Environmental Education at the Elementary Level in Assam: An Analysis

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Abstract: *The researches on environmental education focused more on teaching and learning in complementary secondary schools and on the perception of stakeholders as to their participation in environmental education. Although these studies can be related to teaching and learning of environmental education in the elementary level, there is still a need to specifically focus on elementary level, because the context of the learners, age and even the content is different. In addition, there is still need to develop a strong environmental education base among the learners at an early age. At the elementary level there is need for research into how environmental education has been incorporated into the curriculum, contents on environmental education integrated in different textbooks at the elementary level, status of co-curricular activities environmental education, evaluation procedures on environmental education at elementary level and status of teacher training on environmental education .The findings from this research can help in rethinking the way in which environmental education can be integrated into the school curriculum and teachers can be supported in its implementation.*

1. INTRODUCTION

The State Council of Educational Research and Training (SCERT), Assam has been taking up the task of preparing the curriculum on environmental education and contents on environmental education to be integrated in subjects like – General Science, Social Science and Language for elementary level in Assam. The Government of Assam tried best to provide training to the teachers on environmental education through SCERT, DIET, SSA and other teacher training institutes of Assam. The Government of Assam also tried to provide necessary facilities along with the trained teachers to the elementary level schools of Assam. But, how far these efforts have been successful yet to be analysed and evaluated. Recent evidences of environmental problems prevailing in our society indicate that the teaching of environmental education needs some changes based on research works. Evidences of environmental degradation in the form of soil erosion, poor waste management, water pollution and many other problems can still be observed in many schools and also in the communities around the schools. The school is part of the community surrounding the school, therefore it is expected that what the pupils learn in school should be reflected in society. This situation opens a door for a comprehensive study to anayse the Curriculum on Environmental Education at the elementary level in Assam. But till now no comprehensive study has been made to appraise the effectiveness of Environmental Education Curriculum at the elementary level in Assam. It has been felt that if a research study could be carried out on environmental education curriculum, contents on environmental education integrated in different subjects, status of teacher training, co curricular activities and evaluation procedures on environmental education at the elementary level, it might help to know both the strong and weak points associated with it which would definitely help in future development of Environmental Education Curriculum. The purpose of this is to find out the problems involved in implementing the Environmental Education Curriculum and to suggest suitable measures for the solution and for teaching of environmental education effectively.

Objectives of the Study: The study was conducted with following objective.

To analyze the curriculum of environmental education at elementary level in Assam in terms of

- Objectives of teaching environmental education,
- Selection of content Material,
- Organization of content,
- Instructional procedure, and
- Evaluation procedure.

2. OPERATIONAL DEFINITION OF THE TERMS USED

(a) Environmental Education: Environmental Education as used in this study refers to a subject taught in the elementary schools in Assam with a view to prepare young minds for appreciating the importance of environment in a holistic manner for human survival and welfare and to inculcate a positive attitude to respect nature.

(b) Environmental Education Curriculum: The term 'environmental education curriculum' has been accepted as a plan of teaching learning for environmental education prepared by State Council of Educational Research and Training (SCERT), Assam in 2004 and published in 2010. This includes fulfillment of objectives of teaching environmental education, instructional strategies, class wise distribution of course contents, time allocation, and evaluation, feedback including remedial teaching.

Review of Related Studies: Some of the important researches reviewed for this study have been mentioned below:

These are- Jain and Ragunathan (2001) Bhawalkar (2003), Bhuyan (2004**),** Singh (2004,**)** Rickinson and Sanders (2005), Barnett M. (2006), DiEnno and Hilton (2007), Mtaita (2007), Spiropoulou et. al. (2007), Toili (2007), Dey (2008), Gislason (2009),Malhotra (2009), Mueller et. al.(2009), Conde and Sanchez (2010),Kimaryo (2011), Yadav (2011), Halder (2012), Karimzadegan et.al.(2012) and Borthakur (2013).

Population: The population of the study comprises all the elementary school teachers who teach environmental education in elementary schools in four districts (Jorhat, Lakhimpur, Kamrup and Cachar) of Assam. Total number of elementary schools in Jorhat, Lakhimpur, Kamrup and Cachar districts are- 476, 744, 574 and 460 respectively. The number of teachers who teaches environmental education in the four districts are - 2270, 4856, 3445 and 2777 respectively. Thus, in this study the population consisted of 13348 assistant teachers of elementary schools who deal with environmental education.

Sample: To make the sample is a representative one, fifty assistant teachers from each districts was selected purposively. Thus, total 200 teachers constituted teachers sample.

Tool Used in the Study: A three point Curriculum Evaluation Scale on environmental education meant for the assistant teachers prepared by the investigator.

3. CONSTRUCTION OF ENVIRONMENTAL EDUCATION CURRICULUM EVALUATION SCALE

It is a three point scale consisting of 35 statements. Initially the researcher had gone through the available scale for curriculum evaluation. Based on the idea gained in reviewing literature, investigator constructed the statements and some of the statements were collected from available scale of curriculum evaluation. The statements were edited carefully with the help of fellow research scholars. The draft so prepared was given to 15 experts in the field of teaching profession. They were requested to examine the contents of the tool and their views were invited. Based on experts' opinion, necessary modifications were made to ensure content validity.

For the study of the first objective**, a three point curriculum rating scale** was prepared by the investigator. It consisted of thirty five statements in five dimensions. The dimensions are- Objectives of Environmental Education Curriculum

- Objectives of teaching Environmental Education
- Content of Environmental Education Curriculum
- Organization of contents in the Environmental Education Curriculum
- Teaching – Learning Strategies
- Evaluation Procedures

The scale was named as "**Environmental Education Curriculum Evaluation Scale"**. The distribution of statements in five dimensions is given below.

Table1. *Distribution of Statements in five dimensions of Environmental Education Curriculum Evaluation Scale*

Dimensions	Statement Nos.	Total No. of Statement
Objective of teaching Environmental Education	1,2,3,4,5,6,7,8	8
Selection of Content material	9,10,11,12,13,14,15,16,17	9
Organization of Contents	18,19,20,21,22,23	6
Instructional Strategy	24,25,26,27,28,29	6
Evaluation procedure	30,31,32,33,34,35	6

A copy of Environmental Education Curriculum Evaluation Scale and a copy of Environmental Education Curriculum which has been followed at the elementary level were provided to the selected teachers. They were requested to study the curriculum carefully and rate each statement on the following three points.

- that quality is present in the curriculum

- that quality is partially present in the curriculum

- that quality is not present in the curriculum

Scoring Procedure of Environmental Education Curriculum Evaluation Scale: All the statements of the rating scale are positive. Therefore, assigned scores for A, B, C were 3, 2, and 1 respectively. Therefore, maximum possible score in this scale is 105 and minimum score is 35. The scores were organized systematically in tabular form to calculate mean, median, mode, standard deviation, skewness and kurtosis.

Reliability of Environmental Education Curriculum Evaluation Scale: To establish reliability of the scale, split-half method was followed and co- efficient co-relation was calculated by product moment method. The calculated value of r is 0.73
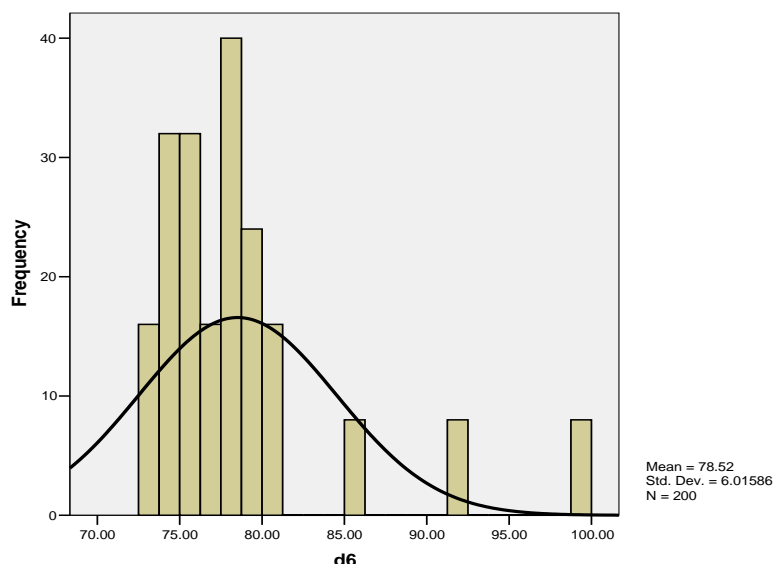
4. CALCULATION OF MEAN, STANDARD DEVIATION, SKEWNESS AND KURTOSIS OF ENVIRONMENTAL EDUCATION CURRICULUM EVALUATION SCALE

The purpose of using the Environmental Education Curriculum Evaluation Scale was to de how far the environmental education curriculum prepared by SCERT is effective and relevant for elementary level in Assam. The first objective of this study was to analyze the curriculum of environmental education at the elementary level in terms of (a) Objectives of teaching environmental education, (b) selection of content material in the environmental education curriculum, (iii) Organization of the content, (d) Instructional procedure and (e) Evaluation procedure. So, this tool was administered to a group of 200 elementary school teachers who teach environmental education in the elementary schools of Assam. The maximum possible score in the scale was 105 and minimum was 35. The value of mean and standard deviation are the indicators of appropriateness and relevancy of environmental education curriculum prepared by SCERT, Assam. The calculated value of skewness and kurtosis are the indicators of how far it deviates from normality. In order to estimate these statistics, the collected data were arranged in frequency distribution table and finally SPSS 13 was used. These have been given in the table below.

Table2. *Mean, Standard Deviation, Skewness and Kurtosis of Environmental Education Curriculum prepared by SCERT, Assam for elementary level.*

Dimension	Mean	Standard Deviation	Skewness	Kurtosis
Whole Scale	78.52	6.015	2.226	4.9609

The calculated values of mean, standard deviation, kurtosis and skewness for the scale were 78.52, 6.015, 4.9609, and 2.226 respectively. The positive skewness indicated that the scores were massed at lower end of the scale and gradually spread out towards higher end. The value of kurtosis was 4.9609 which was greater than 3. Therefore, it was platykurtic. It means that scores were scattered more evenly than the normal distribution. The calculated measure of mean as measured by the Environmental Education Curriculum Evaluation Scale was lower than the mean of equal probability. It indicates the curriculum of environmental education prepared by SCERT, Assam at the elementary level was found to be below the average standard.
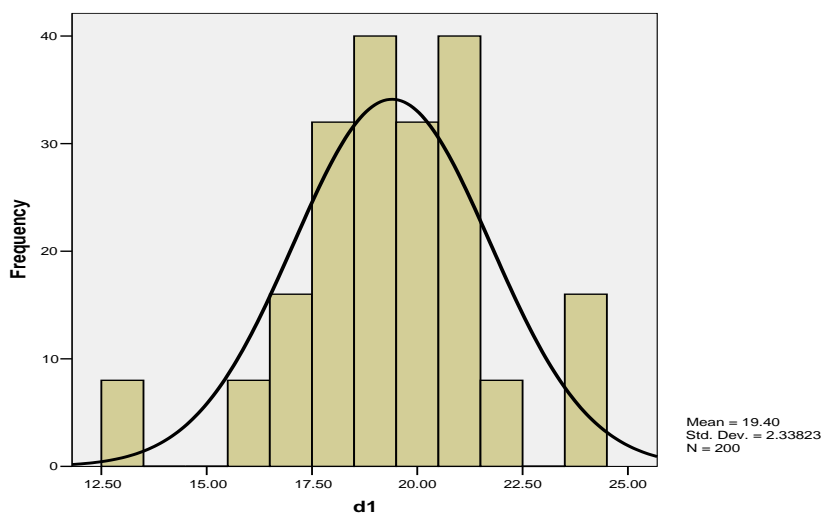
Fig1. *Graphical representation of mean, standard deviation, skewness and kurtosis of environmental education curriculum evaluation scale.*

5. CALCULATION OF MEAN, STANDARD DEVIATION, SKEWNESS AND KURTOSIS FOR OBJECTIVE OF TEACHING ENVIRONMENTAL EDUCATION IN THE ENVIRONMENTAL EDUCATION CURRICULUM PREPARED BY SCERT, ASSAM FOR ELEMENTARY LEVEL

For the first dimension i.e. Objective of teaching environmental education curriculum in the environmental education curriculum evaluation scale the maximum possible score was 24 and minimum was 8. The calculated values of mean, standard deviation, kurtosis and skewness were 19.40, 2.338, 0.928, and -0.339 respectively. The negative skewness indicated that the scores were massed at higher end of the scale and gradually spread out towards lower end of the distribution. The value of kurtosis was 0.9983 which was lower than 3. Therefore, it was leptokurtic. It means that scores were more peaked than the normal distribution. The calculated mean was almost same with the mean of equal probability for the first dimension i.e. Objectives of teaching environmental education in the environmental education curriculum prepared by SCERT, Assam. It indicated that the objectives stated in the curriculum of environmental education at the elementary level needs further observation regarding their suitability and practicability.

Table3. *Mean Standard Deviation, Skewness and Kurtosis of Objectives of teaching environmental education in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

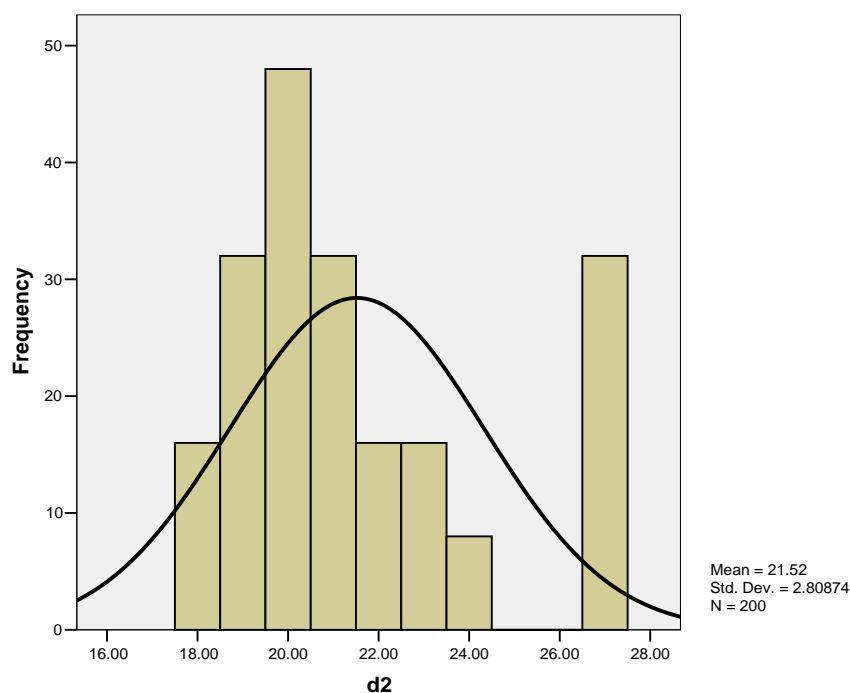| Dimensions	Mean	Standard Deviation	Skewness	Kurtosis
Objectives	19.4	2.338	0.928	0.339

Fig2. *Graphical representation of mean, standard deviation, skewness kurtosis for Objectives of teaching environmental education in the Environmental Education Curriculum prepared by SCERT, Assam for elementary Level.*

6. CALCULATION OF MEAN, STANDARD DEVIATION, SKEWNESS AND KURTOSIS FOR SELECTION OF CONTENT IN THE ENVIRONMENTAL EDUCATION CURRICULUM PREPARED BY SCERT, ASSAM FOR ELEMENTARY LEVEL

The second dimension in the Environmental Education curriculum Evaluation Scale was contents of the curriculum. It had nine items. Maximum possible score was 27 and minimum was 9.The calculated values of mean, standard deviation, kurtosis and skewness for the scale were 21.52, 2.808, -0.279, and 0.929 respectively. The negative skewness indicated that the scores were massed at higher end of the scale. This means this quality has been reflected to a large extent in the curriculum. The value of kurtosis was 0.9983 which was greater than 3. It means that scores were more peaked than the normal distribution. Therefore, it was leptokurtic. The calculated mean was higher than the mean of equal probability for the second dimension i.e. content of curriculum in the Environmental Education Curriculum. It indicated that the contents selected in the curriculum of environmental education at the elementary level were above average level.

Table4. *Mean, Standard Deviation, Skewness and Kurtosis for Selection of content in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

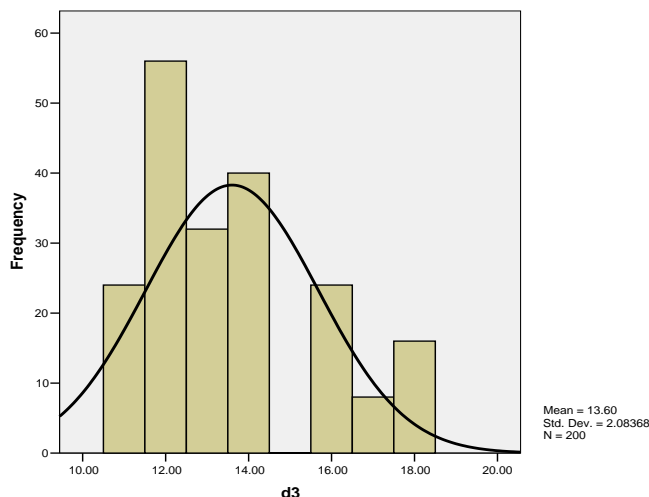| Dimensions	Mean	Standard Deviation	Skewness	Kurtosis
Objectives	21.52	2.808	-0.279	0.929

Fig3. *Graphical representation of mean, standard deviation, skewness kurtosis for selection of content in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

7. CALCULATION OF MEAN, STANDARD DEVIATION, SKEWNESS AND KURTOSIS ORGANIZATION OF CONTENTS IN THE ENVIRONMENTAL EDUCATION CURRICULUM PREPARED BY SCERT, ASSAM FOR ELEMENTARY LEVEL

The third dimension in the Environmental Education Curriculum Evaluation Scale was organisation of contents. It had six items. Maximum possible score was 18 and minimum was 6.The calculated values of mean, standard deviation, skewness and kurtosis for this dimension were 13.6, 2.083, -0.482, and 0.7594 respectively. The negative skewness indicated that the scores were massed at higher end of the scale. Therefore, this quality was found to be reflected to a large extent in the curriculum. The value of kurtosis was 0.9983 which was lower than 3. Therefore, it was leptokurtic. It means that scores were peaked more than the normal distribution. The calculated mean was higher than the mean of equal probability for the third dimension i.e organization of contents in the curriculum in the Environmental Education Curriculum. It indicated that the organization of the contents stated in the curriculum of environmental education at the elementary level were above average level.

Table5. *Mean, Standard Deviation, Skewness and Kurtosis for Organization of content in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

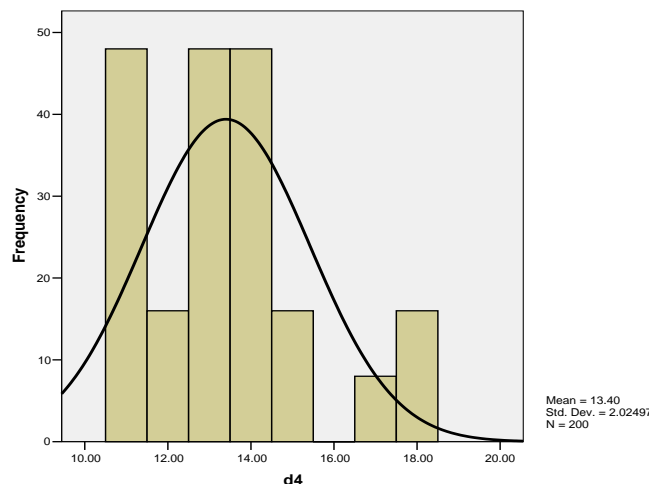| Dimension	Mean	Standard Deviation	Skewness	Kurtosis
Objectives	13.6	2.083	-0.482	0.7594

Fig4. *Graphical representation of mean, standard deviation, skewness kurtosis for organization of content in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

8. CALCULATION OF MEAN, STANDARD DEVIATION, SKEWNESS AND KURTOSIS TEACHING LEARNING STRATEGIES IN THE ENVIRONMENTAL EDUCATION CURRICULUM PREPARED BY SCERT, ASSAM FOR ELEMENTARY LEVEL

The fourth dimension in the Environmental Education curriculum Evaluation Scale was instructional strategy in the curriculum. The total number of items in this dimension was 6. Maximum possible score was 18 and minimum was 6.The calculated values of mean, standard deviation, kurtosis and skewness for the scale were 13.4, 2.024, 0.1187, and 0.792 respectively. The positive skewness indicated that the scores were massed at lower end of the scale and spread out gradually toward higher scale end of the distribution. The value of kurtosis was 0.9983 which was greater than 3. Therefore, it was leptokurtic. It means that scores were scattered more evenly than the normal distribution. The calculated mean was higher than the mean of equal probability for the fourth dimension in the Environmental Education curriculum Evaluation Scale i.e. instructional strategy in the curriculum. It indicated that the instructional strategy stated in the curriculum of environmental education at the elementary level needs revision.

Table6. *Mean, Standard Deviation, Skewness and Kurtosis for Teaching Learning Strategies in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

| Dimensions	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Objectives	13.4	13	13	2.024	0.1187	0.792

Fig5. *Graphical representation of mean, standard deviation, skewness for Teaching Learning Strategies in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

9. TEACHING LEARNING STRATEGIES IN THE ENVIRONMENTAL EDUCATION CURRICULUM PREPARED BY SCERT, ASSAM FOR ELEMENTARY LEVEL

The fifth dimension in the Environmental Education Curriculum Evaluation Scale was evaluation procedure. The number of items in this dimension was 6. Maximum possible score was 18 and minimum was 6. The calculated values of mean, standard deviation, kurtosis and skewness for the scale were 10.2, 1.268, 1.4099 and 1.7405 respectively. The positive skewness indicates that the scores were massed at lower end of the scale and gradually spread out towards higher scale end. The value of kurtosis was 0.9983 which is greater than 3. Therefore, it was leptokurtic. It means that scores more peaked than the normal distribution. The calculated mean was lower than the mean of equal probability for the fifth dimension in the Environmental Education Curriculum Evaluation Scale i.e evaluation in the curriculum. It indicated that the evaluation procedures stated in the curriculum of environmental education at the elementary level were below average level.

Table7. *The level of evaluation Environmental Education Curriculum Evaluation Scale*

Dimensions	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Objectives	10.2	10	10	1.268	1.7405	1.4099
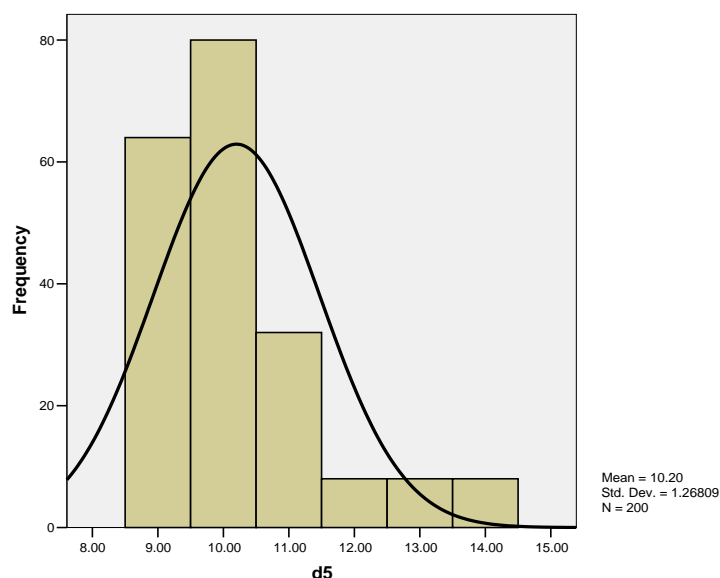
Fig6. *Graphical representation of mean, standard deviation, skewness for evaluation procedure in the environmental education curriculum prepared by SCERT, Assam for elementary level.*

10. CONCLUSION

- The objectives stated in the curriculum of environmental education at the elementary level needs further observation regarding their suitability and practicability.
- The contents selected in the curriculum of environmental education at the elementary level were above average level.
- The organization of the contents in the curriculum of environmental education at the elementary level was above average level.
- The instructional strategy mentioned in the curriculum of environmental education at the elementary level needs revision.
- The evaluation procedures stated in the curriculum of environmental education at the elementary level were below average level.

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