



Developing Kindergarten Children's Awareness of Climate Change (Exploratory Analytical Study)

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Abstract

The study aimed to develop kindergarten children's awareness of climate change as a global crisis facing the whole world. The study student used the semi-experimental method, and the study sample consisted of (30) male and female children, and the awareness scale of climate change was applied to them before and after, and the results concluded that there was a statistically significant difference between the mean scores of the children of the experimental group in the pre and post applications of the climate change awareness scale in favor of the post application.

Keywords: *climate change - kindergarten child, Awareness.*

Introduction

The world has not witnessed a great interest in the issue of climate and climate changes, as is the case in our present era, and this reflects the seriousness of the situation and the sense of responsibility towards what industrial progress and human behavior in pursuit of luxury have profound consequences on the planet's climate. The effects of which began to appear clearly for everyone, such as a significant increase in the rates of hurricanes in areas that are exposed to hurricanes more than those areas are used to, as well as the arrival of hurricanes to areas that hurricanes were not familiar with. Climate changes have

different effects in terms of hurricanes, floods and droughts, and each of them has social, economic, political and psychological effects on all individuals, societies and countries, and this is what makes the issue of climate change of great importance. The sense of danger contributed to making some look at the future in an unoptimistic view, as experts pointed out that climate changes have a direct reason for bringing the end of life closer - on our planet (Al-Rabaani, 2010, 268-270).

The Intergovernmental Panel on Climate Change stressed that the increase in the concentration of greenhouse gases in the

atmosphere is the main cause of climate change and the need to organize communication campaigns on climate change to modify the attitudes and behavior of individuals towards their environment. Most environmental campaigns are based on the principle that people need more information to act in favor of the environment. and reinforce attitudes and Behaviour Pro-environmental (IPCC, 2007).

Cancera confirms; Kroufek; Simonva et al.2017 that children's early environmental education plays an important role in the formation of pro-environmental attitudes and positive behaviors, the formation of motives that shape their future interest in the environment, the development of their habits and values, and the correction of their misconceptions about The environment.

Williams, Sara; McEwen, Lindsey J. & Quinn, Nevil, 2021 not enough studies of children in education and flood preparedness are underestimated. Using an action-based and participatory methodology with children between the ages of seven and nine, an innovative and comprehensive flood education resource was developed as a catalyst for learning. The assessment is that young children can learn more about and prepare for floods, and that intergenerational learning from one child to another can also occur, as children carry home messages they learned at school.

Environmental problems are among the important problems facing the world, and these problems are increasing day after day, and the society's response is to hold more conferences and countries to sign many agreements to ensure adherence to specific standards for preserving the environment, but most members of society do not abide by those decisions, as through real life and observation For the surrounding environment around us, the study student noticed the spread of many behaviors that indicate a lack of interest in the environment, whether in the streets or schools or in facilities such as burning garbage and leaves - cutting trees -

dumping garbage in the seas and on the beaches - gases from cars and factories - burning wood for heating and excessive Electricity consumption and the change it causes in the climate of our planet and other behaviors that indicate a lack of awareness of environmental protection and preservation.

The negative interaction between man and the environment results in severe problems from which man himself may suffer. He is the one who created the environmental problems and he must solve them.

Referring to the above, the research attempts to answer the following question:

- What is the effectiveness of the program to develop awareness of climate change among kindergarten children?

Objectives of study:

- 1) Developing a future understanding of kindergarten children towards environmental issues.
- 2) Preparing a measure of awareness of climate change suitable for kindergarten children.

importance of study:

Presenting a group of children's activities that aim to develop awareness of change the climate.

The study focused on kindergarten children, who are the first and basic structure for raising a citizen who loves and preserves the environment and has knowledge and rational behavior in dealing with it. Draw the attention of those in charge of raising kindergarten children to the importance of developing awareness of change issues climatic.

Terminology

Climate change:

Climate change is usually defined as unusual weather in a place over a certain period of time, ranging from several months to thousands or millions of years. The term climate includes patterns of temperature, precipitation, humidity, winds, and different seasons (Al-Hosani, 2017, 109). It was also defined by the Australian Academy, 2015) as the fluctuation of weather conditions and

patterns over the ages due to human activities. These activities have led to an increase in greenhouse gases that affect climate. Warming of the Earth's atmosphere.

Kindergarten child:

It is defined as the young child between the ages of four and six, who is attached to the educational institution for a pre-school child with the aim of developing and satisfying his needs through various activities (Al-Anai, 2008, 193).

Theoretical framework;

Man is one of the main causes behind climate change, due to his activities that lead to the emission of carbon dioxide and other greenhouse gases into the air. As a result, the concentration of carbon dioxide in the atmosphere is much greater than it was 800,000 years ago. And the twenty-first only by 40% and the following points represent the most important human practices that led to climate change:

- 1) Burning fossil fuels: Fossil fuels that have been in the ground for thousands of years, such as oil, contain carbon dioxide, and therefore extracting it from the ground and burning it releases carbon dioxide stocks into the air. Or coal, or gas
- 2) Deforestation: Forests contribute to the disposal of carbon dioxide in the atmosphere by absorbing and storing it in trees. Therefore, cutting down trees causes the accumulation of carbon dioxide gas.
- 3) 3-In the atmosphere, and burning those leads to the exit of carbon dioxide gas stored inside to the atmosphere. Agriculture and animal husbandry each lead to the emission of different types of greenhouse gases into the atmosphere, for example methane gas produced by animals, which is about thirty times stronger than carbon dioxide carbon as a greenhouse
- 4) Cement production: Cement production emits 2% of the total carbon dioxide emissions

Berger, Emily; Mayberry, Darri & Carroll Matthew, 2020 investigated the perspectives of children and adolescents regarding the effects and complications of the 2014 mine fire and smoke pollution event. Sixty-nine (69 children) and adolescents aged between 8 and 16 years old.

The study found that smoke affected the social, emotional, and academic well-being of some children. Some reported an awareness of the repercussions of the event on their parents and community disasters. Pacheco, 2020 confirmed that children whose bodies and minds are still developing and who depend on adults for care are the most tragic victims of the climate crisis. The shift in weather patterns, the increase in heat, heat waves and drought; The resulting forest fires, the increase in the intensity of storms and floods, the failure of crops, the decrease in nutritional value, the change in the pattern of infectious vectors, and the air pollution resulting from the continuous use of fossil fuels constitutes a heavy burden on children, all of which affects their physical and emotional maturity and their health. As confirmed - Burgoyne - Alen, and Phillip; O'keefe, Bonnle, 2019 stressed the need to reduce the impact of school transport on the environment, as diesel buses and personal vehicle trips for school transport emit millions of tons of greenhouse gases annually into the environment, which contributes to global warming. Children are exposed Harmful contaminants that can affect their health and academic performance. She also stressed that there are many strategies to reduce the impact, which are represented in; 1 - Reducing the cool down time. 2- Continuous modifications to diesel 3- Compressed natural gas buses 4 - Electric buses. Walking and cycling. Borg et al., 2019 called for the need for preschool children to know the environmental impact of different modes of transportation. The study examined children's perceived knowledge using illustrations and questions. Interviewing 53 children, ranging in age from 6 years, the

results of the study concluded that most of the children had acquired some knowledge about the effect with environment for different modes of transport. And the need to communicate with parents to be a major source of knowledge. Zivin, Joshua Graff; Shrader, Jeffrey, 2016 also found that an increase in temperature leads to an increase in mortality rates, especially among fetuses and young children. And when the heat is combined with other conditions such as high humidity, disease vectors, pollution, it can be even more deadly. Even when not fatal, exposure to high temperatures reduces learning and worker productivity.

Everyday activities contribute to climate change, including:

1- Transport;

One of the human factors causing global warming is the transportation network. The burning of fossil fuels during the operation of any motorized vehicle causes severe damage to the atmosphere because it increases the concentration of carbon dioxide, which is a greenhouse gas. Many people admit that they are completely dependent on their personal cars. Moreover, the shipment of goods around the world affects the occurrence of change significantly. Attention must be drawn to the dangers posed by aviation to the environment, as it has been proven to be higher than greenhouse emissions. The frequency of riding a car or motorcycle in daily activities, as well as the habit of traveling long distances with planes, are among the main factors contributing to the phenomenon of global warming and therefore Climate change (Drigas, 2019, 25).

2-Paper production and deforestation

Paper is a very important part of daily life and therefore a product with a great marketing demand. Like any other industrial sector, paper production contains a number of processes that are harmful to the environment. This includes the burning of fossil fuels during the multiple stages of production, and consumption of the residues for automated functions. But the most

important thing is that paper production is the main reason behind the removal Forests (Peters, 2010, 1327-1332).

3- Excessive use of water

There is no doubt that water is the basic substance in life, every living organism consists of a large proportion of water and also needs to consume large quantities to survive. It is required for the growth of every plant. Moreover, it is the basis of every sector of modern production and also important in transport (fuel production), food industry (agriculture - livestock breeding - alcohol) and paper industry.

4- Fossil fuels and excessive electricity

Fossil fuels emit the greenhouse gas carbon dioxide and thus contribute to global warming. Carbon dioxide is the main greenhouse gas in concentration in the atmosphere. The main source of gas is the combustion of fossil fuels. There are many other uses of fossil fuels required for the products and services of daily life. The most important of these forms are most forms of heating and energy production, as well as industrial use. Therefore, a great deal of caution is required in the use of heating and electricity systems. Unnecessary use should be avoided, whether in homes or Business (2010, Collins)

Coping with the negative effects of climate change:

The Egyptian government seeks to confront the negative effects of climate change while applying sustainable development to achieve the desired balance between environmental health and citizen well-being.

Interaction at the international level:

Take positive steps to reduce greenhouse gases where The President of the Republic on the climate changes agreement in Paris in 2015.

Interaction at the national level:

Increasing environmental awareness by strengthening scientific research centers and universities to develop scientific solutions to the problem, implementing the greenhouse gas inventory project, setting up the Egyptian

program to protect the ozone layer, directing attention towards the use of establishing electric power stations, cladding the northern coasts, caring for afforestation, raising the quality of agricultural lands, Expanding the use of modern irrigation techniques, purifying Lake Manzala and raising its efficiency, establishing new cities to reduce overcrowding in the New Valley, applying the environmental law to facilities.

Raising awareness of the necessity of rationalizing the consumption of electric energy and water, activating waste recycling projects, treating sewage water and reusing it in landscaping (Hamadeh, 2017).

Methodology:

The study relied on the semi-experimental approach and the pre- and post-application on one experimental group. The study population was represented by the children of Al-Shorouk Academy, in Basyoun, Gharbia Governorate. The study sample consisted of 30 boys and girls from the second level (5-6) years.

Tools:

- Kindergarten child awareness measure of climate change in its interlocutor (cognitive - behavioral - emotional).
- I Objective of the scale: The scale aims to measure the cognitive - behavioral - affective aspects of consciousness climate change among kindergarten children Assessment of cognitive and emotional scale scores
- The child is given one point if his choice of the picture is correct, and the wrong answer is given Behavioral scale scores

First part:

- The child gets one point if he chooses the picture that expresses the correct behavior towards the child.
- Environment and gets zero if he chooses the picture that expresses the wrong behavior towards the environment
- The child gets one point if he can state why this behavior is correct
- This is wrong, and he gets a zero if he can't state the reasons.

Second Part.

- The child gets one point if he can identify the error in the picture, and he gets zero
- If he could not identify the error in the picture.
- The child gets one mark if he can state why this behavior is wrong. And he gets a zero if he can't state the reasons.

Initial scale experiment

Validity

The scale was presented to a group of specialists to express their opinion on the appropriateness of the scale questions, as well as to determine the degrees and method of correction and the appropriateness of the images. The amendments were made in the light of the opinions of the arbitrators, and the scale in its final form was applicable to children for evaluation.

Reliability

The student conducted an initial experiment on fifteen children from the second level at Al-Shorouk Academy in Basyoun, Gharbia Governorate. The correlation coefficient of the degree of each axis of the scale was calculated with the total score of the scale. The correlation coefficient of the behavioral side was 0.57, the correlation coefficient of the cognitive side was 0.62, and the correlation coefficient of the emotional side was 0.62. 0.51, so the previous correlation coefficients are acceptable and statistically significant internal stability coefficients. Stability of the scale: Cornbrash's alpha coefficient was 0.63, which is an acceptable stability coefficient that indicates stability The scale and its validity for the study.

Program content

The program is based on providing a set of multiple activities that help develop children's awareness climate change through three units:

The first unit: After completing the learning and teaching of the unit, the child can:

- 1- He knows how clouds form.
- 2- He knows the occurrence of floods.
- 3- Knows different weather conditions.

- 4- Distinguish between different weather conditions. - Detects the weather when looking out the window.
- 5- Choose the appropriate weather condition for today's weather.
- 6- He enjoys seeing the shape of clouds with his peers.
- 7- He enjoys hearing the story with his peers.

The second unit after completing learning and teaching the unit, the child can:

- 1- Know the shape of the Earth.
- 2- Know the process of water evaporation and its transformation into rain.
- 3- Know the name of the gas resulting from the burning of garbage and means of transportation.

Know the causes of air pollution and high air temperature.

- 4- It sorts the waste for reuse.
- 5- He wants to praise the Friends of the Environment.
- 6- P- He draws the globe on the canson paper.

The third unit: After completing the learning and teaching of the unit, the child can:

- 1- Know the effect of global warming.
- 2- Know the shape of the thermometer and its degrees.
- 3- Know the role of carbon dioxide.
- 4- Know the activities that increase or decrease carbon dioxide gas.
- 5- E - Know the conditions that affect the melting of ice.
- 6- Knows the kitchen's waste of energy.

Know the causes of climate change. be the word climate change. Draw a thermometer for high temperature and another for low temperature.

Results:

Presenting the results of the kindergarten child's performance in the study group on the climate change awareness scale, each axis separately.

To find out the extent to which the kindergarten child's performance improved on the climate change awareness scale, each axis is on specifically, the study question was:

What is the effectiveness of using the program to develop awareness of climate change, each axis separately - in a child?

To compare the performance of the children of the experimental group on the scale of the kindergarten child's awareness of climate change, each axis separately, before and after using the program, the researcher calculated the value of "t" and its statistical significance.

Table (1) the value of ours and its statistical significance for the difference between the mean scores of the children of the experimental group in the pre and post applications of the scale, which is the kindergarten child in climate change, each axis separately

Indication at a level (0.05)	Value s "t"	Significa ce level	Degrees of freedom	Standard deviation	SMA	Eye size	The group	The hub
Function statistics	5.997	0.0001	29	1.70	23.9 26.5	30 30	Experimenta Tribal Experimenta remotely	behaviouri st
Function statistics	12.82	0.0001	29	1.31 0.89	10.83 14.40	30 30	Experimenta Tribal Experimenta remotely	cognitive
Function statistics	9.000	0.0001	29	0.67 0.51	5.60 6.50	30 30	Experimenta Tribal Experimenta remotely	Sentiment al

The results of Table (1) indicate that the differences between the mean scores of the children of the experimental group in the pre and post applications of the climate change awareness scale, each axis separately, are statistically significant differences at the level (0.05) in favor of the post application, where the value of "T" was The calculated results are statistically significant at the level of significance (0.05) for each axis separately. Accordingly, the second hypothesis of the study was accepted, which states that "there are statistically significant differences at the level (40005a) between the mean scores of the children of the experimental group, the pre and post applications of the kindergarten child's awareness scale of climate change, each axis separately.

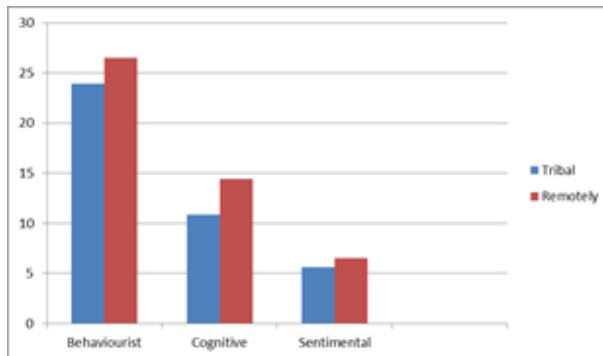


Figure (1) A child's awareness of the mean scores of the experimental group children in the pre and post applications of the kindergarten scale of climate change, each axis separately

Discussion:

This result is due to the superiority of the children of the experimental group dimensionally due to their exposure to the program, which contributed to the development of the kindergarten child's awareness of climate change dimensionally, which gave the children the opportunity to practice these activities that the child loves in an atmosphere of fun, entertainment and cooperation. The children's participation in the activities gave them a great opportunity to interact and train, and to give the child the opportunity to understand what is happening around him in terms of changes in the environment around him. This was confirmed by the study of Abu Zaid (2022), and the study of Abeer Bakri (2019), which emphasized the role of literary media activities in shaping the child's personality, his awareness of his surrounding environment, and the development of personality aspects of the kindergarten child. The success of the program, including its various activities, was evident due to the program's contribution to developing awareness of climate change among kindergarten children, which emerged through children's behavior.

And their questions and responses about knowing the melting of ice and how the extinction and death of the polar bear occurs when its adaptive environment disappears, knowing the importance of trees to purify the air and soften the atmosphere and give us the

oxygen needed to breathe and absorb the harmful gas, which is carbon dioxide, distinguishing between means of transportation that pollute the environment due to the exhaust coming out of them and between other means Transportation is environmentally friendly and does not produce exhaust. The child knows solutions to preserve the climate, such as not cutting trees, not burning forests, using gas or electricity-powered transportation, making filters on factories, sorting and recycling garbage and others. This is consistent with the study of Abu Zaid (2022), Krepelkova (2021) and Williams (2020), who emphasized the need to develop scientific facts, thinking skills, and positive pro-environmental behaviors.

Recommendations

- Focusing on field trips as an educational activity due to their importance in changing the environmental reality towards Better.
- Giving children the opportunity in environmental education to gain knowledge and understanding through experiential learning about the impact of behaviors on the environment. . Invite the Ministries of Education and Environment to provide greater support for the process of environmental education within Egyptian kindergartens and schools.

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