



IMPACT OF GRADE LEVEL ON ENVIRONMENTAL ATTITUDES AMONG STUDENTS: AN ANALYSIS OF MULTIPLE AGE GROUPS

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A healthy and productive environment is considered the key to a sustainable human life. In order to provide adequate education on environment, environmental education is being introduced and followed in the curriculum of many countries. The Sri Lankan curriculum also has environmental education not as a separate subject but as a coordinated subject with Science and other subjects. This study was designed as a survey study under the quantitative approach to explore the impact of grade level on the environmental attitudes of students. Out of a total population of 1078 students, 285 students were selected as a sample through a stratified random sampling technique for this study. The questionnaire consisted of fifteen Likert-type questions on attitudes towards eco-friendly behaviours that were adapted from the questionnaire prepared by Ugulu et al. (2013) and Kaiser et al. (1999) and modified as per the Sri Lankan context. Reliability was determined by the Cronbach Alpha test (0.749). Descriptive statistical techniques and inferential techniques such as the One-way ANOVA test and Post-Hoc LSD test were used for the analysis of collected data. Based on the significant value, no significant differences were observed for the following variables between the grades of secondary level students ($P > 0.05$): Reading environmental-related news and articles while reading newspaper, switching off the television when no one is watching, preferring to walk to nearby places rather than going in a motorbike or other vehicles, not liking to drink anything in one-day cup at any ceremony, buying soft drinks in glass bottles or cans rather than plastic bottles, using one-side used papers for studies or Math practice, carrying re-usable shopping bags while going shopping and throwing wrapping papers and cover papers of food items in dustbins based on biodegradable and non-biodegradable varieties. However, significant differences were observed of the other seven environmental attitudes of the secondary level students and some of the grades ($P < 0.05$). Though environmental concepts are in the curriculum from Grade Six to Eleven with the hope of involving students as partners of the environment, some grades did not show significant differences. Therefore, an emphasis on environmental concepts in the existing curriculum should be given to build positive environmental attitudes among school students in their respective grades.

Keywords: environment, environmental attitude, secondary level students, environmental behaviour, Science-curriculum

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INTRODUCTION

The environment is a gift to humans to meet their living needs (Ruzaik, 2020). However, humans are continuously engaging in environmentally unfriendly activities at different levels, and they are contributing to ecological problems that threaten their lives and the lives of other living species (Ugulu et al., 2013). In order to reduce such environmental threats, people from different areas and fields need to work together as partners in the environment and be environmentally conscious (Ruzaik, 2020). In this manner, environmental education is the key factor to literate future generations with environment friendly values, attitudes, emotions, thoughts and skills to increase their sensitivity towards the environment and to protect the environment (Makki et al., 2003 and Alwis & Silva, 2020). Therefore, it was recommended at the United Nations Conference in Stockholm on the Human Environment to promote and develop environmental education in every nation (Kelani, 2015). Hence, environmental education and practices have been considered as important components of school education from 21st century (Msengi & Doe, 2017).

In the case of Sri Lanka, disasters due to inappropriate climate change and the effects of uncontrolled human activities are the major environmental challenges (Alwis & Silva, 2020). Therefore, serious attention should be given to creating an eco-friendly society. In this manner, the Sri Lankan education system has environmental education as an interdisciplinary subject. Environmental education is combined with Science and other subject areas. However, it is said that the current curriculum does not provide enough knowledge, awareness and attitudes to the school students regarding the environment and its concerns (Alwis & Silva, 2020). Considering this gap, Alwis and Silva (2020) conducted a study on Grade 12 students in Sri Lanka on their environmental attitudes.

Few other researchers including Alwis et al. revealed that different internal and external factors such as gender, income, years of education and residential areas affect the environmental attitudes of the students (Alwis et al., 2020 & Heyl et al., 2013). Since limited a number of research has been done to study the environmental attitudes of school students in Sri Lanka, this study attempts to disclose the impacts of school grades on the environmental attitudes of students. The objective of this study is to determine the impact of school grades on the environmental attitudes of students.

METHODOLOGY

Survey research design under the quantitative research paradigm has been adapted for this study. The population for this study was 1078 students from Grades Six to Eleven studying in the year 2021 in seven schools of Palai Divisional Education Office of Kilinochchi North Zone, Northern Province, Sri Lanka. 285 students from the population were selected by stratified random sampling technique and a questionnaire was given through Google Forms. The questionnaire consisting of fifteen questions on attitudes towards eco-friendly behaviours were adapted from Ugulu et al. (2013) and Kaiser et al. (1999) and modified as per the Sri Lankan context. Further, each question was designed on a five-point Likert-scale. The reliability of the questionnaire was determined by Cronbach's Alpha test (0.749). Data collected from the questionnaire was analyzed using the one-way ANOVA test



to check the significance difference followed by a post-hoc LSD test to determine between which grade levels and eco-friendly attitudes the significance differences existed.

RESULTS AND DISCUSSION

The following null hypothesis was checked for analysis of the results: There is no significant difference between the grade level regarding the environmental attitudes of students. In this manner, significant values (P) for the following variables were more than 0.05: reading environmental related news and articles while reading newspaper, switching off the television when no one is watching, preferring to walk to nearby places rather than going in a motorbike or other vehicles, not liking to drink anything in one-day cups at any ceremonies, buying soft drinks in glass bottles or cans rather than plastic bottles, using one-side used papers for studies or Maths practice, carrying re-usable shopping bags while going for shopping and throwing wrapping papers and cover papers of food in dustbins based on biodegradable and non-biodegradable varieties. Therefore, null hypothesis was accepted, and thus significant differences were not observed between the grade levels regarding the selected environmental attitudes of students (Table 1).

However, $P < 0.05$ was also observed: Not supporting the burning of polythene and plastic materials at home, switching off lights when leaving the room, not wasting water while brushing teeth, preferring to buy eco-friendly products even if they are more expensive than cheaper environmental threatening products, disposing of the old pen caps only in non-biodegradable waste dustbins, following or telling house members to follow natural remedies for mosquitoes instead of chemicals and not carrying food in polythene sheets to school, instead carrying it in reusable lunch boxes (Table 1). Therefore, there are significant differences between the grade levels regarding the environmental attitudes of students.

Table 1: Relationship between environmental attitudes and grades

	Question	Significant Value	Interpretation: null hypothesis (accepted/not accepted)
1	I do not like or support the burning of polythene and plastic materials at home	0.017	Not accepted
2	When I read the newspaper, I read environmental related articles and news	0.138	Accepted
3	I will switch off the television when no one is watching	0.238	Accepted
4	I switch off lights when leaving the room	0.012	Not accepted
5	I prefer to walk to nearby places (on the same street or the next street) than going in a motor vehicle	0.754	Accepted
6	I do not like to drink anything in one day cup at any ceremonies	0.467	Accepted
7	I buy soft drinks in glass bottles or cans rather than plastic bottles.	0.275	Accepted
8	I don't waste water when I brush my teeth; in other words, I do not keep the tap open until I finish brushing.	0.010	Not accepted
9	I prefer to buy eco-friendly products even if they are more expensive than cheaper environmentally threatening products	0.003	Not accepted



10	I use one side used papers for my studies or maths calculation	0.107	Accepted
11	I dispose of the old pen caps only in non-biodegradable waste dustbins	0.048	Not accepted
12	I carry a reusable shopping bag with me when I go shopping for household or other needs.	0.063	Accepted
13	I follow or tell house members to follow natural remedies (burning neem leaves) for mosquitoes instead of chemicals	0.039	Not accepted
14	When I eat outside, I throw wrapping papers and cover papers of food in dustbins based on biodegradable and non-biodegradable verities.	0.192	Accepted
15	I do not carry food in polythene sheets (lunch sheets) to school; instead I carry it in reusable lunch boxes	0.029	Not accepted

Significant at the level of 0.05

Furthermore, post Hoc LSD test resulted in the grade levels between which the significant differences are there towards environmental attitudes. As per the post Hoc LSD test, there are significant differences between the following grades and environmental attitudes: Grades 6 and 9, Grades 7 and 9, Grades 7 and 10, Grades 8 and 9 and Grades 9 and 11 towards the variable not supporting the burning of polythene and plastic materials at home; Grades 6 and 8, Grades 7 and 8, Grades 7 and 9, Grades 7 and 11, Grades 8 and 10 and Grades 9 and 10 towards the attitude switching off lights when leaving the room; Grades 6 and 8, Grades 6 and 9, Grades 6 and 10, Grades 6 and 11 and Grades 7 and 10 towards the attitude of not wasting water while brushing teeth; Grades 6 and 7, Grades 6 and 10, Grades 6 and 11, Grades 7 and 8 and Grades 8 and 10 towards the attitude of preferring to buy eco-friendly products; Grades 6 and 8, Grades 6 and 10, Grades 8 and 11 and Grades 10 and 11 towards the attitude of throwing old pen caps; Grades 7 and 10, Grades 8 and 10 and Grades 8 and 11 towards using natural remedies for mosquito; Grades 6 and 11, Grades 7 and 11, Grades 8 and 11 and Grades 9 and 11 towards the attitudes of not bringing food in lunch sheets to school (table 2).

Table 2: Significant differences between the grades regarding the environmental attitudes

Variables	Grades where significant differences have been observed
Not supporting the burning of polythene and plastic materials at home	6 & 9, 7 & 9, 7 & 10, 8 & 9, 9 & 11
Switching off lights when leaving the room	6 & 8, 7 & 8, 7 & 9, 7 & 11, 8 & 10, 9 & 10
Not wasting water while brushing teeth	6 & 8, 6 & 9, 6 & 10, 6 & 11, 7 & 10
Prefer to buy eco-friendly products even if they are more expensive than cheaper environmentally threatening products	6 & 7, 6 & 10, 6 & 11, 7 & 8, 8 & 10
Disposing of the old pen caps only in non-biodegradable waste dustbins	6 & 8, 6 & 10, 8 & 11, 10 & 11



Following or telling house members to follow natural remedies for mosquitoes	7 & 10, 8 & 10, 8 & 11
Not carrying food in polythene sheets	6 & 11, 7 & 11, 8 & 11, 9 & 11

CONCLUSIONS/RECOMMENDATIONS

Out of the selected fifteen variables (environmental attitudes), only the attitudes not supporting the burning of polythene and plastic materials at home, switching off lights when leaving the room, not wasting water while brushing teeth, preferring to buy eco-friendly products even if they are more expensive than cheaper environmental threatening products, disposing of the old pen caps only in non-biodegradable waste dustbins, following or telling house members to follow natural remedies for mosquitoes instead of chemicals and not carrying food in polythene sheets (lunch sheets) to school, instead carrying it in reusable lunch boxes have significant differences with the grade levels of secondary level students. However, eight selected environmental behaviours do not have significant differences with the grade level of the students.

Though the global concern on environmental education is to create awareness and create an eco-friendly generation and also the fact that Sri Lanka included environmental education as an amalgamated concept in Science and other subjects, emphasis and more concern on environmental concepts in the curriculum should be given in order to improve the eco-friendly attitude among school students. It is recommended for a curriculum revision in order to encourage environmental awareness in an eco-friendly manner among the present and future generations.



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