, which amounted to (73.59) for the experimental group and (63.82) for the control group.

Figure (2) shows the percentage of the difference between the experimental and control groups for students in the environmental decision-making test.

Figure (2) The percentage of the difference between the experimental and control groups of students in the environmental decision-making test discussing and interpreting the results related to the environmental decision-making variable for students: The results of the current research showed that there is a statistically significant difference between the scores of the students of the teachers of the two experimental groups and the students of the teachers of the control group in environmental decision-making, in favor of the students of the teachers of the experimental group, with an effect size above the average. He contributed to this effect through the following:

- The commitment of teachers to teach in green economy methods and strategies in teaching, continuous follow-up with their students, communication with them, and encouraging them to continuously review, enrich their scientific store of information, expand their culture about the environment, and increase their environmental awareness of the risks, challenges, environmental problems and pollution that require correct and appropriate treatment methods.
- Increasing students' interest in environmental issues and environmental cleanliness, using clean energy sources as an alternative to black fuel, which increases environmental pollution, finding alternative environmentally friendly energy sources, and creating a large number of wastes through recycling waste, rationalizing water consumption and electric energy, and taking care of and preserving home, school and public gardens.
- The student of the experimental group transformed from a passive student who receives the educational material and memorizes it only to a positive, active student who is the focus of the educational process and cooperates and interacts with the teacher and with the rest of his fellow students and the need to take into account the individual differences between students and specials when teaching with green economy strategies, as all of what was mentioned during teacher training was taken into account. With these various strategies during the training program, he drew their attention to the differences between students and their considerations.

The results of the current study agreed with the results of several previous studies that dealt with environmental decision-making, including the study (Al-Sayed, 2007), the study (Al-Asadi, 2009), the study (Al-Senussi, 2012), the study (Al-Ta'i, 2015) and the study (Abbas, 2018).

Conclusions: Based on the results of the current research, the following conclusions were reached:

- The training program prepared according to the strategies of the green economy contributed to meeting the training needs of biology teachers for the fourth scientific grade.
- Training of biology teachers for the fourth scientific-grade on teaching green economy strategies contributed to their ability to make environmental decisions for their students.

Recommendations: In light of the results of the current research, the researcher concluded a set of recommendations that might enrich the educational process and benefit those in charge of it, especially in the teaching of biology, through the following:

- The possibility of adopting the training program prepared according to the strategies of the green economy and including it in the training courses held annually by the Department of Preparation and Training in the governorate, to train teachers to teach according to it.
- Emphasis on the practical aspect of teaching strategies through writing plans and implementing them during the annual and quarterly training sessions, and not only the delivery of theoretical information from the trainer to the trainees.
- Opening direct communication channels between the Preparation and Training Department, school administrations, specialization supervisors, and teachers, to identify their training needs and professional preparations, to direct training courses towards meeting those needs.
- Drewing the attention of educational supervisors and biology teachers to the importance of encouraging students to practice environmental decision-making by including it in-class activities.
- The necessity for coordination between the Ministry of Education, the Ministry of Health and the Environment, and environmental, economic, and energy experts to integrate the dimensions of the green economy into the biology curriculum for the fourth-grade science.

Suggestions: To complete the research topic, the researchers suggest the following:

- Conducting studies similar to the current research in other disciplines such as chemistry and physics.
- Conducting a similar study on other samples, such as teachers of stages other than the fourth scientific stage.
- Studying the effectiveness of the training program prepared according to green economy strategies in other variables such as environmental awareness and environmental values for teachers.
- Conducting similar studies for higher educational stages such as institutes and universities.
- Analysis of biology books for the intermediate and Secondary stage according to the dimensions of the green economy.
- Studying the impact of a training program according to the green economy strategy in other disciplines and stages of study, and knowing its effect on other variables.
- Establishing green schools that are environmentally friendly in all governorates of the Republic of Iraq. It is a successful and modern idea, as these schools will be modern in terms of green buildings, as well as the adoption of clean energy, and be similar to the idea of the schools of the distinguished and talented, which opened in all governorates of the country and received great demand.

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