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Level of environmental ethics among the adolescent learners from the high schools of Kerala state

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Abstract
Environmental Ethics of an individual determines the level of conservation of nature and natural resources. So the prime importance of education should be the inculcation of environmental literacy through experiential learning. Environmental literacy leads to environmental ethics. In this study, the investigator included three components in environmental ethics such as Stewardship, Build sustainable society and Compassion and love for environment which has measured the level as low order, intermediate order and high order. The present study intended that to find out the level of environmental ethics and significant difference of environmental ethics with respect to gender, type of institution and locale among the adolescent learners from the high schools of Kerala state.

Keywords: environmental ethics, adolescent learners

1. Introduction
Environmental ethics is a feeling and valuing or moral commitment and responsibilities towards nature for the well-being of present as well as future generations. It is the resultant effect of the environmental literacy. It is the metaphysical knowledge getting from the material knowledge. Since its inception in the early 1970s, environmental ethics as a discipline has focused on the way humans treat the natural world. It is generally acknowledged that people care less about animals, rivers, plants, and mountains than they do about themselves and each other, and thus it is no surprise that they exploit or otherwise abuse nature (Paul wapner; 2009) [6]. Environmental ethics has evolved to the point where many scientists believe they have a major responsibility to help society deal with the human predicament (Bazzaz *et al*.; 1998, Lubchenco; 1998) [1].

Environmental ethics is a new sub-discipline of philosophy that deals with the ethical problems surrounding environmental protection. It aims to provide ethical justification and moral motivation for the cause of global environmental protection (Tongjin Yang; 2006) [9]. Aldo Leopold (1887 - 1948) [3] a forester by training and an environmental manager by profession is often regarded as "the father of environmental ethics". He was not the first to think holistically about land use and resource management - it is the normal worldview in traditional societies. His great innovation was to apply the science of ecology to ethics. Leopold did not simply extend ethical concern to the environment, but developed a new paradigm or worldview. In his words an ethic dealing with the man's relations to lead and to the animals and plants which grow up on it. **(**Routley 1973, P.205, quoting Leopold 1966**,** P.238) [7, 3].

Environmental ethics on global and regional scales is inextricably coupled with development ethics. The Rio declaration (1992) begins: 'Human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature'. The United Nations world commission on environment and development declares: 'sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. That applies to agriculture, forestry, water use, pollution levels, industry, resource extraction, urbanization, national policies and strategies. Sustainable coupled with 'development' expects continued growth, but not such as degrades opportunities and environments for the future (Nicholas Bunnin and E.P Tsui-James; 2003) [4].

Norton (1986) [5] argues persuasively that most writers on environmental ethics have falsely assumed that conservation, in the sense of sustainable resource use, must be identified with anthropocentrism, a commitment to putting human interests first, while preservation. Timothy Beatley (1994) [8] described that today's environmental problems, whether local or global, are at their heart ethical dilemmas. They are questions of competing values and priorities, usually arising in the face of scientific and technical uncertainty.

Many papers published on concept of environmental ethics, stresses the importance of environmental education. But the investigator found a research gap regarding the environmental ethics of adolescent learners from the high schools of Kerala state. Hence the investigator decided to study the level of environmental ethics among adolescent learners and also helps to understand the effectiveness of existing curriculum to impart environmental values among high school students.

Hypotheses of the study
1. There is significant difference in the mean scores of environmental ethics based on :
- Gender
- Type of management of institution
- Locale

Objectives of the study

- To find out the level of environmental ethics among adolescent learners.
- To find out the contribution of each component in percentage to environmental ethics.
- To compare the level of environmental ethics of adolescent learners based on

(1) Gender
(2) Types of management of institution
(3) Locale

Methodology in brief

Normative survey method was adopted for the present study.

a. Population

Population of the study comprises of all the adolescent learners studying in ninth, tenth, plus one and plus two classes in Kerala.

b. Sample

The total sample of 480 adolescent learners was selected for the collection of data.

c. Sampling technique

Stratified random sampling technique.

d. Tools used for the study

Environmental Ethics Scale for Adolescent Learners (EESAL) was used for this study. The items in the ethics scale were categorized into three components such as stewardship, compassion and love for environment and build sustainable society. The items were designed to measure the level of ethics in adolescent learners.

Statistical techniques used for the study

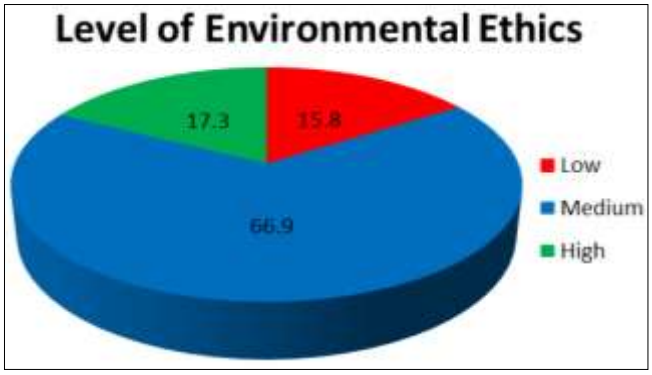
- Percentage analysis
- Test of significance for difference between means (Z test)
- ANOVA

Analysis and Interpretation of the data

Table 1: Level of Environmental Ethics among adolescent learners

Level of environmental Ethics	Frequency	Percent	Cumulative Percent
Low level	76	15.8	15.8
Intermediate level	321	66.9	82.7
High level	83	17.3	100.0
Total	480	100.0	

From the table it is clear that most of the students have intermediate level (intermediate order) of environmental ethics (66.9%). 17.3% of students have high level (high Order) of environmental ethics and 15.8% of students have low level (low order) of environmental ethics.

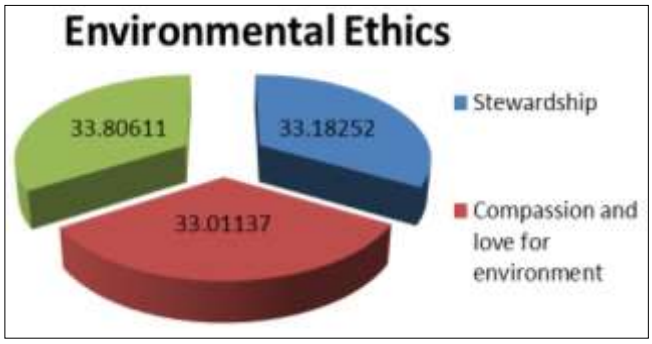


Graph 1: Level of Environmental Ethics among adolescent learners

Table 2: Contribution of components to Environmental Ethics

Components of Environmental Ethics	Percentage of contribution
Stewardship	33.18252
Compassion and love for environment	33.01137
Build sustainable society	33.80611

From the table it is clear that the component Build sustainable society has the highest contribution to Environmental ethics (33.80611%). It is followed by Stewardship (33.18252%) and Compassion and love for environment (33.01137%).



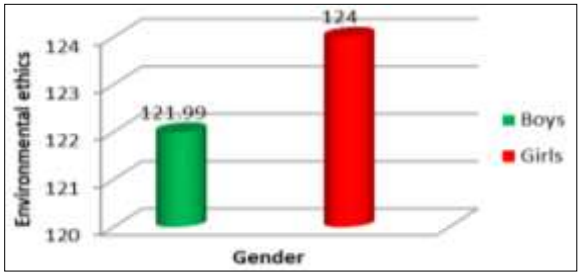
Graph 2: Contribution of components to Environmental Ethics

Table 3: Test of significance for difference between means of Environmental Ethics of boys and girls

Variable	Category	N	Mean	Standard deviation	C.R.	Level of significance
Environmental Ethics	Boys	253	121.99	14.302	1.558	N.S.
	Girls	227	124.00	13.916		

The calculated value of C.R. is 1.558 and is not significant at 0.05 level (C.R. = 1.558: p>0.05). Since the mean scores of the boys and girls do not differ significantly, girls and

Boys are more or less equal in environmental Ethics.



Graph 3: Comparison of means of Environmental Ethics of boys and girls

Test of significance for difference between means of Environmental Ethics of sub samples based on type of school management

Table 4: Descriptives

Type of school management	N	Mean	Std. Deviation	Std. Error
Govt.	235	122.32	14.000	.913
Aided	176	122.25	14.896	1.123
Unaided	69	126.84	12.053	1.451
Total	480	122.94	14.142	.645

Table 5: ANOVA

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1224.171	2	612.086	3.087	0.047
Within Groups	94575.310	477	198.271		
Total	95799.481	479			

The calculated value of F is 3.087 and is significant at 0.05 level (F = 3.087: p<0.05). Therefore Environmental Ethics is significantly different for sub samples based on type of school management. To find which pairs of sub samples differ significantly, Fisher's LSD post hoc test is used.

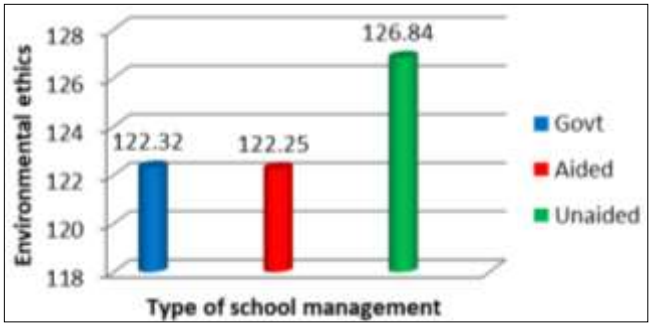
Table 6: Fisher's LSD post hoc test for Environmental Ethics of sub samples based on type of school management

(I) TSM	(J) TSM	Mean Difference (I-J)	Std. Error	Sig.
Govt.	Aided	.069	1.404	.961
	Unaided	-4.521*	1.928	.019
Aided	Govt.	-.069	1.404	.961
	Unaided	-4.591*	2.000	.022
Unaided	Govt.	4.521*	1.928	.019
	Aided	4.591*	2.000	.022

*The mean difference is significant at the 0.05 level.

From Fisher's LSD post hoc test the following results are obtained.

a) Govt. and Aided school students do not differ significantly in Environmental Ethics at 0.05level.
b) Govt. and Unaided school students differ significantly in Environmental ethics at 0.05 level. Since the mean score of the Unaided school students is significantly greater than that of the Govt. school students, unaided school students have more environmental Ethics compared to Govt. school students.
c) Aided and Unaided school students differ significantly in Environmental Ethics at 0.05level. Since the mean score of the Unaided school students is significantly greater than that of the Aided school students, unaided school students have more environmental Ethics compared to Aided school students.



Graph 4: Comparison of means of Environmental Ethics of sub samples based on type of school management

Table 7: Test of significance for difference between means of Environmental Ethics of Rural and Urban students

Variable	Category	N	Mean	Standard deviation	C.R.	Level of significance
Environmental Ethics	Rural	369	123.91	13.826	2.741	0.01
	Urban	111	119.74	14.762		

The calculated value of C.R. is 2.741and is significant at 0.01 level (C.R. = 2.741: p<0.01). Since the mean of the rural students is significantly greater than that of the urban students, rural students have more environmental Ethics compared to urban students.

Graph 5: Comparison of means of Environmental Ethics of rural and urban students

Discussion and Conclusion of the study

The present study focuses on the certain facts of environmental ethics among the adolescent learners from the high schools of Kerala state. Most of the adolescent learners' shows intermediate level (intermediate order) of environmental ethics (66.9%). 17.3% of students have high level (high order) of environmental ethics and 15.8% of students have low level (low order) of environmental ethics. It is also revealed that mean scores of the boys and girls do not differ significantly; girls and boys are more or less equal in environmental Ethics. Govt. and Aided school students do not differ significantly in Environmental ethics at 0.05 levels. Aided and Unaided school students differ significantly in Environmental Ethics at 0.05level. Since the mean score of the Unaided school students is significantly greater than that of the Aided school students, unaided school students have more environmental Ethics compared to Aided school students.

Environmental ethics and sustainable development are correlated each other. Sustainable development is possible

only through the moral commitment to the environment. The Brundtland Commission famously defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 19). Sustainable development emerged out of a familiar moral sensibility as well as prudential concern for avoiding global risk. Prudentially, people embrace sustainable development because they recognize that the global South cannot develop along the same lines as the global North for the simple reason that the planet cannot handle this. If the consumption levels of those in the global South grow to match global North levels, many suggest that we would need four planets' worth of resources and sinks (Folz, 2002) [2].

The ultimate goal of environmental education is the development of environmental ethics through the imparting of environmental literacy. Hence the current schooling system should emphasize in the imparting of literacy regarding environment and sustainability of our nature.

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