

ENVIRONMENTAL EDUCATION FOR PRIMARY STUDENTS THROUGH ORGANIZING AFTER-CLASS ACTIVITIES – CURRENT STATUS AND MEASURES FOR RURAL AREAS OF HAU GIANG PROVINCE

GIÁO DỤC MÔI TRƯỜNG CHO HỌC SINH TIỂU HỌC THÔNG QUA HOẠT ĐỘNG NGOÀI GIỜ LÊN LỚP – HIỆN TRẠNG VÀ GIẢI PHÁP CHO VÙNG NÔNG THÔN TỈNH HẬU GIANG

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Abstract - Research is carried out to evaluate the status of environmental education organized through after-class activities. The research aims to analyze the factors impacting on the effectiveness of environmental education in the rural areas of Hau Giang Province. Sociological survey method by interviewing through questionnaires is used in the research. Primary data is collected by non-probability sampling method. The Binary logistic regression model is also selected to determine the factors affecting the effectiveness of the model, based on primary data sources collected from 50 teachers belonging to 10 primary schools in rural areas of Hau Giang province. According to research results, factors which are guidelines and direction of education management authority, facilities and equipment, students' age, budget for environmental education activities and family's support in student's education have impacts on the effectiveness of the education model in the research.

Key words - After-class activities; environmental education; primary student; Hau Giang province; rural area

Tóm tắt - Nghiên cứu được tiến hành nhằm đánh giá hiện trạng tổ chức hoạt động giáo dục môi trường với hình thức hoạt động ngoài giờ lên lớp. Nghiên cứu nhằm phân tích các yếu tố tác động đến hiệu quả giáo dục môi trường ở vùng nông thôn của tỉnh Hậu Giang. Phương pháp nghiên cứu xã hội học bằng phiếu phỏng vấn đã được thực hiện. Số liệu sơ cấp được thu thập bằng phương pháp chọn mẫu phi xác suất. Mô hình hồi quy Binary đã được lựa chọn để xác định các yếu tố tác động đến hiệu quả của mô hình, dựa trên dữ liệu được thu thập từ 50 giáo viên từ 10 trường tiểu học vùng nông thôn Hậu Giang. Kết quả nghiên cứu đã cho thấy, hướng dẫn và chỉ đạo của cơ quan quản lý giáo dục, cơ sở vật chất và trang thiết bị, tuổi học sinh, ngân sách cho các hoạt động giáo dục môi trường và hỗ trợ của gia đình trong giáo dục học sinh, có tác động đến hiệu quả của mô hình giáo dục trong nghiên cứu.

Từ khóa - Giáo dục môi trường; học sinh tiểu học; ngoài giờ lên lớp; tỉnh Hậu Giang; vùng nông thôn

1. Introduction

A new approach to solve the problem of the environmental sustainability is to educate the sense of environmental protection for primary students that will help raise student awareness about environmental protection (Em and Thao, 2012). In Hau Giang, a rural province in remote areas of Mekong Delta, 100% of communes have their primary schools with the number of 253 schools, 69,375 students and 3,664 teachers (GSO, 2016). Hau Giang province is located in the lower of Hau river and stretches in a wide area with interlaced rivers, therefore, most of the primary schools are separated in remote rural areas. According to Liem, Nhan and Trang (2018), environmental education by the method of organizing after-class activities is evaluated as one of four effective ways applied in rural areas of Hau Giang province. However, this research has not analyzed the factors that impact the effectiveness of teaching environmental education through after-class activities. Therefore, the research helps to identify the status of the current environmental education organized through after-class activities as well as collect the opinions and feedbacks by teachers of these classes. Also in the research, factors affecting the effectiveness of the model are highlighted.

2. Research method

2.1. Data collection methods

Primary data was collected from 50 environment teachers who teach integrated content on environmental protection at ten primary schools in research areas. In particular, all of the member of directorates, leaders of

organizations (school labor union, Ho Chi Minh communist youth union and heads of grade team are included). The number of teachers allocated is as follows: Phung Hiep district has four schools with 20 teachers, and Chau Thanh A district and Long My town has three schools with the sum of 15 teachers in each place.

The primary schools were selected by random sampling method based on the list that was provided by the Education and training department of Districts and Town. The teachers participating in the study were selected by non-probability sampling methods at the time of the interview.

Besides, experts' opinion method has been used in this study, which is a method of collecting scientific information, judging and evaluating a scientific product by a highly qualified educational expert groups according to Lan and Tuan (2012). In their discussion, the expert's opinions will be checked and complemented each other, after that, the majority and objective results about an educational issue will be unanimous. Following this method, the study interviewed experts on educational science, environmental education, environmental management, social sciences and humanities of Can Tho university to initially identify independent variables (the variable X) which are the input of this research.

Based on the analysis of relevant references, the following impact factors have been proposed for this study: 1. Guidelines and direction of the Education management authority; 2. Teacher attributes: age, seniority, number of teaching subjects, positions (board of directors, head of department/office...), specialized teacher skills; 3. Timing;

4. Facilities and equipment; 5. Student's age in grade 1 to 5; 6. Family's support in student's education; 7. Budget. After that, the research group discussed with experts on general and environmental education of Can Tho university to unify research factors. Firstly, removing "Timing" from the research model is done because the duration for activities has been planned based on the general arrangement of the school. Secondly, "Teacher attributes" has also been removed because the characteristics of the research model do not seem to be affected by this variable. Finally, all of the remaining variables have been used in the research model (Table 1).

In the research, variable Y is the one reflecting the effectiveness of the environmental education for primary students through after-class activities organized by community resources (binary variable with 1 = Yes and 0 = No). Y was identified based on self-appraisal by teachers participating in the research. The teachers were asked to identify and compare between targets and achievements then to evaluate if the environmental education activities meet the target. The results can also be confirmed by the school's Directorate (if possible).

The number of research samples is large enough to ensure analysis of Binary logistic regression model. According to Trong and Ngoc (2008), the Binary logistic regression model can be used with at least 30 samples. Also sample sizes are correspondent with the number of primary schools involved in the three selected Districts of Hau Giang Province and the number of participant teachers. In particular, Phung Hiep and Chau Thanh A Districts have almost the same sample sizes. The sampling method is suitable, ensuring the objectivity of research results. The study also uses descriptive statistical features and frequency of study subjects.

Information about the status of current environmental education was collected from the teachers who participated in the research. There are four levels of the status of these activities for teachers to choose from.

According to Minh (2015), in order to analyze the need of adding environmental topics in Science subjects, there are four options namely Very necessary, Necessary, Not important (this means there's no difference between with or without the activities), and Not necessary. Therefore, in the research, the authors also uses four options to analyze the importance of environmental education activities, which are 1. Completely inappropriate, 2. Relatively appropriate but needs to be more improving, 3. Needs to add new content, 4. Completely appropriate.

2.2. Data analysis method

The data was analyzed by SPSS software and Binary logistic regression model is used to determine the factors impacting the effectiveness of teaching environmental education. According to Trong and Ngoc (2008), the Binary logistic regression model uses dependent binary variables to anticipate the probability of a factor while independent variables are analyzed by continuous variables, binary variables or categorical variables. The likelihood of the model is represented by -2 log likelihood

index. The smaller this value is, the more appropriate the model is to estimate.

In the research, binary logistic regression model was used to identify factors affecting the effectiveness of environmental education through after-class activities. There are four variables including X_1 : Guidelines and direction of management authority; X_2 : Facilities and equipment; X_3 : Students' age in grade 1 to 5; X_4 : Budget; X_5 : Family's support in student's education. The model is to identify how the five mentioned above factors affect the dependent variable Y: Whether the environmental education for primary students through after-class activities organized by community resources is effective (Table 1). The equation is as follows:

$$\text{Loge } P(Y=1)/P(Y=0) = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5$$

Table 1. Description of variables used in the analysis model

Variable	Description	Expected value
X_1	Guidelines and direction of management agencies (1 = Yes, 0 = No)	+
X_2	Facilities and equipment (1 = Yes, 0 = No)	+
X_3	Students' age (1 = Yes, 0 = No)	+/-
X_4	Budget (1 = Yes, 0 = No)	+
X_5	Family's support (1 = Yes, 0 = No)	+

3. Results

3.1. Current status of environmental education in the form of organizing after-class activities

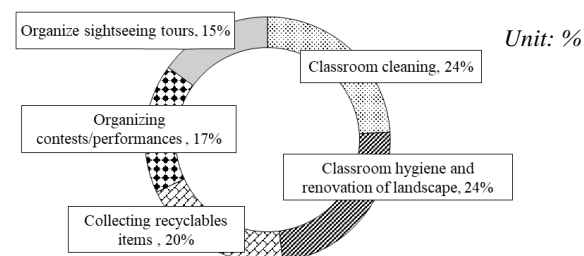


Figure 1. Environmental education through after-class activities are being applied

The results from Figure 1 show that the content and form of after-class activities are now widely applied in the researched schools. Depending on the purposes and time of the activities, the school periodically organizes different plans, including classroom hygiene, renovation of landscape in and around the campus (picking up garbage, weeding, planting flowers and greenery), collecting recyclables items (notebooks, books, old newspapers, scrap paper, plastic bottles, glass bottles), organizing contests/performances (painting, telling stories, singing, dancing, drama performance), tourism (historical - cultural, natural, marine ecosystems). Classroom hygiene activities are held regularly, environmental sanitation and renovation of landscapes are organized according to semester, especially, before the major holidays of the year, Selling recycled products from collecting recyclables is one of the most significant activities that was arranged by the Ho Chi Minh

pioneer youth union to raise funds for poor and hard-working students. Moreover, the schools also organize some tours to visit the historical - cultural sightseeing, beautiful landscapes or nature reserve to provide students with more practical knowledge related to environmental protection.

3.2. Evaluation of environmental education through after-class activities are being applied

Results in Figure 2 show that no teacher said the extracurricular educational activities are currently inappropriate. On the contrary, the percentage of teachers thinking these activities are completely appropriate is 62%. However, 34% of teachers suggested adding new content as well as updating new knowledge to put into teaching based on their own experience. Finally, a very low percentage of teachers think that it is necessary to improve existing content to increase the effectiveness of after-class activities (4%). Creating content for after-class activities is the most essential part because of participating in those extracurricular activities and outside physical activities helps students acquire and accumulate crucial life skills (An, 2015). Consequently, it is critical for updating contents and innovating new approaches which are creative in order to bring more knowledge from practical life into education to help students absorb it more effectively.

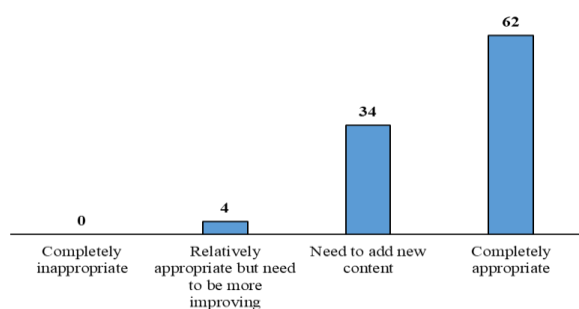


Figure 2. Evaluation of environmental education through after-class activities are being applied.

3.3. Predicting the teacher's perceived effectiveness of environmental education

Table 2. Results of Binary logistic analysis model

Factors	B index	Sig.
X ₁ : Guidelines and direction of management agencies	5.993	0.012
X ₂ : Facilities and equipment	3.037	0.045
X ₃ : Students' age	-3.893	0.027
X ₄ : Budget	5.275	0.014
X ₅ : Family's support	4.057	0.021
Constant	-8.642	

As shown in Table 2, all four variables in the model have Sig. < 0.05. This means all of these variables have impacts on Y with $\alpha < 0.05$ which can be explained as follows.

According to the analysis model, the equation is as below:

$$\text{Loge } P(Y=1)/P(Y=0) = -8.642 + 5.993X_1 + 3.037X_2 - 3.893X_3 + 5.275X_4 + 4.057X_5$$

In this research, the Binary logistic regression model show that the value of -2log likelihood index is 21.431. Cox

& Snell R Square is 0.600 while the Nagelkerde R Square reaches the value of 0.812. In other words, the result show that approximately 81.2% of the model's value has been explained by logistic regression and this is rather high. Omnibus Tests of Model Coefficients, Chi-square is 45.870 with Sig. = 0.000 ($\alpha < 0.05$). Statistical hypothesis test shows the certainty of the Logistic correlation regression model used in the analysis. The model's likelihood (Table 3) is quite high, 92%, which indicates that using Binary logistic regression in the research is suitable.

The results in Table 2 show that all variables have a significant effect on the model (Sig. < 0.05). In there, X₁: Guidelines and direction of the Education Management Authority; X₂: Facilities and equipment; X₄: Budget; X₅: Family's support in student's education have a positive sign (+). This means that these variables impact on the same side as the dependent variable Y. X₃: Student's age has the opposite influence on the outcomes of the study, presented by negative signs (-).

Table 3. Accurate qualitative results of Binary Logistic model

Observation		Effectiveness		Likelihood of the model
		Yes	No	
Effectiveness	Yes	27	3	90%
	No	1	19	95%
Binary logistic regression model's likelihood				92%

4. Discussion

4.1. Current status of environmental education

Currently, various types of environmental education have been organized including regular activities (weekly class and surrounding area cleaning-up activities, contribution of recycled products for re-use) and other non-regular activities such as competitions, events, field visits, travels... which are relevant to environmental education.

The diversity of environmental education activities is one of the factors that contribute to their achievements. This is also reflected through teachers' opinions that the current environmental education activities are suitable. However, in the long-term, more interesting content should be added in order to draw students' attention and interest in these activities. The conclusion is confirmed by the result of teacher survey in which the majority of them have chosen option 2 and 3.

4.2. Measures for improving the effectiveness of environmental education activities

It can be described that environmental education will be more effective when applied to younger students. Specifically, each impact factor is explained as follows:

Firstly, guidelines and direction of the Education management authority have a significant impact on the outcome because these affect the same direction as the dependent variable Y. In other words, when guidelines and direction of the Education management authority have positive improvement, the result (effectiveness of education) will accordingly increase. Hence, it is important to implement the school's curriculum as well as facilitate

teachers to apply the teaching content to maximize the quality of teaching. Likewise, consensus and creating mechanisms to implement environmental education activities in schools is necessary, especially activities that need to be socialized, such as sightseeing, outdoor activities or renovating the green landscape.

Secondly, in case of fixed other independent variables, educational effectiveness will increase if more facilities and equipment are provided. Teaching facilities are material objects that support teachers and students to effectively organize the teaching process in order to achieve the teaching objectives. Using these material objects, teachers can conduct and control the teaching process to help students organize their own awareness activities effectively (Ho, 2002). The main means used in after-class activities for environmental education include cleaning tools, soil digging tools, plants/flowers, projectors and sound systems, Loud speaker, stage, transportation vehicle. Most of the teachers who participated in the study have said that the equipment and facilities of their schools are not appropriate.

Thirdly, in case other variables do not change, environmental education activities will achieve higher results when applied to lower grade students. Khoa *et al.* (2009) claimed that environmental education is suitable for all levels of education in the national education system, however, the study was conducted on the primary schools in a traditional agricultural province - Hau Giang province that set a target to exploit the details of this relevance. Research results have shown that in small classes, teachers will focus on forming and developing five core skill groups for students such as self-awareness skills, communication and behavior skills, decision-making and problem-solving skills, cooperation and sharing skills, self-service and time management skill. So, in the teaching process of forming those skills for students, it is essential to integrate with educational activities the formation of initial awareness about the surrounding environment, environmental hygiene, planting and protecting trees, loving and preserving wildlife.

The research's outcome has also asserted that if the school invests more money in environmental education through after-class activities, teaching will get higher efficiency. In small group discussion with the primary teachers, this teaching method required to be fully equipped with facilities and playgrounds to organize a successful operation. Therefore, the investment is both an immediate and long-term measure to improve teaching effectiveness. However, this is the difficulty for primary schools in rural areas because most households there are poor or near-poor, and families are in difficult circumstances.

Moreover, currently, lessons for environmental

education through after-class activities are usually designed to help students explore and improve their creativity. In this aspect, family's support is necessary for students to apply their knowledge into their daily activities both at home and during other social activities. Teachers participating in the study have agreed that if parents encourage students to participate in activities organized by the school such as making recyclable products from plastic bottles, planting trees around the house, participating in competitions, game shows, visits to beautiful landscapes etc. will help the teaching process achieve the expectation that can help students improve their life skills.

5. Conclusion

Environmental education through after-class activities is an important task to raise awareness and actions to protect the environment. The content of those activities reported here is very diverse. This includes class cleaning, landscape improvement, organizing competitions or performances, and travelling to places of valuable ecosystem which have important significance in the area. The effectiveness of these programs may be improved by focusing on the following recommendations: intensifying the interest and direction of Education management authority, providing more resources to better equip facilities for teaching, younger students in lower grade should be targeted, and financial investment should be increased.

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