



Environmental education in the baccalaureate: From school to family

Educación ambiental en el bachillerato: De la escuela a la familia

Adelina Espejel Rodríguez is a research professor at the Autonomous University of Tlaxcala (Mexico)
(adelinaer@hotmail.com)  (<https://orcid.org/0000-0003-0299-796X>)

Isabel Castillo Ramos is a research professor at the Autonomous University of Tlaxcala (Mexico)
(icastillor@hotmail.com)  (<https://orcid.org/0000-0001-7761-3225>)

Received: 2019-02-08 / **Reviewed:** 2019-04-01 / **Accepted:** 2019-05-20 / **Published:** 2019-07-01

Abstract

This paper has as objective to show how baccalaureate students involve and raise awareness within their families through practical and feasible actions to preserve and care for the school and the community environment. Research is developed in the framework of qualitative methodology. The information was collected using participant or direct observation method; home-works, daily notebooks, it also was applied a questionnaire with questions to answer in open and close form. This research was practiced into Centro de Bachillerato Tecnológico Industrial y Servicios 212 (CBTIs), of Tetla de la Solidaridad, Tlaxcala, México in 2017 year. As study subjects were 85 students and their family were 282, linked to applied Family Environmental Program (PAF) as operative strategy. The data resulting from field work were systematized and processed in order to do easy its analysis and interpretation. Students applied the PAF with their families, also teach to each one to preserve the environment. It is concluded that environmental education should be from parents to sons and from sons to parents;

its permit reinforce their own conscience, develop and promote environmentally friendly values and behaviors, for care, conservation of natural resources. The Mexican population needs to promote the environmental culture.

Keywords: Environmental, young, baccalaureate, community, awareness, value.

Resumen

El documento tiene como objetivo mostrar cómo los estudiantes del nivel medio superior (NMS) involucran y concientizan a su familia, a través de acciones prácticas y viables para conservar y cuidar el entorno escolar y comunitario. La investigación se desarrolla en el marco de la metodología cualitativa. La información se recolectó utilizando el método de observación directa o participante; tareas, bitácoras, asimismo se les aplicó un cuestionario con preguntas para respuestas en forma abierta y cerrada. Esta investigación fue realizada en el Centro de Bachillerato Tecnológico Industrial y Servicios 212 (CBTIs) de Tetla de la Solidaridad, Tlaxcala, México, en el año 2017. Los

sujetos de estudio fueron 85 estudiantes y 282 familiares, vinculados para operar su Programa Ambiental Familiar (PAF) como estrategia operativa. Los datos resultantes del trabajo de campo se sistematizaron y procesaron para facilitar su análisis e interpretación. Los estudiantes aplicaron el PAF, con sus familias, así como enseñar a cada uno de sus integrantes para preservar el medio ambiente. Se concluye que la educación ambiental debe ser de padres a hijos y de hijos

a padres, esto permite reforzar su propia conciencia, desarrollar, fomentar valores y conductas amigables con el medio ambiente, para el cuidado y conservación de los recursos naturales. La población mexicana necesita fomentar la cultura ambiental.

Descriptor: Ambiental, jóvenes, bachillerato, comunidad, conciencia, valores.

1. Introduction

In the face of global and local environmental problems (EP), it is necessary to implement models or strategies of environmental education (EE) in educational institutions that involve both students and their families to reduce EPs in Mexico. Therefore, the aim of this paper is to show how young people from the upper middle level involved their family in environmental activities or actions, in order to jointly create environmental awareness to mitigate EP from their environment. In recent decades, globally there is a greater concern for EPs that are displayed in different parts of the planet, which is why every day EA strategies or models for educational institutions are established, investigated or innovated. EE should be a permanent and transversal process in the formal education system, where students acquire and promote their awareness, knowledge, attitudes, behaviors, values, competencies and practical experiences to act individually, as a group or collectively in the resolution or mitigation of environmental problems. However, EE should not only be a strategy for transmitting information in formal education, but also a form of teaching focused on praxis. Therefore, "its results must be reflected in the daily life of families and governmental and non-governmental institutions, and it must also have a factor of social change, aiming at the development of environmental values and attitudes" (Rivas cited in Salinas, 2016, p.11).

The EE, by the way they conceive and carry it out in the educational action, can be exposed

by different currents: the naturalist, related to the ecosystem or biosphere, which teaches about nature or experiential; the conservationist, which groups the proposals in the conservation of natural resources; the resolute, with which it is about informing or driving people in the development of skills to solve EPs or mitigate them; and the action is accentuated in dynamic tasks (Sauve, 2004). In addition, the moral current or conduct is established in a set of values and attitudes, conscious and coherent among them; while sustainability is about learning to rationally use the resources of the present, to ensure the basic needs of the future (Sauve cited in Paz, Avendaño, William, & Parada, 2014).

García Díaz (cited in Morón, & Morón, 2017, p. 251) indicates that there are three models in relation to EE: a) Naturalistic, adjusted to the understanding and knowledge of the contents of the subjects related to the environment (ES) and environmental research; b) Environmentalist, where it seeks to favor, help, respect and preserve the environment through awareness, motivation, knowledge and training to the population, seeking mitigation of the EP; and c) A third model called sustainable development with the purpose of using resources rationally and sustainably to seek a change in the economic, social and environmental structure.

In this work, by the way it is conceived and practiced the EE is seen from the currents: Resolute, because schoolchildren are informed about EPs and they, together with their families, develop skills and strategies to reduce them; praxis, the students and the members of the



family are placed in a vision of work, of education, and reflection; it is also explained from the ethical-moral current, which is based on a set of environmental commitments and values that they and their families are acquiring through the course. Likewise, the EE is seen from the environmental model, which seeks to benefit, help, respect and preserve the environment through awareness, information and training to the population, for the mitigation of the EP.

In each of the currents and models it is sought that the EE is an instrument to activate, promote and develop environmental awareness, focused on originating the friendly participation of teaching, in the conservation, use and improvement of the E, in addition it is accentuated in the

achievement of positive attitudes and committed behaviors in the subjects (Morachimo, 1999). It also allows the individual to analytically and reflexively evaluate their position, behavior and awareness of the environment (Paz, Avendaño, William, & Parada, 2014, p. 260).

Environmental awareness, when linked to EE, is explained as cognition, emotions, responsibility, practices and lifestyles that the individual dynamically and actively shapes with their nature (Febles cited in Alea, 2006). We speak of a multidimensional knowledge, with different dimensions (Chuliá, cited in Moyano, & Jiménez, 2005). In this respect, according to Gomera (cited in Espejel, & Flores, 2017), we can distinguish four (See Chart 1).

Chart 1. Dimensions of environmental awareness

Affective	<ul style="list-style-type: none"> • Recognition of environmental deterioration, affirmations and emotions in environmental matters. • Friendly attitude towards the environment, motivation is achieved and stimulate feelings in order to sensitize.
Cognitive	<ul style="list-style-type: none"> • To obtain information, knowledge and understanding about environmental deterioration. • Develops environmental skills and values for the conservation and care of the environment
Conative	<ul style="list-style-type: none"> • Availability to favor attitudes, behaviors and environmental values to reduce EP.
Dynamic	<ul style="list-style-type: none"> • Practice of responsible work, both private and social.

Source. Own elaboration based in Gomera (2008) and Morachimo in Avendaño (2012).

2. Education and family

The family has been conceptualized as the main base of the human species, which is constantly immersed and related to its nature. "The family is a space for living relationships and coexistence where feelings, emotions, behaviors, values and diverse attitudes are expressed, associated with the behavior of living beings" (Rojas, 2002, p.190).

Families are the basis for inculcating values of responsibility, respect and discipline to take care of the environment in a friendly manner. The EE must be redirected from home to school and vice versa. School education should strengthen the knowledge and values of young

people to build them in a manner consistent with their school-family environment. These can be proactive, for example, "love, honesty, responsibility, tolerance, humility, respect for human dignity, respect and care for the E, attention to the satisfaction of needs, quality of life, care of the health and attention in education" (Rojas, 2002, p.90). Family is a space where values, notions and ideals for the progress of people and the care of their environment are transferred and taught.

The EE must start from the teaching of parents to children so that the family can transmit values and behaviors that serve to care for and preserve the school and community's E. Currently, it is sought that environmental educa-



tion is transversal with the different disciplines to unify knowledge and learnings from a daily and empirical reality.

In the present work the family is argued as a transmitter and receiver of environmental values, following Bronfenbrenner (cited in Mathiesen et al., 2002), it is considered as an open system of great relevance for the development of people. But also “Its fundamental educating function, responsible for transmitting social norms and values to their descendants and preparing them to function in the social world, has been recognized in all cultures throughout history” (Levy cited in Mathiesen et al., 2002, p 56).

The family, together with the educational institution, friendships and social information networks, are the main transmitters of the knowledge, values, behaviors, attitudes, roles and habits that help us to develop as rational people within a society (Papalia cited in Mathiesen et al., 2002). In this research, it is sought that young people transfer environmental knowledge in a responsible and timely manner to family members, to encourage environmental action in homes and communities.

Society shapes its values through family and school socialization. The child or young people visualize their environment according to the way of life offered by the family (Loera cited in Fragoso, & Canales, 2009) parents must intervene in a conscious way to form values, knowledge and attitudes that allow their children an approximation with the real world. However, educational institutions are modeled as a space of relationships with different individuals, who have a culture and knowledge different from those learned at home.

The school becomes a privileged place where students interact with different groups, with their own cultures, with particular ways of valuing the world that surrounds them and complement it with the particular way that they develop in their classrooms to expand their horizons (Fragoso, & Canales, 2009, p.178).

The education of young people is acquired from the experience and family, school and community life, which makes each individual have their own culture with values and attitudes different from their environment. Although the strongest and affective bonds for the acquisition of values are within the family (Fragoso, & Canales 2009). Therefore, this paper analyzes the environmental values transmitted by parents to their children or vice versa, from young people to parents, due to the updated education they acquire in the course of their continuing education.

Given this, young people participate in an exchange of communication and training of knowledge, attitudes and environmental values, obtained in educational institutions. They seek to be involved in a participatory manner with each member of their family in order to contribute, promote and develop environmental values together. Jacometo and Rossato (2017, p.58) allude that “Affective bonds provide psychological and social support in the family, helping to cope with everyday problems.” This article describes the way in which young people involve their parents, family and friends, to develop and promote values acquired in school, in order to mitigate EP.

3. Methodological strategy

The research is developed in a qualitative context to expose and deduce the interactions and subjectivities (Dieterich, 2003, Gayou, 2012) of the students. This methodology conceptualized by Taylor and Bogdan (2000) and Hernández, Fernández and Baptista (2014) as: The one that describes the information in textual form of individuals either in written form or in dialogue. Also, the perceptible observation. Methodological notions that allow achieving the objective proposed in the present investigation. To execute the research, first of all, the teacher in a didactic and practical way, applied the phases of the EE model (Espejel, 2015) to the students, to motivate them,



provide environmental information, teach them skills, values and commitments with their environment, with the aim to encourage and increase the environmental awareness of the students, as well as being able to transmit, establish and organize activities with members of their family. Within the actions of the EE model, a FEP is considered as a tool that contains a series of specific actions and practices (planned and proposed by the students, according to the environmental problems of their community), projected to be executed in a given period, with the fundamental purpose of identifying and mitigating the EPs of educational institutions and localities (Espejel, & Flores, 2017). Afterwards, the young people took the information and knowledge to their homes so that their relatives could participate in the elaboration and execution of their FEP.

3.2 Sample and techniques

To carry out the research work, CBTis 212 was selected, which is located in the municipality of Tetla de la Solidaridad, Tlaxcala, Mexico; mainly, because the institution is adjacent to the most important industrial zone of the State and because the municipality presents major environmental problems, such as: erosion, deforestation, contamination by solid waste, air and water pollution (Espejel, 2009). Also, because in CBTis 212 the subject of Ecology is accredited, which is taught in the fourth semester of the common core, its contents are related to environmental education and sustainable development. The study involved 85 students of the fourth semester of the baccalaureate of CBTis 212, who were studying Ecology, of the evening shift of the specialties of Logistics, Mechatronics, Programming (A) and Programming (B). Each student elaborated his FEP with activities that his same family proposed. The total number of participants was 367.

For the collection of information direct participant observation was used “to obtain impressions of the surrounding world through all relevant human faculties” (Patricia and Adler,

cited by Gayou, 2012, p.104). This technique needs to have a close relationship with individuals to work.

To make a more complete and methodical inquiry and assessment, the students were asked to answer a questionnaire and submit the logs where they captured the FEP activities. The questionnaire was organized in three parts: a) General aspects, b) Executed actions, c) Organization of teams, d) Satisfaction of carried out actions.

3.3 Systematization and analysis of information

The observations, narrations of their logs, projects and the questionnaire allowed us to describe, systematize and analyze the information. “The method of descriptive analysis is the one that was used to show the successful results of the present research work” (Espejel, & Flores, 2017, p. 299). According to the objectives proposed in the project, the categories of analysis were presented in a logical and coherent manner. The Excel program was used for systematization to organize, classify and categorize the information. It was considered that:

The analysis of qualitative data, respond not to the quantification of information but to the process of interpretation with the purpose of discovering concepts and relationships in the raw data, and then organizing them in explanatory schemes. (Strauss, & Corbin, 2002, p.20)

4. Analysis and results

4.1. General aspects of the participants

The research involved 85 young people from CBTis 212, between 16 and 17 years old, male (35) and female (50), of four specialties of the evening shift. Each student together with his family elaborated his FEP with activities that they proposed among themselves. The parents (mother, father) of the students who participated



are adults between 38 and 44 years old on average. The brothers and sisters who collaborated are between 11 and 17 years old. Those who participated the most were the mothers, then the brothers, dads and sisters, among others.

The total number of participants in the FEP was 367 subjects, of whom the mainly the

father, mother, brother and sister collaborated; however, students integrated others, such as friends, girlfriends or boyfriends, because their parents could not participate in all activities because of their work (See Chart 2).

Chart 2. Participants in the FEP of the NMS students

	Total		Total		Total		Total
Students	85	Fathers	49	Mothers	76	Brothers	51
Sisters	42	Uncles	8	Aunts	9	Grandmothers	7
Grandfather	3	Cousins (M)	4	Cousins (F)	7	Friends	4
Female friends	1	Boyfriend	2	Nephews (M)	3	Nephews (F)	6
Sister in law	3	Husband	1	Neighbor (M)	1	Neighbor (F)	2
Others	3	Aggregate Total					367

Source: Own elaboration

Regarding the family's work and school activities, it was found that the majority of the fathers of the students are employees, workers and merchants, only 9% are professionals. While 18% of moms are employed, 37% are housewives and only 3% are professionals. This last fact is relevant because it suggests the reason why they participated more with the children while carrying out the FEP. Most of the brothers and sisters who collaborated are students.

4.2. Sensitization-motivation and environmental knowledge to the members of the family

In order to carry out their FEP, the students had to inform their parents of the environmental activities that they should complete as a family. At first, it was difficult for the students to convince them, however, when they explained the objectives and the importance of taking care of the E, the parents agreed to support and partici-

pate in the work of ecology. It is worth mentioning that families are based on feelings of love and solidarity, to preserve affective bonds and carry out projects in a shared manner (Jacometo, & Rossato, 2017).

Some testimonies are shown:

First, I came home and I told them that the teacher had told us in class about caring for the environment and what could happen in a few years if we still do not have conscience, so I told them that the teacher had left us as homework to carry out an ecological project in which we do some activities that benefit the environment. When I explained to them, they noticed that I was excited and eager to start working, which motivated my family to follow my steps and integrate to raise awareness and help the environment. (Pablo, Mechatronics)

Subsequently, the young people sensitized-motivated the family members, through the knowledge acquired in the classroom, about the environmental deterioration so that they under-



stood the importance of implementing environmental actions. The students showed the document of “Carta 2070”, images of the EPs of their community and told them about the plot of the film “The inconvenient truth” of Al Gore. This information, as stated by Rivas (cited in Salinas, 2016), impacted and sensitized the family. Future and current generations require friendly values and feelings with the E for the care and conservation of natural resources. As well as being familiar with the environment, to achieve friendly attitudes with nature (Kollmuss, & Agyeman, 2002).

The students showed that they had fostered, developed and increased environmental awareness to their families, since they decided to support the activities projected in their FEP. Likewise, they understood and reflected that they would also benefit from taking care of their environment. Molano and Herrera (2014) argue that in addition to achieving favorable attitudes and behaviors with the E, the aim is to move from discourse to practice.

I told my parents that this family project is to take care of our E, in order to keep our planet healthy and to live a few more years, in this respect my family understood, reflected, conscientized and started helping me (putting together bottles, efficient light-bulbs, batteries, posters, water saving, etc.). (Mauricio, Logistics)

4.3. Organization and planning to carry out the FEP

Each student organized in a different way to capture and design his or her FEP, some analyzed all the EP in the community and from these they established the goals and the actions to mitigate them. The students in the course of ecology learned that first an environmental diagnosis must be elaborated in order to have knowledge of the local to the global:

First, we sat down to talk and discuss about the EPs that there are in the community and which

could be reduced with viable activities, later we planned the actions that we were going to carry out during the following months, to fight the contamination that there is in the community, we organized ourselves according to what each one wanted to do, to improve the E and the community environment. (Alberto, Programming-B)

Other young people, individually, planned the environmental activities of their FEP and then invited their family to participate. Each member of the family selected the environmental activity that they liked the most. The students planned their FEP activities with easy and feasible actions that could be carried out in a short time, since some family members worked and were not available to carry out complex tasks. Every time someone came up with an idea, they commented on it and expanded it to see which one was the most appropriate and that had a greater impact on nature.

The activities were projected and carried out according to the time availability of the members of the family, sometimes in the morning, sometimes in the afternoon. Some decided to make the most difficult on Saturday, as the father could help with the actions where greater strength was needed. Also, during the weekends they worked in the community.

Sometimes they were not able to execute all the planned activities, because there were problems, such as: lack of time, little interest, disappointment, as they picked up the garbage and the next day it was dirty all over again; due to lack of health and fatigue of the grandparents, due to the schedules they had to meet, lack of creativity and knowledge, bad weather, poor communication, lack of tools and due to unpunctuality.

4.4. Actions executed by members of the family

The young people elaborated their FEP in order to raise awareness and teach the members of their family to take care of the E, so that their



children can enjoy and have a better quality of life. The FEP have fostered an environmental awareness and a dynamic collaboration, favoring the school-community conjunction (Acosta, Fuenmayor, León, & Sayago, 2006). The structure of the FEP includes an objective, name of the family or name of the team, community where it is applied, EP to mitigate, viable actions, date and members of the family that execute it.

Most of the students carried out their FEP with the purpose of promoting environmental awareness in the members of their family about the damage that is being caused to the E, as well as recommending to be more careful with the daily and labor activities that contaminate their environment. The EE is a motivator of environmental awareness, focused on causing the dynamic intervention of teaching-learning for the conservation and preservation of the E (Morachimo, 1999). As an example:

We must create awareness in each one of the members of the family, so that we participate together in the execution of environmental activities, to achieve a cleaner environment and therefore have a better future for our children. (Verónica, Logistics)

The students also proposed their goals to prevent, avoid, control and mitigate environmental problems to have a cleaner planet and enjoy it with the family. Also, become ecological voices to inform the family, neighbors and others the serious problems that pollution is causing, which should be reduced with different proposals and practical solutions.

The main EP that the family fought was the contamination of solid waste and that of battered green areas, where the greatest number of actions were organized to mitigate them. The mother and the student were the most involved; for soil contamination, less environmental work was done.

In Chart 3 we can see the members of the family, as well as their participation in number of tasks to mitigate the PA of their school or community. The environmental actions that were carried out the most were: collecting garbage, separating and recycling, not wasting and reusing water, cleaning green areas, lectures, talks, composting, cleaning lagoons, rivers and streets, collecting rainwater, planting trees and plants, as well as watering them, putting trash cans and posters.

Chart 3. Family participation in environmental activities

Environmental problems that were mitigated	Father	Mother	Brother	Sister	Student
Solid waste pollution	25	51	33	17	62
Battered green areas	30	56	24	20	61
Deforestation	23	42	19	18	49
water waste and pollution	23	47	19	20	54
Visual contamination	15	20	11	13	27
Lack of environmental values	26	42	11	17	47
Soil pollution	7	9	7	5	9

Source: Own elaboration

The students, along with their family, proposed environmental actions to mitigate the problem of solid waste, they mainly want to contribute to have a clean and healthy environment,

also help the family economy, selling recyclable material and thus value more their environment. Alfie (cited in Molano, & Herrera, 2014, p. 193) said that “environmental training seeks aware-



ness and responsibility to achieve the solution to environmental deterioration.”

When carrying out this project, we discovered many contaminated places, with a lot of garbage that people throw away. So, we decided to contribute to our community by collecting it so that people realize that what they are doing is very wrong. (Carolina, Mechatronics)

The students and their families planned activities to solve the environmental problem of the damaged green areas and deforestation, mainly to support the E, having shaded areas, a pleasant climate, a good quality of life, greater fauna, locating trees in appropriate places, rehabilitate arid areas, more oxygen, take care of the planet so that trees and plants are in optimal conditions, improve the appearance of the community to raise awareness in children and adults, and prevent diseases.

My mom and I decided to do it because it is very important to keep our parks clean and looking good, because that's where most small children play. And it is very bad that the places where they play are mistreated and littered with garbage, because they can get diseases. (Martha, Programming-B)

The family decides to take actions so as not to waste and contaminate the water because it considers that it is necessary to be environmentally aware, since one day it may end or be scarce. Also, they do not want to run out of this vital liquid, since they do not like the idea that their future children and grandchildren cannot enjoy it or simply cannot meet their needs of daily life. The members of the family value water because they know it is very important for the existence of the land and without it life would be a disaster, for example, there would be no agricultural production, the lakes and rivers would

be dry and this would imply no longer working for money, but for water.

Water is something vital for our life on earth and if it were to end it would be a disaster, that is why we must take care of it since this liquid is very important for our existence on earth. For without it we could not live, because it is very important for our hydration as well for the crops and animals that exist on the planet earth. (Magdalena, Programming-A)

The lack of environmental values is another problem that the student struggled with the family, mainly because they observed that people do not have the habit of taking care of their E. Students want to change their way of thinking and educating new generations in the environmental field, in order to have a better or equal environment in the future. The main idea was to raise awareness among the population to care for and preserve natural resources:

Because pollution in all aspects is something that affects the life of the human being, but sometimes some people do not do anything to take care of the environment, since they don't know how to do it, it is best to orient them so that this problem does not continue to grow in the communities. (Irma, Logistics)

The different members of the family liked to participate in the FEP, mainly to contribute and care for their environment and interact with nature and the coexistence that is established between them, also to encourage and increase environmental awareness. Only the father and the student mention that to give good example to the children. The sister and the brother are the only ones who allude that doing environmental actions is a pleasant experience. Levy (cited in Mathiesen et al., 2002) mentions that one of the functions of the family is to transmit values of all kinds, to function and act in the social and environmental world (See Chart 4)



Chart 4. Reasons why the members of the family liked to carry out the FEP

	Father	Mamá %	Hermana %	Hermano %	Estudiante %
To set an example for children and family	30				5
To contribute and care for the	60	41	57	25	50
Have interaction with nature and the coexistence of the family	10	18			20
Satisfaction of caring for the E				25	15
To have and encourage awareness		35	14	12	10
Pleasant experience			29	38	
Others		6			

Source: Own elaboration

Some testimonies:

It is an example that we set for our children and that our children will give to our grandchildren, in this way we become aware of how to take care of the environment to have a future. I really liked doing the activities, I had fun when we planted the trees and gathered all the garbage from the streets. (Dad and sister)

5. Discussion and conclusions

The family is the basis for transmitting values and friendly behaviors towards the E, for the care, conservation and preservation of nature. However, it is unavoidable to increase knowledge, encourage and develop environmental awareness to engage in practical and viable actions in the family, school and community context. Jiménez cited in Apaza (2014) affirms that ecological awareness is fostered in the family and values learned in the home are reinforced, manifesting in daily environmental actions that optimize the living environments of the community.

It is worth mentioning that the Mexican population needs to promote environmental culture, for this reason the family EE must be fed back with the knowledge and experiences acquired by the students in the different educational levels, so that they converge in the updat-

ing of the information for the practical and feasible action on global and local EPs.

The educational institution of the NMS has the task of training competent young people that contribute to sustainable development in a critical, reflective and argumentative manner to favor the solution and mitigation of EP in the areas of their environment. This is one of the generic competences that marks the Comprehensive Reform of Higher Secondary Education (RIEMS) which students of the NMS must develop “to contribute to sustainable development in a critical manner with responsible actions and assuming an attitude that favors the solution of environmental problems at the local, national and international levels” (Diario Oficial, 2008, p.5).

The way to take and apply environmental projects in high school institutions allows students and their families to acquire the following advantages: increase coexistence and time with the family, develop the ability to communicate and convince, increase environmental awareness, learn to decrease costs of electricity, water and learn to plan and execute environmental activities. Remacha and Belletich (2015) and Rodríguez Vargas and Luna (2010) point out that projects expand creative skills in students mainly when they are formed into teams for the performance of shared tasks. In addition, applying this type of EA projects generates emotions of well-being, pleasure, stimulation, desolation



and affection when involved in the care and conservation of the environment, since it allows family members to be included, from children to adults and friends, which makes the coexistence between family-nature more pleasant.

The educated and trained young people of the CBTis 212 are active entities in environmental skills and knowledge, to execute viable programs or projects to raise awareness among family members and to propose actions aimed at reducing environmental deterioration in their locality. In short, the EE must be oriented from the family to the school and vice versa to strengthen the knowledge, skills, values, attitudes and behaviors of the young people and the members of the family group to achieve an environment consistent with their reality. "Education is a process of raising awareness, changing attitudes and values, acquiring knowledge and developing skills, aimed at the protection and care of the environment" (Tovar-Gálvez, 2017, p.523).

Bibliographical references

- Acosta, C., Fuenmayor, B., León, E., & Sayago, A. (2006). Programa innovador de educación ambiental para la población indígena aúñ en la Laguna de Sinamaica. *Omnia*, 12(3), 123-150.
- Avendaño C., W. (2012). La educación ambiental (EA) como herramienta de la responsabilidad social (RS). *Revista Luna Azul*, (35), 94-115.
- Apaza Quispe, J. A. (2014). La conciencia ecológica en el consume de productos en la ciudad de Puno-Perú. *Revista de Investigación en Comunicación y desarrollo* 5(2), 5-12.
- Alea, A. (2006). Diagnóstico y potenciación de la educación ambiental en jóvenes universitarios. *Odiseo, Revista electrónica de pedagogía*, 3(6), 1-29.
- Diario Oficial (2008). Acuerdo número 444 por el que se establecen las competencias que constituyen el marco curricular común del sistema nacional de Bachillerato. Diario Oficial de la Federación, 21 de octubre.
- Dieterich, H. (2003). *Nueva guía para la investigación científica*. México: Ariel.
- Espejel, A. (2009). *Problemas ambientales procedimiento metodológico y acciones de mitigación en el estado de Tlaxcala*. México: Universidad Autónoma de Tlaxcala/Universidad de Camagüey.
- Espejel, A. (2015). *Educación ambiental, enseñanzas prácticas para el nivel medio superior*. México: Universidad Autónoma de Tlaxcala
- Espejel, A., & Flores, A. (2017). Experiencias exitosas de educación ambiental en los jóvenes del bachillerato de Tlaxcala, México. *Revista Luna Azul*, (44), 294-315. DOI: 10.17151/luaz.2017.44.18
- Fragoso, E., & Canales, E. (2009). Estrategias educativas para la formación en valores desde la educación informal de la familia. *Educere*, 13(14), 177-185.
- Gayou, J.L. (2012). *Cómo hacer investigación cualitativa: fundamentos y metodología*. México: Paidós Educador.
- Gomera, A. (2008). *La conciencia ambiental como herramienta para la educación ambiental: conclusiones y reflexiones de un estudio en el ámbito universitario*. Universidad de Córdoba, España. (<https://bit.ly/2QcWFNK>) (2018/02/10).
- Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, P. (2014). *Metodología de la investigación*. México: Mc Graw Hill.
- Jacometo, M., & Rossato, A. (2017). Relaciones familiares versus aprendizaje: un análisis con niños de 5 y 6 años. *Alteridad*, 12(1), 55-66
- Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: why do people actenvironmentally and what are the barriers to pro-environmental behavior. *Environmental Education Research*, 8(3), 239-260, <https://doi.org/10.1080/13504620220145401>.
- Mathiesen, M.E., Mora, I., Chamblas, G., Navarro, M., & Castro, M. (2002). Valores y familia en estudiantes de enseñanza media de la Provincia de Concepción. *Revista de Psicología*, 9(2), 55-74.
- Morón, H., & Morón. C. (2017). ¿Educación Patrimonial o Educación Ambiental?: perspectivas que convergen para la enseñanza de



- las ciencias. *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias*, 14(1), 244-257.
- Molano, A., & Herrera, J. (2014). La formación ambiental en la educación superior: una revisión necesaria. *Revista Luna azul*, (39), 186-206.
- Morachimo, L. (1999). *La educación ambiental: tema transversal del currículo. Módulo Ontológico, Centro de Investigaciones y Servicios Educativos - Pontificia Universidad Católica del Perú*. Lima: Perú, Pontificia Universidad Católica del Perú.
- Moyano, E., & Jiménez, M. (2005). *Los andaluces y el medio ambiente*. Andalucía: Consejería de Medio Ambiente, Junta de Andalucía.
- Paz, M., Avendaño C., William, R., & Parada, A. (2014). Desarrollo conceptual de la educación ambiental en el contexto colombiano. *Luna Azul*, (39), 250-270.
- Remacha, A., & Belletich, O. (2015). El método de aprendizaje basado en proyectos (ABP) en contextos educativos rurales y socialmente desfavorecidos de la educación infantil. *Perspectiva Educacional, Formación de Profesores*, 54, 90-109.
- Rojas, M. (2002). Aprendizaje transformacional en la familia y en la educación. *Revista Venezolana de Análisis de Coyuntura*, 8(1), 189-200.
- Rodríguez, E., Vargas, E., & Luna, J. (2010). Evaluación de la estrategia 'aprendizaje basado en proyectos'. *Educación y Educadores*, 13, 13-25.
- Salinas, D. (2016). Educación ambiental para el desarrollo y consumo sustentable en Chile. Una revisión bibliográfica. *Revista Electrónica Educare*, 20(2), 1-15.
- Sauvé, L. (2004). Una cartografía de corrientes en educación ambiental. En Michèle Sato e Isabel Carvalho (Orgs.), *A pesquisa em educação ambiental: cartografias de uma identidade narrativa em formação*. Porto Alegre. (<https://bit.ly/2Jylu6m>) (2018/10/01).
- Strasuss, A., & Corbin, J. (2002). *Bases de la investigación cualitativa. Técnicas y procedimientos para desarrollar la teoría fundamentada*. Colombia: Universidad de Antioquia.
- Taylor, S.J., & Bogdan, R. (2000). *Introducción a los métodos cualitativos de investigación. La búsqueda de significados*. Barcelona: Paidós.
- Tovar-Gálvez, J. (2017). Pedagogía ambiental y didáctica ambiental: tendencias en la educación superior. *Revista Brasileira de Educação*, 22(69), 519-538.

