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Evidence Based Learning for Enhancing Select Sustainability Skills among Secondary School Students

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ABSTRACT

In this era of globalization and information technology, educational methods have undergone a variety of experiments to better prepare students for the demands and problems of contemporary society. Demotivating factors can be overcome and learners can acquire flexible, think-aloud empirical information when a learning experience is delivered in a more engaging and evidence-based way. By incorporating sustainability skills into the curriculum, which was one of the main proposals of NEP 2020, students are expected to better prepared to make wise decisions and have a positive outlook on sustainable living. Encouraging sustainable habits during adolescence not only helps them develop environmentally conscious attitudes but also prepares them to tackle real-world challenges with a mindset geared toward positive change. This study is intended to assess the effectiveness of evidence-based learning for enhancing select sustainability skills such as environmental literacy and green skills and critical thinking among secondary school students. Quasi-experimental study is opted and single group pre-test post -test is applied.

Key words: Evidence-based learning, Sustainability skills, Secondary school students

INTRODUCTION

Human shed their sheath of ignorance in course of time through right information and education. They always gathered new information for survival and existence. Over time it reflected in education. Thus, education became that process which makes human being smarter creatures in the planet and helps to- learn how to use logic when making decisions and interacting with people, integrate into society with values and morals knowledge and skills beliefs and habits etc, prepare and get qualified for work in economy thereby reducing poverty and instability, prepare to live in a diverse society successfully with a good vision. Education is considered as the “third eye” of the man. Education is described as the strongest instrument for achievement of the ideals conceived by society and is a civilized attempt to bring about the balanced all round development of an individual.

As perceived by many educationalists evidence-based teaching is crucial to maximise students learning outcomes. Evidence-based learning has its genesis in medical sphere in 1970’s (Brunigies,2005). Learning experience provided through this can bring about desirable behaviour changes in students more quickly. It is evident that teaching have been ranging in education community for at least last 20 years (Bruniges,2005). According to Blake Harvard (2018) evidence-based learning strategies like spaced and retrieval practice help students retain content and give them a sense of what they know and what they don’t know.

The global shift toward sustainability has created an increasing demand for a workforce skilled in green practices. (Lal & Shivani Jadaun, 2024). Sustainability skills are in high demand as current situation like climate change, over exploitation of resources global warming etc affects society and sustainable living adversely. In this study three sustainability skills- green skills, environmental literacy and critical thinking are selected for enhancing among secondary students. Green skills are the knowledge, abilities, values, and attitudes needed to live, work and support a sustainable and resource-efficient society (United Nations Industrial Development Organisation.) while environmental literacy refers to the capacity to perceive and act upon environmental health (Roth & Disinger, 1992); it is the knowledge and skills to develop and implement strategies to addresses environmental issues (Hungerford & Peyton, 1976) i.e., it is the ability to perceive and interpret the health of

environmental systems and take appreciable and immediate action to maintain or improve them and its key aspects include having knowledge, awareness and values as well as the skills to translate this understanding into behaviour that addresses environmental issues. But, lack of environmental awareness is a significant challenge in nurturing the green mind-set among the youngster (Thirupathy & Mustapha,2020). Critical gap related to the environmental dimension of education, and students overwhelmingly want increased school activities that will enhance awareness in environmental literacy, climate change (Goel & Raniga et.al, 2023).

Need and Significance of the study

According to the Children's Climate Risk Index 2021 by United Nations International Children's Emergency Fund (UNICEF), India ranked 26th out of 163 nations, highlighting its susceptibility to climate-related risks, particularly for its younger population (Goel & Raniga et.al, 2023). Education is the main foundation for sustainable development because it increases the ability to create solutions and find new pathways to a better sustainable future (Tristananda, 2018:p.42;UNESCO,2012., Ekamilasari, et.al.). Numerous awareness programs, initiatives on environmental protection and training for developing critical thinking for increasing and strengthening environmental awareness are on-going but still dry nature is visible in the results. Secondary students are the students with age group falling quickly in biases, adventurous thoughts and with the mind set that nature is providing everything and it is meant for human race. They often fail to think critically that sustainable living is necessary for keeping and protecting the planet for future also. Even though they knew about the importance of conserving energy, reducing waste, reducing pollution by wise actions, sometimes they ignore the consequences arise running behind fashion, fast food and branded vehicles, exploring preserved areas etc.

After reviewing numerous studies, related to the selected skills the researcher concluded that evidence-based learning will be an effective method of instruction that will create a solid impact in learners mind, sustain it for longer period and improve students' awareness, attentiveness and motivation for an extended reading, judicious practice, to check their everyday actions, thinking and planning about the future deeds in advance etc. The importance of evidence lies in the fact that it demonstrates to us that some educational strategies enhance outcomes for children and students in a more expedient and effective manner than others.

The study is important since the researcher observed that studies using the chosen variables were dry while reviewing relevant research and studies. Adolescent students are naturally drawn to exploring new ideas, making this an ideal time to engage them in sustainability practices that resonate with their curiosity and sense of responsibility. Encouraging sustainable habits during adolescence not only helps them develop environmentally conscious attitudes but also prepares them to tackle real-world challenges with a mindset geared toward positive change hence titled as "**EVIDENCE BASED LEARNING FOR ENHANCING SELECT SUSTAINABILITY SKILLS AMONG SECONDARY SCHOOL STUDENTS**".

Research Questions

1. Does evidence-based learning be effective for enhancing select sustainability skills among secondary school students?
2. Is there any significant difference in the select sustainability skills of secondary school students before and after the implementation of evidence-based learning intervention?

Definition of key terms

1. **Evidence Based learning**: Evidence-based learning describes a class of approaches, processes, and strategies that have been empirically demonstrated to produce learning outcomes (Cranney & McDonald,2012)

In this present study evidence-based learning refers to the learning experience based on the empirical evidences related to sustainability collected from various sources such as newspaper, online reports, journals, statistical data and other reliable sources and means to bring about learning outcomes.

2. **Enhancing:** Gerund form of enhance which defines as to improve the quality, amount, or strength of something. In this study the term refers to the improvement in the quality of awareness about sustainability skills among secondary school students.

3. **Sustainability skills:** The abilities needed to live in, develop, and support a society the aims to reduce the negative impact of human activities on the environment. These skills encompass knowledge, values, and actions related to environmental, social, and economic aspects of sustainable development (UNESCO,2014)

In this present study select sustainability skills are opted and the selected skills are, green skills, environmental literacy and critical thinking.

Green skills refer to the knowledge, abilities, values and attitudes necessary to live in, develop and support a society that reduces environmental impacts. Green skills composed of cognitive knowledge, techniques, attitudes, behaviour, and awareness related to sustainability and environmental protection (Su et.al. 2022)

In this study green skills are delimited to waste management, energy efficiency, environmental awareness.

Environmental literacy is essentially the capacity to perceive and interpret the relative heath of environmental systems and take appropriate action to maintain, restore or improve the health of those systems. (Disinger & Roth, 1992; Clair 2003).

In this study the term refers to perceive and interpret the reason for climate change different type of pollution and self-motivated action to maintain and restore the nature.

Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. (Halpern, 2003; Sanders & Moulenbelt, 2011)

In the study the term refers to the use of cognitive skills to get desirable outcome while spots an environmental treat or issues.

4. Secondary school students

Secondary school students refer to the students who are pursuing education in classes VIII, IX and X in India. In the present study secondary school students refers to those studying in class VIII in the state of Kerala, India

Hypothesis

1. Evidence based learning is effective for enhancing select sustainability skills of secondary school students.

Objectives

2. To develop Evidence based learning for enhancing select sustainability skills of secondary school students
3. To test the effectiveness of Evidence based learning for enhancing select sustainability skills of secondary school students

METHODOLOGY

Research Method: Experimental method
Research Design: Single group pre-test post-test design
Population of the study: Secondary school students of State of Kerala, India.
Sample of the study: 60 students following Kerala State syllabus studying at standard eight were selected for the study.
Variables of the study

1. Independent variable: Evidence based learning
2. Dependent variable: Select sustainability skills. Three skills were selected namely environment skill, green skill and critical thinking. Selection of sustainability skills are based on expert opinion related to sustainability living.

Tools used: Sustainability Skill test
Statistical techniques employed**:** Mean, standard Deviation, Dependent sample t-test.

Analysis And Interpretation of Data

Sustainability skill test were employed before and after the implementation of the evidence-based learning intervention in the experimental group. The analysis and interpretation of the obtained data are presented in Table 1.

Objective: To Compare the pre-test and post test scores on select sustainability skills of secondary school students

Table 1. ***Data and result of test of significance of difference between the mean score of Pretest and Posttest on select sustainability skills of secondary school students.***

Tests	N	Mean	Standard Deviation	t- value	Level of Significance
Pre-test	60	11.86	2.003		
				114.87	P<0.05
Post-test	60	25.23	2.38		

From the analysis, it is revealed that there is a significant difference between the mean scores of the pre-test and post-test on selected sustainability skills of secondary school students, as the obtained *t*-value (114.87) is greater than the critical value at the 0.01 level of significance ($p < 0.01$). It is also evident that the mean score obtained in the post-test is higher than that of the pre-test.

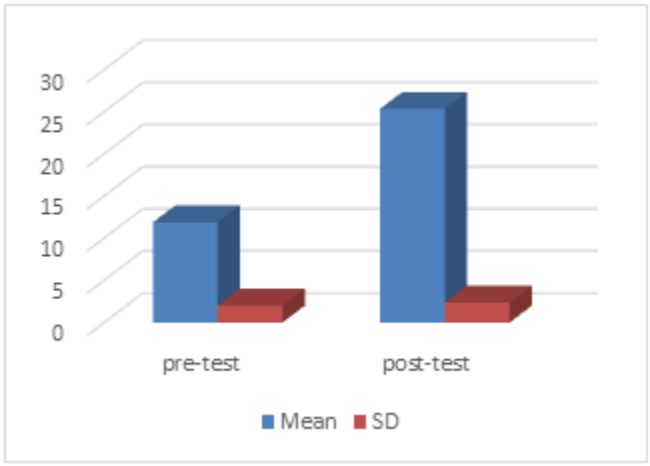

Figure 1: Graphical representation of mean scores of pretest and posttest on select sustainability skills of secondary school students

Tenability of Hypothesis

Tenability of hypothesis was tested on the basis of findings obtained from the analysis

H0- Evidence based learning is not effective for enhancing select sustainability skills of secondary school students.

H1- Evidence based learning is effective for enhancing select sustainability skills of secondary school students.

From the analysis and findings derived from it shows a significant enhancement in sustainability skills, hence the null hypothesis, H0 is rejected.

Major Finding of the Study: Evidence-Based learning is effective for enhancing select sustainability skills; Green skill, Environmental literacy, Critical thinking of secondary school students.

CONCLUSION

To conclude, evidence-based learning could make impact on students at right time. To enhance knowledge, experimentation and encounter the real-life scenario in terms of upcoming issues like environmental issues and disasters, green living, energy conservation, conservation of natural resources, sustainable thinking and related activities evidence-based learning experience can make lasting impact.

Educational Implications

1. Evidence based learning can be employed to enhance other sustainability skills.
2. Evidence based learning can be used in other disciplines to improve attention and interest.
3. Curriculum planners can rely evidence-based learning distant, online courses.

Suggestions

1. Study can be conducted to elementary, higher secondary and higher education.
2. Problems facing while employing evidence-based learning can be put into study.
3. Only select sustainability skills are studied in the present study, other skills can be put under study.
4. An evaluation study can be conducted on the present syllabus on the areas where evidence-based learning is demanded.
5. The omitted Green skills can be studied independently or in connection with AI.
6. A study on NEP 2020 align with the variables can be done.

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