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ABSTRACT

In a coastal community, four social groups were chosen to participate in various educational programs designed to promote their desire to take environmental action. At the end of these educational programs, conducted by a scientist and an environmental educator, the participants were invited to get involved in the resolution of an environmental problem: that of the lack of vegetation in the village or that of a damaged stream. Following the positive response of all four groups, researchers employed narrative inquiry and semi-structured interview techniques in order to identify the educational and sociocultural factors motivating the desire for action. Three judges analyzed the data using a priori categories, with openness towards emerging categories. The principal motivational factors identified were the visual observation of the problem, the reception of information, the impression that the task could be accomplished, the sense of solidarity, and the expectation of personal rewards following the action. (Contains 30 references.) (Author/ASK)

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Abstract

In a coastal community, four social groups were chosen to participate in various educational programs designed to promote their desire to take environmental action. At the end of these educational programs, conducted by a scientist and an environmental educator, the participants were invited to get involved in the resolution of an environmental problem: that of the lack of vegetation in the village or that of a damaged stream. Following the positive response of all four groups, researchers employed narrative inquiry and semi-structured interview techniques in order to identify the educational and sociocultural factors motivating the desire for action. Three judges analyzed the data using a priori categories, with openness towards emerging categories. The principal motivational factors identified were the visual observation of the problem, the reception of information, the impression that the task could be accomplished, the sense of solidarity, and the expectation of personal rewards following the action.

Key words

Environmental education, environmental action, motivation, social groups.

Introduction

The tangible transformation of the milieu while building local competencies (Bracht and Gleason, 1990) and optimizing the person-social group-environment relationship (Pruneau, Chouinard and Arsenault, 1998) are important objectives in environmental education. Citizen involvement in actions of restoration or conversion of bioregional systems is an important facet of these objectives. How can environmental educators ensure citizen involvement in environmental action? What educational and sociocultural factors favor the community commitment decision to

safeguard resources? The research project presented in this article brings a first answer to these questions.

Research Program History

This project is part of a broader community development and research program entitled *Coastal Zones 2000*, taking place in coastal communities of eastern Canada. The main goal of the program is the progressive restoration of coastal ecosystems (streams, salt marshes, intertidal zone) via the involvement, commitment and leadership of social actors. The communities of Cap-Pelé and Shediac in New-Brunswick, Canada serve as the experimental ground to answer various fundamental questions. Here are some examples of these questions: *Which social groups are more likely to successfully get involved in environmental action? Which educational interventions will improve the person-social group-environment relationship? Will a locally organized multimedia site, available on the Internet, help social groups plan their environmental action?* In Cap-Pelé, a village of 2500 inhabitants where the present study was done, citizen involvement began in 1996. In the course of the first study, retired seniors and elementary school students experienced, for nine months, a milieu-related educational process resulting in the clean-up and unblocking of a section of the Friel stream. Following this educational process, the seniors manifested their desire to pursue the ecological restoration of their milieu. They formed a corporation they called *Senators of the Environment* and identified other environmental problems needing to be solved in the community. The also identified four other social groups that could make a commitment to the solving of environmental problems: the Knights of Columbus, local fishermen, and fourth and seventh grade classes. Université de Moncton researchers thought well to educate these new groups about the environment and to update the educational and sociocultural factors leading some of these groups to environmental action.

This second research, looking at the Knights of Columbus, fishermen, and fourth and seventh grade students constitutes the subject of this article.

We first present the theoretical framework we developed to facilitate the study of factors contributing to environmental action. We then describe the various educational activities experienced by the Knights of Columbus, fishermen, and fourth and seventh grade students, and identify our research method. Finally, we identify the educational and sociocultural factors which, according to the participants, exerted the most influence on their desire to get involved. We then use these results to formulate a diagnostic about environmental attitudes in the Cap-Pelé community. We postulate that this diagnostic could be useful to orient future educational interventions in this community.

Theoretical Framework

A considerable amount of literature exists on the subject of factors which influence environmental action. However most of this literature is not founded on in depth research work. It consists mostly of works of vulgarization intended for educational interventions or social activities. Emmons (1997) defines environmental action as an intentional approach implying decisions, planning, execution and reflection on the part of an individual or group. The action is oriented towards the completion of a specific environmental objective, either large or small scale. Emmons establishes a distinction between *environmental actions* and the concept of *responsible environmental behavior* proposed by Hungerford and Volk (1990). For Emmons, responsible environmental behavior can present itself as a voluntary and autodetermined response, but can also appear as an automatic response, stemming from a habit or fear of social sanction. Environmental action, however, is simultaneously product and process. Individuals decide to pose specific actions based on their knowledge and attitudes towards environmental issues, and participate actively in attaining their goals. In the framework of our research, we have adhered to Emmons' definition. Jensen and Schack (1997) also differentiate between direct environmental action (where individuals participate personally in environmental improvement) and indirect environmental action (where individuals employ various strategies to incite third parties to invest in ecological well being). In this project's framework, we mostly deal with direct environmental action.

Project Wild (1995) provides a typology which facilitates the identification of sociocultural factors inciting groups to get involved in environmental action projects. These factors are both internal and external. Some groups, for example, are influenced by their values, beliefs, abilities or knowledge, while others submit to social pressure. We have recourse to this typology to present literature on the subject of sociocultural factors that influence environmental action.

Among the *internal factors*, we first find attachment to milieu. Iozzi (1989), Low and Altman (1992), Prohansky, Fabian and Kaminoff (1983), and Thomashow (1995) explain that persons who entertain a significant relationship with their biophysical milieu or community are more inclined to take measures to protect it, since their milieu gives them satisfaction and pride. These persons are more attentive to potentially harmful ambient elements and environmental changes. They identify with their environment or their community.

The second internal factor consists of the motivation of individuals to act when directly suffering from the problem's immediate consequences (Wall, 1995; Bracht and Gleason, 1990). These individuals try to mitigate the negative effects they experience. Other internal factors are equally evoked by the National Consortium for Environmental Education and Training (1994). Sufficient knowledge of the environmental problem and its solutions, positive expectations about the action undertaken, as well as previous community or environmental action experiences, will all contribute to securing a group and sustain its desire for involvement. Certain values and attitudes, like internal locus of control (Hungerford and Volk, 1990), will also exert some influence. The internal locus of control in individuals corresponds to a feeling of confidence in one's capacity to make positive changes occur within a problem situation. Similarly, the presence, in individuals of a given group, of abilities like leadership and organizational and planning capacities will have an impact on one's feeling that one *can act* (Florin and Wandersman, 1983).

The *external factors* reported by researchers also vary widely. The presence of friends in the action project (Wandersman and Giamartino, 1980), the influence of leaders considered to be competent or particularly skilled in the task to be accomplished (Jang Hsu and Roth, 1996), and peer pressure (Dresner and Gill, 1994), constitute important influence factors in deciding to get

involved in environmental action. Indeed, information is more credible in the community when it comes from a peer, since he or she is considered to have the same values and attitudes as the rest of the group. The impact of these last three factors is even greater when dealing with a community in which a strong social solidarity (Oropesa, 1992) and marked environmental values (Wall, 1995) are present. Many sociologists thus believe that social solidarity exerts a positive effect on regional commitment. According to Park (1967), for example, interaction between neighbors favors attachment to milieu and awareness of common interests and attitudes that constitute the building blocks of local organizations. This theory, however, is questionned by Oliver (1984) who believes that where there is strong social solidarity, people identify themselves to the community so much that they believe their peers will take care of all local problems. Conversely, people who experience to a lesser degree that feeling of belonging evaluate their participation as essential to change. Another external sociocultural factor consists of personal rewards reaped following environmental action. People consider that they will receive material or psychological (admiration, visibility, etc.) benefits during or after the action (Uusitalo, 1992). Finally, the availability of resources necessary to realize the work is also a deciding factor (Bracht and Gleason, 1990).

Research on educational interventions favoring commitment to environmental action is far less developed. Many teams under the direction of Harold Hungerford have worked on investigating educational methods that exert a positive influence on responsible environmental behavior. Even if the concept of responsible environmental behavior is related to that of environmental action, it is much different, as stated above. Despite these differences, the works of Hungerford and Ramsey (1989) are sufficiently pertinent to report them here. These researchers identified seven variables susceptible to influence behavior in relation to the environment. These are knowledge of strategic actions, acquisition of abilities required for environmental action realization, environmental sensitivity, internal locus of control, knowledge of problems, beliefs and values, as well as knowledge of principal ecological concepts. They estimate that educational methods looking to develop responsible environmental behavior should exploit or take into account

these seven variables. The privileged educational approach here is that of the resolution of problems on-site.

Pruneau and Chouinard's educational model (1997) has also been associated to positive results with respect to the incitation of social groups to start an environmental action. This model, allying problem resolution techniques to sensory and affective contact approaches, contains the following successive steps: inviting the learners to appreciate, critically evaluate and know the resources of their milieu; making them share their impressions and concerns about the milieu; making them project a vision of their bioregion's future; acting to improve the environment. Similarly, we find in the literature other educational techniques that, according to the authors, seem to exert an influence on the desire to act of the learners. The President's Council on Sustainable Development (1997) thus suggests the choice of an action project that corresponds to the citizens' needs and to the publicization of these needs. Project Wild (1995) advises the use of success stories, that is to say, newspaper or magazine articles in which successful environmental actions undertaken by other community are reported. Finally, there are the vision and agenda activities (President's Council on Sustainable Development, 1997) that consist in inviting members of a community to project a vision of an ideal milieu and to write down the steps necessary to attain those goals. This type of strategy would thus incite action while reinforcing social beliefs, values and attitudes favorable to the environment.

Unfolding of Educational Activities within Each Group in the Present Study

Given the rarity of information on the subject of educational techniques that can *guarantee* environmental action start-up by social groups, the researchers of the present study opted for a variety of educational activities. The total duration of educational interventions with each of the groups was fixed at four hours, given the availability of adult groups (the Knights of Columbus and local fishermen). The choice of a short training period also seemed like a realistic option for the fourth and seventh grade students. In fact, the participating teachers could not devote more than four hours to this field of study since environmental education is given little importance in the

present New Brunswick educational program. The educational sessions with the four groups were planned and offered by Université de Moncton students enrolled in the Environmental Studies Masters program, and who were participating, within the framework of that program, in an environmental education course. For each social group, a team of two trainers was assembled, each team consisting of a scientist and a pedagogue[1]. Teams created, planned and administered their own educational activities. The students involved knew the goal of the research, i.e. to incite groups to start an environmental action. Training activities were thus elaborated on the basis of their beliefs and conception of environmental education. Researchers estimated that even if it made data analysis more complex, the diversity of the activities developed and experienced could enrich the results. From that step on, research took the form of four case studies.

Educational Activities with Fourth Grade Students

The team working with the fourth graders had to educate them about the Friel stream's[2] problems, this by recommendation of the Senators of the Environment. The stream was littered with domestic waste and blocked at several points, reducing its normal flow. The team chose the following educational activities:

- historical narration of the Friel stream (including the clean-up of one section of the stream previously done by seniors and other students);
- informative presentation about stream ecology on overhead transparencies;
- written predictions by students on what elements they thought could be found in the stream (to favor cognitive dissonance);
- visit to the stream and brief clean-up;
- in a big book, drawing of the stream's actual state.

The activities were of a constructivist nature (use of cognitive dissonance and on-site experience) and of a traditional nature as well (direct ecological and historical information transmission).

Educational Activities with Seventh Grade Students

The educational activities performed with the seventh graders also centered on the Friel stream's problems. Students first received information on stream ecology; they listened to a success story narration; they visualized their village in the year 2000 and filled in the missing words in the George Moustaki song, "Il y avait un jardin" ("There Was a Garden"). Finally, they went to the stream to observe the problem.

Educational Activities with the Knights of Columbus

The Knights of Columbus were made aware of the shortage of trees and vegetation in the village of Cap-Pelé. Their training began in the forest through sensory and experiential activities: listening to noises, searching for trees useful to particular animals, solo meetings with a tree of one's choice, etc. They were then informed about trees that could be planted in this village near the sea. Finally, they participated in a quiz game on the usefulness of trees and in a debate on a question touching their region: the necessity of cutting forest growth to make room for a highway.

Educational Activities with Local Fishermen

Information transmitted to fisherman about the stream-sea ecological relationship was adapted to their needs and interests, that is to say, fishing and hunting. The team in charge of the group prepared a slide show and quiz game using the manipulation of material of interest to them, like moose antlers, fox teeth, etc. They then viewed a video on which they could see the state of the Friel stream from 2 km away. A second video was also shown to allow them to see the unblocking action by students and seniors previously performed on a section of the stream. A discussion followed on the actions that could be undertaken to save the stream.

Method

At the end of the educational activities, the groups were invited to get involved, if they wanted to, in a restoration action. If groups decided that they wanted to participate, they were told

to do so by telephoning a graduate student in charge of the project within two weeks of the training session. Teachers were warned not to influence their students so that they could make a choice in an autonomous fashion. After the allotted reflection time, all four groups manifested the desire to get involved in the action.

In order to identify the factors inciting groups to opt for environmental action, researchers set up an interview guide in which the questions made use of two research tools: narrative inquiry and semi-structured interview. The first part of the interview, centered on narrative inquiry, contained questions like "Tell me what happened that you decided to act on the trees' (or stream's) behalf". Sub-questions were used for clarification as they helped people explain their point of view. According to Connely and Clandinin (1990), this type of question favors in-depth understanding of life experiences reported in symbiotic fashion with emotions, values and impressions linked to that experience. The questions of the second part, those of the semi-structured interview, were inspired by the census of written works mentioned before. The questions of the second part were similar to these: "Do you think you can solve this problem? Why? Have you ever helped your community before? How? Do you think having friends involved in the project influenced you? Explain. Do you think the environment is important to the people of Cap-Pelé? For whom? I will have you recall the educational activities experienced with -- and --. In your opinion, which ones encouraged you to act?" etc. These more specific questions were added to accommodate Cap-Pelé's sociocultural milieu. In that community, researchers had noticed that people were not used to expressing their thoughts at length. Answers were short and direct. Validation of the interview guide was then realized thanks to two successive trials with both adults and students who had participated in educational sessions. The two parts of the interview ensured triangulation on the level of data collection instruments, as recommended by Van der Maren (1995). Indeed, ulterior analysis allowed the verification of the concordance between the two sections of the interview. Often, the second part allowed the actors to clarify and develop their answers.

Interviews lasted thirty minutes and were conducted over the span of two to three days following different groups' manifestation of desire to act. All adult group participants in the educational activities were interrogated: eight Knights of Columbus and three fishermen. In the fourth and seventh grade classes, a sample of eight students was chosen from each class with the help of the quota method (Van der Maren, 1995). The sample of eight students was composed of children who had already acted on behalf of the environment and others who were less or little involved. A written questionnaire, constructed to measure this type of action and validated by a class not involved in this project, was administered in order to assemble a sample of typical cases. Researchers also solicited the help of teachers in order to identify and interrogate only students who were capable of manifesting a certain level of self-expression. Similarly, in order to triangulate data sources, we also questioned one informant per group, that is to say, a Senator of the Environment who had participated in the educational activities of the group.

The interviews were recorded on audio tape and faithfully transcribed for analysis purposes. Before beginning analysis, researchers proceeded with what Husserl (1970) calls knowledge criticism. The idea was to shed light on personal biases that could hamper the analysis' objectivity. In fact, in the pluridisciplinary research team, everyone had his or her own hypotheses concerning factors influencing environmental action. It was important to become aware of these presuppositions before proceeding.

Content analysis was done thanks to the work of three judges. An inter-coding percentage of 96% was obtained. Participants' and informants' answers and comments that corresponded to a priori categories, that is to say, to the action factors identified in the literature census, were first taken. Other elements judged significant and not found in the theoretical framework were then found to form emerging categories. The coding model used was mixed and divided into three steps: individual designation of categories by each judge, inter-judge agreement about categories, and assignment of balance for each category for each actor (presence of the category: yes or no).

Following analysis of the corpus, index cards were created for each group. The theoretical framework's categories, emerging categories and the balance attributed to each (yes, no) could be

found on these cards. A compiled table for all groups was finally elaborated, in which the presence or absence of categories linked to sociocultural factors that had influenced environmental action could be observed. The educational factors that incited the group to start an action were not added in any table because of the diversity of educational interventions chosen by the teams.

Results

Sociocultural Action Factors

Table 1 shows the sociocultural factors that, according to interrogated individuals, favored or facilitated their decision to act. Certain category groupings found in this table (moral, anthropocentric and biocentric values) were inspired by the research of Kempton, Boster and Hartley (1995). These anthropologists, who interrogated 46 adults considered to be environmentalists, found that the latter's environmental values derived from three principal sources: religion, anthropocentrism[3], and biocentrism[4]. Other category groupings were created from the data itself.

In Table 1, we note that the sociocultural factors that, according to interrogated individuals, had motivated the action the most were the sense of solidarity, the impression of success due to the presence of a group, the feeling that the project was realizable, as well as attachment to nature and to people in the milieu. Similarly, prior accomplishment of community actions and expectation of rewards following the action were important motivational factors. The presence of friends involved in the project, awareness of the future, esthetic values, environmental responsibility, the influence of leaders and social pressure were more or less influential sources of encouragement. Finally, religious values, availability, personal interest for the action project, perception of the problem as serious and fear for health were less often mentioned as influential factors.

Table 1: Sociocultural factors that incited the members of the 4 groups to environmental action (n=27)

Moral or religious values	
sense of solidarity	27
religious values	1

Factors related to milieu	
attachment to nature	22
attachment to people	21

Values related to the group (to its characteristics)	
prior community actions	10
availability	3

Factors related to the task	
impression of success if working as a group	26
project is realizable	23
presence of friends within the group	8
personal interest in the action project	3

Anthropocentric values	
personal rewards following the action	15
awareness of future	7
esthetic values	6
perception of problem as being serious	3
fear for health	1

Biocentric values	
environmental responsibility	9

Social values	
influence of leaders	9
social pressure	7

The preponderance exhibited by sense of solidarity in the participants' answers concerning the reasons for their desire to act was predictable given that this Acadian community is known for its cooperative tradition. In fact, during the 1930s, the citizens of this rural community of 2500 inhabitants had to show, in order to survive, an entrepreneurial spirit and a sense of cooperation so as to set up family businesses (fish factories and smokehouses) allowing the entire population to meet its needs in autonomous fashion. In Cap-Pelé, fishermen sell their catch to the industries where their own spouses and other members of the community work. Similarly, Acadians are generally recognized for their attitude of cooperation and solidarity. This is how answers like the following were frequently formulated: "Everyone has to share in the responsibilities that come with working on an action project" (a Knight); "I like to help, and I want to work with others" (a seventh grade student)...

Attachment to the village's natural milieu and people was also well rooted into the participants' answers. Feelings of ecological identity (Thomashow, 1995) and community identity (Altman and Low, 1992) were easy to locate in their explanations: "I live close to the sea and I always want to go there. We mustn't destroy that" (a fourth grade student); "We really are attached to the people of Cap-Pelé. We do what we can to improve this parish" (a Knight).

Answers concerning the probability of success of an action project were varied. Participants explained their concept of the easiness of the task by citing the presence in the group of strong or competent people, the simple nature of the task, the greater number of volunteers in the group, and the availability of financial resources: "With the government's help and great Knight Raoul's help, we can do something" (a Knight); "There are a lot of us! They are strong and courageous!" (a fourth grade student).

Expected personal rewards following the action mentioned by participants were either of concrete or psychological nature: pride, joy, visibility, interest from tourists, glory, the return of children who have grown up and left the village, etc.

Awareness of the future and esthetic values are two action factors that were found only in the Knights of Columbus group. Their remarks were riddled with an ardent desire to embellish the

village for the well-being of future generations: "I could say that the environment is important to the future of my kids who are growing up" (a Knight). Social pressure, the presence of friends involved in the project and the influence of leaders were, however, influential factors mentioned by all groups. Individuals who talked about the importance of those factors in the motivational process said they were led towards acting by their friends, by leaders known to be skilled and efficient or by the impression that "the environment is important for the people of Cap-Pelé" (a fourth grade student).

The seriousness of the problem was only identified as a factor by the group of fishermen, but was expressed by each of these seamen. In fact, these men learned, during their training session, to recognize a cause and effect relationship between the deteriorated state of streams and coastal marshes and the reduction of fishing resources. "We used to be able to fish cockles. Now they are contaminated. The entire food chain is affected!"

Action Factors of an Educational Nature

Table 2 offers insight into the educational activities that the participants reported as sources of motivation in their desire for commitment towards the environment. As mentioned above, this table contains no numbers since the training offered to the four groups differed. It is nonetheless interesting to note that visual contact with the environmental problem, either direct or through video, was an important factor in the decision to act of three of the four social groups. Remarks such as these were gathered: "When we went to see the stream, we saw that it was polluted by large pieces of wood... I wanted to make it better, to help it, to remove what was in it" (a seventh grade student); "I didn't know the stream was so dirty. The video influenced me greatly" (a fisherman). Similarly, the cognitive dissonance used on the fourth graders seems to have exerted a decisive impact: "I thought I was going to see frogs and little fish. When I saw what state the stream was in, I thought to myself that something had to be done."

Transmission of environmental knowledge as an influence factor was identified by several individuals in each of the social groups. Participants explained that this educational intervention

had held their interest, helped them better understand or "brought them out of their ignorance" in regard to the problem. Similarly, in the seventh grade class, the use of a success story seems to have reinforced the feeling that they could act: "That tale made me make a decision. I thought to myself that we could get involved." As for the Knights, they were touched and amused by the sensory activities: "What impressed me was the noise of the branches creaking and the stream flowing. It was interesting and made me want to get involved." Finally, the fourth graders said they had been encouraged by the accomplishment of their first action: "We can do it! It's fun and we've done it before."

Table 2: Educational factors that incited the groups to environmental action

- Information given (all groups)
- Cognitive dissonance (fourth graders)
- Execution of a first action (fourth graders)
- Visual contact with problem (fishermen, fourth and seventh graders)
- Sensory approach (Knights of Columbus)
- Success story (seventh graders)

Discussion and Conclusion

The sociocultural and educational factors that led the four Cap-Pelé groups to begin an environmental action are very diverse. They could be grouped in the following fashion:

1) *factors related to the power to act*: use of success stories, accomplishment of a first action, impression of being able to succeed if part of a group, realizable project, availability;

2) *factors related to the habit of acting*: prior community action, sense of solidarity, religious values;

3) *factors related to the knowledge of the need to act*: given information, visual contact with problem, use of cognitive dissonance;

4) *factors related to others' actions*: influence of leaders, presence of friends involved in the project, social pressure;

5) *personal and affective factors*: attachment to nature and people, use of sensory approach, environmental responsibility, personal rewards following the action, awareness of the future, esthetic values, perception of the problem as being serious, fear for health, personal interest in the action project.

The reasoned action theory, as applied in EE by Fishbein and Manfredo (1992), allows for a second analysis of the results obtained here. This theory is anchored on the following premise: humans are reasonable beings who systematically use the information given them. They decide to adopt a behavior in relation to two determinants: their personal attitude regarding the proposed behavior (personal determinant) and their perception of social pressures exerted to engage in the said behavior (social determinant). An individual will tend to adopt a behavior if both conditions are present: 1) he believes the behavior will provide positive consequences to him and those consequences are important to him; 2) he estimates that his fellow citizens consider that he must accomplish the act in question and he is motivated to conform to social norms. Thus, in Cap-Pelé, we note the preponderant place taken by personal determinants in the results: attachment to milieu, personal rewards expected after the action, visual contact with the problem, prior community action, etc. It is this important presence of personal determinants that favored the rapid and generalized emergence of desire for action in participating groups. However, determinants of a social nature (influence of leaders, presence of friends involved in the project and social pressure) were found less often in participants' answers. Is it to say that social norms in favor of environmental action are weakly developed in the village of Cap-Pelé? We estimate this interpretation to be plausible. Indeed, as for the concrete realization of an environmental action on-site, the degree of participation of group members was very high on the first day. The Knights of Columbus offered their collaboration during the Tree Day they organized themselves, a day during

which thousands of trees were sold to village inhabitants at modest prices. Similarly, the fishermen and the fourth and seventh grade students worked very hard, on a first outing, in cleaning up and unblocking the Friel stream on a distance of one kilometer. Nevertheless, on a second day devoted to the stream's restoration, few fishermen and none of the seventh graders invited showed up on-site. It must be added that this second day was in the middle of July, at a time when students are on vacation and an important period of the season for cod fishing.

In the light of result interpretation through reasoned action theory (Fishbein and Manfredo, 1992), we can still formulate the hypothesis that desire for environmental action can easily be aroused with the help of a variety of short-term educational activities in a cooperative village like Cap-Pelé. However, the conviction of the importance of environmental action and the regularity of accomplishments related to environmental action should be the object of further educational intervention and research. These interventions could have the goal of developing social norms in favor of environmental action accomplishment. We should thus promote, in the general population, the value given to the target behavior, that is to say, involvement in the restoration of bioregional ecosystems...

On this subject, researchers had already undertaken measures to verify the presence, in the general population, of the awareness of ambient environmental problems and of an internal locus of control. An investigation conducted in the village by Boubacar (1998) allowed the discovery, in groups already involved in the project as well as in other individuals, of a distinct lack of knowledge about the most serious problems as well as a marked interrogation about their capacity to get involved personally involved in the resolution of those problems. To overcome these difficulties, researchers plan to design and realize other educational interventions. One of these interventions consists in collaborating with village citizens to plan and set up an interactive site on the Internet. The proposed site would provide information on the state of resources in the milieu, suggestions on possible methods of development, intergroup communication tools, motivational videos showing actions previously undertaken, etc. Researchers consider that this site could influence social norms favorable to the environment by generalizing awareness of environmental

controversies, by favoring the emergence of new leaders, by offering publicity for events and people associated with the project, and by increasing community identity and social cohesion.

As for the scientific importance of the research presented in this article, we believe that it provides information on the factors influencing environmental action in small communities. Environmental action seems easy to stimulate at first, but more difficult to maintain. Certain factors seem to be determinant of environmental action, like visual contact with the problem, the impression that the action is realizable, importance of the information, a sense of social solidarity and the expectation of personal rewards following the action. Other factors, however, seem all the more associated to particular groups or interests: sense of esthetics (Knights), economic consequences of problems (fishermen) and personal interest in the action project (the desire to visit the site, for the students). More research is needed to reinforce the validity of the results presented here.

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Notes

1 The scientist and pedagogue are Masters degree students in Environmental Studies. These students alfeady have a Bachelor's degree in another discipline: biology, engineering, education, agriculture, etc. These identified as pedagogues necessarily have a background in teacher education. The term pedagogue is used to avoid possible confusion with the actual fourth and seenth grade teachers whose classrooms participated in the study.

2 The Friel stream is a stream about 3 km long going through Cap-Pelé to finally throw itself into the sea. This stream's different sections have different probes: reduction of flow because of trash and improper residential development, pollution due to refinement site waste, etc.

3 Anthropocentrism is defined as the belief in nature's usefulness in the well-being of humanity.

4 Biocentrism consists in recognizing the rights of nature, animals and plants for their intrinsic value. People who hold this belief estimate that species have a fundamental right to continue to exist.

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