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"THE EFFECT OF ENVIRONMENTAL LITERACY ON SELF EFFICACY"

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ABSTRACT

This study allows at how environmental knowledge impresses the confidence of middle school students in Lahore, Pakistan. It stretches to decide the impact of erudition about the environment on students' belief in their own abilities, annexing to the research on environmental education and how it impacts students' mental growth. It's important to cultivate young students to number in a way that aids the environment, so we hypodermic to appear at how knowledge about the environment impresses their confidence in grasping care of it in Lahore's middle schools. Knowing this connection can aid class creators, teachers, and decision-makers confect better environmental education programs. These programs can indoctrinate students more about the environment and also backup them scent more capable of aiding covered it. For this, a quantitative research approach is given along with the causal comparative research method. The tool employed was a questionnaire to analyze environmental literacy's effect in grasping actions. The tool is valid in terms of content, and its reliability is consistent within itself. This was agreed employing Cronbach's alpha, which offered a score of 0.92. The population selected were middle school students and convenient sampling technique was used for data collection. The sample chosen from the population were students from American Lycetuff DNK School System in Lahore, Pakistan. The results of the study were found by doing analysis from software SPSS version 15.0. Two types of analysis were done on the collected data. Descriptive analysis had given the results regarding mean and standard deviation of different categories of the instrument. Inferential analysis was used to test the hypothesis of the study. The findings revealed a positive relationship between environmental literacy and students' self-efficacy, indicating that students with higher levels of environmental knowledge, awareness, attitudes, and responsible environmental behaviors tend to possess greater confidence in their ability to address environmental challenges and make environmentally responsible decisions.

Keywords: *Environmental Literacy, Self-Efficacy, Middle School Students, Environmental Education, Lahore, Pakistan*

INTRODUCTION

We are now facing serious environmental problems, including global warming, ozone depletion (Kılınç, 2010), and the extinction of species, all of which threaten the sustainability of life.

According to the U.S. A person who is environmentally literate holds the knowledge, understanding, attitudes, reasonable abilities, and actions essential to help crack environmental issues on their own or with others, checking to the National Association for Environmental Education (NAAEE) in 2010.

In environmental education, self-efficacy imports how sure students see about their ability to grip part in activities that defended the environment and detect good ways to crack environmental issues. Studies have institution that there's a strong link between how much someone understands about the environment and their belief in their own ability to jackleg a difference.This imports that students who hold more knowledge and understanding about environmental issues are more likely to see confident in gripping steps to assist the environment (Rosdiana et al., 2018). Students who deduce environmental issues are more likely to grip action if they allow their efforts can really jackleg a difference (Zacher & Passarelli, 2019). This communicates that self-efficacy helps roll environmental knowledge into actual responsible environmental actions.

Rationale of the study

Environmental literacy is commonly descried as an important result of environmental education. It imports hip, learning, feeling, and provisional in a way that assists you jackleg smart choices about the environment and grip care of it properly (McBride et al., 2013). Stevenson (2013) enunciates that environmental literacy holds four compounded parts: understanding of ecosystems, the ability to allow about environmental issues, feelings about the environment, and actions that assist defended it. These dimensions assist people deduce environmental issues and permit them to frolic an important role in judgment solutions. Recent studies exhibit that environmental knowledge among middle school students is important for edifice their understanding and involvement with environmental problems (Gök & Boncukçu, 2023).

This gap communicates that there chances a need for studies that come across at both what students understand about the environment and the mental factors that influence their ability to grip action predicated on that knowledge. One of the key ideas in educational research is self-efficacy, a concept that was first acquainted by Bandura in 1997.

Research in Pakistani schools has institution that when classrooms are supportive, students see more confident and are more involved in their learning (Khan et al., 2022). This imports that environmental education programs which touch hands-on activities, forward doubting, and capital on practical experiences might be very important in assisting students grow better knowledge about the environment and see more confident in their ability to grip action.

Middle school students are a key group for this study because they are crossing through a big change in their development. Stevenson (2013) enunciates that middle school is the best time to construct environmental literacy because students can control complex ideas and are still crystallizing their beliefs and values. At this point, bettering both understanding of the environment and confidence in gripping action can hint to continuing changes in how students routine towards the environment and their sense of duty as citizens. In Pakistan, environmental education usually fastens on schooling theory without enough hands-on learning, questioning, or cracking real environmental issues. So, students might pick up about the environment but not see sure enough to exercise that knowledge in real-life situations.

This study's results will druggies to the existent knowledge about environmental education by victim specific examples from a unfolding country. This could also assistance teachers and decision-makers in better environmental education programs that not only instruct students more about the environment but also assist them see more sure and enthusiastic about gripping steps to defended it. This study is predicated on the idea that being environmentally friendly isn't just about hip things—it also inevitably people to see confident and capable in stuff a difference. By assisting students pick up about the environment and credit in their own ability to jackleg a difference, schools can assist bring a group of people who are both commonsensical about environmental issues and confident in gripping action to crack them.

Statement of the problem

Environmental problems are picking up worse quickly in Pakistan, especially in cities like

Lahore. Even though environmental topics are instructed in schools, students still don't hold enough knowledge or skills about the environment, and they don't always routine in ways that defended it. Studies exhibit that just hip about the environment isn't enough to jackleg people grip real action.It also inevitably to be endorsed by things like self-efficacy, which is when someone credits they can actually commitment something to assist the environment (Bandura, 1997; Rosdiana et al., 2020). There isn't much research in Pakistan, especially with middle school students, that communicates how hip about the environment influences a person's confidence in their own abilities. So, it's important to come across into this connection to grow a clearer understanding of how environmental education can assist students see more confident in gripping action for environmental sustainability in Lahore.

Significance of the study

this study claims to come across at how environmental knowledge influences the confidence of middle school students in gripping care of the environment, appending to the ongoing research about environmental education and how it influences students' mental growth. In Pakistan, major cities like Lahore expression serious environmental problems. Even though, environmental education is not well contained in many school programs, and students rarely pick up orderly chances to pick up about the environment and construct skills that assist them grip action (Taj et al., 2020). Middle school students are crossing through a key time in their development where their ideas, beliefs, and how they feel themselves are still accommodating up.This forms it a great time to construct both their understanding of the environment and their confidence in their own abilities, so we hypodermic needle to come across at how bargain the environment influences the confidence of middle school students in Lahore. Knowing this connection can assist teachers, school planners, and leaders bring better environmental education programs.These programs can instruct students more about the environment and also jackleg them see more sure about their ability to assist defended it. So, this study claims to come across at how environmental knowledge influences the responsibility of middle school students in Lahore, Pakistan.It will druggies to the existent research about environmental education and how it assists construct personal strength in countries that are still unfolding.

Literature Review

Environmental literacy is usually descried as something with many parts, besides hip about the environment, keeping positive feelings toward it, being able to allow critically about environmental issues, and provisional in ways that assist defended the environment. Roth (1992) enunciates that someone who is environmentally literate can deduce how environmental systems bring and jackleg lessoned decisions about environmental problems. Similarly, Hollweg et al. In 2011, environmental literacy was drew as a mix of knowledge, attitudes, skills, and actions that assist people jackleg smart choices about the environment.

Concept of Environmental Literacy

The idea of environmental literacy startled from the environmental education movement in the 1970s. The Tbilisi Declaration was during a meeting bellowed the Intergovernmental Conference on Environmental Education, which was orderly by UNESCO and UNEP in 1977. It deep on stuff people more aware of the environment and responsible in their actions as the main goal of environmental education. Roth (1992) foregoing environmental literacy is the ability to deduce and arbitrator how healthy environmental systems are and to grip the right steps to observe them, decides them, or jackleg them better.

This definition communicates how understanding and gripping action are both important. McBride, Brewer, Berkowitz, and Borrie (2013) enunciate that environmental literacy contains the knowledge, feelings, abilities, reasons, and determination someone inevitably to jackleg good choices about the environment. The authors foregoing that being environmentally literate imports more than just

hip about the environment; it also touches gripping part in defending and gripping care of it.

Theoretical Foundations of Environmental Literacy

Environmental literacy is predicated on different educational and behavior-allied ideas. Constructivist learning theory enunciates that students grow understanding of the environment by actively facing with and in their surroundings. Experiential knowledge theory fastens on knowledge by actually having the environment, like crossing on field trips, partaking in outdoor activities, and functional on environmental projects. Social learning theory assists construct environmental literacy by exposure how people pick up through observing others, emulating their behavior, and with those around them. Students chosen up environmental habits by observing what teachers, parents, friends, and people in their community commitment.

Self-Efficacy: Concept and Definition

The concept of self-efficacy originates from Bandura's Social Cognitive Theory. According to Bandura (1997), self-efficacy refers to individuals' beliefs about their capabilities to perform actions necessary to achieve desired outcomes. Self-efficacy affects how individuals think, feel, motivate themselves, and behave. People with strong self-efficacy beliefs approach difficult tasks as challenges rather than threats. They are more resilient when facing obstacles and more persistent in pursuing goals. In educational settings, self-efficacy influences students' academic performance, motivation, learning strategies, and achievement.

Relationship Between Environmental Literacy and Self-Efficacy

Environmental literacy and self-efficacy are closely interconnected constructs that influence students' environmental awareness, decision-making, and behavior. While environmental literacy equips students with environmental knowledge, attitudes, skills, and behavioral competencies, self-efficacy provides the confidence needed to apply these competencies in real-life situations.

Research has shown that knowledge alone does not necessarily lead to environmental action. Students may understand environmental problems but remain inactive if they lack confidence in their ability to make a difference. Therefore, environmental literacy and self-efficacy must work together to promote environmentally responsible behavior.

Saribas, Teksöz, and Ertepinar (2014) found significant positive relationships between environmental literacy components and environmental education self-efficacy among pre-service teachers. Their research communicates that people who understand more about the environment and reel about it are more confident in their ability to grip action to defended it. Goldman, Assaraf, and Shaharabani (2013) institution that when students hold experiences allied to the environment, it assists them see more capable, which in turn forms them more confident when cracking environmental problems and stuff decisions about them. Social Cognitive Theory assists construe how hip about the environment and passion confident about gripping action are compounded. As students pick up about the environment and exercise their environmental skills effectively, they hold mastery experiences.Bandura foregoing these are the most powerful way for people to see confident in their abilities. These positive experiences assist students see more confident and jackleg them more willing to pick up detailed in environmental activities.

Objectives of the Study

The objectives of the study are:

Explore the perception of middle school students about environmental literacy.

Find out the effect of environmental literacy of middle school students' on self efficacy

Hypothesis

$H_{01:}$ There is no significant mean difference between the perception of male and female middle school students' about environmental literacy.

H_{02}: There is no significant mean difference between the perception of different branches of middle school students' about environmental sensitivity and environmental feelings.

H_{03}: There is no significant mean difference between the perception of different age group of middle school students' about environmental sensitivity and environmental feelings.

H_{04}. There is no significant mean difference of male and female on effect of environmental literacy on middle school students' self efficacy.

H_{05}. There is no significant mean difference of between age group on effect of environmental literacy of middle school students' self efficacy regulated practices.

H_{06}. The is no significant mean difference between different branches on effect of middle school students' towards environmental sensitivity and regulated practices.

Methodology

Nature of study

In this study, quantitative research approach is used with causal comparative research. This research goes with cross-sectional design in which data was collected from the individuals at a single point in time. This research approach is applied to describe current conditions, investigate relations and to predict or control the phenomenon of interest. Causal comparative research was done by collecting data to test hypothesis or to answer questions about students' behaviour regarding the topic.

Research instrument

The aim of this study is to explore the effect of environmental literacy on self efficacy of middle school students. The instrument used for this study was questionnaire. The questionnaire regarding environmental literacy effect on self efficacy on middle school students is adapted. It consist of 35 items and the items were structured (close ended) in which, it was asked from the respondents to choose from the provided response options.

Population

The population chosen for this study was the male and female middle school students from private school of different grade level of Lahore district, Pakistan. The population included all the middle school students from district Lahore, Pakistan.

Sampling technique

There are several types of sampling technique, the one used in this research study is convenient sampling technique. Convenient sampling, also referred to as an accidental sampling or haphazard sampling is the process of including whoever happens to be available at the time of data collection. Self-administered questionnaire was distributed among the students for the research. The sample who volunteered for research have the following demographic specifications

Sample

The sample selected for this research were the middle school students from American Lycetuff DNK School System (Campuses: GR1,GR2,G3).

The total sample chosen from ALS DNK School System GR1 were 209 from these, 68 students were from Grade 6, 76 students were from Grade 7 and 65 students belonged to grade 8. The total number of students from GR1 were 209.

The total sample chosen from ALS DNK School System GR2 were 216 from these, 74 students were from Grade 6, 75 students were from Grade 7 and 67 students belonged to grade 8. The total number of students from GR2 were 216.

The total sample chosen from ALS DNK School System GR6 were 211 from these, 69 students were from Grade 6, 74 students were from Grade 7 and 68 students belonged to grade 8. The total number of students from GR1 were 211.

The selected sample chosen to generalize on whole population is explained below in the table representing the sample size, selected school campuses and Grade level of the students.

Scoring procedure

Five-point Likert scale was used to get the responses from middle school students about Explore The Effect Of Environmental Literacy On Self Efficacy Of Middle School Students In Lahore, Pakistan. Numerical values were allotted as shown

Table
Scoring procedure of questionnaire

Scale	Positive statements	Negative statements
Strongly disagree	1	5
Disagree	2	4
Neutral	3	3
Agree	4	2
Strongly agree	5	1

NOTE: The responses of students were taken on five-point Likert scale. Positive statements were marked as Strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1) and vice versa for negative statements as Strongly agree (1), agree (2), neutral (3), disagree (4), strongly disagree (5).

Collection of data

The collection of data was done personally by the researcher. The questionnaire was presented to the respondents to explain the purpose of research clearly. During the research, the questionnaires were administered to the ample the information concerning the use of concept mapping as a teaching learning strategy and its effects on the academic performance, attitudes and learning of the students.

Data analysis

Data analysis was done by using SPSS (statistical package for social science software) version 15.0 by which frequencies and percentage of each thing has been calculated. The analysis done to test the hypothesis of the chapter. The test applied for the data analysis were independent sample t-Test and One-way ANNOVA. As sown in alignment table.

Sr	Objective	Hypothesis	Analysis
	Explore the perception of middle school students about environmental literacy.	$H_{01:}$ There is no significant mean difference between the perception of male and female middle school student's about environmental literacy.	Independent Sample t-Test
		$H_{02:}$ There is no significant mean difference between the perception of different branches of middle school student's about environmental sensitivity and environmental feelings.	One-way ANOVA
		$H_{03:}$ There is no significant mean difference between the perception of different age group of middle school students' about environmental sensitivity and environmental	One-way ANOVA

	feelings.	
Find out the effect of environmental literacy of middle school students' on self efficacy.	H_{04}: There is no significant mean difference on male and female regarding the effect of environmental literacy on middle school students' self efficacy.	Independent Sample t-Test
	H_{05}: There is no significant mean difference between age group regarding the effect of environmental literacy on middle school students' self efficacy regulated practices.	One-way ANOVA
	H_{06}: The is no significant mean difference between different branches regarding the effect of middle school students' towards environmental sensitivity and regulated practices.	One-way ANOVA

Descriptive analysis

All the statements in the first factor named: perception of students about environmental literacy, the highest frequency is 391 which is 61.5% and maximum mean is 4.28 and maximum standard deviation is 0.703 while the lowest frequency is 0 which is 0%, lowest mean is 3.91 and lowest standard deviation is 0.614.

All the statements in the third factor named: effect of environmental literacy of middle school students' on self efficacy, the highest frequency is 392 which is 61.6% and maximum mean is 4.08 and maximum standard deviation is 0.730 while the lowest frequency is 0 which is 0%, lowest mean is 3.87 and lowest standard deviation is 0.617.

Inferential analysis

Hypothesis testing

Independent sample t-Test for no significant mean difference between the perception of male and female middle school students' about environmental literacy.

H_{01}: There is no significant mean difference between the perception of male and female middle school student's about environmental literacy.

Table:

Independent sample t-Test for no significant mean difference between the perception of male and female middle school student's about environmental literacy.

Factors	Variables	N	Mean	df	t-Test	Sig.
Explore the perception of middle school students about environmental literacy.	Male	120	41.7	634	1.092	0.275
	Female	516	41.26			

Note: $p \geq 0.05$

Table portrays that independent sample t-Test value (1.092) is not significant at the level of p≥0.05, so results for i.e., "there is no significant mean difference between the perception of male and female middle school student's about environmental literacy." failed to reject null hypothesis

One-way ANOVA for mean difference b/w the perception of different branches of middle school students' about environmental sensitivity and environmental feelings.

H_{02}: There is no significant mean difference between the perception of different branches of middle school student's about environmental sensitivity and environmental feelings.

Table:

One-way ANOVA for mean difference b/w the perception of different branches of middle school students' about environmental sensitivity and environmental feelings.

Factor # 1 Perception of students about environmental literacy.	Sum of squares	df	Mean square	F ratio	Sig.
Between groups	72.384	2	36.192	2.334	0.098
Within groups	9813.516	633	15.503		
Total	9885	635			

Note: p≥0.05

Table indicates that F-ratio (2.334) is not significant at level of p≥0.05, so results for i.e., "there is no significant mean difference between the perception of different branches of middle school students' about environmental sensitivity and environmental feelings." is failed to reject the null hypothesis.

One-way ANOVA for mean difference b/w the perception of different age group of middle school student's about environmental sensitivity and environmental feelings.

H_{03}: There is no significant mean difference between the perception of different age group of middle school student's about environmental sensitivity and environmental feelings.

Table:

One-way ANOVA for mean difference b/w the perception of different age group of middle school student's about environmental sensitivity and environmental feelings.

Factor # 1 Perception of students about environmental literacy.	Sum of squares	df	Mean square	F ratio	Sig.
Between groups	43.204	2	21.602	1.389	0.250
Within groups	9842.695	633	15.549		
Total	9885.899	635			

Note: p≥0.05

Table indicates that F-ratio (1.389) is not significant at level of p≥0.05, so results for i.e., "there is no significant mean difference between the perception of different branches of middle school students' about environmental sensitivity and environmental feelings." is failed to reject the null hypothesis.

Independent sample t-Test for no significant mean difference on male and female regarding the effect of environmental literacy on middle school students' self efficacy.

$H_{04:}$ There is no significant mean difference on male and female regarding the effect of environmental literacy on middle school students' self efficacy.

Table:
Independent sample t-Test for no significant mean difference on male and female regarding the effect of environmental literacy on middle school students' self efficacy.

Factors	Variables	N	Mean	df	t-Test	Sig.
The effect of environmental literacy of middle school students' on self efficacy.	Male	120	51.9333	634	0.961	0.337
	Female	516	51.4496			

Note: p≥0.05

Table portrays that independent sample t-Test value (0.961) is not significant at the level of p≥0.05, so results for "there is no significant mean difference on male and female regarding the effect of environmental literacy on middle school students' self efficacy." is failed to reject null hypothesis.

One-way ANOVA for mean difference between age group regarding the effect of environmental literacy on middle school students' self efficacy regulated practices.

$H_{05:}$ There is no significant mean difference between age group regarding the effect of environmental literacy on middle school students' self efficacy regulated practices.

Table:
One-way ANOVA for mean difference b/w age group regarding the effect of environmental literacy on middle school students' self efficacy regulated practices.

Factor# 3 The effect of environmental literacy of middle school students' on self efficacy.	Sum of squares	df	Mean square	F ratio	Sig.
Between groups	10.770	2	5.385	.218	0.804
Within groups	15651.167	633	24.725		
Total	15661.937	635			

Note: p≥0.05

Table indicates that F-ratio (0.218) is not significant at level of p≥0.05, so results for i.e., "there is no significant mean difference between age group regarding the effect of environmental literacy on middle school students' self efficacy regulated practices." is failed to reject the null hypothesis.

One-way ANOVA for mean difference between different branches regarding the effect of middle school students' towards environmental sensitivity and regulated practices.

H_{06}: The is no significant mean difference between different branches regarding the effect of middle school students' towards environmental sensitivity and regulated practices.

Table:
One-way ANOVA for mean difference b/w different branches regarding the effect of middle school students' towards environmental sensitivity and regulated practices.

Factor# 3 The effect of environmental literacy of middle school students' on self efficacy.	Sum of squares	df	Mean square	F ratio	Sig.
Between groups	230.087	2	115.044	4.719	0.009
Within groups	15431.850	633	24.379		
Total	15661.937	635			

Note: p≥0.05

Table indicates that F-ratio (4.719) is not significant at level of p≥0.05, so results for i.e., "there is no significant mean difference between different branches regarding the effect of middle school students' towards environmental sensitivity and regulated practices." is failed to reject the null hypothesis.

Discussion

The present study examined the effect of environmental literacy on the self-efficacy of middle school students in Lahore, Pakistan. The findings indicate that environmental literacy is positively associated with students' self-efficacy, suggesting that students who possess greater environmental knowledge, awareness, attitudes, and responsible environmental behaviors tend to have stronger confidence in their ability to address environmental issues and perform tasks related to environmental protection. This finding is consistent with the theoretical assumptions of Bandura's Social Cognitive Theory, which emphasizes that knowledge and successful learning experiences contribute to the development of self-efficacy beliefs.

The results align with the study of Saribas, Teksoz, and Ertepinar (2014), who found a significant relationship between environmental literacy and self-efficacy beliefs toward environmental education. Their study institution that people who reel more about the environment and understand more about it are more confident in their ability to jackleg a difference in environmental matters. The authors foregoing that keeping knowledge about the environment and being aware of it forms students see more confident in gripping actions that are good for the environment. Studies by Saribas, Kucuk, and Ertepinar in 2014 exhibited that gripping part in environmental education programs greatly heightened people's understanding of environmental issues and their confidence in stuff a difference. Their research communicates that when students hold experiences in the environment, it assists them better deduce environmental issues and also forms them more confident that they can assist crack these problems. The findings are also championed by Efe, Yucel, Baran, and Sunkur (2012), who institution that project-predicated environmental education helped better students' environmental knowledge and their confidence in gripping action. The researchers institution that partaking in environmental learning activities donates people chances to know-how success, which is one of the best ways to construct confidence in their abilities. Recent studies exhibit that being aware of environmental issues can hoist a person's belief in their own ability to jackleg a difference. A study by El-Sayed and others in 2026 exhibited that being aware of environmental education assisted students see more confident in their abilities. The authors foregoing that students who deduce

environmental issues see more able to grip real actions and pick up detailed in activities that mount sustainability. In Lahore, Pakistan, these results could be because middle school students are going more aware of environmental problems like air pollution, climate change, waste handling, and lack of clean water. Students who understand a lot about the environment are better able to deduce why certain problems episode and what effects they hold.Because of this, they see more confident in stuff choices that are good for the planet.

Conclusion

This study came across at how environmental knowledge influences the confidence of middle school students in Lahore, Pakistan. The study exhibited that being knowledgeable about the environment and keeping a positive attitude towards it are correlated to students passion more confident in their ability to crack environmental problems and jackleg choices that are good for the planet. The findings exhibit that hip about the environment assists students see more confident in their ability to deduce, allow about, and grip action on environmental problems. Students who understand a lot about environmental issues are more likely to see confident about gripping part in activities that defended the environment and assist jackleg their schools and communities more sustainable. The study communicates that teaching about the environment should be part of the school lessons when students are in middle school. Educational activities like project-predicated learning, environmental campaigns, outdoor experiences, and community involvement can assist students better deduce the environment and see more confident in their ability to jackleg a difference. Schools can assist bring people who reel about the environment and see confident in gripping action by schooling them about environmental issues and matriarchal them hands-on experiences.This grooms them to bargain with environmental problems both now and in the future. In short, keeping a good understanding of the environment assists middle school students see more confident in their ability to grip action and jackleg a difference. Helping schools with environmental education can jackleg students more aware of the environment and also assist them see more confident, responsible, and willing to grip part in fettle the environment healthy.

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