Can Tho University Journal of Science
website: sj.ctu.edu.vn

DOI: 10.22144/ctu.jen.2018.039

Research on environmental education through extra-curricular activities organized by community resources for primary students in rural areas of Hau Giang province

Le Tran Thanh Liem

College of Rural Development, Can Tho University, Vietnam

Correspondence: Le Tran Thanh Liem (email: lttliem@ctu.edu.vn)

Article info.

Received 16 Jan 2018
Revised 05 Mar 2018
Accepted 30 Nov 2018

Keywords

Community resources, environmental education, extra-curricular education, Hau Giang province, rural area

ABSTRACT

The research carried out from May 2016 to June 2017 is to indentify factors affecting the results of environmental education through extra-curricular activities organized by community resources. The participants were 50 teachers and 30 parents of students from 10 primary schools in Hau Giang province's rural areas. Sociological survey method was used in the research. Primary data were used in the binary logistic regression model, in which dependent variable Y indicated the impacts of environmental education through extra-curricular activities organized by community resources. Independent variables of X include: X_1: Equipment; X_2: Documents; X_3: Students' age; X_4: Budget. The equation of this model is: $Log_e\ P(Y=1)/P(Y=0) = -5.933 + 2.840X_1 + 3.319X_2 + 2.729X_3 + 3.582X_4$. Besides, a summary of options (%) and a band score (scale from 0 to 10) were used to evaluate the impacts of factors that affect the results of these environmental education activities. Results of analyzing important factors are as following: support from primary schools and student's parents to extra curricular activities for environmental education; requirements of teaching environmental education contents; suitable time for educational activities and solutions to draw attention from parents to the environment education activities.

Cited as: Liem, L.T.T., 2018. Research on environmental education through extra-curricular activities organized by community resources for primary students in rural areas of Hau Giang province. Can Tho University Journal of Science. 54(8): 63-69.

1 INTRODUCTION

Together with other important issues, environment has become one of the top concerns globally including Vietnam as it affects every aspect of people's life. Nowadays, in humans' development process, their activities have negative impacts on the environment, which often known as unsustainable development. Education aimed at raising awareness on environment protection for the whole society in general and the young generation in particular, especially primary students is considered an effective way to help protect the environment and build up a stable living environment.

Hau Giang is a province in the Mekong Delta. All communes (100%) of Hau Giang Province have their own primary schools (Central Steering Committee of general statistics of rural, agriculture and fisheries, 2016). However, as Hau Giang is located at the lower of Hau River, stretches in a wide area with interlaced rivers, most of the primary schools are separated in remote rural areas. This has both advantages and disadvantages for education and training in general and environmental education in particular.

According to Le Tran Thanh Liem *et al.* (2017), currently in the rural areas, two of the most popular

environmental education activities are adding in environmental topics to subjects and organizing extra-curricular activities. However, in order to teach these extra subjects effectively, teachers have to spend much time reading documents for reference, preparing lecturers and organizing classes. Therefore, in most of the case teachers do not have enough time to spend on these education activities. As the result, the quality of these education training activities does not meet expectation.

For the above reasons, research on environmental education through extra-curricular activities organized by community resources (EEtE-CAObCR) for primary students was conducted to improve the efficiency of this education.

2 RESEARCH METHOD

2.1 Approach method

The research was conducted from May 2016 to June 2017. The definition of "community resources" was thoroughly explained to teachers, in which community resources here mean groups of students from universities and colleges from and outside the Mekong Delta to support the locals in organizing environmental education activities. Regarding format, this method is relatively similar to the method of organizing extra-curricular activities for environmental education. However, the two methods are different in time, duration and organizers of these activities. For the method of organizing extra-curricular activities for environmental education, these activities are often organized right after class-hour or break time between classes. These activities include competitions, observation and field trips. For the method studied in the research, these environment education activities are organized separately when students do not have classes and often last about 120 to 180 minutes. Also, the contents of the training must be approved by School's Directorate, teachers will only support or help supervise the class when it is necessary. Therefore, the research studied factors affecting the outcomes of the model then proposed solutions to help enhance the quality of these activities.

2.2 Data collection method

The questionnaires were delivered to 50 environment teachers and the directorates (participants) of 10 primary schools chosen from Phung Hiep district (20 participants and 4 schools), Chau Thanh A district (15 participants and 3 schools) and Long My town (15 participants and 3 schools).

Besides, 30 parents were interviewed on these environmental training activities in primary schools.

Primary data were collected by non-probability sampling method. Sample sizes (50 of primary teachers and 30 of primary student parents) are big enough for the binary logistic regression. According to Hoang Trong and Chu Nguyen Mong Ngoc (2008), the binary logistic regression model can be used with at least 30 samples. Also sample sizes are corespondent with the number of primary schools involved of the three selected Districts of Hau Giang Province and the number of teachers participated. In which, Phung Hiep and Chau Thanh A Districts have almost the same sample sizes.

A band score (from 0 to 10) was used to identify the importance of factors in each aspect.

2.3 Data analysis method

In the research, binary logistic regression model was used to identify factors affecting the outcomes of EEtE-CAObCR. There are four variables including X_1: Equipment; X_2: Documents; X_3: Students' age; X_4: Budget. The model is to identify how the four mentioned above factors affect the dependent variable Y: Whether the environmental education for primary students through extra-curricular activities organized by community resources is effective (Table 1). This is one of the new points of the research. According to Hoang Trong and Chu Nguyen Mong 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 -2loglikelihood index. The smaller the index is, the more likelihood the model is. The equation is as follows:

$$\log_e P(Y=1)/P(Y=0) = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4$$

Table 1: Variable description in binary logistic regression model of the EEtE-CAObCR

No.	Variable	Meaning/Value	Expected value +/-
1	X_1	Equipment (1 = Yes, 0 = No)	+
2	X_2	Documents (1 = Yes, 0 = No)	+
3	X_3	Students' age (1 = Yes, 0 = No)	+/-
4	X_4	Budget (1 = Yes, 0 = No)	+

Also, descriptive statistics was used to have an overview about the situation of the contents, opinions from teachers, schools' Directorates, parents of the environmental training activities.

3 RESULTS AND DISCUSSIONS

3.1 Identifying factors affecting the outcomes of the EEtE-CAObCR by binary logistic regression model

Results of binary logistic regression model of the EEtE-CAObCR are shown in Table 2.

Variable X_1: Equipment has B = 2.840 and Sig. = 0.029 < 0.05; therefore, X_1 has statistical impact on the outcome of the environmental education activities for primary students. Equipment is one of the factors help improve the outcomes of education, especially for these environmental education activities which are often organized in different forms (lecture, game, contest) and locations (classroom, conference room, school yard, site). According to binary logistic model results, variable X_1 has (+) value which means that in the event of more equipment used in these education activities while other factors remain unchanged, the outcomes of the EEtE-CAObCR will be improved.

Table 2: Results of binary logistic regression model for the EEtE-CAObCR

Variable	B Index	S.E.	Wald	Sig.	e^{β}
X_1: Equipment	2.840	1.298	4.785	0.029	17.111
X_2: Documents	3.319	1.460	5.168	0.023	27.646
X_3: Students' age	2.729	1.302	4.390	0.036	15.310
X_4: Budget	3.582	1.512	5.615	0.018	35.955
Constant	-5.933	2.135	7.725	0.005	0.003

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 α < 0.05 which can be explained as follows.

Variable X_2: Documents has B = 3.319 and Sig. = 0.023 < 0.05; therefore, X_2 has statistical impact on the outcome of the environmental education activities for primary students. Documents are one of the factors that contribute to the outcome of the training activities as these activities also include observation and field trips with customized contents to be suitable with students in different ages. According to binary logistic model results, variable X_2 has (+) value when there are more documents, such as relevant research, used in teaching and for reference while other factors remain unchanged, the outcome of the EEtE-CAObCR will be improved. In fact, most of teachers suggest that there should be more investments in teaching equipment and facilities. Currently, there are no or only few books on environment education at school libraries. As the results, teachers have to look for the information on the internet. Computers are not equipped enough for all teachers to use while teachers do not have personal laptops. Besides, lack of information technology skills of teachers is also another drawback.

Variable X_3: Students' age has B = 2.729 and Sig. = 0.036. X_3 also has (+) value and is directly proportional to variable Y. This means that environmental education activities will be more suitable with higher-grade students. The majority of students of Grade 3 to Grade 5 have to go to school by bicycle or on foot themselves. Besides, older students are less shy and can be more active during classes. Also, games of these activities are often physical-oriented ones so they are more suitable with older students as compared to Grade 1 or 2 students.

Variable X_4: budget has B = 3.582 and Sig. = 0.018 < 0.05. It shows that if more budget is invested in EEtE-CAObCR, outcomes of the education will be improved. One of the advantages of the method is that it requires fewer budgets as compared to activites organized by the schools. Instead, equipment can be borrowed from schools while teachers only have supporting role in activities or can support in informing parents or in contributing to the contents of these activities. Budget for organizing these activities are mostly by from universities or colleges. The budget can be raised by university's clubs, groups for social benefits or through social activities organized by Students' Associations, Ho Chi Minh Communist Youth Unions.

By binary logistic regression model, the equation is as follows

$$\text{Log}_e\ P(Y=1)/P(Y=0) = -5.933 + 2.840X_1 + 3.319X_2 + 2.729X_3 + 3.582X_4$$

By binary logistic regression model, 2-log likelihood is 21.122 and it indicates that these 4 factors do have impacts on the outcomes of the method. Cox & Snell R Square is 0.603 while Nagelkerke R Square reaches 0.815. It means that about 81.5% factors of the model can be explained by the model and this is rather high value. Via Omnibus Tests of

Model Coefficients, Chi-square is 19.245 with Sig. = 0.014 ($\alpha<0.05$). Statistical hypothesis test shows that the model has high likelihood. The model's likelihood is high 90% which indicates that using Binary Logistic Regression in the research is suitable (Table 3).

Table 3: The likelihood of the model of EEtE-CAObCR by using binary logistic regression

Observation		Effectiveness		Likelihood of the model
		Yes	No	
Effectiveness	Yes	16	4	80.0%
	No	1	29	96.7%
Binary Logistic Regression model's likelihood				**90.0%**

3.2 Other factors affecting the EEtE-CAObCR

3.2.1 Supports from primary schools to extra curricular activities for environmental education

Results in Table 4 show that the activities will receive support and direction from schools' Directorate and teachers. Fifty-one percent of teachers agree that directions from school Directorate and support from other colleagues are important factors contributing to the success of environmental education activities in their school. Among 50 surveyed people, 29% think that schools will allow using their equipment and tools in these environmental education activities. Another support from schools is that the school will provide partly financial support to organize these education activities and the budgets come from their budget contributed from the society, accounted for 13%. However, among suggested options, only 7% of surveyed people think that teachers and students who join the environmental education activities should be honored and prized for their notable achievements.

Table 4: Supports from primary schools to extra curricular activities for environmental education

No.	Supports from schools	%
1	Directions from Directorate and support from other teachers	51
2	Allowing using school's equipment and tools	29
3	Financial support (partly)	13
4	Compliments to teachers and students who join the training	7

One of the most important factors that should be considered is support from schools by allowing using of teaching equipment and tools. To rate the probability of using these equipment and tools, score method was used. Higher probability of using has higher score and vice versa. Score of each equipment/ tool in Fig. 1 is the average score by teachers.

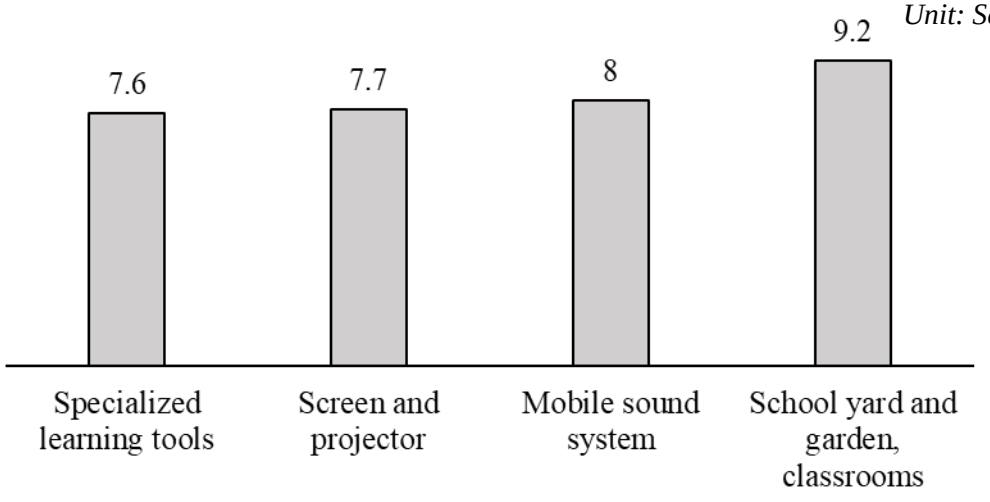

Fig. 1: Schools' equipment to be used for the EEtE-CAObCR when necessary

According to Fig. 1, schools are most willing to allow using of school yards, playgrounds and classrooms, scored 9.2, followed by mobile sound system with 8 points, screen and projector (7.7) and specialized learning tools (7.6).

3.2.2 Supports from parents

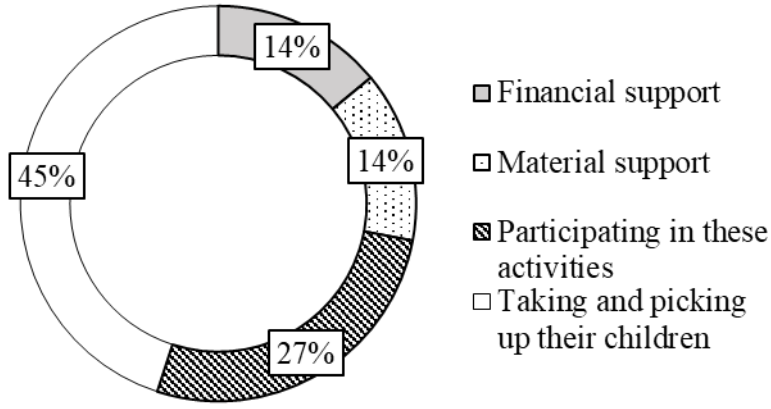

Fig. 2: Ways of support from parents to environmental education through extra curricular activities organized by community resources

Another important factor that helps improve the outcomes of the environmental education is support from parents. According to Fig. 2, when these activities organized at their children's school, parents are willing to take them to the activities as well as pick them up, accounted for 45% as the highest ratio. Besides, 27% of surveyed parents said they would join these activities alongside their children while 14% would have financial support and 14% among them would sponsor materials such as gifts.

3.2.3 Requirements of teaching contents

Environmental education activities were defined by laws such as Environment Protection Law dated on August 4, 2017, Environment protection Law dated on November 29, 2005, Environment protection Law dated on June 23, 2014, Decision No. 1363/QĐ-TTg signed by Prime Minister of the Socialist Republic of Vietnam on October 17, 2001 to approve the project *"Adding environmental topics into the national education system"*. In compliance with the direction from the Communist Party of Vietnam and Government, on January 31, 2005, the Vietnamese Ministry of Education and Training issued Directive No. 02/2005/CT-BGD&ĐT *"Enhancing environmental education activities"*. According to the Directive, the main focus of primary and secondary education is to equip students with adequate knowledge and skills about environment and environmental protection through subjects and curricular-extra activities. In environmental education through extra curricular activities organized by community resources, based on requirements of teaching materials of the method, research studied the importance of each kind of contents that are suitable with the researched areas then to propose solutions to improve the outcomes of the environmental education through extra curricular activities organized by community resources in reality. Results are shown in Table 5.

Table 5: Important teaching contents of environmental education through extra curricular activities organized by community resources

No.	Group of contents	Average
1	Clean-up the surrounding environment	9
2	Roles of environment components (soil, water and air) – Ways to protect the environment and prevent environment pollution	8.8
3	Role of trees and forest eco-system – the importance of trees and forest protection	8.5
4	Waste recycle – and waste management after recycling	8.2
5	Energy and Energy saving	7.8

The research mentioned 5 kinds of contents for environmental education through extra activities. In which, 9 points were given to the content of clean up the surrounding environment, then the content of roles of environment components (soil, water and air) – Ways to protect the environment and prevent environment pollution scored 8.8 points. Another important topic suggested by teachers is "Role of trees and forest eco-system – the importance of trees and forest protection" (8.5 points), "Waste recycle and waste management after recycling" (8.2 points). The topic of "Energy and Energy saving" was least important according to teachers with 7.8 points.

3.2.4 Suitable time

According to Fig. 3, 46% of teachers think that suitable time to organize these environmental education activities is in academic semesters as well as in summer break, in summer break only is chosen by 36% of teachers while only 18% of them choose to organize the activities during academic semesters.

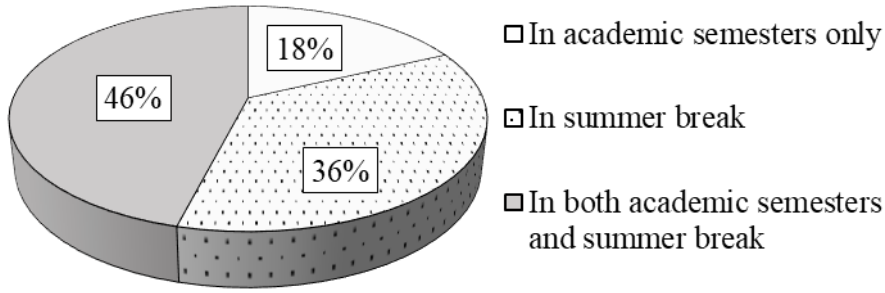

Fig. 3: Suitable time for environmental education through extra curricular activities organized by community resources

3.2.5 Solutions to draw attention from parents to the environment education activities

Fig. 4 indicicates some solutions to draw attention from parents to the environment education through extra curricular activities organized by community resources.

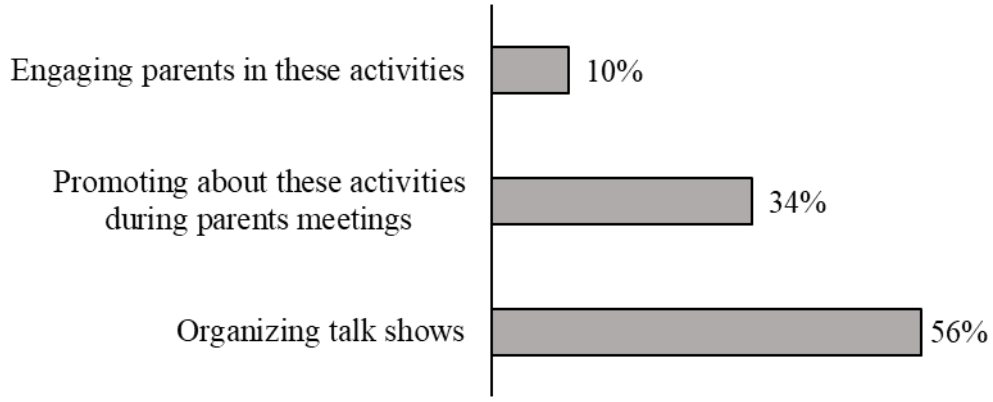

Fig. 4: Proposed solutions to draw attention from parents to the EEtE-CAObCR

Results show that organizing talk shows on environmental education, especially about the method of organizing extra-curricular activities is one of the solutions to raise parents' awareness and to engage them more to the activities, accounted for 56%.

During these talk shows, participants who are members of Schools' Directorates, parents, lecturers and students from universities and colleges can have open dialogues to exchange ideas then solutions to improve the outcomes of environmental education through extra-curricular activities. Besides, promoting the activities during parent meeting is one of the ways to draw more attention from parents to these environmental education activities, accounted for 34%. Meanwhile, only 10% of teachers think that parents should also join the training alongside their children. Family plays an important role in the growth and development of a child. Education can't be successful without support from family; therefore, engaging parents to join these activities together with their children should be a must. This is also an important solution to enhance the quality of education in general. However, the majority of parents are busy with work to earn for living. As the results, only one tenth of asked teachers support this solution.

4 CONCLUSION AND PROPOSED SOLUTIONS

The method of EEtE-CAObCR is quite suitable to be carried out in rural areas of Hau Giang as well

as other areas which have similar conditions in the Mekong Delta. When organizing these kinds of activities, there are 4 factors that should be taken into consideration, including: equipment, documents for teaching, age of students and budget to spend on the education.

Besides, the model may receive supports from: (1) primary schools: the school's Directorate to assign teachers to support the training, to allow using the school's equipment; (2) student's family: parents can help take their children to the training classes as well as pick them up, they also can join the activities with their children or financially supports to the training.

Also, it's a need to raise awareness of parents on EEtE-CAObCR. Awaress raising activities may include organizing talk shows, mentioning about the environmental education to parents after parents' meeting each semester, engaging parents to join the training together with their children.

REFERENCES

Central Steering Committee of general statistics for rural, agriculture and fisheries, 2016. Report on general statistics of rural areas, agriculture and aquarium 2016. Statistics Publishing House, Hanoi. 139 pages (in Vietnamese).

Hoang Trong and Chu Nguyen Mong Ngoc, 2008. Data analysis with SPSS part 1. Hong Duc publishing house. Ho Chi Minh City. 295 pages (in Vietnamese).

Le Van Khoa, Phan Van Kha, Phan Thi Lac and Nguyen Thi Minh Phuong, 2009. Environment and environment protection education. Education publishing house. Ha Noi. 271 pages (in Vietnamese).

Le Tran Thanh Liem, Pham Ngoc Nhan, Do Ngoc Diem Phuong, *et al*., 2017. Report of "Research on situation of environmental education for primary students in rural areas of Hau Giang province". Can Tho university level research. Can Tho University. 90 pages (in Vietnamese).

MOET, Ministry of Education and Training, 2005. Directive enhancing environment education activities ditective (Directive No. 02/2005/CT-BGD&ĐT dated January 31, 2005). Accessed on August 4, 2017 at https://thuvienphapluat.vn/van-ban/Giao-duc/Chi-thi-02-2005-CT-BGDDT-tang-cuong-cong-tac-giao-duc-bao-ve-moi-truong-4819.aspx (in Vietnamese).

National Assembly, 1993. Environment Protection Law (Law No. 29-L/CTN dated December 27, 1993). Accessed on August 4, 2017 at http://www.moj.gov.vn/vbpq/lists/vn%20bn%20php%20lut/view_detail.aspx?itemid=10443 (in Vietnamese).

National Assembly, 2005. Environment protection law (Law No. 52/2005/QH11 dated November 29, 2005). Accessed on August 4, 2017 at http://www.moj.gov.vn/vbpq/lists/vn%20bn%20php%20lut/view_detail.aspx?itemid=16747 (in Vietnamese).

National Assembly, 2014. Environment protection law (Law No. 55/2014/QH13 dated June 23, 2014). Accessed on August 4, 2017 at http://moj.gov.vn/vbpq/lists/vn%20bn%20php%20lut/view_detail.aspx?itemid=29068 (in Vietnamese).

Prime Minister of the Socialist Republic of Vietnam, 2001. Decision adding environment education subject into the national education system decision (Decision No. 1363/QĐ-TTg dated October 17, 2001). Accessed on August 4, 2017 at http://chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&_page=414&mode=detail&document_id=9868 (in Vietnamese).