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Promoting Global Citizenship Through Climate Awareness Among 5th Grade Students: A True Experimental Study

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ABSTRACT

The purpose of the study was to find out the climate awareness on promoting global citizenship on 5th grade students. Through practicing global citizenship, children can contribute to the world in meaningful ways as they are aware of problems, laws, and regulations, making them accountable. The current study used a quantitative research design. A true-experimental research design with a pre-test and post-test control group was employed to accomplish the research's goal. The same pre-test post-test was used to gather quantitative data from students of 5th grade. The study population was comprised 5th grade students attending public school in the Lahore region. For this, random sampling was employed. Thirty students were randomly assigned into the experimental and control groups using a simple random method. Researcher developed a test consisting of Mcqs, matching item and short questions to gather the data. Researcher made sure the validation of the tool by three different authenticated experts from three different reputed institutes. Researcher piloting the test to ensure weather the tool is valid and reliable (value of Cronbach's Alpha was 0.82), the value of reliability was up to mark. Control group learners received lesson on routine way while the experimental group learners received lesson through activities-based major focus on climate awareness. The experiment group exhibited significant improvements after the intervention. Students that were exposed to climate awareness shown higher levels of understanding, accountability, and awareness of their responsibilities as global citizens.

I. Introduction

There has been a massive environmental disaster

in the world that includes desertification, pollution, climate change, and dangers to biodiversity. Climate change is the most critical



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global issue that extends beyond national boundaries and impacts people all around the world. Global citizens are known about these issues like climate change and actively involved in finding solutions related to climate change. To address the issues of climate change, we need to promote global citizenship and teaching of science is an important way to achieve this goal (Kitson, 2023).

Education for Environmental Citizenship (EEC) is a type of learning that teaches people about their responsibilities toward the environment. It enables people to understand the causes of environmental issues and motivates them to become active members of their communities and take remedial action (Environmental National Education Council [ENEC], 2018). The foundation of EEC is the belief that everyone has the right to live in a clean environment and to live a healthy world for future generations. EEC assists individuals in gaining the information so that they act as responsible members of society and improve the environment (ENEC, 2018). The term "climate" particularly relates to long-term weather patterns, but the phrase "environment" refers to a wider variety of factors in both the natural and man-made worlds. It is essential for us as global citizens to be aware of the environment in general as well as the particular climate issues that our world is currently facing.

The goal of GCE is to help people acquire the skills, values, and knowledge necessary to comprehend and address the complex issues that a worldwide society presents (UNESCO, 2014). The significance of GCE is emphasized by the SDGs, which emphasize the value of GC and high-quality education as essential components of sustainable development. Its importance in the SDGs has been recognized by the UNO. The importance of GCE has also been brought into light by the COVID-19 pandemic, which has highlighted the complexity of global issues like society, economics, and health. So, communities must work together to solve these issues (UNESCO, 2020).

Tiana (2002) discussed the idea of GC as it was presented at the 46th International Conference on Education (ICE) held in Geneva, stressing the significance of fostering global participation locally by building citizenship skills. On the other

hand, global citizenship appears to be hard to achieve in developing countries such as an impoverished Pakistan, where people are faced with social, political and economic issues. This is challenging to weave into local contexts the concepts of global citizenship. Students in developing nations feel unprepared to embrace global citizenship, despite theoretical expectations, which causes disconnect with the idea. Therefore, it is critical to develop informed people who can close this gap and encourage inclusive participation (Andreotti, 2006). This view is supported by Parekh (2003), who supported for the development of globally minded people who are rooted in their local communities but also recognize their strengths and uniqueness. It is necessary to overcome the conflict that exists between fostering global citizenship and highlighting national identity (Peters et al., 2008).

In Pakistan, global citizenship education faces difficulties due to the demand for alignment with the nation's ideology, challenging by its turbulent past and current situation. According to Peters et al. (2008), concepts like global citizenship, education, and citizenship might have contradictory meanings, thus they should be discussed and understood in their context. Though it is a relatively new idea in Pakistan, global citizenship education fits in with the National Policy's goals, thus teachers and scholars are assessing its applicability and relevance in the local setting. Pakistan's socio-economic and political conditions present particular difficulties for the concept of GCE. Although the value of helping students to develop a sense of global citizenship is becoming increasingly apparent, empirical research especially experimental studies that concentrate on this topic is scarce. Existing literature emphasizes the demand for contextual awareness and implementation of global citizenship education, considering Pakistan's specific ideological and cultural context.

In order to fill this gap, the goal set for this research was to determine how well Pakistani schools' science curricula incorporate elements of global citizenship, with a particular emphasis on climate education. There is numerous international and national research on the topic, however, there is a notable absence of experimental research within the Pakistani context. The purpose set for this research was to

empirically investigate how incorporating climate awareness into science lessons affects students' knowledge, attitudes and actions related to global citizenship. The findings from this research would bridge the gap between theory and practice in global citizenship education by providing insightful information for curriculum development and instructional practices targeted at promoting global citizenship among Pakistani students. This study intends to cover this gap by examining how incorporating a climate component into science instruction affects students' development of GC in the 5th grade.

Although a lot of work has been done in an international context DiCicco (2016) highlighted a research gap regarding the possibilities as well as challenges of GCE in U.S. public schools. The study showed how crucial it is to expand the curriculum to support the growth of informed, accountable, and critical-thinking global citizens. DiCicco suggests that to better educate students about the complexities of the global world, future researchers focus on developing curricula that thoroughly include global elements. But the literature within the Pakistani context (Khalid et al, 2022; Pasha, 2015; Kousar & Brett, 2020; Mahmood & Sajid, 2021) was scarce, which conducted experiments to find out the effect of science education about environmental components on enhancing the global citizenship among students. Researcher aims to investigate this phenomenon (GCE) through this study and fill a gap in the body of knowledge. Most of the literature cited from Pakistan was either qualitative (Khalid et al., 2022; Breidahl & Doherty, 2019) or quantitative just survey base (Barlow, 2020; Zajda & Bered-Samuel, 2018). To support the previous studies a methodology gap was identified. So, it is necessary to conduct quantitative research in Pakistan through which researcher do an experiment to find out the effect of teaching science integrated with climate component on promoting global citizenship among students.

II. Objective of the Study

The following research question used to lead this study:

1. To find out the effect of providing climate

awareness in 5th grade students' on promoting global citizenship.

III. Research Questions

The following research question was used to lead this study:

2. What is the effect of teaching climate awareness in science on promoting global citizenship among grade 5 students?

IV. Research Methodology

A. Research Design and Approach:

The current study used a quantitative research method to investigate the effect of teaching climate awareness on promoting global citizenship in 5th grade students. In this study, the researcher employed a positivist paradigm, utilized the quantitative research approach, specifically an experimental research design. Experimental research employed within the typology of accessible quantitative research methodologies. In particular, a true-experimental research study was a control group design before and after the test. To accomplish the study's goal, researcher choose an experimental research design, specifically true experimental study was conducted using a pretest-posttest control group design. The selection of a quantitative method, in this case, was influenced by the purpose of assessing whether teaching climate awareness through science enhance global citizenship among students. In this experimental design, the primary emphasis was on systematically and objectively assessing students' knowledge before and after the intervention, providing a comprehensive understanding of the effect of teaching of climate awareness through science promote GC and shift positive attitude towards GC.

B. Target Population

5th grade children from public school in the Lahore area represented the study population. This population selection was vital to experiment to investigate the effect of teaching climate awareness on promoting global citizenship in 5th grade students.

C. Sampling

The sample for the current study was consisted of thirty students from the 5th grade. This study employed a random sampling technique, in which

information was collected from participants. Thirty students of 5th grade were randomly divided into the experimental and control groups using a simple randomization method.

D. Research Tool

Researcher used one main tool in quantitative research to measure and assess the phenomenon. In order to gather data, the researcher developed a test that included questions about global citizenship. The test was developed using an organized procedure. Test was developed in accordance with the learning objectives and Research question. The cognitive levels of recall, comprehend, and apply were taken into consideration when developing each item. The test's accuracy, relevance, and simplicity were also examined. The item difficulty index formula was used to substitute the items that were deemed extremely difficult or extremely easy. The tool was first reviewed by experts before being approved. Once experts had approved the instrument, after that researcher conducted a pilot test to assess its reliability under practical circumstances.

E. Data Analysis Procedure

Table 4.1: Comparison of Pre-test scores of Control and Experimental group (Independent Sample t-Test)

Group	n	Mean	SD	df	t	p
Control	15	14.87	3.27	28	-2.406	.025
Experimental	15	19.00	5.79			

($p < .05$)

Table 4.1 shows that pretest scores given in table indicate that there is a significant difference in the mean score of control ($M = 14.87$, $SD = 3.27$) and experiment ($M = 19.00$, $SD = 5.79$) group, $t(28) = -2.406$, $p = .025$. This mean that, in pretest, the mean scores are not same, the mean pretest score

The following research question was used to lead this study:

R.Q.1. what is the effect of teaching climate awareness in science on promoting global citizenship among grade 5 students?

In order to answer according to the first study question (What is the effect of teaching climate awareness in science on promoting global citizenship among grade 5 students?), statistical tests were used for data analysis using the statistical package for social science (SPSS-21). First, SPSS was used to enter the scores obtained from the pre-test and post-test. The experimental and control groups' pre-test and post-test results were used to compute the descriptive statistics, Mean and SD. The t-test were used to compare the mean scores of the two groups. The outcome of the independent samples t-test showed that a difference existed in both control and experiment group prior to treatment; therefore, post-test results for the experimental and control groups were compared using ANCOVA.

Hypotheses Testing

H₀₁: There is no effect of teaching climate awareness in science on promoting global citizenship among grade 5 student.

of experiment group is five points more than that of control group. The findings showed that there was already a difference between experiment and control group prior to the treatment. By applying ANCOVA the pre-test results were controlled as a covariate.

Table 4.2: Analysis of Covariance (ANCOVA) for Posttest Scores Using Pretest Scores as Covariate

Source	SS	df	F	p	Partial eta square
Pre-test (Covariate)	190.57	1	9.18	.005	0.774
Group	1035.50	1	49.88	.001	0.758
Error	560.49	27			

($p < 0.05$)

Table 4.2 indicates that significant effect of group, $F(1, 1) = 49.88$, $p = .001$ and the value of effect

size $\eta^2 = 0.758$ which is accepted because it indicates a very large effect size (Ellis, 2010). The

effect size 0.758 indicates that the experimental group results better after intervention as compared to control group. ANCOVA eliminated the impact of starting variations and produced a more accurate estimation of the actual effect of treatment by statistically covariate the scores of pretests.

V. Discussion and Conclusion

The first research questions used to lead this study was: "What is the effect of teaching climate awareness in science on promoting global citizenship among grade 5 students?" According to the study's findings, learners in experimental group performed higher on post-tests than those learners who was in control group. The finding revealed that the computed effect size (η^2p) of 0.758 was very large effect size of teaching climate awareness on promoting global citizenship promotes in 5th grade students. Furthermore, there was a significant effect of teaching climate awareness in science on promoting global citizenship among 5th grade students. The second research questions used to lead this study was: "How does teaching climate awareness in science influence grade 5 students' attitude towards global citizenship?" According to researcher's findings concluded that after the post survey the learners in experiment group were more capable and well aware and they showed positive attitude towards global citizenship as compared to those learners who was in control group. The finding revealed that the computed effect size (η^2p) of 0.942 was very large effect size of teaching climate awareness on promoting global citizenship promotes in 5th grade students. Furthermore, there was a significant effect of teaching climate awareness in science influence grade 5 students' attitude towards global citizenship.

According to the findings of this research, learners' understanding about global citizenship was greatly improved when climate awareness was incorporated into science lessons. Learners who received teaching in new different way showed a better comprehension of environmental responsibility and global challenges or issues than students who received teaching in a traditional way. The findings suggest that raising students' knowledge of climate change is a useful instructional approach for encouraging global

citizenship education. In comparison to the control group, findings showed that learners who received science instruction with climate awareness activities had much greater knowledge as well as more positive attitude regarding global citizenship.

The researcher finding is align with the UNESCO (2015) framework, which highlights that teaching global citizenship is not limited to social studies but can be included into other subject areas. Climate change and environmental sustainability are emphasized by UNESCO as essential elements of global citizenship. The current research supports up this assertion by showing how teaching science with climate-related topics can greatly improve students' understanding of global citizenship.

The results of the study show that when learners learn about environmental issues, worldwide challenges, and the effects of climate change throughout the world, they not just acquire academic knowledge but also start recognizing their duties and responsibilities as part of the worldwide community and act as a responsible global citizen. Learners who acquire the knowledge about climate change are more capable to think about the issue we face in our locality around as well as these local issue impact on worldwide community. This illustrates how awareness of climate change is crucial for changing their attitudes and motivating them to develop into responsible global citizens.

According to the research's findings, it is concluded that teaching pupils about climate change awareness is a good way to promote global citizenship in students and make them a responsible global citizen. Teachers can assist learners in acquiring the understanding, beliefs, and attitudes necessary for responsible global citizenship by incorporating global citizenship theme (climate awareness) into their lessons. The findings are consistent with the notion that teaching about climate change and environmental issues can enhance moral development as well as global responsibility in addition to improving educational learning.

To summarize up, the recent study concluded that researcher find out the effect of teaching climate awareness on promoting global citizenship in 5th grade students. This study conducted on the

students of 5th grade of public sector in Lahore city. The goal of the study provided climate awareness and check whether global citizenship is developed or not. The present study proved that if we provide students awareness about climate change through science subject by using different teaching strategies to give knowledge related to these issues so we easily promote global citizenship. It highlights how important it is for institutions to include climate awareness programs and activities within their curricula so that young students can acquire the knowledge as well as accountability necessary to tackle worldwide problems and issues in the future.

VI. Recommendation

The researcher suggested a recommendation considering the findings of the current study. Researcher used one global citizenship theme that is climate awareness and this was used as a foundation for intervention in this study. Researcher recommended to future teachers to teach the climate awareness through science subject to promote global citizenship. It is

recommended to future teachers to add more subjects like social studies, Mathematics, English and General Knowledge and indulged other themes of global citizenship in these subject and promote global citizenship. Researcher recommend to future teacher to use different instructional strategies in teaching method like hand on activities and interactive activities (debate, role play task, assignments, and practical verbal and visual examples) so develop students' sense of global responsibility and make a global citizen. Furthermore, it is also recommended to inaugurate Professional development in the teacher's training program and incorporate global citizenship topics to give awareness to teachers about how to produce globally responsible minded students. Researcher carried out experiment on 5th grade students of a government sector institute. It is recommended to future teachers to conduct research on different grades students also impose on college and university students so it could be identified that teaching on higher level may be promote global citizenship through climate awareness.

Conflict of Interest

The authors showed no conflict of interest.

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