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## Extracurricular Environmental Activities in Moroccan Middle Schools: Opportunities and Challenges to Promoting Effective Environmental Education

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**Abstract:** The study aims to promote relevant and effective environmental education (EE) through extracurricular clubs. For this, we studied the state of play of environmental activities (EA) carried out by 48 environmental clubs belonging to urban and rural areas of the Regional Academy of Education Fez-Meknes, Morocco. These extracurricular environmental clubs remain so far without formal environmental education programs. In this study, we identified the bulk of programs offered by extracurricular environment clubs, including types of scheduled activities and percentages of achievement and student beneficiaries in urban and rural settings. In addition, we have identified the main barriers to achieving certain environmental activities. The significant correlations detected between some of the variables studied allowed us to better explain the achievements and the weaknesses of these clubs. Finally, we have made recommendations to promote relevant and effective extracurricular environmental education.

**Keywords:** *Environmental education (EE), environmental activities (EA), environmental clubs, effective Program, student.*

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### Introduction

In Morocco, as in many other countries, man's behavior towards the environment has been awfully flawed (Asslouj, Kholtei, Amrani-Paaza, & Hilali, 2007; Boukhoubza et al., 2008). The Higher Council for Education, Training and Scientific Research (CSEFRS, 2015) in its strategic vision of the reform 2015-2030 (p.68) also focused on persistence of "incivility behaviors at school level and their environment such as non-respect of the environment and the public good". However, a lot of research has examined the variables influencing responsible environmental behavior (Chawla & Cushing, 2007; Cialdini, Reno & Kallgren, 1990; Corraliza & Berenguer, 2000; Hines, Hungerford & Tomera, 1987; Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002; Malandrakis, Boyes & Stanisstreet, 2011; Pruneau et al., 2006; Skamp, Boyes & Stannistreet, 2009).

The current research has agreed that pro-environmental behavior is so complex that we cannot summarize it in a single explanatory model, even though some researchers have tried to draw a predictor model of environmental behavior (Hines et al., 1987; Corraliza & Berenguer, 2000). However, studies that have evoked environmental behavior are generally of two types: the first tried to make more or less exhaustive studies on all the factors or variables that were found to have an influence on the environmental behavior. This is done through meta-analysis that takes advantage of the results of previous studies regardless of the context of each study. Thus, this aims to reach generalizations and predictions about environmental behavior (Hines, et al., 1987; Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002).

In this first type of research, they generally found two broad categories of factors: internal factors such as knowledge, awareness, motivation, values, attitudes, priorities etc.; and external factors such as institutional, economic, social, and cultural factors. The second type of research, represented by numerous works, tested the impact of one or more specific variables on a well-defined pro-environmental behavior and in a particular context, using qualitative and quasi-experimental methods (Bonaiuto, Carrus, Martorella & Bonnes, 2002; Chhokar, Dua, Taylor, Boyes & Stanisstreet, 2011; Cialdini, Reno & Kallgren, 1990; Corraliza & Berenguer, 2000; Hadjichambis, Paraskeva-Hadjichambi, Ioannou,

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Georgiou & Manoli, 2015; Heimlich & Ardoin, 2008; Humphreys & Blenkinsop, 2018; Kerry et al., 2013; Skamp et al., 2009 and others).

By analyzing the different variables influencing the environmental behavior mentioned in the studies already cited, we found the use of several terms that express these variables. However, such assorted usage does not reflect a diversity of variables involved. Admittedly, we have identified the use of different terms (by different researchers) but with very close connotations, and sometimes, with an inclusive meaning; or even the use of different terms to express the same variable with the same import. In this sense, there are several examples of studies that have dealt with variables influencing pro-environmental behavior.

Kollmuss and Agyeman (2002), in their model of pro-environmental behavior (p.257), specified external factors and internal factors in complex interactions. Whereas Corraliza and Berenguer (2000) spoke on the interaction between personal and situational variables, they are about the same thing. Also, Hines et al. (1987), in personality factors, specified "motivation and desire for action" as a precursor to pro-environmental action. On the other hand, Chawla and Cushing (2007) evoked a very close term "ownership of environmental issues", which means that the presence of personal significance on environmental issues is a condition that is responsible for environmental behavior. Skamp et al. (2009) spoke in turn of "the willingness to act". Malandrakis et al. (2011) have further refined this willingness to act, in their own words, "belief in the usefulness of pro-environmental actions", as a variable associated with students' willingness to undertake pro-environmental actions. Some authors have expressed some variables by general terms with significant contrasts and whose meaning varies from one society to another. Examples include the variable "norm" (Cialdini, Reno & Kallgren, 1990) and the variable "values" (Kollmuss & Agyeman, 2002; Pruneau et al., 2006; Schultz & Zelezny, 1999).

In general, we can say that the variables influencing the pro-environmental behavior, stated by all the researchers above, can be classified according to their degree of influence, direct or indirect, in two main categories, some of which lead to the others. That is, some variables are less correlated with behaviors and enter into the training or education phase.

This first type can be called the "causes" variables. In this first category, we can include the following variables: environmental knowledge, awareness, development of individual and collective action skills, development of cooperation values, etc. The second type of variable, having direct significant correlation with pro-environmental behaviors, can be qualified as variables "consequence" or "empowerment variables". This second type of variable is the result of a long process of training and environmental education (EE). It contains variables such as ownership of environmental issues, motivation and desire for action for the environment, self-confidence, and belief in the utility of pro-environmental action. Also, having a significant previous experience in EE (Chawla & Cushing, 2007; Humphreys & Blenkinsop, 2018; Hungerford & Volk, 1990) combined with the presence of infrastructure and organizations adequate for environmental actions all constitute a favorable ambient climate that facilitates the development of pro-environmental behavior. Some authors (Chawla & Cushing, 2007; Kapyła & Wahlstrom, 2000; Rickinson, 2001; Rickinson et al., 2004; Zelezny, 1999) have established a direct link between environmental behavior and the student's integration into an effective educational program related to the environment. Such a program maximizes opportunities for improving the environmental behavior of learners. Among the characteristics of an effective EE program, we can mention:

- Work for environmental problems that are significant to the environment (Hungerford & Volk, 1990, p. 14) and meaningful to the learner (Chanse et al., 2017; Luke, 2001; Russell & Bell, 1996). This is achieved by involving the student through the various phases of the realization of the environmental project of their school since the conceptualization and the programming until the implementation of the project. In this way, the student takes ownership of the project and, seeing some of their own goals being realized, they will have more self-confidence with a strong sense of self-efficacy (Chawla & Cushing, 2007, p. 6-7; Malandrakis et al., 2011; Stern, 2000). Also, the adoption of eco-responsible behavior requires strategies to reinforce responsible actions (Hungerford & Volk, 1990) and project leaders. This turns the environmental project from an issue of administration or teachers into a student issue. This is very vital and feeds the active involvement of students.

- EE programs must be spread over time (Chawla & Cushing, 2007, p. 4; Hungerford & Volk, 1990, p. 14; Rauch, 2000; Rickinson, 2001, p. 270-271; Rickinson et al., 2004; Stern, Powell & Ardoin, 2008; Thomson, Hoffman & Staniforth, 2003; Zelezny, 1999) because sustainable change in environmental behavior does not happen overnight. Certainly, this requires corresponding programs covering the whole of the learner's school life with phases of action targeted at solving certain local environmental problems.

- EE programs must contain specific action component for the environment. Certainly, in addition to environmental knowledge, these programs must develop action and intervention skills to solve certain environmental problems (Ballantyne, Fien & Packer, 2001; Breiting & Mogensen, 1999; Kapyła & Wahlstrom, 2000; Jensen & Schnack, 1997; Sauve, 1997).

- The presence of the formative evaluation is considered among the criteria of the effectiveness of an EE program (Carleton-Hug & Hug, 2010; Fien, Scott & Tilbury, 2001; Kapyla & Wahlstrom, 2000; Morris, Jacobson & Flamm, 2007; Thomson et al., 2003; Zint, Kraemer, Northway & Lim, 2002). Carleton-Hug and Hug (2010), examining 37 EE projects, found the scarcity of assessment in EE programs, especially the assessment of effectiveness and impact. As observed, many EE programs based on participant volunteerism neglect any evaluation of the program, and if it exists, it is usually done at the end of program delivery. However, formative evaluation ought to be carried out as the program is being implemented. This approach makes it possible for readjustments to be effected appropriately and to resolve the malfunctions and failures that appear during the execution of the program. As such, the presence of this type of assessment improves the effectiveness of the EE program.

This research work deals with EE in the extracurricular setting which is the enabling environment for some EE activities. Environmental clubs established within schools can operate beyond the constraints of official programs and the lack of time in the classroom to carry out their own EE program. This can be achieved by taking advantage of the prospect to integrate a larger number of students into their activities. Although some authors have questioned the impact of extracurricular activities on student performance (Hunt, 2005), many other studies have confirmed the extremely positive impact of participation in extracurricular activities at several personal, social, and intellectual levels (Boatwright, 2009; Busseri & Rose-Krasnor, 2009; Feldman & Matjasko, 2007; Fujita, 2006; Howard & Ziomek-Daigle, 2009; Lawhorn, 2008; Lipscomb, 2007; Lousley, 1999; Mason, Schmidt, Abraham, Walker & Tercyak, 2009; Shulruf, Tumen & Tolley, 2008; Wilson, 2009). Therefore, most of these studies have highlighted the positive effect of this type of activity on students' academic performance (Boatwright, 2009; Feldman & Matjasko, 2007; Fujita, 2006; Gerber, 1996; Howard & Ziomek-Daigle, 2009; Lawhorn, 2008; Wilson, 2009). Yet, other studies have addressed more beneficial dimensions of extracurricular activities such as improved educational attainment and literacy outcomes (Shulruf et al., 2008; Wilson, 2009), development of self-confidence (Mahoney, Harris & Eccles, 2006; Kort-Butler, 2012), and developing teamwork and leadership skills (Lawhorn, 2008; Wilson, 2009). This was performed without neglecting how students appreciate extracurricular activities (Lawhorn, 2008).

Extracurricular activities for international students are extremely important and constitute the right means for their integration. In fact, studies have shown that international students who were more engaged in extracurricular activities scored higher satisfaction scores for life in general in the host country than those who were less engaged (Toyokawa, T and Toyokawa, N., 2002). Certainly, this type of activity allows them cultural integration and a better understanding of the culture of the new country in a way that is better than the environment of the classroom. In addition, these activities create cooperative and fruitful relationships with people who share the same concerns (the environment). This significantly reduces interracial conflict (Goldsmith, 2004). Also, the significant presence of extracurricular activities can be an indicator of a dynamic school, open to its environment and able to reduce the gap of social inequality (Marsh and Kleitman, 2002).

### *Research Questions*

1. What is the state of play of the environmental activities (EA) actually carried out by environmental clubs established within middle schools?
2. What are the main obstacles to the implementation of environmental education programs offered by environmental clubs?
3. How can the challenges be overcome and what recommendations can be put forward to promote relevant and effective environmental education?

## **Methodology**

### *Research Design*

In this study, we described the state of play of EA carried out by extracurricular environment clubs belonging to the Fez-Meknes Regional Academy. In particular the programs drawn up, the actual activities carried out, the percentages of beneficiary pupils, the obstacles listed in the urban and rural areas, etc. So, this is a descriptive study. However, we have extracted from this study the real issues and barriers that impede the delivery of environmental programs and activities. This lets us talk about a diagnostic descriptive study. In addition, the significant correlations detected between the variables studied allowed us to better explain the achievements and the weaknesses in order finally to propose an action program for these clubs. Consequently, we can talk about a correlational diagnostic descriptive design.

### *Sample*

This study concerns 48 middle schools belonging to the Regional Academy of Education and Training of Fez-Meknes, Morocco. Knowing that recent very recent studies carried out in the same region (Fez-Meknes Academy) (El Batri et al., 2019) revealed significant educational differences between students depending on the socio-environmental context of the institution (urban /rural). Thus, the sample studied was chosen randomly to be representative of both the urban

environment (Directorate of Fez) and rural areas (Directorate of Moulay Yaakoub). That is, we used stratified sampling. This represents a percentage of 63.15% of all existing middle schools at both directorates. Precisely 39 329 students continue their studies at the level of the schools studied (Table 1).

Table 1. Numerical details of the samples studied

	Total number of schools	schools studied		Number of boys		Number of girls		Total
		N	%	N	%	N	%	
Directorate of Fes (Urban)	62	39	62.9	17 367	50.81	16 813	49.18	34 180
Directorate of Moulay Yaakoub (Rural)	14	9	64.2	3 168	61.52	1 981	38.47	5 149
Total	76	48	63.15	20 535	52.21	18 794	47.78	39 329

From the outset and before any analysis, obviously, the first observation from Table 1 is the significant decrease in the percentage of schooling of girls in rural areas (38.47%), while that of boys represent 61.52%. Whereas at the urban level, these percentages are almost equal (50.81% of boys and 49.18% of girls).

#### Data Collection Tool

The data collection tool is a five-component questionnaire (26 items). The first section contains general information about the presence of the environment club and the annual EE program (2 items). The second section reveals the EA programmed during two school years (2016-2017 and 2017-2018, 5 items). The third component of the questionnaire concerns the approximate percentage of achievement of the environmental program and the percentage of students benefiting from the activities carried out (3 items). The fourth component of the questionnaire deals with the EA actually carried out in two school years and their proportions (9 items). Finally, the last component (7 items) deals with the various obstacles that hinder the realization of the EA indicated in the fourth component.

The scope of the questionnaire was determined based on the objectives of the study. Indeed, to know exactly the state of play of EA carried out by environmental clubs (first objective), we started the questionnaire with general information about the existence or not of an environmental club and a written annual programme on environmental education. This through two closed questions. Responses were provided by checking the appropriate box (yes or no). Then we went on to identify the main features of these programs. This is by revealing the EA listed in these programs (see Figure 1). Admittedly, the presence of an environmental education program does not imply its complete realization (100%) and gives no idea about the percentage of students involved in this program. For this reason, we have included questions about the approximate percentages of program delivery and the students who benefited from these programs (see Figure 1). This, in addition to details on the types of EA and their frequencies (once, twice and several times in a period of two school years).

In some institutions, environmental action is seasonal and is limited to organizing certain activities during national or international occasions (World Environment Day, Water Tree Day, etc.), given that the administration insists on this type of activity (through circulars). As a result, we have added a question about this (Likert scale, see Figure 1). To determine the different EA likely to be implemented within the framework of these clubs, we benefited from our experience in these clubs in addition to the reviews of the literature. Among the objectives of the study is to reveal the real problems as well as the main obstacles that impede the execution of the programs proposed by the environmental clubs. And in particular, the absence of certain important types of EA. To do this, we explored the various problems and obstacles that could hinder the action of these clubs (material, administrative, security, etc. see table 10).

The questionnaire has undergone several revisions in collaboration with the research committee to ensure its reliability, clarity, and accuracy. After then, it was administered face-to-face to the leaders of the environmental clubs of the schools concerned. This step revealed that there are no problems with the understanding of the items in the questionnaire. Cronbach's Alpha internal consistency is distributed over the components of the questionnaire as follows: 0.523 for programmed EA; 0.863 for percentage of program achievement and percentage of student beneficiaries; 0.800 for actual activities in two school years, and 0.577 for obstacles to implementation of EA. This indicates that the internal consistency of the questionnaire is satisfactory. Regarding the validity of the questionnaire content, the questions are precise and representative of all the EA likely to be carried out within the framework of extracurricular clubs. Indeed, in addition to our experience as a coordinator of an environment club, we have carefully explored the literature to identify the different activities that can be carried out within the framework of these clubs. The answers collected giving a very low proportion to "Other activities" show that the main EA are indeed the ones we have mentioned. What constitutes an element of validity of the contents of the questionnaire. In addition, the questionnaire interviewed teachers in charge of environmental clubs. That is, an elite of people who are aware and active in environmental education. This enhances the value of the answers and gives added value to the results. This

seemed clearly at the level of the discriminative power of the instrument. In fact, the discriminative power of the instrument was tested a second time six weeks after data collection. This test was conducted at five institutions. The results similar to those found during the first collection of data reach percentages between 88% and 96%. That is to say, environmental club officials mentioned the same EA with almost the same range of proportions and the same obstacles as those indicated during the first data collection. This is a strong element of the reliability of the results. In addition, we selected an exhaustive representative sample from each of both directorates studied (urban and rural) to improve the validity of the results. The questionnaire also benefited from the external validity provided by the latest report of the Higher Council for Education, Training and Scientific Research (Rapport CSEFRS, 2018) entitled “Une Ecole de Justice Sociale” (A School of Social Justice). This report has focused, inter alia, on educational inequalities between urban and rural areas and the impact of material factors.

**I. Environmental Club Programs**

• Check the appropriate box:

1) Does your establishment contain an environment club? Yes  No

2) Have you written in your club (or institution) an annual environmental education program? Yes  No

3) If you have an environmental education program, specify which of the following activities you have already planned in the last two years:

- Cultural activities to raise awareness about the environment (seminars, competitions, exhibitions...)
- Campaigns for cleanliness and waste collection
- Greening of plant space and plant care
- Organization of an environmental outing
- Other programmed activities  Determine them .....

4) What is the approximate percentage of achievement of the environmental program for the last two years?

- Less than 50%
- Between 50 and 80%
- More than 80%

5) What is the approximate percentage of students who benefited from the environmental activities that you have organized during the last two years?

- Less than 50%
- Between 50 and 80%
- More than 80%

6) Do you organize environmental activities during certain national or international occasions (the world days of the environment, the tree, the water, ...):

- No
- Rarely
- Occasionally
- Often

**II. Detail of the environmental activities actually carried out**

Complete the following chart of environmental activities that you have already organized with your students over the past two years.

Environmental Activities	No	Yes		
		Once	Twice	Many times
1- Greening of the space of the establishment				
2- Organizing a clean-up campaign and collecting waste from classes, the establishment, or the surrounding environment.				
3- Conducting environmental research activity				
4- Organization of cultural activities about the environment (awareness activities, competitions, exhibitions, theater ...)				
5- Organization of an environmental activity within your institution supervised by associations, institutions or persons outside your institution.				
6- Organization of a scientific or entertainment environmental outing for the benefit of students				

**III. Obstacles**

Among the following barriers, check those that hinder the execution of the environmental activities listed in the table:

- Material obstacles
- Security obstacles
- Administrative Obstacles
- Absence of a formal environmental education program
- Lack of initiatives from teachers
- Low student interaction
- Other obstacles  Determine them .....

Figure 1. Excerpt from the questionnaire for teachers responsible for environmental clubs

*Data Collection*

Data collection was done in face-to-face. In fact, I went through the forty-eight establishments in person. It was at the end of the 2017-2018 school year during the months of May and June. Some teachers completed the questionnaire immediately, others returned it to me later. But, in general, we have not recorded serious problems concerning the comprehension of the items of the questionnaire. Admittedly, we explained to the teachers from the beginning that the information requested concerns two school years (the current year and the previous year).

For the first part of the questionnaire (question 1 and 2), we asked closed questions. Hence, the leaders of environmental clubs must answer yes or no. For the second part of the questionnaire (question 3), we looked for planned EA in two school years (2016-2017 and 2017-2018). Among them, we noted the cultural activities of environmental awareness, campaigns of cleanliness and waste collection, greening, school trips, etc. The third part (question 4 and 5) concerns the approximate percentage of program achievement as well as the percentage of student beneficiaries. Also, we classified these percentages into three distinct intervals (less than 50%, 50-80% and greater than 80%). Concerning the realization of the EA during certain national or international occasions (the world days of environment, tree, water...) (question 6), we employed the 5-points Likert scale; 0 points to "no answer", 1 to "no", 2 to "rarely", 3 to "occasionally", and 4 to "often". For the details of the EA actually carried out (questionnaire table, Figure 1), we mainly took into account the activities carried out twice or more. That is, activities accidentally performed only once in two years were not included in the results and analyzes.

The whole of the previous part of the questionnaire essentially answers the first research question. That is, the characterization of the state of play of programs and EA carried out by extracurricular environment clubs. The remaining part of the questionnaire (obstacles) mainly concerns the second research question. That is, identifying the main obstacles and the real problems that hinder the promotion of effective environmental education through the activities of environmental clubs. For this part of the questionnaire, we explored the various obstacles that may hinder the implementation of the EA mentioned in the previous section. Among these obstacles, we noted material (financial), administrative barriers, lack of security, lack of a formal EE program, lack of initiatives, low student interaction, etc.

Some results, such as low percentages of program delivery and the lack of environmental exits in public schools, prompted us to collect other data afterwards. This was to further refine the causes and better explain these results. Indeed, we questioned five randomly selected clubs about the existence/ non-existence of an evaluation of their achievements. Additionally, we collected some qualitative data concerning the types of difficulties found during the school trips. This was done through an interview with a teacher responsible for the realization of one of the few school trips made in a public middle school.

*Data Analysis*

The analysis of the data was done based on descriptive statistics and correlations between the different variables studied. This was carried out using the IBM SPSS20 statistical software. The descriptive statistics were made to first assess the presence of environmental clubs, EE programs, and the percentage of students receiving these programs in the schools (urban and rural) studied. Also, it has a clear idea about the different EA programmed and those actually carried out with their frequencies. Descriptive statistics were also used to identify the main barriers to achieving the various EA in urban and rural areas. The analysis of the data was also done using some significant correlations found between the variables studied, including the school environment (urban/rural), the presence of the EE program, and the presence of certain types of obstacles that hinder the achievement of EA. Other significant correlations were analyzed, particularly the material obstacles, the percentage of completion of certain activities, and the percentage of student beneficiaries.

**Results**

*Environmental Clubs and Environmental Education (EE) Programs*

Table 2 shows that the majority of the middle schools studied have an environment club (94.9% to 100%). However, the presence of an environmental club does not always imply the existence of a written EE program. Most especially in rural middle schools, there is a significant number of clubs that have been created without any EE program (Table 2).

*Table 2. Presence of Environmental Clubs and Environmental Education (EE) Program*

	Number of middle schools studied (N)	Presence of Environmental Club		Presence of an EE Program	
		N <sub>1</sub>	%	N <sub>2</sub>	%
Directorate of Fes (Urban)	39	37	94.9	36	92.3
Directorate of Moulay Yaakoub (Rural)	9	9	100	6	66.7
Total	48	46	95.83	42	87.5

There is no significant correlation between the presence of the environmental club and the presence of the EE program. On the other hand, we found a significant positive correlation between the school environment (urban or rural) and the presence of the EE program (Table 3).

Table 3. Correlations between the school environment and the presence of the Environmental Education (EE) program

School environment (urban / rural)	Presence of the EE program		
Pearson Correlation	1		.350*
Sig. (2-tailed)			.015
N	48		48

\*. Correlation is significant at the 0.05 level (2-tailed).

#### Planned activities, percentage of achievement and student beneficiaries

Environmental club leaders have typically programmed EA such as cultural awareness activities, cleanliness and waste collection campaigns, and greening. However, almost all EE programs do not include field trips (Table 4).

Table 4. Activities planned by the Environmental Clubs

Environmental Activities	Yes		No		Total	
	N	%	N	%	N	%
Cultural awareness activities	29	60.4	19	39.6		
Cleanliness and waste collection	41	85.4	7	14.6		
Greening	38	79.2	10	20.8	48	100
Field trips	2	4.2	46	95.8		
Other Activities	15	31.3	33	68.8		

Regarding the implementation of environmental programs, 68.75% of environmental clubs studied (33 clubs) reported that they have completed more than 50% of their EE programs. Nevertheless, only 16.7% of these clubs reported a completion of more than 80% of their programs (Table 5). For the percentages of the students benefiting from the EA carried out, 43.5% of the studied clubs (21 clubs) declared that between 50% and 80% of the pupils of their establishments benefited from these activities and only 12.5% of the clubs have registered more than 80% of students benefiting from EA (Table 5).

Table 5. Percentage of achievement of environmental programs and percentage of student beneficiaries

% of program achievement and % of student beneficiaries	Achievement of Environmental Programs		Students benefiting from Environmental Activities	
	N (Clubs)	%	N (Clubs)	%
No answer	4	8.3	4	8.3
Less than 50%	11	22.9	17	35.4
Between 50% and 80%	25	52.1	21	43.8
More than 80%	8	16.7	6	12.5
Total	48	100	48	100

There is a significant positive correlation between the percentage of achievement of environmental programs and the percentage of student beneficiaries ( $r = 0.771$ ) (Table 6).

Table 6. Correlation between percentage of achievement of environmental programs and percentage of student beneficiaries

		Percentage of achievement of the environmental program	Percentage of students benefiting from environmental activities
Percentage of achievement of the environmental program	Pearson Correlation	1	.771**
	Sig. (2-tailed)		.000
	N	48	48
Percentage of students benefiting from environmental activities	Pearson Correlation	.771**	1
	Sig. (2-tailed)	.000	
	N	48	48

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Concerning the organization of EA during certain national and international occasions (the world days of the environment, the tree, the water ...) show that in urban areas, 53.84% of clubs reported that they often celebrate these periodic occasions. While in rural areas, only 22.22% of clubs often celebrate these occasions (Table 7).

Table 7. School environment (urban / rural) \* Periodic occasional environmental activities Cross-tabulation

		Environmental activities carried out on periodic occasions										Total	
		No answer		No		Rarely		occasionally		Often		N	%
		N	%	N	%	N	%	N	%	N	%		
School environment	Urban	2	5.1	0	0	2	5.1	14	35.89	21	53.84	39	100
	Rural	1	11	1	11	0	0	5	55.55	2	22.22	9	100
Total		3	6.25	1	2	2	4.1	19	39.58	23	47.91	48	100

The implementation of EE programs is largely correlated with this type of environmental activity. Indeed, there is a significant positive correlation between the percentage of achievement of EE programs and the achievement of periodic occasional EA (Table 8).

Table 8. Correlation between Periodic Occasional Environmental Activities and Percentage of Environmental Program Achievement

	Periodic occasional environmental activities	Percentage of achievement of the environmental program
<b>Periodic occasional environmental activities</b>	Pearson Correlation	.676**
	Sig. (2-tailed)	.000
	N	48
		1
<b>Percentage of achievement of the environmental program</b>	Pearson Correlation	.676**
	Sig. (2-tailed)	.000
	N	48
		48

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Detail of the environmental activities actually carried out in two school years (2016-2017 and 2017-2018)

EA which have been carried out several times by at least half of the environmental clubs are school beautification, waste collection, environmental research, and environmental awareness activities. The majority of clubs (66.7%) did not make any school trips in two school years. Also, 52.1% of the clubs did not carry out any environmental activity which involves people or associations external to their institutions. This indicates a notable lack of openness of schools to their socio-environmental context (Table 9).

Table 9. Details of the environmental activities actually carried out in two school years (2016-2017 and 2017-2018)

Environmental Activities	No		Only once		two times		Several times		No answer		Total (Clubs)	
	N	%	N	%	N	%	N	%	N	%	N	%
greening	4	8.3	1	20.8	11	22.9	18	37.5	5	10.4		
Embellishment	3	6.3	3	6.3	1	2.1	37	77.1	4	8.3		
Waste collection	4	8.3	5	10.4	5	10.4	28	58.3	6	12.5		
Environmental research	10	20.8	5	10.4	5	10.4	24	50	4	8.3		
Drawings, frescoes	9	18.8	1	2.1	7	14.6	17	35.4	4	8.3		
Cultural activities of awareness	8	16.7	9	18.8	6	12.5	24	50	1	2.1	48	100
Activities by external elements	25	52.1	8	16.7	5	10.4	8	16.7	2	4.2		
School outings	32	66.7	7	14.6	2	4.2	2	4.2	5	10.4		
Other activities	6	12.5	3	6.3	1	2.1	3	6.3	35	72.9		



*Obstacles that hinder the execution of environmental activities*

Among all the obstacles explored, only two types of obstacles significantly impede the execution of the EA already mentioned (Table 9). These are the material (financial) obstacles as well as the lack of initiatives on the part of the teachers (Table 10). Material barriers are felt more at the urban level (89.74%), whereas at the rural level, these obstacles represent 33.33% (Table 11). Furthermore, 91.7% of clubs reported that there is absolutely no weak interaction of students with EA. This indicates that students feel good about this type of activity.

*Table 10. Obstacles that hinder the implementation of environmental activities*

Types of obstacles	Yes		No		Total	
	N	%	N	%	N	%
Material (financial)	38	79.2	10	20.8	48	100
Security	14	29.2	33	68.8		
Administrative	9	18.8	38	79.2		
Absence of a formal EE program	18	37.5	30	62.5		
Lack of initiatives from teachers	28	58.3	20	41.7		
Low student interaction	3	6.3	44	91.7		
Other obstacles	9	18.8	38	79.2		

*Table 11. Material obstacles \* School environment Cross-tabulation*

		Material obstacles				Total	
		Yes		No		N	%
		N	%	N	%		
School environment	Urban	35	89.74	4	10.25	39	100
	Rural	3	33.33	6	66.66	9	100
Total		38	79.16	10	20.83	48	100

The Pearson correlation test (Table 12) shows the existence of a significant positive correlation between material barriers and the environment in which the institution is located. Of all the obstacles studied, the material obstacle is the only one correlated with the environment where the school is located.

*Table 12. Correlation between the school's outdoor environment and material barriers*

		Material barriers	
School environment (urban / rural)	Pearson Correlation	1	.542**
	Sig. (2-tailed)		.000
	N	48	48

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### Discussion

The main objective of this study is the promotion of EE through extracurricular environment clubs (third research question). To do this, we were obliged to characterize the current state of affairs of these clubs' activities and their programs (first research question). In addition to identifying the real problems and main obstacles that impede their action (second research question).

To get a more or less clear and precise idea of these clubs and their programs, we first sought information on the very existence of clubs and EE programs. Admittedly, the creation of an environmental club in a school does not always imply the existence of an EE program, especially in rural areas (Table 2). Although some clubs were created at the beginning of the school year, and were sometimes imposed by the administration, they remain inactive during the year. This is because the creation of these clubs by the administration is obligatory at the beginning of each school year. However, the activation of these clubs as well as their programs depends on the voluntarism of the teachers. This is attributed to the fact that a significant number of teachers working in rural areas live in cities that are far from their place of work. This makes it more difficult for them to commute and do volunteer activities. Therefore, teachers in rural areas need special encouragement and training to carry out these types of activities such as the reduction of working hours or material and moral encouragement.

The results show that the programs offered by clubs are generally characterized by certain types of activities planned by the vast majority of these clubs. These activities are: cleanliness and waste collection, greening and Cultural

activities of awareness. These types of activities essentially develop the learner's psychomotor skills. However, we have not recorded activities in these programs that allow the development of knowledge and understanding of the local environment and its problems. Indeed, almost all of these clubs have not planned any school trip that concerns the local environment and its problems. This was done for a period of more than two school years. Knowing that very recent studies (El Batri et al., 2019), carried out at the level of the same region, have confirmed the importance of knowledge of the local environment and its specific problems, in the promotion of knowledge and pro-environmental behavior.

It seems that field trips are devalued and do not usually take place in Moroccan public schools. This is due to a lack of training, the necessary means, and the high number of students per class. On the other hand, at the level of private schools in the same region, school trips are usually made (El Batri et al., 2019).

By summarizing a significant number of scientific articles that have addressed the importance and impact of field trips, we have drawn several conclusions. These studies and conclusions support official administration of this type of extracurricular activities, at least to serve the ecological and environmental themes of the program. Indeed, field trips provide several educational and social benefits in the short, medium, and long term (Pace & Tesi, 2004). In comparison with control groups (who did not go on school trips), school trips favored better cognitive learning (Behrendt & Franklin, 2014; Bogeholz, 2006; DeWitt & Storksdieck, 2008; Kisiel, 2006; Kruse & Card, 2004; Pace & Tesi, 2004; Prokop, Tuncer & Kvasničák, 2007; Stern et al., 2008). This is in addition to a better understanding of the scientific content and its practical parts (Gough & Scott, 2003; Kamarainen et al., 2013; Kisiel, 2006; Prokop et al., 2007). Also, school outings allow for emotional learning by developing interest, empathy, attitudes, and positive connections to nature and the environment in general (Behrendt & Franklin, 2014; DeWitt & Storksdieck, 2008; Kruse & Card, 2004; Palmberg & Kuru, 2000; Prokop et al., 2007; Stern et al., 2008). Some authors have shown that school trips significantly improve motivation and willingness to act in favor of the environment (Behrendt & Franklin, 2014; Bogeholz, 1999; Chawla & Cushing, 2007; Palmberg & Kuru, 2000; Sivek, 2002; Wells & Lekies, 2006). Others have emphasized the positive impact of school trips on the learner's environmental behavior (Bogeholz, 2006; Bogner, 1998; Kruse & Card, 2004; Palmberg & Kuru, 2000; Stern et al., 2008).

School outings are also a rewarding experience and opportunities for exploration and discovery that allow students to acquire new meanings for nature on a personal level (DeWitt & Storksdieck, 2008; Kisiel, 2006; Palmberg & Kuru, 2000). Outdoor activities involving 11- to 12-year-olds in Finland have helped to develop self-confidence and a sense of security (Palmberg & Kuru, 2000).

For all the above reasons, and to fill this big gap in Moroccan public education, field trips must be administered officially, whether at the level of curricula or extracurricular activities. This activity goes with the commitment of all the means and skills necessary for their implementation.

Program planning is obviously of no importance without effective implementation and without involving the majority of students in the activities implemented. However, the results show that clubs are not effectively implementing their own programs. Indeed, few clubs have been able to carry out the vast majority of the activities they have planned. Also, very few clubs were able to engage most of the students in their activities. Admittedly, these two variables are closely linked. In fact, we found a strong, significant positive correlation between the percentage of achievement of EE programs and the percentage of student beneficiaries. That is, the more active the environmental club is, by carrying out a large number of activities, the more the number of student beneficiaries increases. It seems like a logical correlation. These results led us to look more closely at the true causes of the clubs' low efficiency in carrying out their programs. One of the reasons for this low efficiency in club action is the lack of any form of evaluation of their achievements. In fact, we did a post-test with 5 clubs that were randomly selected from the 48 studied. This test revealed the absence of any structured evaluation of the achievements of these clubs.

It seems that leaders of these clubs are not aware of the vital role of evaluation in the effectiveness and evolution of EE programs. This is in addition to the fact that the participation of teachers in the activities of these clubs is voluntary, and the majority of them work with full-service rosters. This constitutes binding conditions for the development of club activities and their evolution. Some of these clubs mainly engage in occasional activities through incentives from the administration, and they resist any form of evaluation of their own achievements. Here we note that the periodic occasional activities (the world days of the environment, the tree, the water...) hold an especially central place in the programs of the clubs. This explains the strong positive correlation between this type of activity and the percentage of completion of EE programs ( $r = 0.676$ ,  $p < 0.01$ ) (Table 8).

Of course, these clubs cannot evolve without evaluation. Several authors consider evaluation to be an efficiency criterion for an EE program (Carleton-Hug & Hug, 2010; Fien et al., 2001; Kapyla & Wahlstrom, 2000; Morris, Jacobson & Flamm, 2007; Thomson et al., 2003; Zint, Kraemer, Northway & Lim, 2002). So, we can say that the lack of evaluation (formative and summative) during and at the end of the realization of the EE programs is one of the main flaws to be filled.

EA carried out on periodic occasions are often repeated in urban schools, with 53.84% of them. On the other hand, in rural institutions, only 22.22% of clubs often carry out this type of environmental activity (Table 7). This can be

explained by the existence of more severe constraints in rural than in urban areas—in particular, the stability of teachers and the distance from their place of residence. Almost all the teachers in the studied rural schools live in urban areas. This complicates the realization of certain EA. Thus, the lack of initiatives on the part of teachers is more pronounced in rural areas (66%) than in urban areas (56%).

Moreover, all the programs of the studied clubs are of short term, they do not exceed a school year. Their activities are mainly casual and seasonal. Indeed, they do not have a global vision or medium- or long-term objectives. Since there is no official program for these clubs so far. However, effective programs must be well structured and covering medium and long terms objectives (Chawla & Cushing, 2007, p. 4; Hungerford & Volk, 1990, p. 14; Rauch, 2000; Rickinson, 2001, p. 270-271; Rickinson et al., 2004; Stern et al., 2008; Thomson et al., 2003; Zelezny, 1999). This is another weak point of the current programs.

The analysis of the details of the EA actually carried out more than once, makes it possible to identify almost the same types of activities as those existing at the program level. Thus, these activities allow the learner to develop essentially psychomotor skills. These activities are cleanliness and waste collection, beautification, greening and Cultural activities of awareness. However, very few activities (such as research activities) allow the development of knowledge or understanding of local or global environmental issues. Also, the majority of the clubs did not organize any school trip in more than two years. Therefore, the activities actually carried out confirm those already mentioned at the program level. In addition, the majority of institutions surveyed stated that they did not engage in any activity involving people, experts or associations outside their institutions. This shows a lack of openness of these institutions on their socio-environmental context.

However, the field of EE requires the opening of the school to its environment (El Batri et al., 2019; Kapyla & Wahlstrom, 2000; Sauve, 1997; Tudor & Dvornich, 2001). For example, Sauve (1996) indicated that the network of person-society-environment relations is at the center of EE. According to Rauch (2002), EE, as a vector of educational innovation, implies an opening of the school to the outside world and the development of new forms of teaching-learning. In addition, the greening of the school (as a project for the development of an ecologically oriented school focused on the environment) is closely linked to its openness to the local community and neighborhood (Rauch, 2000). In the same vein, Lambrechts and Hindson (2016) considered that the interconnection between school and society is a necessity in education for sustainable development. Moreover, Wals, Beringer and Stapp (1990), in their pedagogical model of EE, proposed an action research process for the resolution of local biophysical and/or social problems. Finally, one of the objectives of the strategic vision of educational reform in Morocco (2015-2030) is to "Succeed at a multifunctional school for all, able to offer different services to its environment in terms of health, environmental and cultural awareness..." (CSEFRS, 2015). Certainly, this study shows that a lot more needs to be done in terms of programs, means, and EA to achieve this goal.

One of the people responsible for carrying out one of the few school trips at a public urban middle school told us that one of the serious problems they have encountered is that it is quite strenuous to ensure the control of a high number of students during a school trip. In the same vein, Simmons (1998) found that teachers have serious concerns about student safety during a school trip. The author also gave other pretexts that explain the fear of school outings, which may be valid in our case. Among these is the teachers' lack of confidence in being able to teach in a particular context, especially since they are not sufficiently trained to carry out an excursion.

Curriculum reforms need to recognize the importance of school outings as a learning environment that is very beneficial and sometimes irreplaceable. Strategies to address security issues also need to be considered. Moreover, among the obstacles that significantly impede the implementation of EA are material obstacles (79.2%) and the lack of initiative on the part of teachers (58.3%) (Table 10). Nevertheless, the vast majority of clubs (91.7%) do not recognize the existence of weak interactions on the part of pupils as an obstacle. This implies the opposite, i.e., students interact well and appreciate the EA carried out.

In addition to the weaknesses detected in the content of EE programs and their implementation, the study revealed some obstacles that hinder the achievement of certain EA. And in particular the material obstacles. This type of obstacle has been declared by the vast majority of existing clubs in the urban environment. Indeed, there is a strong correlation between this obstacle and the urban environment. However, urban clubs are the most active and have the largest percentage of EE programs compared to rural clubs. That is, the impact of lack of funding only appears in the most active clubs. This seems logical, to a certain extent, because the more active clubs are in achieving a high number of EA, the more they need funding and logistics. While less active clubs do not need the same amount of funding. This proves that material obstacle, even if it has influences, is not the main obstacle that actually hinders the realization of EA. This is the case since the urban clubs have done enough activities despite this hurdle.

Many EA do not require a lot of financial resources. However, this obstacle is gaining momentum as EA intensify and develop (urban case). Certainly, the lack of funding to meet extracurricular EA is a quasi-permanent variable that has been highlighted in several studies (Ham & Sewing, 1988; Hultsman, 1992; Jackson & Rucks, 1993; Simmons, 1998; Velazquez, Munguia & Sanchez, 2005). However, we can always find creative solutions and even partially overcome this challenge.

### Conclusion and Recommendations

Before presenting our conclusions and recommendations, it is better to recall the objectives that guided this research work. The study aimed, among others, to clearly characterize the state of play of the planned EA and those actually carried out by the extracurricular environmental clubs (at the middle school level). In a second step, we identified the main challenges and obstacles that hinder the promotion of relevant and effective EE. And in light of the analysis and discussion of achievements and weaknesses, we proposed recommendations that could promote EE through environmental clubs. Among these recommendations, we proposed a program of action, knowing that these clubs remain so far without any formal EE program.

Regarding the state of play of EA, the majority of environmental clubs have planned and carried out (more than once a year) a set of EA (cleanliness and waste collection, beautification, greening, Cultural activities of awareness and environmental research). However, these activities mainly develop psychomotor skills in the learner. That is to say, there are few activities that can stimulate reflection and eco-responsible action especially vis-a-vis the real problems that characterize the region (wadi pollution, deforestation, urban pollution, etc.). The implementation of activities that allow reflection and action on the local environment and its specific problems can be a solution to this problem. However, we recorded an almost total absence of school trips related to the local environment. Furthermore, we have revealed a notable lack in the opening of these clubs on their socio-environmental context.

Besides, environmental clubs are not effectively implementing their own programs. Indeed, few clubs have been able to carry out most of the planned activities. Among the causes that explain the low effectiveness of the clubs: First the voluntary nature of their action in addition to the absence of any form of self-evaluation carried out by these clubs vis-a-vis their own programs and achievements. Knowing that the evaluation has been considered by several researchers as one of the criteria for the effectiveness of any EE program. One of the major weaknesses of these clubs is that their activities are seasonal, short-term and they lack an overall vision or goals that go beyond the scope of a school year. Therefore, the administration of a formal medium and long-term program seems necessary.

Additionally, the lack of funding influences but does not constitute a fundamental obstacle to the achievement of EA. However, this obstacle is gaining momentum as the extracurricular activities develop and intensify.

To promote a relevant and effective EE, it is necessary to overcome the challenges revealed in this study, particularly, the modesty of current short-term programs that lack quality in their content and efficiency in their implementation. This in addition to the absence of a formal program that can contain medium and long-term goals. Admittedly, environmental clubs must be open to the socio-environmental context of the school. By taking all these weaknesses into consideration, and starting from our own experiences as coordinators of an environmental club, we can put forward some recommendations that are confirmed by other studies. Among the recommendations to improve the impact of EA, we note that EE programs must work for significant problems for the learner and his/her environment. Also, knowledge of the local environment and the student's active involvement in studying local and tangible environmental problems significantly improves his or her acquisition of environmental knowledge related to science programs as well as his or her motivation to adopt pro-environmental behaviors (Anderson, 2012; Chanse et al., 2017; El batri et al., 2019; Higde, Oztekin, & Sahin, 2017; Tugurian et al., 2017; Saribas et al., 2017). On the other hand, effective programs must be spread over time.

For all these considerations, we recommend to the environmental clubs a simple program in its main lines, rich and variable in its content, but effective in overcoming most of the identified challenges. This program covers the three years of middle school and develops knowledge, reflection and conscious action for the environment. Thus, the main features of this program can be summarized as follows:

- The first year: Knowledge of the local environment. This knowledge concerns both the natural environment (mountains, wadis/rivers, forests, endemic species...) and the environment created by man (the main monuments that constitute the heritage of the region). This will come about through active methods of involving the student in research related to his/her environment, tours, photography competitions, exhibitions, and so on.
- The second year: Understanding the main environmental problems of the region. This is done through interactive studies involving the social and environmental context of the student (El Batri, 2019). Among these problems, we can mention the pollution of the "Sebou" wadi, the extinction of certain species of fish, urban waste, deforestation, and overexploitation of certain resources.
- The third year: The learner's participation should be devoted to solving certain environmental problems (selected during the second year). After knowing the basics of his/her local environment and its problems (in the first two years), the student must be asked to participate in the resolution of some of the problems of his/her region such as tree planting, forest waste collection ("Ain Chkef" Forest), sensitization activities, etc.

Finally, we can say that the implementation of such a program and its ongoing evaluation can only be beneficial, both to the student and to his/her environment, in the short, medium, and long term.

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## References

- Anderson, A. (2012). Climate change education for mitigation and adaptation. *Journal of Education for Sustainable Development*, 6(2), 191-206.
- Asslouj, J., Kholtei, S., Amrani-Paaza, N., & Hilali, A. (2007). Impact des activites anthropiques sur la qualite des eaux souterraines de la communaute Mzamza [Impact of human activities on the groundwater quality of the Mzamza community] (Chaouia, Maroc). *Revue des sciences de l'eau/ Journal of Water Science*, 20(3), 309-321.
- Ballantyne, R., Fien, J., & Packer, J. (2001). Program effectiveness in facilitating intergenerational influence in environmental education: Lessons from the field. *The Journal of Environmental Education*, 32(4), 8-15.
- Behrendt, M., & Franklin, T. (2014). A review of research on school field trips and their value in education. *International Journal of Environmental and Science Education*, 9(3), 235-245.
- Boatwright, T. C. (2009). *Comparison of grade point averages and dropout rates of students who participate in extracurricular activities and students who do not participate* (Unpublished doctoral dissertation). Lindenwood University, United States.
- Bogeholz, S. (1999). *Qualitaten primarer naturerfahrung und ihr zusammenhang mit umweltwissen und umwelthandeln* [Qualities of primary nature experience and their connection with environmental knowledge and environmental action]. Opladen, Germany: Leske+ Budrich.
- Bogeholz, S. (2006). Nature experience and its importance for environmental knowledge, values and action: Recent German empirical contributions. *Environmental education research*, 12(1), 65-84.
- Bogner, F. X. (1998). The influence of short-term outdoor ecology education on long-term variables of environmental perspective. *The Journal of Environmental Education*, 29(4), 17-29.
- Bonaiuto, M., Carrus, G., Martorella, H., & Bonnes, M. (2002). Local identity processes and environmental attitudes in land use changes: *The case of natural protected areas*. *Journal of economic psychology*, 23(5), 631-653.
- Boukhoubza, F., Ait, A. B., Yacoubi-Khebiza, M., Jail, A., Hassani, L., Loukili, L. I., & Nejmeddine, A. (2008). Impact of olive oil wastewater on the physicochemical and biological quality of groundwater in the Haouz plain, south of Marrakesh (Morocco). *Environmental technology*, 29(9), 959-974.
- Breiting, S., & Mogensen, F. (1999). Action competence and environmental education. *Cambridge journal of education*, 29(3), 349-353.
- Buchan, G. D. (2000). Obstacles to effective environmental education. *International Journal of Environmental Education and Information*, 19(1), 1-10.
- Busseri, M. A., & Rose-Krasnor, L. (2009). Breadth and intensity: Salient, separable, and developmentally significant dimensions of structured youth activity involvement. *British journal of developmental psychology*, 27(4), 907-933.
- Carleton-Hug, A., & Hug, J. W. (2010). Challenges and opportunities for evaluating environmental education programs. *Evaluation and program planning*, 33(2), 159-164.
- Chanse, V., Mohamed, A., Wilson, S., Dalemarré, L., Leisham, P. T., Rockler, A., ... & Montas, H. (2017). New approaches to facilitate learning from youth: Exploring the use of Photovoice in identifying local watershed issues. *The Journal of Environmental Education*, 48(2), 109-120.
- Chawla, L., & Cushing, D. F. (2007). Education for strategic environmental behavior. *Environmental Education Research*, 13(4), 437-452.
- Chhokar, K., Dua, S., Taylor, N., Boyes, E., & Stanisstreet, M. (2011). Indian secondary students' views about global warming: Beliefs about the usefulness of actions and willingness to act. *International Journal of Science and Mathematics Education*, 9(5), 1167-1188.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of personality and social psychology*, 58(6), 1015-1026.
- Corraliza, J. A., & Berenguer, J. (2000). Environmental values, beliefs, and actions: A situational approach. *Environment and behavior*, 32(6), 832-848. <https://doi.org/10.1177/00139160021972829>

- CSEFRS. (2015). *For a school of equity, quality and promotion. A strategic vision of reform 2015-2030* (Report 2015). Morocco: Higher Council for Education, Training and Scientific Research Retrieved from <https://www.csefrs.ma/wp-content/uploads/2015/05/Re%CC%81sume%CC%81-vision-Anglais.pdf>
- DeWitt, J., & Storksdieck, M. (2008). A short review of school field trips: Key findings from the past and implications for the future. *Visitor studies*, 11(2), 181-197.
- El Batri, B., Nafidi, Y., Alami, A., Chenfour, D., & Zaki, M. (2018, November). *L'éducation environnementale dans l'enseignement primaire Marocain: Représentations, Connaissances et Activités* [Environmental education in Moroccan elementary education: Representations, knowledge and activities]. Paper presented at the 3rd Edition of the International Conference on Pedagogical Approaches and E-Learning (APEL'2018), EST-Fez, Morocco.
- El Batri, B., Alami, A., Zaki, M., Nafidi, Y., & Chenfour, D. (2019). Promotion of the environmental knowledge and behavior through the Moroccan syllabus of sciences in the middle school. *International Electronic Journal of Elementary Education*, 11(4), 371-381.
- Feldman, A. F., & Matjasko, J. L. (2007). Profiles and portfolios of adolescent school-based extracurricular activity participation. *Journal of Adolescence*, 30(2), 313-332.
- Fien, J., Scott, W., & Tilbury, D. (2001). Education and conservation: Lessons from an evaluation. *Environmental Education Research*, 7(4), 379-395.
- Fujita, K. (2006). The effects of extracurricular activities on the academic performance of junior high students. *Undergraduate Research Journal for the Human Sciences*, 5(1), 1-16.
- Goldsmith, P. A. (2004). Schools' role in shaping race relations: Evidence on friendliness and conflict. *Social Problems*, 51(4), 587-612.
- Gough, S., & Scott, W. (2003). *Sustainable development and learning: Framing the issues*. London, England: Routledge.
- Hadjichambis, A. C., Paraskeva-Hadjichambi, D., Ioannou, H., Georgiou, Y., & Manoli, C. C. (2015). Integrating sustainable consumption into environmental education: a case study on environmental representations, decision making and intention to act. *International Journal of Environmental and Science Education*, 10(1), 67-86.
- Ham, S. H., & Sewing, D. R. (1988). Barriers to environmental education. *The Journal of Environmental Education*, 19(2), 17-24.
- Heimlich, J. E., & Ardoin, N. M. (2008). Understanding behavior to understand behavior change: A literature review. *Environmental education research*, 14(3), 215-237.
- Higde, E., Oztekin, C., & Sahin, E. (2017). Turkish pre-service science teachers' awareness, beliefs, values, and behaviours pertinent to climate change. *International Research in Geographical and Environmental Education*, 26(3), 253-263.
- Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of environmental education*, 18(2), 1-8.
- Howard, A. K., & Ziomek-Daigle, J. (2009). Bonding, achievement, and activities: School bonding, academic achievement, and participation in extracurricular activities. *Georgia School Counselors Association Journal*, 16(1), 39-48.
- Hultsman, W. Z. (1992). Constraints to activity participation in early adolescence. *The Journal of Early Adolescence*, 12(3), 280-299.
- Humphreys, C., & Blenkinsop, S. (2018). Ecological identity, empathy, and experiential learning: A young child's explorations of a nearby river. *Australian Journal of Environmental Education*, 34(2), 143-158.
- Hungerford, H. R., & Volk, T. L. (1990). Changing learner behavior through environmental education. *The journal of environmental education*, 21(3), 8-21. <https://doi.org/10.1080/00958964.1990.10753743>
- Hunt, H. D. (2005). The effect of extracurricular activities in the educational process: Influence on academic outcomes? *Sociological Spectrum*, 25(4), 417-445.
- Jackson, E. L., & Rucks, V. C. (1993). Reasons for ceasing participation and barriers to participation: Further examination of constrained leisure as an internally homogeneous concept. *Leisure Sciences*, 15(3), 217-230.
- Jensen, B. B., & Schnack, K. (1997). The action competence approach in environmental education. *Environmental education research*, 3(2), 163-178.
- Kamarainen, A. M., Metcalf, S., Grotzer, T., Browne, A., Mazzuca, D., Tutwiler, M. S., & Dede, C. (2013). EcoMOBILE: Integrating augmented reality and probeware with environmental education field trips. *Computers & Education*, 68, 545-556.

- Kapyla, M., & Wahlstrom, R. (2000). An environmental education program for teacher trainers in Finland. *The Journal of Environmental Education*, 31(2), 31-37.
- Kerry, J., Pruneau, D., Cousineau, M., Mallet, M. A., Laliberte, B., & Langis, J. (2013). Faire naitre l'espoir et l'auto-efficacite chez les jeunes par l'action environnementale communautaire [Creating hope and self-efficacy among youth through community environmental action]. *Canadian Journal of Education/ Revue canadienne de l'education*, 36(4), 3-32.
- Kisiel, J. (2006). More than lions and tigers and bears: Creating meaningful field trip lessons. *Science activities*, 43(2), 7-10.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental education research*, 8(3), 239-260. doi:10.1080/13504620220145401
- Kort-Butler, L. (2012). Extracurricular activity involvement and adolescent self-esteem. *University of Nebraska-Lincoln*, 19(2), 12-16.
- Kruse, C. K., & Card, J. A. (2004). Effects of a conservation education camp program on campers' self-reported knowledge, attitude, and behavior. *The Journal of Environmental Education*, 35(4), 33-45.
- Lambrechts, W., & Hindson, J. (2016). *Research and Innovation in Education for Sustainable Development*. Vienna, Austria: Lambrechts & Hindson.
- Lawhorn, B. (2008). Extracurricular activities. *Occupational Outlook Quarterly*, 9, 16-21.
- Lipscomb, S. (2007). Secondary school extracurricular involvement and academic achievement: A fixed effects approach. *Economics of Education Review*, 26(4), 463-472.
- Lousley, C. (1999). (De)Politicizing the environment club: Environmental discourses and the culture of schooling. *Environmental Education Research*, 5(3), 293-304. <https://doi.org/10.1080/1350462990050304>
- Luke, T. W. (2001). Education, environment and sustainability: what are the issues, where to intervene, what must be done? *Educational Philosophy and Theory*, 33(2), 187-202.
- Mahoney, J. L., Harris, A. L., & Eccles, J. S. (2006). Organized Activity Participation, Positive Youth Development, and the Over-Scheduling Hypothesis. Social Policy Report. *Society for Research in Child Development*, 20(4), 3-32.
- Malandrakis, G., Boyes, E., & Stanisstreet, M. (2011). Global warming: Greek students' belief in the usefulness of pro-environmental actions and their intention to take action. *International journal of environmental studies*, 68(6), 947-963. <https://doi.org/10.1080/00207233.2011.590720>
- Marsh, H., & Kleitman, S. (2002). Extracurricular school activities: The good, the bad, and the nonlinear. *Harvard Educational Review*, 72(4), 464-515.
- Mason, M. J., Schmidt, C., Abraham, A., Walker, L., & Tercyak, K. (2009). Adolescents' social environment and depression: social networks, extracurricular activity, and family relationship influences. *Journal of Clinical Psychology in Medical Settings*, 16(4), 346-354.
- Morris, J. K., Jacobson, S. K., & Flamm, R. O. (2007). Lessons from an evaluation of a boater outreach program for manatee protection. *Environmental Management*, 40(4), 596-602.
- Orion, N., & Hofstein, A. (1994). Factors that influence learning during a scientific field trip in a natural environment. *Journal of Research in Science Teaching*, 31(10), 1097-1119.
- Pace, S., & Tesi, R. (2004). Adult's perception of field trips taken within grades K-12: Eight case studies in the New York metropolitan area. *Education*, 125(1), 30-40.
- Palmberg, I. E., & Kuru, J. (2000). Outdoor activities as a basis for environmental responsibility. *The Journal of Environmental Education*, 31(4), 32-36.
- Prokop, P., Tuncer, G., & Kvasnicak, R. (2007). Short-term effects of field programme on students' knowledge and attitude toward biology: a Slovak experience. *Journal of Science Education and Technology*, 16(3), 247-255.
- Pruneau, D., Doyon, A., Langis, J., Vasseur, L., Ouellet, E., McLaughlin, E., ... & Martin, G. (2006). When teachers adopt environmental behaviors in the aim of protecting the climate. *The Journal of Environmental Education*, 37(3), 3-12. <https://doi.org/10.3200/JOEE.37.3.3-12>
- Rauch, F. (2000). Schools: A place of ecological learning. *Environmental Education Research*, 6(3), 245-258.
- Rauch, F. (2002). The potential of education for sustainable development for reform in schools. *Environmental education research*, 8(1), 43-51.

- Rickinson, M. (2001). Learners and learning in environmental education. *Environmental Education Research*, 7(3), 207-320.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M. Y., Sanders, D. & Benefield, P. (2004). *A review of research on outdoor learning*. Preston Montford, Shropshire: Field Studies Council.
- Russell, C. L., & Bell, A. C. (1996). A politicized ethic of care: Environmental education from an ecofeminist perspective. In K. Warren (Ed.), *Women's voices in experiential education* (pp. 172-181). Dubuque, IO: Kendall/Hunt Publishing.
- Saribas, D., Kucuk, Z. D., & Ertepinar, H. (2017). Implementation of an environmental education course to improve pre-service elementary teachers' environmental literacy and self-efficacy beliefs. *International Research in Geographical and Environmental Education*, 26(4), 311-326.
- Sauve, L. (1996). Environmental education and sustainable development: A further appraisal. *Canadian Journal of Environmental Education*, 1(1), 7-34.
- Sauve, L. (1997). L'approche critique en education relative a l'environnement : origines theoriques et applications a la formation des enseignants [The critical approach in environmental education: theoretical origins and applications to teacher training]. *Revue des sciences de l'education*, 23(1), 169-187.
- Schultz, P. W., & Zelezny, L. (1999). Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. *Journal of environmental psychology*, 19(3), 255-265.
- Shulruf, B., Tumen, S., & Tolley, H. (2008). Extracurricular activities in school, do they matter? *Children and youth services review*, 30(4), 418-426
- Simmons, D. (1998). Using natural settings for environmental education: Perceived benefits and barriers. *The Journal of Environmental Education*, 29(3), 23-31.
- Sivek, D. J. (2002). Environmental sensitivity among Wisconsin high school students. *Environmental Education Research*, 8(2), 155-170.
- Skamp, K., Boyes, E., & Stannistreet, M. (2009). Global warming responses at the primary secondary interface 1. students' beliefs and willingness to act. *Australian Journal of Environmental Education*, 25, 15-30.
- Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407-424.
- Stern, M. J., Powell, R. B., & Ardoin, N. M. (2008). What difference does it make? Assessing outcomes from participation in a residential environmental education program. *The Journal of Environmental Education*, 39(4), 31-43.
- Thomson, G., Hoffman, J., & Staniforth, S. (2003). *Measuring the success of environmental education programs*. Ottawa, Canada: Canadian Parks and Wilderness Society and Sierra Club of Canada.
- Toyokawa, T., & Toyokawa, N. (2002). Extracurricular activities and the adjustment of Asian international students: A study of Japanese students. *International Journal of Intercultural Relations*, 26(4), 363-379.
- Tudor, M. T., & Dvornich, K. M. (2001). The NatureMapping program: resource agency environmental education reform. *The Journal of Environmental Education*, 32(2), 8-14.
- Tugurian, L. P., & Carrier, S. J. (2017). Children's environmental identity and the elementary science classroom. *The Journal of Environmental Education*, 48(3), 143-153.
- Velazquez, L., Munguia, N., & Sanchez, M. (2005). Deterring sustainability in higher education institutions: An appraisal of the factors which influence sustainability in higher education institutions. *International Journal of Sustainability in Higher Education*, 6(4), 383-391.
- Wals, A. E., Beringer, A., & Stapp, W. B. (1990). Education in action: A community problem-solving program for schools. *The Journal of Environmental Education*, 21(4), 13-19.
- Wells, N. M., & Lekies, K. S. (2006). Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children Youth and Environments*, 16(1), 1-24. Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children Youth and Environments*, 16(1), 1-24.
- Wilson, N. (2009). *Impact of extracurricular activities on students* (Master's thesis, University of Wisconsin-Stout). Retrieved from <http://www2.uwstout.edu/content/lib/thesis/2009/2009wilsonn.pdf>
- Zelezny, L. C. (1999). Educational interventions that improve environmental behaviors: A meta-analysis. *The Journal of Environmental Education*, 31(1), 5-14.
- Zint, M., Kraemer, A., Northway, H., & Lim, M. (2002). Evaluation of the Chesapeake Bay Foundation's conservation education programs. *Conservation Biology*, 16(3), 641-649.