

Abstract

The present study aimed at developing attitudes and environmental problem solving skills in English language curriculum of first secondary year students. The analytical descriptive method for reviewing related studies and literature was used. The quasi- experimental design employed in the present study is the pre/ post test, control group, experimental group design. Then the researcher selected the units (the sixth and seventh units) of the prescribed book of first secondary stage students to be taught according to the suggested strategy. Then, the researcher constructed an environmental attitudes scale and an environmental problem solving scale. Two classes from Gehan El Sadat secondary school were randomly chosen to be the experimental and the control group. The control group students were (N=33) while the experimental group students were (N=37). Their age ranged from 15-16 years old. Then, the researcher applied an environmental attitudes scale and an environmental problem solving scale to both groups. Then, the researcher constructed the suggested strategy based on instructional scaffolds and applied it to the experimental group, and applied the environmental attitudes scale and environmental problem solving scale to both groups after implementing the strategy. Finally, statistical analysis was made and results were discussed. The study results indicated that the suggested strategy was effective in developing the students' positive attitudes towards the environmental problems and the environmental problem solving skills.

Key words: A strategy-Instructional scaffolds-Environmental attitudes- problem solving skills.

Summary

Introduction:

With scientific knowledge doubling every three years (Nash,2009) ,it becomes increasingly important for students to develop higher order thinking skills. This involves basic skills, but also requires learners to use their knowledge in a variety of domains, perform critical analysis, and solve problems. As educators call for mere integrated instruction, problem solving often serves as a core curriculum standard that joins various disciplines, rules, concepts, strategies and skills. Also, the environmental problems' number increase and varies day after day, and new problems emerge like climate change, non renewable resources depletion, transportation crisis and new ailments outbreak due to air pollution with chemical substances. So, these problems should be solved to live in a safe and clean environment. Also, Learners should acquire the problem solving skills to be able to face environmental problems in away that they will play a distinguished role in solving them. Furthermore, the teacher should realize that these skills enable learners to deal with and handle these problems. So,students should be encouraged to participate directly and indirectly in preserving the environment and suggest the best solutions to its problems (Faheem ,2005,p:125). Therefore, problem solving is a basic skill needed by today's learners.

Statement of the problem:

The study problem is identified in the weakness of first secondary year students' environmental problem solving skills and their negative attitudes towards it.

The present study tried to answer the following main question:

-What is the effectiveness of a suggested instructional scaffolding strategy in developing attitudes and environmental problem solving skills of first secondary year students?

From this main question some sub-questions emerge:

- 1- What are the forms and types of instructional scaffolds that can be presented to first secondary year students through "Tomorrow's World" and "Safety and health" units in the English curriculum?
- 2- What are the features of a suggested strategy based on instructional scaffolds in English curriculum of first year secondary stage?
- 3- What are the procedures for applying the suggested strategy for developing attitudes towards environment and environmental problem solving skills in English curriculum of first secondary year students?
- 4- How far is the suggested instructional scaffolding strategy effective in developing attitudes towards environmental problems included in English curriculum of first secondary year students?
- 5- How far is the suggested instructional scaffolding strategy effective in developing environmental problem solving skills in English curriculum of first secondary year students?

Hypotheses of the study:

- 1- There are statistically significant differences between the mean scores of the experimental and the control group students on the pre and post application of the environmental attitudes scale in favor of the experimental group post application of the scale.
- 2- There are statistically significant differences between the mean scores of the experimental and the control group students on the pre and post application of the environmental problem solving scale in favor of the experimental group post application of the scale.

Method and procedures:

Design of the study:

The present study followed the analytical, descriptive method for reviewing literature and related studies.

The quasi- experimental design was employed in the present study in the pre/ post test, control group, experimental group design.

Participants of the study:

Two classes from Gehan El Sadat secondary school were randomly chosen to be the experimental and the control group.

The control group students were (N=33), while the experimental group students were (N=37). Their age ranged from 15-16 years old.

Tools of the study:

- 1- An environmental attitudes scale.
- 2- An environmental problem solving scale.

Procedures of the study:-

- 1- Reviewing literature and related studies.
- 2- Selecting the units (the sixth and seven units) of the prescribed book of first secondary year students to be taught according to the suggested strategy.
- 3- The researcher determined forms and types of instructional scaffolds in every lesson of the (sixth and seventh units) in first secondary year English curriculum.
- 4- Constructing the environmental attitudes scale and the environmental problem solving scale and applying them to the study participants (The experimental & control group) before applying the strategy.
- 5- Constructing the suggested strategy based on instructional scaffolds and applying it to the experimental group.
- 6- Applying the environmental attitudes scale and environmental problem solving scale on both groups after implementing the strategy.
- 7- Statistical analysis was made and results were discussed.
- 8- Recommendations and suggestions were presented.

Results of the study:

- 1- The suggested strategy was effective in developing students' positive attitudes towards the environmental problems.
- 2- The suggested strategy was effective in developing students' environmental problem solving skills.

Recommendations:-

In the light of the present study results the researcher recommended the following:-

- 1- Using the internet in developing students' abilities of gathering, organizing and analyzing information about environmental problems.
- 2- Training English teachers on teaching environmental issues using instructional scaffolding strategy.
- 3- Educators have to revise curricula to include integrated learning environments which encourage learners to use higher order thinking skills, and in particular , problem solving skills.
- 4- Environmental problem solving skills are basic skills needed by today's learners as guided by recent research in problem solving.

Suggestions:

Based on the study results, it was suggested that:

The researcher suggests the following research on the light of the study results:-

- 1- Further research is needed to explore the effectiveness of similar strategies in developing environmental problem solving skills.
- 2 – While the present study provided support to the effectiveness of the suggested strategy in developing environmental problem solving skills, further research is needed to investigate the effectiveness of similar instructional strategies in developing environmental values ,ethics and awareness.
- 3- More studies are needed with different student population in other areas with the purpose of investigating the effectiveness of other scaffolding strategies in developing environmental problem solving skills.
- 4– Developing English curricula by involving various environmental problems and including them in all units.
- 5- Using other instructional strategies in developing environmental responsibility and awareness in English curricula.

Definition of terms:**Instructional scaffolds:**

It is defined as helps presented to learner during learning process to enable him to achieve tasks or solve a problem, which he cannot solve without help in a way that results in not needing this help in the future(ElSalamy,2008.p:40).

A strategy:

It is defined as special ways of processing information that improve comprehension,learning,or retention of the information (Pezham,2012,p163).

Environmental attitudes:

It is defined as situations or reactions or responses of individual towards an environmental problem or issue by acceptance or rejection as a result of a certain experience has a relation to this environmental problem or issue (Ismaeel& El Rafee,2004,P:39).

Operational definition of environmental attitudes:

It is defined operationally in the present study as situations or responses of the student towards some environmental problems which are (air pollution- non renewable resources depletion- heavy traffic-bird flu-food pollution- public hospital pollution) by acceptance or rejection.

Environmental problem solving skills:

It is defined as a set of skills which learner learns deliberately and regularly via activities and scientific applications related to environment where he lives, which enables him to deal with it successfully and aims at building his personality in away that enables him to be responsible towards environment(Hassan,2007.p:102).

Operational definition of environmental problem solving skills:

It is defined operationally in the present study as the students' ability to determine some environmental problem which are (air pollution- non renewable resources depletion- heavy traffic-bird flu-food pollution- public hospital pollution),analyze information about it,and suggest solutions.

Appendix (7)
The Initial Version of the
Environmental Attitudes Scale

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The Initial Version of the Environmental Attitudes Scale

The environmental attitudes scale instructions:

Dear student,

This scale is designed to measure your attitudes towards some environmental problems. These problems are: air pollution, bird flu, food pollution, non- renewable resources depletion, public hospitals pollution, heavy traffic.

This scale consists of several situations followed by three choices and you will choose the item which coincides with your attitude towards these environmental problems.

Follow these instructions:

- 1- Choose the option which expresses your attitude and write it down in the definite place in the answering paper.
- 2- Do not leave any question without answer.

An example:

You saw a child was eating an apple which he found on the floor.

- 1- I advise the child not to eat the apple because it is not clean.
- 2- I think that this child has the right to eat the food he wants whether it's clean or not.
- 3- I think that not all polluted foods pass diseases to human being.

And now fill in your personal information.

Name:

Class:

Air Pollution Problem

- 1- To overcome air pollution problem, poisonous gases emission and car fumes what is your opinion about using another power resources to operate cars:
 - a- I think that it is impossible to use fossilized fuel.
 - b- I think that we can use electricity to operate cars.
 - c- I think that some cars can be operated by fossilized fuel and other cars can be operated by electricity.
- 2- Your brother sat in a café with his friend and his friend smoked so many cigarettes
 - a- He has the right to smoke where he wants.
 - b- He should reduce number of cigarettes he smokes.
 - c- He should give up smoking because it's harmful to health and causes death.
- 3- The responsible authorities constructed green belts and green areas.
 - a- We should make green areas and plant trees in touristic districts.
 - b- We should plant trees in industrial areas and over crowded districts.
 - c- We should construct green areas in certain cities when a responsible person visits those cities.
- 4- One of summer activities in your school is planting trees in the school and neighborhood:
 - a- I participate in this activity.
 - b- I prefer to spend summer months in a camp.
 - c- I think that participating in this activity will make me tired.
- 5- When you were walking in the street, you saw a person burning large amounts of garbage in the street:

- a- I advise him not to burn garbage in the street because gases emission affects badly on health.
 - b- I will help him in burning more amounts garbage.
 - c- I go on my way.
- 6- When you were walking in a crowded square in Mansoura city, you saw heavy smoke came out of a taxi, so people were upset because smoke caused cough and left the place.
- a- You ask the taxi driver to repair his car.
 - b- You leave the place like others.
 - c- You take the taxi number and inform the traffic department about the taxi.
- 7- Some farmers get rid of rice chaff by burning it.
- a- I discuss with them the danger of burning the rice chaff and its effect on air and human health with them.
 - b- I advise them to throw the rice chaff in the Nile.
 - c- I advise them to burn the rice chaff in areas far from residential areas.
- 8- You saw your neighbor operating a stove with coal in his house and he brought large amounts of it to use.
- a- I advise him to buy an electric stove instead of the one that works with coal.
 - b- I give him amounts of wood that can be used in heating.
 - c- My neighbors and I inform the responsible authorities about him.
- 9- A seminar was held in your school about air pollution and your teacher told you that every student has the right to attend the seminar.
- a- I think that I should attend it to know the dangers of air pollution problem.

- b- I think that attending this seminar is a waste of time.
 - c- I decide not to attend this seminar.
- 10- You heard about a new traffic law which fixes filters to cars to purify fumes:
- a- I think that fitting filters reduces fumes' danger.
 - b- I think that any citizen has the right to fix filters or not.
 - c- I think that these filters don't reduce air pollution because air is polluted by other resources.
- 11- A decree was issued to impose a fine on people who burn garbage in the street:
- a- Every one has the right to burn garbage.
 - b- Burning garbage results to air pollution.
 - c- The fine must not be imposed on all those who burn garbage.
- 12- Sellers who grill corn led to air pollution with smoke.
- a- We should leave these sellers grill corn even if this will pollute air.
 - b- These types of activities should be forbidden.
 - c- Every person has the right to practice the activity he wishes.
- 13- A decree was issued to use oil free of lead to operate cars:
- a- I think that this type of oil reduces lead oxides in air.
 - b- I think that old cars owners should use this type of oil.
 - c- I think that cars mustnot be operated by oil at all.
- 14- Some restaurants' grills lead to heavy smokes.
- a- I think that grilling doesn't pollute air.
 - b- I think that those restaurants must fit filters.
 - c- I think that these restaurants mustnot grill foods.

Food Pollution Problem

- 15- You bought some fruits and found some insects in them.
- a- I will wash the fruits well with water.
 - b- I spray insecticides on the fruit.
 - c- I throw the fruits.
- 16- Your sister sprays the insecticide near the food:
- a- I will cover food.
 - b- I advise her not to spray the insecticide beside the food.
 - c- I do not care.
- 17- A bakery offers its products without covering them:
- a- I advise the seller to cover the food with plastic bags.
 - b- I do not buy pastry from the bakery.
 - c- I do not say anything.
- 18- You saw the waiter in a restaurant washing pots and plates with water only:
- a- I advise him to wash them with water and soap.
 - b- I ask him to clean the pots and plates with a towel.
 - c- I do not say anything to him.
- 19- You saw a street vendor mixing food remains with the food which he presents to clients:
- a- I advise the seller not to present food remains to the clients.
 - b- I do not tell the clients about what the seller has done.
 - c- I encourage the seller to present the food remains to other clients.
- 20- You saw a seller frying potatoes, fish and other foods in the same oil, and he does not change it:

- a- I think that this seller has the right not to change the oil.
 - b- I think that this seller should change the oil in order not to interact with air and cause food pollution.
 - c- I think that using oil for frying many times does not affect on health.
- 21- You saw your little brother was eating food which he knew that some insects landed on it.
- a- I think that insects donot pass diseases to human being.
 - b- I think that we should throw food which insects landed on it.
 - c- I think that he can eat part of food which insects didn't land on it.
- 22- You heard about a factory produces meat and that the equipments of this factory are full of mice:
- a- I should inform the responsible authorities about this factory.
 - b- I think that mice will not pollute the meat.
 - c- I do not interfere in this matter and stop buying the products.
- 23- You saw a housekeeper in a village bringing water from a canal which is full of dead animals and use this water for drinking, cooking and washing vegetables:
- a- I think that the flowing water purifies itself.
 - b- This woman should stop using water in cooking and washing vegetables.
 - c- This woman should use this water in other things.

Bird Flu Problem

- 24- You saw a neighbor throwing dead chickens in the street.
- a- I advise the woman not to throw the dead chickens in the street.
 - b- I go on my way.
 - c- I inform responsible authorities about this woman.

- 25- You knew that your neighbor brings up birds on her house's roof:
- a- I will inform her husband.
 - b- I help her to bring up more birds by giving them corn.
 - c- I advise her to slaughter the birds.
- 26- You heard about a campaign and awareness programs against bird flu disease which aim at making people know the disease symptoms and ways of avoiding it:
- a- I participate in the campaign.
 - b- I'm satisfied about my information on bird flu disease.
 - c- I participate in other activities.
- 27- You saw a sweeper gathering birds which responsible authorities slaughtered because of catching bird flu, to cook and eat them:
- a- I advise him to leave the birds in order not to be infected with bird flu.
 - b- I leave him to gather the birds.
 - c- I help him in gathering the birds.

Non-Renewable Resources Depletion Problem

- 28- You watched a report on TV about an oil country where oil reserve is going to run out:
- a- I listen to this report with interest.
 - b- We should not be worried about this because there are other resources of power.
 - c- This matter is not important to me because my country is not an oil country.
- 29- I heard in news that a country exports large amounts of natural gas although its gas reserves are not enough:
- a- I think that this country should export natural gas to benefit from hard currency it earns.

- b- This country should maintain its natural gas.
 - c- I think that every country has the right to do with its gas resources.
- 30- You read in a book that there are some industrial countries depend on coal in industry:
- a- I think that these countries should depend on other resources of power to operate industries.
 - b- I think that these countries should consume coal in industry.
 - c- I think that every country has its policy in industry.
- 31- You saw a gas cylinder merchant empties a cylinder in the air and you asked him about the reason he said that its tap is damaged.
- a- I think that it does not matter.
 - b- I tell the merchant the danger of gas emission.
 - c- I go on my way.
- 32- An exporting oil country signed a deal with another country and the deal restriction is importing some types of cattle strains in exchange for exporting oil to it:
- a- I think that this country should maintain its oil.
 - b- I think that it doesn't matter that this country exports oil in exchange for cattle strains.
 - c- I think that every country has the right to import and export what it wants.
- 33- A great country offered to construct an oil refining factory in a country for obtaining half the amount of the refined oil.
- a- The country that has oil should construct the factory.
 - b- I think that both countries will benefit from the deal.
 - c- I think that the country which will construct the factory should obtain more than half of the refined amount of oil.