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Paper: Escuelas Verdes Program – A contribution to the democratization of Environmental Education

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Abstract

This paper proposes an approach to address the challenge of democratizing Environmental Education from a governmental entity while representing an opportunity to enrich the overall education of students and strengthen school planning and integration amongst subjects, teachers, and their communities. It is based on the experience and lessons gathered by the program Escuelas Verdes (Green Schools) of the Ministry of Education of the City of Buenos Aires, Argentina.

Along this review the points aforementioned are developed making special emphasis in good practices, lessons learnt and procedures in democratizing ESD in order to enable extensive scope, replicability and quality education. This review is based upon documented evidence and an analysis of documentation. On the other hand, it takes into consideration interviews done to key actors within the program.

Introduction

The system of production and consumption in modern societies triggered increasingly critical situations in environmental, social and cultural terms. These problems affect society as a whole and in different ways. Consequently, comprehensive perspectives are needed to solve them. The solution to environmental problems requires a deep cultural change in our society. In this sense,
education is a key tool to start generating those changes. Schools can and must play a leading role in the education of citizens committed to democratic life, care for the environment and the search for a better quality of life both locally and globally.

The institutionalization of Environmental Education within the city of Buenos Aires has shown fundamental for its implementation and establishment in the local education system. The Constitution of the City of Buenos Aires (Chapter 4 – article 27) expressly mentions the need to develop a policy to promote Environmental Education throughout all educational streams and levels.

In 2005 the Law No.1687 of Environmental Education for the Autonomous City of Buenos Aires was enacted establishing the need of creating learning spaces where students learn about the environment, considering it’s multiple and complex relationships. It establishes as well the creation of an Environmental Education Affairs Coordinating Committee and states that a variety of actions should be encouraged to include the environment dimension within schools as: training for teaching and non-teaching staff, developing Environmental Education Resources and improving school architecture favouring the environmental integration of school buildings, among other aspects.

The Ministry of Education responded to this stipulation by incorporating Environmental Education as an administration’s axis around which revolves the actions framework carried forward with the aim of orientating schools towards the future.

In consequence, in 2010 the Escuelas Verdes Program was created (Resolution 3117/MEGC/10) with the main goal of encouraging sustainable development through Environmental Education and Management in schools, raising in students critical thinking in regards to environmental issues. The launching of this Program is pioneer at national level, due to its extensive scope, its proposal and type of management.

This article represents a review of how the Escuelas Verdes Program addresses the challenge of democratizing Environmental Education in the whole educational system of the Autonomous City of Buenos Aires. To meet this task the program works taking into account three items: extensive scope, replicability and quality education. It intends to provide environmental education proposals for the whole school system; to deliver quality education for all; and to foster replicability processes among schools by promoting autonomy and self-management mechanisms.

In the first section of the paper, the Escuelas Verdes Program will be presented according to different items: (1) how it proposes to work Environmental Education at an institutional level; (2) how it proposes to link it with the curriculum; (3) how it proposes to work Environmental Education at a class-room level; and (4) it’s core lines of action with its results.

In the section of lessons learnt, an analysis of the critical success factors and aspects to improve will be done. This study will take into account the categories applied by the program to address the challenge of democratizing Environmental Education: extensive scope, replicability and quality education.

**Escuelas Verdes Program**

In the initial stages of the program, there was a first period of studying the situation of Environmental Education initiatives in the city to take action with grounded basis. Within schools many valuable initiatives were going on leaded by principals and by teachers. The school community has been working since a long time ago in environmental issues and education. In
response to this fact, the program intends to deepen the work that was already happening within schools, promote the sharing of bottom-up knowledge, consolidate quality Environmental Education within schools and support schools in their efforts towards sustainability.

In regards to other organizations proposals of Environmental Education, it was found that there had been many enriching proposals going on (from NGOs, the government -principally the Environmental Ministry and the private sector), but they had in some cases low impact and in others short scope. These two aspects are very important for the Ministry of Education to achieve, due to its responsibility to attend an extensive scope of schools.

Taking into account this first evaluation and trying to overcome these challenges, the Escuelas Verdes Program was designed from the inside of the Ministry of Education. The program main goal is to encourage sustainable development through environmental education and through the inclusion of sustainable practices within schools. Through Environmental Education, the program intends to work towards the construction of citizenship by encouraging commitment and responsibility in all social sectors for the effective resolution of socio-environmental issues.

The program includes a diversity of beneficiaries and it is oriented to the whole school system: pre-primary education, primary education, secondary education, special educational needs, education for people with disabilities and adult education. Its main beneficiaries are: students, teachers, non-teaching staff, principals and supervisors. This trait proposes a paradigm shift whereby Environmental Education is taken up comprehensively by the whole education community.

Still, it is important to mention, that the program began to work strongly with the public system (100% funded and run by the government) attending the inherent inequalities in comparison with private (controlled by the government, run by private, and tuition fee) schools. In the present time, it is giving its first steps with the private system. The reality of the city is of major socioeconomic inequality and this is reflected as well in the system of education.

The socioeconomic status of the students who attend private schools is higher than those who attend public schools. The total students enrollment of the city is 731,091, distributed 372,739 at the public and 358,352 at the private system. 30% (225,380) of these students have their basic needs unsatisfied. The total amount of educational institutions is of 2.679, distributed in 1,157 public and 1,522 private.1

Regarding the specific goals of the program, they are the following:

- To provide continuity and permanence of Environmental Education in the education system.
- To promote a critical environmental perspective based on a complex view of the environment.
- To guarantee the provision of a heterogeneous environmental education promoting educational equality.
- To stimulate the performance of specific environment management actions.

1 This statistical data has been obtained by the document “Panorama Educativo 2009 – 2010” developed by the Operative Direction of Research and Statistics.
• To contribute to the development and improvement of teaching resources and training for an integral approach to Environmental Education, contributing to overall innovation in education.

In terms of organization, the program is based in 4 pillars: Waste Management, Environmental Health, Energy Efficiency and Renewable Energy and Climate Change. It represents an integral initiative that aims to work with these four pillars simultaneously: through courses on environmental education and the development of educational resources; and through the implementation of concrete sustainable actions.

In this section, the Escuelas Verdes Program will be presented according to different items: (1) how it proposes to work Environmental Education at an institutional level; (2) how it proposes to link it with the curriculum; (3) how it proposes to link Environmental Education at a class-room level; and (4) its core lines of action with their results.

1 – Environmental Education at an institutional level

The Escuelas Verdes Program approach promotes special emphasis in not restricting Environmental Education to the class-room level but to work strongly in transforming the institutional culture of the school into a “green” one. This institutional approach involves all elements of school dynamics: school project, resources management, linkages with the curriculum; class-rooms projects, institutional communication, and promotion of sustainable practices, among others.

In this sense, it is intended that the institutional culture of the school to be crossed by the Environmental Education involving the whole school actors. A “Green School” is “open to the community, establishing reciprocal relations of mutual cooperation with civil society, the community and the private sector” (Weissmann, 2009).

From this approach, some characteristics of a “green school” can be identified (Henderson, Tilbury, 2004):

• School leadership which places sustainability at the heart of school planning and practice. It engenders democratic and participatory whole-school decision-making processes;

• Whole-school participation in undertaking school action and improvement plans;

• Reciprocal community, family and stakeholder partnerships;

• Participatory learning approaches which engender students skills and competencies for critical thinking, intercultural perspectives, participation and citizenship;

• Integration of EE and EFS across all key learning areas in the curriculum;

• Hidden curriculum which reflects key messages and ideas supported by the taught curriculum;

• Regular professional development for teachers, school management and program partners and facilitators;

• ‘Greening’ of the school and physical surroundings;

• Classrooms within and outside school boundaries;

• Reductions in a school’s ecological footprint (through resource consumption and environmental improvements);
• Regular monitoring, reflection and evaluation procedures which inform future actions. The school is not just the centre of learning but is also a ‘learning organization’ itself;

• Practitioner research which encourages reflective practice of teachers and promotes improved performance.

In line with this theoretical approach, one of Escuelas Verdes proposals is to include the environmental dimension in the School Project, being a way to root it within the institutional culture. Every school of the city of Buenos Aires has its own School Project. This is a central document of the institution that works as a waybill where it is specified their mission, vision, objectives, lines of action and evaluation. The School Project is conceived rather than as a product in itself, as a dynamic document, questioning the daily routine of the school. The school project is a management tool that has to be drafted annually and aims to improve the school organization and guide its decisions. It is built upon a participative mechanism involving principals and teachers.

Incorporating the environmental dimension in the School Project, in all its parts, contributes to the formalization and strengthening of environmental education in schools. It increases the chances to cross the school culture with environmental education and to establish ongoing projects on time.

2 - Linkages with the curriculum

In regards to the teaching level, an important issue that worries educators interested in working with environmental education is how to link it with the current curriculum. As explicitly mentioned in Law No.1687 of Environmental Education of City of Buenos Aires, environmental education should be included in all educational levels and streams. This means that the treatment of the contents must be integrated into the various curricular areas, not narrowing them to a single specific one.

Within the present Curriculum, there is no specific area related exclusively to Environmental Education. This fact, even though can be an obstacle, is an opportunity as well. The contents related to environmental education proposals have a high degree of association with many of the contents proposed in the Core Learning Priorities (NAP) required to be addressed at a National Level and with the curriculum of the Ministry of Education of the city. Therefore, environmental projects do not require an extracurricular work time, but collaborate with the development of curriculum content already defined.

The Escuelas Verdes proposal to establish the linkages between the Curriculum and Environmental Education is through a cross curricular approach. This leads to the opportunity to multidisciplinary approach of content. At the same time, makes necessary to define space and time to deal with content in school, respecting the existing curriculum structure.

The cross curricular approach of environmental education itself is a challenge within the school due to its historically fragmented structure into different disciplinary spaces. Though respecting the basic principles of teaching in each discipline, teachers can integrate them into a holistic view without constituting merely a ‘sum of explanations’.

3 – Environmental Education at the classroom level

Although many teachers agree with cross-curricular approaches, still many teachers often wonder how to implement it actually? And added to this interrogation, they ask themselves how to teach the mandatory content incorporating lessons for promoting sustainable habits and behaviors. How is the best way to form committed students that participate actively in their
communities and being real agents of change? Which is the most effective way to change or transform the established knowledge of a group? What possible strategies influence the daily practices of students? How can teachers articulate required subjects with education for sustainability?

The main teaching strategy proposed by the Escuelas Verdes Program to achieve the inclusion of Environmental Education at the class-room level with a cross-curricular approach is the project based learning. These educational projects, apart from accomplishing to facilitate teachers the linkages to current curriculum, they give them the opportunity to empower students to action. Projects are proposed to being planned and carried out by students accompanied by their teachers. It is intended that students not only learn concepts, but also learn the skills necessary for lifelong learning and autonomy.

Working with projects has many advantages and a key one is that it arouses students' interest and facilitates meaningful learning. Meirieu (2007) proposes a trilogy of work: project - problem - resources. Thus, “a project enables students to discover difficulties, problems, and from there they will find the resources to solve them. Because deep down, what gives meaning to what is done is the answer to a question. And the student only learns if this response actually corresponds to a question that he has formulated. If we give answers without waiting to see what he responds, the student may not have a desire to learn”. (Meirieu, 2007: 45)

Meirieu, argues that students learn when they seek answers to the questions they formulate. For this, it is necessary to make knowledge within school lively and dynamic. This knowledge brings something and while it brings something, it is redemptive. Knowledge "is not a subject that the student must appropriate to return it the day of the test, it is not this at all. It is a knowledge that governs the desire to know even more. Learning raises new questions. The aim of the school is to bring out these questions.” (Meirieu, 2007: 45)

Working with this knowledge enables projects to emerge alive. Moreover, working with environmental issues identified in the school or in the community, the project takes on a greater meaning. It enables students to become agents of change by achieving commitment, ownership and active participation. This is based on the belief that learning these issues requires not only mastery of certain content (know), but also skills development and sustainable habits (know how), promoting certain values and attitudes of responsibility and commitment (know how to be) and fostering a collaborative, participative and democratic education (knowing how to live together). (Delors, 1996)

It is important to note, that working through educational projects have many educational advantages worth to mention (Anijovich, 2010: 99):

- It provides alternatives of integration as opposed to the fragmentation of knowledge that the subjects division produces.
- It allows inclusion of different actors and promotes various forms of relationship with space and objects.
- It uses different information sources, various gateways to knowledge and variety of resources.
- It focuses learning in the understanding, not in accumulation.
- It considers students' prior knowledge and encourages dialogue between them and the new information.
- It connects school to the world beyond, showing the proximity of disciplinary knowledge in real life.
- It addresses problematic situations and promotes the search for alternative resolutions.
- It encourages curiosity and research as it is based on the legitimate interests of students and promotes those interests.

- It encourages teamwork and collaborative work.

- It places students in a situation of dialogue and promotes different forms of argument.

- It involves students in an active way in the search for sources and resources in the planning process, in decision-making, to demonstrate their knowledge and so on.

- It encourages the development of higher order thinking skills as it requires analyzing and evaluating alternatives, using different types of knowledge, clarifying inferences, making deductions and generalizations.

- It allows installing metacognition and self-evaluation processes in the whole process of the project, from the beginning to its completion.

- It promotes diversity because it is compatible with different learning styles of students.

- It encourages the development of autonomy, by providing means for transferring the responsibility for learning from teachers to students.

Furthermore, the educational approach proposed by the program has to do with educating for citizenship. So it interrelates the “project-based learning” with the “service learning” pedagogy. Service-learning is understood "as a supportive service featuring teenagers or young, designed to address the real needs of a community, and planned in order to contribute to develop specific learning " (Nieves Tapia , 2006).

If environmental projects involving schools, develop effective service that meets the needs of a particular community and are an attempt to solve a particular environmental problem, it will be much more significant. In this way, the projects led by students allow developing meaningful learning related to the formation of values, leadership, and citizenship. (Nieves Tapia , 2006).

Leading “service-learning projects” at schools strengthens the effective exercise of citizenship in young people. Students are potential agents of change, however, it is necessary to empower them to participate meaningfully in the life of their school and community. In turn, environmental education, must be rooted in the values and practices of participatory democracy.

This approach promotes training of students in public affairs, engaging with social reality that surrounds them, making them aware of their rights and holding them accountable for their actions as builders of a fair society. The service learning projects are "an effective way to live the higher values and to develop ways of participation. The strongest projects have young people as protagonists and builders are effective citizenship" (Nieves Tapia , 2006: 9).

4 - Core lines of action with their results

The program actions are integrated around four key thematic work areas: Integral Waste Management, Environmental Health, Power Efficiency and Renewable Energy, and Climate Change.

In relation to these areas, it proposes the improvement of strategies for teaching and learning processes and promotes the incorporation into the curriculum of specific content in each disciplinary area in all levels of the education system.

In addition, it works with the schools’ own environmental management, using the experience as a learning tool, basing their operation on knowing-doing-being, with the aim of attaining
coherence between what is learned in the classroom and the reality that students experience in the educational environment.

Furthermore it provides tools for teachers to facilitate this approach and the cross-curricular incorporation of environmental education content in their planning and classes.

In concrete terms these lines of actions are translated in the following projects: (a) the Comprehensive Waste Management Plan; (b) the green roofs; the carbon footprint management; (c) Carbon Footprint Management; (d) the eco-challenge; (e) the Sustainable Mobility project; (f) the School vegetable gardens; (g) the Environmental Fair; (h) the development of Educational Resources; and (i) the project “Environmental Education at school”.

In this section, these projects will be delineated and specified according to their main goal, their implementation methodology and the results so far. The implementation of each project has to do with actions related to training for teaching and non-teaching staff; developing Environmental Education Resources; and improving school architecture favouring the environmental integration of school buildings, among other aspects.

a – Comprehensive Waste Management Plan (Integral Waste Management Area)

The Comprehensive Waste Management Plan main goal is to promote responsible consumption and waste reduction, reuse and recycling within schools. This plan establishes the procedure for waste management at schools, provides the necessary equipment for the correct source separation, and coordinates and carries out differentiated waste collection at every state-run school in the city. Furthermore, it provides training stages and specific educational resources for each level of the education system, addressed to principals, teachers, assistants and students.

Educational Resources have been prepared under the plan’s framework aiming to provide useful tools for teachers and valid and significant knowledge for students. In correlation with the jurisdiction’s teaching guidelines, they promote "Learning to learn" and "Learning to do". Part of these resources has been designed alongside the Operative Office for Technology Incorporation to be lodged in the educational platform "Integrar", and used by the students using the “S@rmiento BA” Plan netbooks. In 2012, 87% of the elementary schools worked with the teaching resources generated by the program.

This plan was launched in 2010 and 40 schools were participating. This number increased progressively until today, in 2011 other 160 schools were added and by the end of 2012 a total of 1058 schools were participating. This numbers shows that there was a 423% increase between 2011 y 2012. Today all state-run kindergarten, primary and secondary schools in the city sort their waste. So far, 334,000 kilos of recyclable waste have been recovered at schools.

To achieve this, the number of students who were trained and involved in the separation of waste at schools rose from 76,000 in 2011 to 340,000 by the end of 2012. On the other hand, the program worked with the Ministry of Environment and Public Space in the delivery of 36,618 dual waste bins and 1,989 containers within schools. This enables schools to separate at origin into "recyclable waste" and "garbage", and a special truck driven by Urban Waste

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2 The data mentioned in this section regarding the core lines of action of the program is based in the publication "Escuelas Verdes: libro de Gestión", released by the Ministry of Education of the City of Buenos Aires in 2013.

3 The “S@rmiento BA” Plan is a technological and pedagogical plan that provides primary teachers and students with netbooks and training to improve their teaching and learning processes with the new technologies.
Collectors’ Cooperative collects the recyclable waste. An average of 40% of the waste generated at schools was recycled, mainly paper, cardboard and plastic.

However, not every school separates correctly. The effectiveness of solid waste sorting varies among the different schools. Achieving a perfect and homogeneous separation throughout the education system will be the result of an ongoing process of increasing awareness and continuous training.

b - Green Roofs (Environmental Health Area)
Building green roofs at schools facilitates the inclusion of green spaces as learning areas, understanding them as pedagogical proposals that contribute to the health and wellbeing of the educational community. Via the "Green Roofs on Public Buildings" Program of the City of Buenos Aires, Escuelas Verdes promotes the construction of green roofs at schools. Once built, they are proposed as spaces to work teaching contents of the various subject areas.

On the other hand, Green roofs provide environmental benefits to the building where they are set. These advantages can be listed as the following: increasing rainwater absorption and runoff; improving energy saving due to less temperature variation in the building; contribution to biodiversity generating alternative urban habitats, generating of an acoustic barrier; and reduction of greenhouse gases.

So far, 4 green roofs have been built at schools and 2 are under construction. Teachers carried out educational activities at green roofs involving 2,300 students. On the other hand, the program developed various pedagogical proposals for teachers and students: informative talks, classroom and recreational activities, teaching resources (cartoons), and interactive activities (organic residue composting and transplantation of plants).

c - Carbon Footprint Management (Climate Change Area)
With the goal to make the educational community aware of climate change and manage the carbon footprint at educational institutions, the Escuelas Verdes program generates tools for the educational community to learn about this impact and provides training to promote its reduction.

The program has designed an online Carbon Footprint Calculator which enables students, and people in general, to detect which actions in their daily life they may modify to reduce the emissions of greenhouse gases and thus contribute to mitigate their global warming effects. Additionally, it developed software to measure and manage the Footprint at school buildings in the city in a dynamic and interactive manner, identifying, at the same time, the opportunities for implementing and following up reduction and improvement projects.

4 Schools with Green Roofs built so far are the following: School No. 6 “French y Beruti” in Educational District 1 (built by Environmental Protection Agency of the Ministry of the Environment and Public Areas); Kindergarten School No. 6 “Madre Eufrasia Yaconnis” in Educational District 10 (built by Ministry of Urban Development); and Middle School No. 7 “María Claudia Falcone” in Educational District 9 (built by Ministry of Urban Development); and the Auditorium of the Saavedra Educational Area (built by General Directorate of School Infrastructure of the Ministry of Education).

5 The two green roofs under construction are: One-Shift School No. 13, “Prefectura Naval Argentina”, in Educational District 17 and Special Education School No. 7, “Juan XXIII”, in Educational District 19 being built by the Ministry of Urban Development.
d - Eco Challenge (Power Efficiency and Renewable Energy Area)

In 2012 the Ministry of Education of the City of Buenos Aires carried out the first edition of Eco Challenge in the country. With the technical support of the Argentine Auto Club (ACA by its acronym in Spanish) and with Sportlink as the organizing company, 16 technical schools from the city participated in the project, plus one school from the province of Buenos Aires and one from Córdoba.

The challenge aims to promote the research and use of renewable energy in transport systems by students and teachers. Technical schools, involving teachers and students, have to research and construct zero-emission (of CO₂) vehicles that later take part in a race in the city streets (driven by the students). The winner was the most efficient car in terms of its autonomy. In addition, the school that offers the most sustainable design wins an award. For the construction of the vehicles, the school has a basic kit with three 12-volt gel type batteries, an electric engine, an electronic voltage regulator, tires, wheel rims and bearings, among other elements, in addition to ACA’s advice.

The first race took place in 2012 on a track located along 9 de julio Ave. More than 100 students and teachers were involved in the project and 16 zero-emission vehicles were built. The second race took place in 2013 on a track located at Costanera Sur. More than 130 students were involved and 21 zero-emission vehicles were built.

e - Sustainable Mobility Project (Environmental Health Area)

From the program another of the principles promoted has to do with the adoption of healthy and environment-friendly means of mobility in the city. According to a survey carried out during the year 2012 in state-run middle schools, it was notice that only 2% of the students go to school by bicycle. In this regard, it is the intention of the program to increase its use, contributing to the improvement of the students’ quality of life. The Sustainable Mobility Project foresees participatory workshops to encourage debate, reflection and changes in daily habits as regards urban transport and, in turn, to provide tools to enable the use of bicycles.

To accomplish this goal the program promotes the use of non-motorized transport to school, encouraging cycling and walking. It works alongside Safe Paths projects by different Government agencies such as "Camino Escolar" and "Senderos Seguros" in order to help improve safety and the conditions for living together in public spaces, contributing to sustainable mobility. On the basis of this joint work and the purchase and placement of bicycle racks by the Office of the Deputy Secretary for Transport, it carries out awareness and reflection activities for middle school students and teachers on the challenges of mobility and their possible solutions.

Specifically from the Ministry of education, 120 Bicycle parking racks were delivered in every secondary and technical school and 82% of middle schools were trained for sustainable mobility and safe passage. On the other hand, the program collaborates with the Operative Management Office for Curriculum in the development of a new curricular annex on sustainable mobility for all school levels, and we develop educational resources for the classroom.

f - School vegetable gardens (Environmental Health Area)

The creation and enhancement of schools’ green spaces as open classrooms bring students closer to nature. The program fosters educational projects of organic vegetable school gardens and the planting of native ornamental species.
To accomplish this goal it gives theoretical-practical training for teachers of all levels on the creation and layout of school vegetable gardens and provides seeds, plants, seedlings and compost for their construction. On the other hand, it provides teaching materials so that the gardens and green spaces in schools may be used as teaching tools to create cross-curricular links among different subject areas.

So far, 500 teachers and 7,540 students were trained in the creation and handling of school vegetable gardens resulting in 306 schools running vegetable gardens. Each school works using different devices to carry out the project, taking into consideration their own environmental conditions and space limitations. Furthermore, the program delivered 1,000 seedlings. In terms of educational resources, it developed a Guide for Kindergarten and Elementary level teachers to adapt the working proposals of the school vegetable garden project to curricular contents and developed educational resources with teaching sequences for the classroom.

**g - Environmental Fair** (Power Efficiency and Renewable Energy Area)
Under the umbrella of the Science and Technology Youth Fair of the city of Buenos Aires, the program develops the Environmental Fair since 2012. This event works as a showcase for schools to share their environmental educational projects and is a competition that funds the best projects. This Fair seeks to foster the development of new technologies related to the environmental care, encouraging the interest in this projects and supporting their implementation.

In order to accomplish this goal, the program collaborates with schools in the design and project planning processes, evaluate them together with a respected jury within the scope of the competition, and finance the development of the winning projects. After the announcement of the elected projects, it works accompanying teachers and students training and giving support in their execution.

The projects are limited to the following areas: Comprehensive Waste Management, Power Efficiency, Environmental Health, Renewable Energy, Climate Change, Sustainable Construction (techniques and materials) and Sustainable Resources Management. Projects are assessed considering their positive environmental impact, social and community well-being, teamwork promotion, and the material and economic feasibility of their execution.

Along 2012 and 2013, 140 students and teachers participated in projects submitted at the Environmental Fair and 8 winning projects were implemented with the support – both pedagogical and financial- of the program.

**h - Kids ISO 14000 Project** (Power Efficiency and Renewable Energy Area)
The program is working in collaboration with JICA to implement Kids’ISO 14000. This program shares project-based learning approach of environmental education. They work with the operating principle of ISO 14000 for environmental management systems in the implementation of the PDCA (Plan-Do-Check-Act). The main goal of the program is to encourage power efficiency in Buenos Aires by raising students’ awareness of environmental matters so that they learn how to deal with environmental issues at home.

Furthermore, the program has produced curricular materials for teachers and students to promote energy saving through activities and encourage sustainable waste management at home.

This project is being run since 2011 and will be implemented for over 3 years and 7 months. The ultimate impact in 2014 is expected to expand to a total of 55 schools, reaching more than 110 teachers, 9000 students and 9000 families. So far, it has started in 5 trial schools plus 25 schools.
(both state and private-run), 30 teachers have been trained, and carried out 4 training and exchange trips to Tokyo, Japan.

**i - Educational resources** (transversal to all areas)

Escuelas Verdes offers a number of opportunities for teacher training and continuing education and produces educational resources in line with current curricula, in order to consolidate the incorporation of Environmental Education into the school system.

The program works alongside the Operative Management Office for Curriculum in the creation of the Environmental Education curricular framework for the City of Buenos Aires, with the purpose of defining skills and conceptual content, and proposing methodological strategies for teaching Environmental Education. This curricular framework is aimed at initial, elementary and middle school levels and will support and facilitate the work of principals and teachers when including environmental issues in class projects and in the school project. It also contributes to the development of teaching tools for all educational levels in all central areas connected with Environmental Education in schools and produce specific educational resources.

On the other hand, it offers four-monthly and intensive courses for accreditation in the city's Teacher Training Centre CEPA (for its acronym in Spanish) as the main teacher training strategy. It also provides courses, training and workshops in schools for principals, teachers and students for which we produce teaching and educational support resources.

Via the digital platform “Integrar”6 of the “S@mientoBA” plan, it encourages teachers, students and the general community to share their experiences and initiatives to inspire others to come up with new environmental actions. This exchange of knowledge and know-how contributes to the education community’s collaborative work.

**j - Project “Environmental Education at school”** (transversal to all areas)

The project “Environmental Education at school” main objective is to facilitate the development of environmental education in schools through the inclusion of environmental correlates in the School Project and carrying on cross-curricular environmental projects in the school. To this end, the program worked in association with the University of San Andrés and WWF Argentina. The project had three stages: training cycle, work at school and support and monitoring.

The training cycle was targeted to principals and teachers. The first meeting was aimed to principals with the objective to promote the inclusion of Environmental Education in the School Project. The middle encounters were targeted to teachers (a teaching couple for school) aiming to accompany teachers in the Environmental Projects. Finally, one last meeting brought together principals and teachers where they worked together interrelating this institutional and classroom approach.

This project was carried on by 51 schools: 20 kindergarten-schools, 19 primary-schools and 12 secondary-schools. All of these schools submitted a written project and a portfolio documenting the work done within the institution. After this delivery, the third stage of the project began and these documents were evaluated. Finally, every school was visited and advised on how to improve their projects.

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6 It is an educational portal that invites teachers, students and the community to collaborate and participate in the construction of educational resources and socialization of educational experiences. It is available in the following link: [http://integrar.bue.edu.ar/integrar/](http://integrar.bue.edu.ar/integrar/)
The projects carried on within schools were elected after a diagnosis done at the institution and treated a topic that was relevant to each context. This way of working was very well welcome by teachers and students because they resulted very significant to their reality.

**Lessons Learnt so far**

This review of the Escuelas Verdes Program shows that many positive results have been accomplished since its launching in 2010 until the present day. These results seem crucial for the democratization of Environmental Education in the school system of the City of Buenos Aires. As already explained the program intends to meet this task accomplishing to provide environmental education proposals for the whole school system; to deliver quality education for all; and to foster replicability processes among schools by promoting autonomy and self-management mechanisms.

From its experience, many lessons aroused. In the following section, this learning process will be depicted, enunciating what can be described as its critical success factors and on the other hand, its aspects to improve.

**a - Critical Success Factors**

- **Program managed by a government agency**
  This review suggests that a program funded and managed by a government ministry is in a good position to align itself with the other ministries and co-work in articulation. One of the city's main objectives is to become a Green City. Aligning the program with city environmental policy, indicators and priorities has served to increase the program’s uptake by schools.

On the other hand, many other government agencies are working towards this purpose. Political support can contribute to its relevance, effectiveness and longevity. By the results obtained in many of the core lines of action aforementioned, it is shown that this aspect was key to accomplish many of its achievements.

Furthermore, being part of a government agency reassures a stable budget as opposed to a non-governmental organization that use much of their time to fundraising. Significant and continuous financial support assists the programs’ with long-term and strategic planning and being able to focus on improving the support provided to schools (through resources, personnel and professional development) for more effective outcomes.

- **Program rooted at the Ministry of Education**
  One of the more significant success factors is being rooted at the Ministry of Education with a specific area, enabling a direct gateway into schools, the consolidation within the whole system and the influence at a curricular level. Only from this space of influence it is possible to set the foundations for incorporating environmental education permanently and solidly within the system.

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7 The Comprehensive Waste Management Plan is carried out in articulation with the Ministry of Environment and Green Spaces, providing the dual waste bins, the containers and the truck in charge of the collection the recyclable waste. Different ministries afforded the green roofs, one by the Ministry of the Environment and Public Areas and two by Ministry of Urban Development. With the support of the Secretary of Sports, the organization of the Eco-Challenge race on public roads is accomplished. The program works alongside with different government agencies to implement the Sustainable Mobility project. The Undersecretary of International and Institutional Relations of the city facilitated the cooperation with Japanese Agency to carry on the ISO Kids 1400 project.
It is the responsibility of the ministry of education to develop quality contents to all schools. In this aspect, the program was able to assist in the design of a new Environmental Curricular Frame in articulation with the Curriculum Operational Division. This is a critical factor because schools and teachers can see the relevance of their work to match commitments and professional priorities.

Furthermore, being within the ministry of education, enabled the program to work in alliance with the Operative Office for Technology Incorporation and upload the teaching resources developed to the educational digital platform “Integrar”. In 2012, 87% of the elementary schools worked with the teaching resources generated by the program.

On the other hand, the professional development of teachers is a critical component to for capacity building within schools and to provide an Environmental Education of quality. Personnel of the program give courses at CEPA since 2011, the Official Teacher’s Training School of the City of Buenos Aires, promoting the knowledge, contents, values and policies of Escuelas Verdes.

Last but not least, in terms of management, the system of education of the city of Buenos Aires is vertical and bureaucratic. For every decision and action, it is necessary to go through various required steps in order to obtain the appropriate authorizations and legitimacy. Being a program rooted in the heart of the ministry, facilitates the process of taking the decisions and consolidating them within the system.

- **Approach that accompanies Environmental Education with Environmental Management**

  The program educational approach differs from the approach to education about the environment, suggesting the need of an education for the environment. This focus promotes the need to develop in youth a thorough knowledge of the environment, a comprehensive understanding of the influence of their actions on the world and, therefore, the great responsibility they have to improve present and future. In consequence with this principles, the program accompanies environmental education proposals with concrete environmental management that improve the school buildings in regards to their environmental footprint, considering example as an essential aspect of teaching and learning.

  For this reason, each project is based on specific practices as: implementing waste separation and collection throughout the school system; improving the biking circuit and delivering biking racks; providing seedling for gardening and vegetable gardens; building Green Roofs; developing a software for measuring the school system Carbon Footprint and awarding with funds the best projects presented at the Environmental Fair, among others.

- **All projects accompanied by the ‘triad of actions’**

  As aforementioned within the section were core lines actions were delineated, each project is implemented attending to a triad of actions related to: training for teaching and non-teaching staff; developing Environmental Education Resources; and improving school architecture favouring the environmental integration of school buildings, among other aspects.

  This integral way of implementation avoiding isolated actions, results in a solid mechanism to offers quality proposals to the educational system. Through this triad of actions teachers are assisted in a) building upon EE knowledge, skills and competences b) providing support and motivation to implement changes c) improving teaching and learning approaches and finally d) building capacities for institutional change.
- **Umbrella Framework for every Environmental Education proposal**

One of the main goals of the program “Escuelas Verdes” is to become an umbrella framework for the environment-related initiatives and proposals of other stakeholders. Linking the program to other existing Environmental Education initiatives in line with the ministerial proposal adds value to the program by enriching resources and support available and avoiding duplication of work. Furthermore, working in partnership with other organizations contributes to deepen the actions implemented by the program. It allows the program to ensure for the quality of Environmental Education proposals offered by the different organizations, promoting the high-quality ones and discouraging the second-rate ones.

In this way, it intends to connect civil society organizations with schools to provide them with support and establish cooperation agreements; to canalize the companies’ proposals and initiatives that are aligned with the program pillars; and to establish links with other government departments and other cities through the transference of good practices and the generation of effective cooperation processes.

- **Identification of key actors within schools**

Another of the success factors relates with the identification of people committed to environmental education within each school to support the work from the inside of the institution. The Escuela Verdes Program sends a call to every school at the beginning of each year to designate an Environmental Delegate of the institution. Every school of the public system has the obligation to elect a delegate, who will be responsible for strengthening the relationship between the educational community and the program.

The program recommends to the school to elect a faculty member. Its role is to be the direct link between the school and the program, pulling the progress of the actions implemented and channeling demands and/or inquiries that are generated in the school regarding the actions proposed in terms of environmental education and management.

Green Schools accompanies this proposal by offering the delegates an agenda regarding trainings and activities, and bringing materials to facilitate the work at school. Also, it keeps a fluid communication through the monthly delegates’ newsletter, where they broadcast news of the program, opportunities, contests, seminars and information relevant to the function they perform.

- **Strategy shift to prioritize broader scope**

Since the beginning of the program until the present day, it has worked towards its scalability aiming to reach the whole educational system. In the first place, the scalability is ensured by the funds reassured by the Ministry of Education and by the technical capacity of its twenty team members. On the other hand, in terms of management, the executives of the program turned

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8 Escuelas Verdes has established a wide network of partnerships with: cooperation agencies (JICA, ArTech, Education Council of the Spanish Embassy); NGO’s (Fundación Cascos Verdes, UTN, IAPG, 500 RPM, ACES, ACUMAR, Artech, UNIDA Civil Assotiation, Bgreen, Energizar, Argentine Bicycle Chamber, Canaglia, Green Helmets, Amartya, Foro 21, Cambio Democrático Foundation, Espacios Verdes Foundation, Garrahan Foundation, Oir Mejor Foundation, Argentine Wildlife Foundation, San Andrés University, Ecoplas, National Institute of Industrial Technology, Sabe la tierra, INTA - Pro Huerta, Hampatu, Argentine Institute of Oil and Gas, Agricultural School University of Buenos Aires); private companies (Tetrapack, Village Cines, Shimano, ALDAR S.A, CEAMSE, CONDESUS S.A, Girasol, Greentara cultural contents, LIHUE S.A); and individuals (Edgardo Rodriguez visual artist, El murgón de la esquina dance group, Bonomo puppets).
from a modality of custom work in-place with schools to the promotion of self-management and autonomy in the implementation of Environmental Education.

An example of this is how the approach of vegetable gardens teachers’ training change of course from a modality of supporting and monitoring schools by visiting them to a modality of gathering all teachers running vegetable gardens together in the same place. In 2011, 81 schools started working with vegetable gardens, 2013 other 100 schools and in 2013 over 300 schools.

- **Work supported by people from within the system**

The public system of education in the city of Buenos Aires promotes professionalization of teachers and principals by a scoring system that enables them to ascend. They sum points by attending teacher trainings, presenting cultural background, attesting seniority in the system and performing tests, among others. This turns the system very close and difficult to influence.

Within the personnel of the program, there is a small team that worked during many years as teachers and principals within schools. Due to this expertise they understand the school dynamic better than everybody, its needs and flaws. They are excellent readers of the school culture and are often consulted before any decision is made within the program. On the other hand, they represent a gateway to schools because other colleagues receive them openly.

- **Ongoing presence in the system & dissemination**

The program has grown steadily over time and has been installed in the heart of the system. The constant work, the sustained offer of various trainings for teachers, the reliability and consistency of the proposals, resulted in a space gained of recognition within the system. This is clearly exemplified by the fact that at first, the offer of the program exceeded the demand of the schools. In the present time, this relationship reversed and schools are continuously requiring for more educational resources and training.

On the other hand, communicating the program inwards and outwards the system is key to obtain legitimacy, within the ministry and the policy makers; the schools, teachers and principals; and the general public. The good image facilitates and assures the long-term political support, the program’s uptake by schools and wins partners outside the government system.

b - **Aspects to improve**

- **Develop a holistic proposal versus isolated areas**

Since the inception of the program, the lines of actions were directly detached from the same four areas: Integral Waste Management, Environmental Health, Power Efficiency and Renewable Energy, and Climate Change. However, one of the current weaknesses is that these areas and lines of action do not have a clear thread among them. Although the program has a clear

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9 The program Escuelas Verdes has been disseminated and shared in several expositions and courses carried on by members of its team. In 2011, Carlos Gentile (Program Director) presented the program at JICA in Tokio (October), at the UNESCO Headquarters in Paris (November 2010), at UdeSA University (November) and at UCES University (November). In 2011, members of the team (Silvia Senatore and Lucas Osardo) started to give an environmental course at the Teacher’s Training School of the City of Buenos Aires (CEPA). In the present time, one course is being given and on the second quarter of this year other three courses will be given. In 2011, Silvia Senatore participated as an expositor at a Provincial Congress: “IV Jornadas Bibliotecarias del Chubut”. In 2012, Mauricio Macri (City Mayor) is travelled to Rio+20 to present the program and Carlos Gentile presented it at 7th edition of the GLOBAL CONFERENCE held on September in Evian, France.
conception of what type of “green school” it wants to promote, these lines of action are not sufficient to accomplish this kind of institution.

In response to this fact, within the program, an Escuelas Verdes Award Scheme is being developed. This scheme is being designed to enable all schools to carry it out. For this reason, it relates to pedagogical issues and institutional management, and do not imply any necessary economic cost. It is a voluntary system and promotes the autonomy of each school on their way to institutional strengthening in Environmental Education. A guidebook its being created by the Program outlining suggested the steps to become a “Escuela Verde” will be available to institutions.

On the other hand, this scheme intends to provide schools an opportunity for obtaining recognition and accolades for their efforts and achievements. It also intends to attract and commit them to the program.

- **Formation of an Escuelas Verdes Network**

School networking provides added incentives and motivation for schools to continue their participation in the program. Networking also provides opportunities for teachers to share experiences and ideas, as well as connect students with work being undertaken in other areas. In the present time, the program lacks of well-oiled mechanisms to cluster schools, teachers and students. Within schools many valuable experiences are being undertaken and it is important to implement a machinery to share this bottom-up knowledge.

- **Guidance and monitoring schools**

Due to the fact that the Ministry of Education has a large scope to attend, is many times unable to reach in depth each school. Providing schools support while participating in the program through guidance and monitoring seems a critical factor to accomplish significant teaching and learning processes. In the present time, the program is working towards strengthening and deepening this service.

In terms of guidance, ongoing support contributes to program effectiveness in promoting the type of Escuela Verde it wants to accomplish. In terms of monitoring, formal reporting by schools enables them to reflect upon their actions and to review progress. Furthermore, regular visits to schools provide face-to-face feedback and the possibility of matching bottom-up and top-down knowledge.

- **Increase presence in private schools**

The Escuelas Verdes program began to work strongly with the public system and in the present time almost every action is targeted to it, attending in a minor degree private schools. The private educational system consists of 1,522 private educational institutions with a total of student enrolment of 358,352. The program already started working in with this target by offering trainings in key issues as the Comprehensive Waste Management Plan and the designation process of the Environmental delegates is in progress. However, much more capacity building proposals are needed to meet a real democratization of Environmental Education within the whole system.

This fact is really relevant and needs to be emended. For this reason, one of the main goals ahead for the program is extending its scope and deepening its influence to all institutions that are not being reached. By this, it intends to assure the inclusion of Environmental education in the educational system in a permanent and consolidated way.
Conclusion

The democratization of Environmental Education is not an easy task. A system of education as the one of the City of Buenos Aires is difficult to manage due to its complexity, its huge size and inner inequality. So far, the Escuelas Verdes Program seems to have accomplished many encouraging results regarding reaching an extensive scope; offering quality environmental education proposals; and fostering replicability of good practices within schools.

In many ways, the program has accomplished this task. The following table (Table 1) summarizes how each of these critical success factors collaborate in meeting the duty of democratizing Environmental Education in the City of Buenos Aires.

<table>
<thead>
<tr>
<th>Program Managed by a government agency</th>
<th>Extensive Scope</th>
<th>Quality Education</th>
<th>Replicability</th>
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<tbody>
<tr>
<td>Program rooted at the Ministry of Education</td>
<td>✔ ✔ ✔</td>
<td>✔ ✔ ✔</td>
<td>✔ ✔ ✔</td>
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<tr>
<td>Approach of EE interrelated with Management</td>
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<td>✔ ✔</td>
<td>✔ ✔ ✔</td>
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<tr>
<td>All projects accompanied by the triad of actions</td>
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<td>✔ ✔ ✔</td>
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<td>Ongoing presence in the system &amp; dissemination</td>
<td>✔ ✔</td>
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**Table 1.** Critical Success Factors to the democratization of EE - (✔ contributes fairly, ✔ ✔ contributes highly, ✔ ✔ ✔ contributes very highly)

When analyzing the table, it appears that many of the critical factors support the task of obtaining an extensive scope. On the other hand, it is shown that there is a need to continue developing strategies to strengthen quality environmental education for all and replicability. In this regard, it is important to mention that when the program initiates a new project, as a first step it tests the initiative with a pilot plan. After the revision of its results, it studies the adequate strategy to extend its scope. In the present time, the “Environmental Education at school” project is on its initial stages, succeeding its first pilot plan this year. One the main objectives of this project, is to offer a wide range of quality environmental education for the whole system and enable mechanisms of replicability of good practices. This represents an accountable effort to emend this item.

Furthermore, the following table (Table 2) summarizing how each aspect to improve may collaborate in consolidating and strengthening democratization of Environmental Education, shows how the program is heading majorly to foster replicability and provide quality environmental education.
<table>
<thead>
<tr>
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<td></td>
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<td>✓ ✓ ✓</td>
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<td></td>
<td>✓</td>
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<td>Increase presence in private schools</td>
<td>✓ ✓ ✓</td>
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Table 2. Aspects to improve to the democratization of EE - (✓ contributes fairly, ✓ ✓ contributes highly, ✓ ✓ ✓ contributes very highly)

As a whole, this review shows that thanks to the track-record provided by the Escuelas Verdes Program, many lessons aroused. Programs should systematically evaluate its processes by monitoring their actions to inform development effectiveness. This process would enable programs to capture both quantitative and qualitative data in order to reflect upon progress, learn from experience and identify ways to improve. In sum, they can serve as mirrors to improve their management and as examples to inspire other programs enabling horizontal learning.
Bibliography


