

Teachers' Experiences Evaluating an Environmental Education Project in a Primary School in Yucatan, Mexico

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A congruent evaluation approach to Environmental Education (EE) is a key element that would allow to an evaluation community to enhance their programs and therefore reach major benefits to improve their lives in contexts such as the environmental, educational and communitarian. In this work I present teachers' experiences participating in an empowerment evaluation of an EE program in a primary school in Southern Mexico. Participatory Action Research (PAR) was the methodology approach to implement empowerment evaluation of this EE program. Teachers learned and recognized the value that an evaluation could bring to their own educational practices and relationships with others community members, and at the same time they developed a responsible and autonomous environmental culture which leads to improve environmental situations in their school, home and community.

Environmental Education: A Priority for a Better Environmental Situation

There has been almost 50 years from the beginning of Environmental Education (EE) and several conferences, agreements, and treaties have been developed in order to enhance the environmental situation. The World Summit on Environment and Development, at Rio in 1992, (Palmer 1998) and the World Summit on Sustainable Development at Johannesburg in 2002 (United Nations Educational Scientific and Cultural Organisation 2010) have been two important conferences in which EE was highly recommended as a main strategy to improve the current situation on environmental problems. However, despite of several numbers of conferences, there has still not been a robust and deep impact on the environmental and life welfare around the world, but specifically in the developing countries. This is the case of the Latin American region and particularly in Mexico, where their EE appearance was almost a decade later in comparison with the implementation and development of

several EE programs in industrialized countries such as United States, Canada, Australia, United Kingdom and other Western Europe countries (González-Gaudio 2007).

Although Mexico has had a slower rhythm of development in the field of EE, the country has attempted a strong development of EE within the formal education context. However, rather than make EE implementation possible at this level, Mexico have been influenced by strong ties to the political and social problems of that epoch, which have impeded the contribution of enough and successful efforts within this field (González-Gaudio 2001).

Recently, the Ministry of Education in Mexico (2007-2012) established the priority to develop a better educational level that increase in the students their educational attainments, which have an impact primordially on their welfare and the national development required in the Mexican context (Rodríguez & García 2009). To attain this purpose, a new educational reform at primary education level has been approved. Within this new reform, EE is demanded as an important component to be developed as a cross-curricular subject in order to improve environmental conditions in our country.

Evaluation: Key Element in the Implementation of EE Programs

Despite several endeavors implemented in EE, still it is having a gap between what does theory say and what does in practice do (Stevenson 1987, 2007). This issue in EE could be attributed to the absence of the evaluation component, which must be a core element in any EE program. As Crohn & Birnbaum (2010) have asserted, even though EE has not been a recent field attempting to lead to better environmental behaviors, an evaluation approach has not been present in those EE programs. Evaluation of EE programs has not been either a primary or imperative aspect considered by different kinds of organizations that develop EE. Similarly, the major efforts to develop EE has not been with a quality and systematic evaluation approach which provides to teachers and environmental educators robust knowledge about the EE program under implementation (Carleton-Hug & Hug 2010).

Because of the necessity that EE aims to lead citizens to think in a critical way, make decisions, and learn to be people that acquire worthy environmental ways to act (Robottom & Hart 1993), it has been remarked the necessity of developing approaches to evaluation that empower and allow people to act in a participatory way to solve local-national-global environmental problems. In this sense, I argue that a congruent evaluation approach would become a key element to provide a better implementation of EE which helps teachers, children, parents and community member for learning and developing in their lives a responsible and autonomous environmental culture. Empowerment evaluation was that congruent evaluation with the theoretical and methodological approach to the EE program under implementation. In this paper I will focus on the different three phases of a teachers' experience participating in empowerment evaluation of an environmental education program in a primary school in Southern Mexico.

Participatory Action Research as Methodological Approach to Implement an EE Program and its Empowerment Evaluation

Through Participatory Action Research (PAR) the group of researchers and participants tried to contribute with the generation of new knowledge on the resolution of environmental problems and at the same time on the implementation of the empowerment evaluation approach for Viga's model. PAR is considered as a strategy to improve life conditions through the own people participation in seeking, analysing and acting for problem solutions (Craig 2009).

PAR contributed to the involvement of teachers, children and parents in a more active and critical way within the different stages of this project. As well, PAR was present in the beginning of the training workshop on Viga's model, where participants learned on PAR methodology to the model implementation, and therefore in its evaluation stage.

Methods and study place

Methods used in this research were the *Participant Observation* (Dewalt & Dewalt 2001; Mayan 2001; Patton 1990; Rodríguez, G, Gil & García 1999; Stake 2010) during all school activities including teachers' classes. I conducted nine *Open-ended Interviews* (Gillham 2000, 2005; Patton 1990; Ruane 2005; Stake 2010) to principal and teachers from the primary school, entrepreneurs, and local governmental and non-governmental authorities within this community. Two *Open-ended questionnaires* (Hernández, Fernández & Baptista 2003; Ruane 2005) were applied, as well with teachers and children's parents, and eight *Focus Groups* were implemented (Edmunds 1999; Krueger 1988) with the principal, teachers and parents.

The main research site was "The Primary School", a rural school located in South Nousmet¹ in Yucatán, México. This small town is located about 50 minutes near to Merida City and it has 800 inhabitants mainly coming from Mayan origins (INEGI

Teachers and Principal of this primary school: a participatory community.

The selection of research participants from the school context made a total of five teachers, including the school principal, and one more person who is in charge of all maintenance activities within this primary school.

On the one hand, there were teachers' characteristics that encourage the project participation. For instance, one of this teachers' characteristic was the age. They are mainly young people in service between 28 and 33 years old which made they were more interested, motivated and participatory in this project. On the other hand, there were also constraints that several times dificulted the program implementation. Two of these constraints were the place of residence and the agredd time to participate in this project. The five teachers working in this school live in a different place to their job location. Four of them live in a place located to one hour from South Nousmet community where is the primary school, generating a stressful situation for their participation because after the journey day they known that were going to travel one hour more to home; a difference from the other teacher who lives to 10 minutes from this community. This situation was very tied to the reduction of time destined to the

¹ I have changed the name of the research study place in order to conserve the anonymity and confidentiality of participants within the project.

project because of a broad range of other priority activities within their primary school.

Three Interconnected Phases for an EE Program Implementation

During January and February in 2011, a group of researchers provided to teachers and a principal from the primary school the first training workshop about an Educational Model for a Responsible and Autonomous Environmental Culture (Viga 2004). This model was implemented through the National Environmental Education Cross-Curriculum in the primary school in South Nonsmet in Yucatan, Mexico. Viga's model aims:

“To contribute in both the management and the conservation of biodiversity, as well as in the generation of a responsible and autonomous environmental culture in Yucatan State through EE as a cross curriculum implementation in primary education” (Viga de Alva & Paredes. 2009, p. 45).

Within this workshop participants learned about the four components of Viga's model. Firstly, participants learned about current situation on environmental problems, as well as on epistemological and methodological issues in the field of EE. In this model, EE is an important component that encouraged participants to rethink and act in pro of the management and conservation of the natural resources in their community. Secondly, participants learned about PAR, the second component of this model, which promoted and advocated involvement of teachers and students in solving and promoting environmental solutions in both school and home contexts. The three PAR steps, see, analyse and act, were a significant learning in this project to solve any educational and environmental problem. Thirdly, participants learned on other important component present in Viga's model, the *culture*. Participants recognized and value:

“The system of knowledge which gives order, coherence, integrity and direction to the community members toward the development of social actions” (Aguirre 1982, p. 149).

This learning was in regarding to those important culture components in the community and their own educational system in our state. With this knowledge and understanding, teachers were able to develop strategies to involve people from community and other colleagues to implement EE in their own contexts. The culture component in this model was very tied to *communitarian participation*, the four important element in Viga's model. Through the emphasis that inclusion and participation would generate more strategies to improve lives conditions in their community, teachers and students involved parents and community to participate in several school activities in order to solve some environmental problems. Here, communitarian participation was defined in Viga's model as:

“The action to participate in an event or its stages in both indirect or direct way, through the physical presence, provision of ideas, planning and accomplishment of actions through the resources, knowledge and abilities being in group and which activity is going beyond of the family benefit

context framing the population groups in their totality and expressed in some place, sceneries, environments and relationships” (Castillo 2001, p. 275).

After the training workshop on Viga’s model, participants began a second training workshop on empowerment evaluation as the approach to evaluate Viga’s model under implementation. The time destined for this workshop was only three days because of the tied teachers’ agenda for the next two months.

Empowerment Evaluation advocates that social programs can raise the likelihood to obtain better results if participants contribute knowledge on planning, implementation and evaluation of those social or educational programs (Fetterman 2005a, 2005b; Wandersman et al. 2005). In this way, these three training days included teaching on the conceptualization and principles on empowerment evaluation, as well as involved several meetings in which were agreed about its empowerment evaluation design. Participants enhance a combination of PAR to develop Viga’s model and at the same time its empowerment evaluation. Participants together with the sponsor, researchers and the evaluator had discussions in order to guide and advice activities regarding to the evaluation of Viga’s model.

Once teachers finalized these two training workshops, a third phase consisted in Viga’s model implementation. Principal of the primary school, teachers, students and their parents began a participatory process within the project in their school. From this project experience, teachers organized the development of a short research about the natural resources state and main environmental problems within the community where is located the primary school. As well, teachers were able to use the three PAR steps to solve two or three most important environmental problems affecting both the community and the primary school. Furthermore, an important attainment for teachers was that parents implement specific actions to care the environment such as saving energy and water or implementing the three R’s in their homes. Moreover, extending the dimension implementation of this project in the educational area, teachers involved in this project participated in a professional development course where they promoted the implementation of Viga’s model in other primary schools as their own pilot research within this course. During and at the end of Viga’s model implementation, teachers were able to provide the sponsor and other participants reflections about their experiences in this research, and therefore to indicate possible improvement areas within such EE model.

Conclusions

It is essential to conduct an evaluation that is appropriate to the theoretical and methodological approach to the EE program under implementation. Going beyond the implementation of any approach to evaluation of EE practice I assert that the development of empowerment evaluation within this project allowed all school community to be part of their own implementation of environmental solutions in both school and community contexts. Teachers learned that PAR can be an accurate methodology to develop EE help them to improve and reflect those situations or elements that were impeding a better development of the EE model. Moreover, teachers understood and reflect that through PAR and empowerment evaluation, the EE project implemented in their primary school encouraged toward a positive impact

on natural resources and resolution of environmental problems; provided valuable strategies to develop innovative and successful EE ways in primary schools at local level; integrated theoretical and methodological components for a flexible implementation in different contexts, integrated primary curriculum in formal education, and found for congruent action between the educational aim, objectives and values of the new education reform proposed by the Ministry of Education.

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