Review of International Geographical Education Online
© RIGEO Vol. 2, No. 2, Summer 2012

Let's Plan the School Garden: A Participatory Project on Sustainability in a Nursery School in Padua*

Lorena ROCCA[1]
University of Padua, Padua, ITALY

Giovanni DONADELLI[2]
University of Padua, Padua, ITALY

Sonia ZILIOTTO[3]
University of Bozen, Bozen, ITALY

Abstract

The increasing complexity of urban regions and the lack of green areas in the neighborhoods have turned the cities less and less child-friendly. In order to locally face these situations, the project "Small steps of Agenda 21", which promoted a participatory planning experience for children focused on the green area of their school, was realized in the nursery school "J. Mirò" in Padua. During the project the children had the opportunity to be real protagonists of the improvement on the school garden while growing the awareness of the importance of discussion and participation in

*This contribute was inspired from the work of Giovanna Rizzato and a portion of it was presented at the 7th International Symposium on "Contemporary trends in teaching and learning Geography", 17 – 18 September 2011, Cluj-Napoca, ROMANIA.

[1]Department of Historical, Geographical and Antiquity Sciences–section of Geography, University of Pauda, Via del Santo, 26 - 35123 Padua, ITALY. E-mail: lorena.rocca[at]unipd.it

[2]Corresponding author: Department of Historical, Geographical and Antiquity Sciences–section of Geography, University of Pauda, Via del Santo, 26 – 35123, ITALY. E-mail: giovanni.donadelli[at]studenti.unipd.it

[3]Faculty of Education, Free University of Bozen, Regensburger Allee 16 - 39042 Brixen, ITALY. E-mail: sonia.ziliotto[at]unibz.it

the local community. Results show that children improved their sense of inclusiveness and responsibility and prove that Agenda 21 processes are possible also in the nursery school.

Keywords: Agenda 21, nursery school, children's participation, Education for Sustainable Development

Introduction

This paper presents the project "Small steps of Agenda 21" in order to verify the possibility to realize a Local Agenda 21 process at school and to analyze the outcomes. The work started, in fact, from this question: Is it possible to apply the methodology used in the Agenda 21 to a school project?

An Agenda 21 process focuses on the local sustainability and, using a participatory approach, goes from the context analysis to the local action in order to improve and change the local territory (UNCED, 1992b). All of those steps were applied carrying out a project to plan a new school garden at a nursery school in Padua, an important town in the northeast of Italy. The project involved both a group of five year-old children with their teachers and different sectors of the municipality of Padua.

In particular, the project was inspired by the guidelines of Local Agenda 21/Agenda 21 at school and it dealt with the town seen as an "educational environment": children – future citizens – can learn, through experiences based on participation, to reflect on the sustainability of their actions and of the surrounding environments (UNCED, 1992b). The article explores the notion that when young children are involved in making decisions that affect their lives, including those decisions regarding sustainability and the natural environment, they are capable of contributing to the decision-making that brings through purposeful action a more sustainable world.

Since the '80s the concept of sustainable development started to be considered and discussed in several documents (Meadows et al., 1972; UNCHE, 1972; Brundtland, 1987) with the attempt to balance the demand of socio-economic progress and the need to safeguard the environment and its resources.

During the Rio de Janeiro Summit, the importance of sustainable development was confirmed by the final declaration (UNCED, 1992a) to be the main objective for the future. Furthermore, the proclamation of the Local Agenda 21 (UNCED, 1992b) showed that sustainability can be reached not only through states' decisions (top down) but also, and especially through initiatives of the local community (bottom

up). It is important to highlight that Agenda 21 was the first international document that identified education as an essential tool for achieving sustainable development.

Ten years later, this idea was developed during the World Summit on Sustainable Development, which defined the central role of Education for Sustainable Development (ESD) and decided that sustainable development, as "long-term perspective and broad-based participation" (WSSD, 2002, point 26), had to be integrated at all levels of education. In this way, sustainable development was promoted by the UN with the declaration of the decade of ESD for the period 2005-2014 (General Assembly, 2002), co-ordinated by the UNESCO (UNESCO, 2005a). The Decade helped focus attention on the fact that education is an indispensable element for achieving sustainable development. Furthermore, at half Decade during the UNESCO World Conference on ESD, the "Bonn Declaration" was approved, which underlines the importance of a shared collaboration because "investment in ESD is an investment in the future" (UNESCO, 2009, point 3).

Strongly related to the international documents mentioned above, there is the UNECE Strategy on ESD (2005), which is the frame of reference for the states' policies. This strategy specifies that ESD can promote "a shift in people's mindsets" and can provide "critical reflection and greater awareness and empowerment so that new visions and concepts can be explored and new methods and tools developed" (UNECE, 2005, p. 1). Also in this case the attention is focused on education, in particular "for ESD to become part of an agenda for change towards a more sustainable society, education itself must be subject to change" (point 41).

In the Conclusions of the European Council on ESD (2010) there are two significant aspects with regard to the project, "Small steps of Agenda 21": on the one hand the importance given to ESD in pre-primary schools, on the other hand the need that "educational institutions at all levels should themselves strive to be sustainable organizations and to act as role models, by integrating the principles of sustainable development in policy and practice" (p. 3, point 9). As in other documents, this one underlines the central role of the active participation of all stakeholders, which means school leaders, teachers, pupils, the school board, administrative and supportive staff, parents, NGOs, the local community and business.

These international documents prove that ESD must start in early childhood because this is a time in life when important foundations are laid along with a desire for lifelong learning. So early childhood curricula need to be "context sensitive and culturally relevant" (Pramling Samuelsson, Kaga, 2008, p. 15) allowing children, families and communities to work together on meaningful local issues. Context and

culture have to be recognized in order to develop children's ability to be competent citizens that give a meaningful contribution to their community.

There are several and much debated definitions of sustainable development, nevertheless it is agreed that sustainable development is at the intersection between the environment, and social and economic fields. Some researchers, like Stoltenberg (2010), also add to this well-known triangle, the cultural field. In any case, sustainable development is a dynamic concept (Backer, 2006) that implies "an on-going process across space, time, societies and cultures" (Haubrich, 2007, p. 29).

Therefore ESD is not a new discipline, but a new perspective that deals with topics and problems not isolating them from their context, but taking into consideration the interrelations among environmental, social/cultural and economic processes (Ziliotto, 2010). Just because of the inter- and cross-disciplinary nature of sustainable development the geographical domain, more than other fields, is called into question to foster ESD.

As you can read in the Charter on Geographical Education, "Geographical Education contributes to this [environmental and development education] by ensuring that individuals become aware of the impact of their own behavior and that of their societies, have access to accurate information and skills to enable them to make environmentally sound decisions, and to develop an environmental ethic to guide their actions" (Commission on Geographical Education of the International Geographical Union, 1992, p. 7). This principle guided and represented the intentions of the international geographical community for fifteen years, together with the suggestions proposed by the UN. That is why, on July 2007, the International Geographical Union decided to reassert the ideas of the 1992 Charter, which are still extremely topical, through the Declaration of Lucerne, where we can read the following: "... Geography Education can greatly contribute to achieving the goals of the United Nations Decade for Education for Sustainable Development by providing relevant knowledge, skills, values and attitudes crucial for a peaceful coexistence of individuals with nature on this planet. Sustainable development is future-oriented and is a concept of peace between humans and nature and a concept of justice between generations, different nations, cultures and regions of the world. In addition to social, environmental and economic concerns, the concept of sustainable development also extends to global responsibility and political participation" (Haubrich, Reinfried, Schleicher, 2007, p. 4).

The two basic documents drawn from the geographic reservoir emphasize that the relationship between Geographical Education and ESD can be very fruitful. To this end Angelo Turco's geography of complexity (Turco, 1988) asserts that the

territorializing acts produce and transform the earth's surface not as single actions, which are added one to another, but as a continuous work of planning and transformation. According to this point of view, sustainable behaviors are new territorializing acts which can improve the area and shape new ways of living, more respectful of the delicate balance between economic, social and environmental fields (Rocca, 2007a).

Agenda 21 in town

Today almost 80% of EU citizens live in urban areas. While growing, towns have made their economic expansion the first priority, paying little attention to social and environmental aspects. This unbalanced development has obviously led to the dramatic consequences which are at present clearly visible in towns as well as in their suburbs: social exclusion, polluted environment, lack of green areas which are important also as a socializing element, air pollution, traffic jams, noise, refuse (UNFPA, 2007).

We have to rethink our towns taking into account the fact that the model of development which has been adopted up to now has proved to be incapable of tackling the complexity of the issues which appear in our everyday life, for example with regard to social equity, energy consumptions, preservation of biodiversity and health. The magnificent and progressive fates, which have been told for long time, have shown their illusory nature: it is now a question of funding a new sense of living in a place which includes good individual practices and collective actions, a responsible attitude towards the planet and the beings. The new attitude should start in our territory, in the areas we can concretely take care of.

Therefore we can say that a town is sustainable when it offers basic environmental, social and economic services/facilities to all the residents, without compromising the functioning of nature, people's settlement and society systems, on which these services depend. A sustainable town tries to reduce the importations of natural resources and the exportation of waste; it maximizes the protection of the natural capital, as well as of the local building capital and of the human one. The new world has to be rebuilt starting from the towns, which are communities of life and work, destinations of tourism and services, crucial places of exchange and commerce, meeting places for arts and knowledge, crossroads of different cultures; the new town has to take advantage of the richness of diversities, in order to move towards a more harmonious urban development, with a strong involvement both on the administrators' and on the inhabitants' side.

Therefore there is a need for initiatives which develop the awareness and the skills necessary to build an ecological and fair town, interested in the quality of life

and in a responsible and democratic citizenship: all this demands sensitivity, skills, motivation to act, as a result of a skillful integration of formal educational processes (through educational proposals for the citizens, cooperative learning, intercultural and environmental education, etc.) and non-formal activities (UNESCO, 2005b).

Local Agenda 21

Local A21 – the process through which the town and its inhabitants try to activate a trail of activities aimed at local sustainability – originates from the conviction that the small contributions of several citizens create public opinion and determine the trends of the economic forces and of "strong" subjects, according to the motto "think globally, act locally". Agenda 21 is a document produced in Rio de Janeiro in 1992 and signed by the 160 heads of State who were present, which exhorts governments to develop by the year 2000 environmental policies involving all the economic and social sectors in the promotion. The document engages both the South and the North of the world and calls for major changes in individual and collective behaviors, by defining different priorities and social costs. The Agenda 21 document (UNCED, 1992b) clearly states that "Because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives" (UNCED, 1992b, Chapter 28).

The demand for active participation in the transformation of towns from places of "services" to places, which meet people's needs, can be met also through Agenda 21. This is a process aiming at starting a bilateral dialogue in which the great global decisions taken by governments meet the points of view of citizens, of those who live in that territory and, for this reason, are very experienced in it.

The process of Agenda 21 is based on 4 pillars (fig. 1):

- the knowledge of the reality for which a series of activities towards urban sustainability is identified
- the sharing of development scenarios
- participation and active involvement of the local actors seen as holders of a knowledge which is not always codified, but which is spread on the territory as the result of concrete experiences inside one's own town
- concrete actions through a participated planning for a real change of one's own urban context.

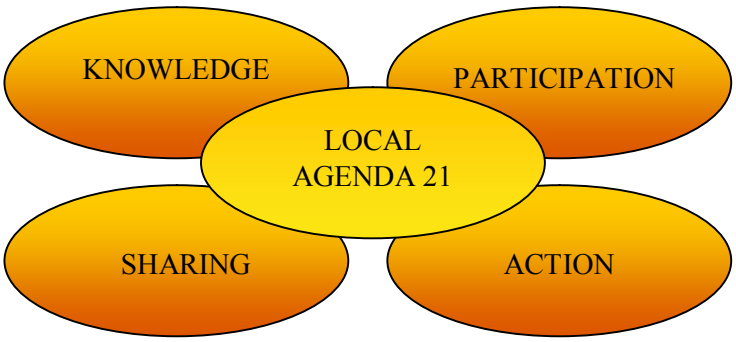

Figure 1. *The pillars of Local Agenda 21 (Source: Salmaso et al., 2002)*

The pillars mentioned above have to be considered not in a linear, but in a reticular way. That means that an Agenda 21 process can start from any of the pillars written above.

Among the potentialities of Local Agenda 21 it is important to highlight some elements: first of all, it activates the participation and the creativity of all the local actors, who become the protagonists of the decision-making process; then, it reduces the cause of conflict between citizens and the administration; moreover, it assures a systemic and cross-disciplinary approach to problems: social, economic and environmental aspects are taken into account all together and dealt with at the same time.

The potential advantages for the participants are numerous, too: they can express needs, expectations and personal points of view, as well as acquire and exchange information; they become an active part in an innovative process, in terms of ideas and stimuli for the definition of new projects for the territory; moreover, there is the possibility to form new "alliances" and partnerships between the involved actors, which also permits to obtain a widespread knowledge.

Of course there are also some possible limits. As the whole process generally takes medium-long periods, it is possible to experiment discontinuity of commitment and enthusiasm. Resources may be few, and they could become scarce. There could be conflicts and/or distrust among the involved actors. As regards to the part played by the Public Authority, there could be a lack of involvement, or lack of shared responsibility. Finally, people could also suffer from the lack of guarantees about the real spin-offs as regards to the proposals which were made.

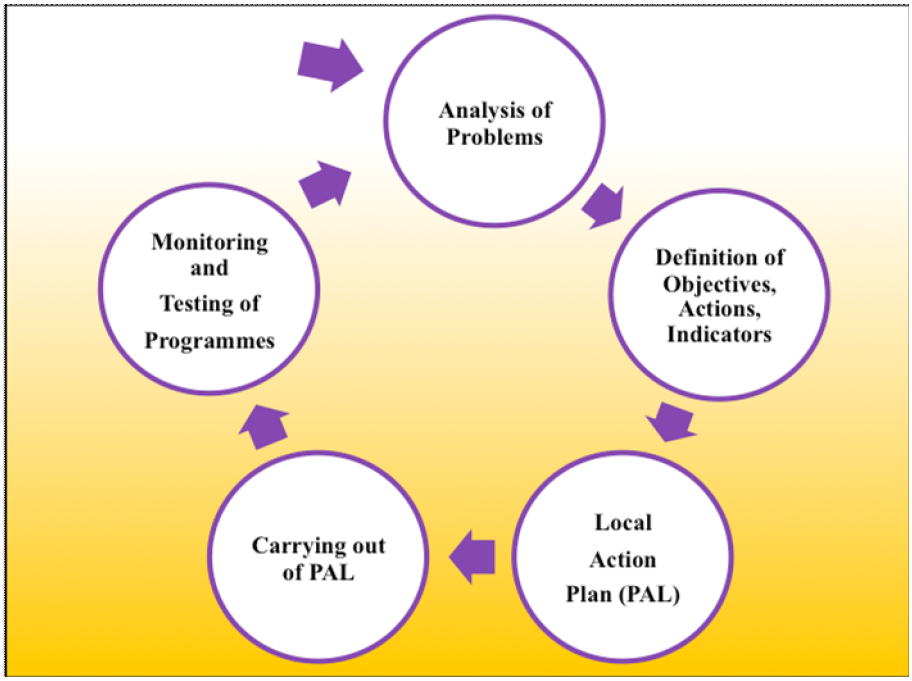

Figure 2. *The phases of the Local Agenda 21 process (Source: Salmaso et al., 2002)*

In the process of Local Agenda 21, the various phases follow a cyclic process that starts from the analysis, move then to the definitions of objects, actions and indicators to get later to the Local Action Plan and its realization. The monitoring and evaluation phase is the last but at the same time represents a bridge (and a first step) towards a new analysis (figure 2).

Agenda 21 at school

The local A21 originates from the proposal of the local authority to carry out the Agenda 21 of the town; it is a challenge which starts from what is "near" us, where we feel able to act, but where global dynamics are also reflected: it is an invitation to participate to concrete projects, to really experience the possibility of change.

Educational activities, realized in the schools, should modify everybody's attitudes towards sustainability and create skills and abilities for a shared change.

A21 in the schools can be realized at three levels: a) the sustainable organisation of the whole school area; b) the adaptation of the *curriculum* (methods and subjects) c) the community involvement.

As regard to the first point, the school can be seen as an environmental system which uses resources, produces waste and hopefully improves the well-being of its members.

As for the adaptation of the curriculum, the project does not imply the introduction of a new school subject but the reorientation of the old ones towards sustainability. It means to rethink the relations inside the school by voicing everybody's opinions and needs, which are legitimated by the fact they participate to the change. The stress shifts from the product to the method, and attention is focused on the various stages of the planning process and, above all, on the students' skills to observe and to analyse the object and the context on which they intervene, while the "real" project has a secondary importance. The community engagement is the third key point and refers to the intention of sharing needs, aims, ideas and dreams between the stakeholders. This process allow to create network of competences and points of view which provide a better planning and understanding of the process and the results attended and obtained. The community with its actors is at the same time author and "guarantor" of the project and that is why we need to reach it during the planning: to guarantee a wide thinking and a solid support to the analysis and consequently to the action which it will inspire.

The project: "Small steps of Agenda 21"

The project was carried out in a class of 24 children in the age of 5, in the nursery school "J. Mirò". The school is situated in a densely built and inhabited residential area of Padua. The lack of green areas in the neighbourhood urged the school to guarantee a certain quality to outdoor games, as the importance that this kind of activities has in children's growth is well-known.

Context

The school has been built more than 40 years ago and since then the school garden hasn't received any extra-ordinary maintenance. In these many years children have run and walked on the grass which has disappeared almost everywhere. In addition, many tree roots have made the garden surface irregular and sometimes dangerous.

The teachers were troubled by this situation. They were worried about the possibility that someone, completely unaware of the needs of the school, could be asked to plan their garden and were anxious to know which were the criteria adopted by the municipality to guide the renewing of the school garden.

Therefore it was decided to activate an Agenda 21 process at school, which involved the different sectors of the municipality of Padua, the children, their parents, their teachers, the school caretakers, some employees, and the representatives of the neighbourhood, with the belief that the participation was not only a social behaviour to acquire, but also a great educational opportunity.

Aims

The aims of the project have been the following: on the one hand, there were "practical" aims, that means the creation of a participatory set of activities to produce improvements in order to make firstly the garden functional to recreational and playing activities and secondly to offer each child an "outdoor well-being"; on the other hand, there were "educational" aims, particularly the specific learning objectives, employed cross and interdisciplinary, which followed the ministerial guidelines (*Campi di Esperienza*) for the nursery school (Ministero della Pubblica Istruzione, 2007).

The main focus was oriented to enhance the children points of view enabling them to be active and responsible subjects of the process. This aim was supported by promoting a critical approach based on discussions and individual/group reflexions. This is why, in every step of the project the hypothesis were explored and shared, a plan was created, verified and, when necessary, planned again and again.

The project was organized in three main phases: "The garden as it is now", "The garden I would like to have", "The garden of our dreams". According to the territorialist approach (Turco, 1988), the general aims of the project were organized by the domain they had to develop (denomination, reification, structuring) for each one of these 3 phases. From table 1 it is also possible to see the main structure of the project and its sub-objectives.

Table 1.
Project's main stages, general and specific objectives (Source: Rizzato, 2009)

General objective	**1) To know, to understand the existing territorialisation "THE GARDEN AS IT IS NOW"**
Sub-objectives	Denomination: To know the value of the name as identity To know the name of the area, of plants, of objects, of the materials present in the garden Reification: To recognize human and natural elements To observe more carefully the artefacts in the garden To understand differences and identities To recognize areas of well-being and problematic ones Structuring: To understand the function assigned to the area To recognize the use of the different areas To understand the personal and collective (for the whole school community) usefulness of the areas To highlight problems to be solved, weaknesses and elements to be improved
General objective	**2) To be and to recognize oneself as actor-planner of territorialisation "THE GARDEN I WOULD LIKE TO HAVE"**
Sub-objectives	Denomination: To denominate the places which have the greatest emotional value, according to the use of space To reflect on how everyone denominates the different areas To share a common denomination To learn the names of plants, objects, materials To make a simple classification with the help of experts To name future areas/objects Reification: To use the space as Geography Laboratory To contribute to the creation of botanical tables, plates, signs, etc. To develop personal future scenarios: to add, remove, modify elements – existent and not.

	Structuring: To highlight, reflect and understand how changing this space will affect the habits: of each child - who will create new and personal landmarks of the school community, which will become a laboratory of the whole school and of the surrounding area
General objectives	**3) To reach and present a shared project "THE GARDEN OF OUR DREAMS"**
Sub-objectives	Denomination: To define one denomination of things, plants, spaces Reification: To reach a compromise on things to be changed, modified, added To create a shared map of the "garden we would like to have" Structuring: Highlight, reflect and understand how the acquisition of this new space becomes an added element to mental structuring of each child, who will incorporate this place into his/her personal landmarks of the school community, which will become a laboratory-extension of the community itself of the whole school and of the surrounding area.

Method

The modus agendi of this operative community was cooperative learning, collaboration and exchange of ideas which permitted help and mutual growth. Transferring Vygotskij's theory (Vygotskij, 1978) in a context of reciprocal learning, the different interacting subjects can be considered as several zones of proximal development (Felisatti, 2006). The key-words of this methodology are: active participation of each child, with his/her uniqueness and skills (Rocca, 2007b), cooperation and collaboration of the work group acting as a small learning community (Varisco, 2002; De Rossi, 2006), play dimension as privileged resource of learning and relations (Cherubini, 2007, Goleman, 1995) and "mistake

exploitation" as a possibility of personal and group reflection (Piaget, 1969; Lamedica, 2003).

Such a model demands that the school community welcomes methodologies similar to those employed by the scientific community (Felisatti, 2006). In fact, the project was based on a research activity: from observation to action and reflection, from problem finding to problem solving (Goldstein, Levin 1987; Mayer, 1992). The children, guided by the teacher and following personal reflections and group discussions, were called to conceive and verify the "possible ideas" through concrete experiences of observation, personal elaboration and documentation. In the research process the teacher had the function of scaffolding (Varisco, 2002; Calvani, 1995), that means firstly he/she acted as facilitator and regulator of experience; secondly, while children exchanged views and opinions, he/she guaranteed the respect of every child's contribution, so that everyone of them could feel free to express his/her ideas without being criticized; finally, he/she acted as a director for the preparation of the setting (Schön, 1993), he/she identified and arranged spaces, time and materials for the different activities.

As previously presented, the participatory methodology officially supported by the Agenda 21 processes was another crucial element of the project.

The variety of the actors involved in the project highlights the excellent level of participation and involvement of the school community. As we can see in table 2, every actor was involved in a different way in order to bring his competences to the discussion and to the children, who played a real central role in the planning process with their questions, observations and hopes.

Table 2.
Actors involved and type of actions in the different stages (Source: Rizzato, 2009)

Involved actors	Action
24 five year-old children:	Observe the starting situation; highlight problems; look for personal solutions; compare personal solutions; reach a shared future scenario
3 teachers: one for each division	Plan the activities in their organizational aspect; activate motivation; meet experts; have a scaffolding role in the educational action; exchange ideas to create the common scenario; support communication in the school branch and with parents
School caretakers	Help teachers to organize practically the activities
Technicians and	Facilitate and support the teachers during the project;

experts of *Informambiente*[1]	botanists carried out concrete activities with children; stimulate reflection and participated assessment
Municipality technicians of public parks and gardens	Plan the creation of works; participate in the negotiating table
School building technicians	Plan the creation of works; participate in the negotiating table
Town area councillors	Finance the participatory project and participate in the negotiating table
Headmaster	Establish relations with public authorities for administrative and planning matters
People in charge for A21 in the other schools of the same quarter	Act as a link between public authorities and the school; attend to relations inside and outside the school building

Evaluation

Dialogue, respect and listening are very important elements which support the four Agenda 21 pillars (fig. 1). The learning process starts in fact from a dialogical dimension and from the ability to share the personal points of view. Participation needs few further steps: communication of the personal ideas, involvement and practical actions (Branca e Colombo, 2003).

During the different phases of this one year long project the children have been called many times to share their thoughts and their opinions with the teachers. There was also a daily self-evaluating form, through which the children could estimate their own behaviours and attitudes during the activities. In fact, the end of every meeting the children were asked to individually put a smile (☺ = good, 😐 = so and so, ☹ = not good) on the following four simple questions, written on a hanged poster:

- Did I behave according to the class rules?
- Did I listen to my schoolmates' ideas?
- Did I get new ideas during the discussions?
- Did I express my opinions in the group?

Each month the poster was changed and three times in the year the children were proposed to reflect on the answers collected in the previous months, in order to

[1] *Informambiente* is the name of the Environment Office of the municipality of Padua.

monitor their participation, their learning and the efficacy of the project.

Structure of the project

The project was organized in three main phases. The first one: "The garden as it is now" mainly focused on the observation and on the analysis of the garden's state of art. The second phase moved from the reality to the wishes of the single actors: "The garden I would like to have". The third phase consisted in sharing the individual points of view, in reaching a common vision of the school garden of "our" dreams and in presenting it to the whole school. There was also a forth step, that has been not counted as a proper phase because the children weren't physically present. It is crucial because concludes the previous. In this last stage, in fact, the children's works were finally taken to the city administrators and discussed with them.

First phase: "The garden as it is now"

In order to start the project it was necessary to create a situation which could act as a long-lasting motivation and which could really promote an active behavior, able to direct and maintain interest and attention of the involved children (Cherubini, 2007).

The solution found by the teachers was the creation of a story which followed the storyline approach (sfondo integratore), a sort of narrative global setting in which the activities are included as an integral part of it (Cisotto, 2005; Felisatti, 2006). The idea was to simulate an exchange of letters with the major of Padua. In his first letter the major asked the children whether they were satisfied with the garden of their school or if, on the contrary, they thought that some improvements were necessary. This request started a big discussion among the incredulous and astonished children, which was carried out during the following meetings. This input opened a series of problems, linked most of all to the awareness of the school context and led to many questions: What is in our garden? What is missing? What do we like? What would we like to change? In order to answer to all these questions the children were asked to collect as many information as possible concerning their experience on the school garden (i.e. pictures, draws and stories).

Through a guided critical analysis of these resources the children changed their views of the garden, as it appears clearly from their drawings. A good example is in the two drawings of Lorenzo, a five years-old child, which show the difference between his first vision of the school garden (fig. 4), where all the elements are taken into consideration, and, after the observation (fig. 5), where the focus is just on the "castle" and the slide. The majority of the drawings made after the observation are more detailed, because the children understood that each single elements of the garden was important for a different reason.

Figure 4. *Example of drawing before the observation*

Figure 5. *Example of drawing after the observation*

Subsequently, by means of old photographs, stories, memories and drawings the children reconstructed some of their experiences linked to the school garden. Most of them, as we expected, drew something concerning games (18 children on 25), but some also outdoor activities (4 on 25) and nature observations (3 on 25).

Then, through an active observation a generic territory had turned into a place of attention, observation and learning. Children moved from personal analyses to group analysis starting from the denomination of few clear reference points. Everybody recognized and identified them thanks to their function, while the other elements were included according to the topological relationship with them. In order to reach this last objective it was necessary to experience many times the relativity of children's points of view and of action. Several games were used, especially physical games, which helped the children to become aware of concepts which otherwise would have been only abstract, confirm some certainties, but also deconstruct a knowledge still too anchored to self-centred positions (Pento, 2007).

The activities continued with the numeration and classification of the garden's plants thanks to the help of a botanist of the municipality, who helped the children and the teachers to recognize them.

Second and third phases: from the garden of dreams to the project

The meetings of the second phase were used to look for possible solutions to the problematic situations. The children were let free to express their creativity: they

proposed gardens with swimming pools, tracks for small cars, strange trees and flying animals (figure 6).

Subsequently, the children compared the several gardens of their dreams and drafted a first possible garden (fig. 7). The comparison stage was important not only to look for common aspects, but also to understand if the project was realistic. During the conversations, the need for more playthings and for a new lawn emerged as a priority for the group.

Figure 6. *The garden of my dreams.*

Figure 7. *First version of the common garden.*

The third phase started with an intermediate meeting with the experts of the municipality. It was fundamental to create a real project. The children had to give an account of all they had done, which forced them to unify their experiences and to reach the construction of a chronological and logical consequentiality. They all agreed that the heart of the garden was still the old willow, the centre of every kind of game (as it can be seen in the fig. 7).

It's important to highlight that also the teachers, through some meetings with the technicians of the municipality, prepared the garden of their dreams. The activities proposed to the adults followed the same structure: from personal to group thinking in order to write a common and shared project.

At the end, the five years-old children presented their garden of dreams to their schoolmates, to all the school teachers and caretakers, and afterwards the teachers presented their proposals to the children and also to the parents.

The final stage: the crash with reality

Finally, there was a meeting with the representatives of the municipality in order to present the final projects. Children were not present, but they were "represented" by

their drawings and by the teachers. Both children's and teachers' projects had been sent to the municipality before the first meeting, but it became clear that the very first project planned by the School Building sector of the municipality had not taken into account these suggestions obtained by the participated activities in the school. Only negotiation succeeded in reconciling the different points of view: during the discussions the actors from both sides managed to reach a common solution. For example, if we look at the pictures of the garden (fig. 9 and fig. 10), we notice that after the restyling the playground is half grass-covered and half paved. This was the solution found by the work's group to meet the needs of the different parts.

Figure 9. *The garden as it was before*

Figure 10. *The final garden*

The children wanted a lawn, the teachers also a surface to walk on during wet periods and bad weather. The technicians of *Informambiente* demanded environmental sustainability. Therefore, it was important to use permeable material in order to permit the regular drainage of rain; the School Building sector had to respect the budget and the Neighbourhood council wanted the works it had financed to be carried out. Thus, the part with the grass satisfies the children and the part paved with tiles resting on sand satisfies the adults. The soft area around the castle meets the need to protect children while they are playing.

Of course, many other demands–from all the parts involved – have not been satisfied. Just to mention some of them: the children desired more playthings (and also a larger lawn); the teachers would have appreciated an area equipped for outdoor activities; among the ideas of *Informambiente* there was the creation of beds for an orto fiorito [flowered vegetable garden]. Anyway, the product of this

participation's process has brought all the involved actors closer, also emotionally: now the garden really belongs to everybody.

Results and discussion

The most important result of this project was obviously the school garden itself. Even if all the children's opinions haven't been taken into consideration as much as hoped, this experience has made all the pupils aware and involved in the future of their garden. At the end of the project, in fact, when their project was discussed by the teachers and the technicians of the municipality, all the children were caring about the results of the meetings. They really felt part of this project and were curious and interested in its results. During an interview made at the end of the year, the teachers were completely satisfied with their project because, from their point of view, all the aims had been achieved and all the pupils had increased their participation attitudes.

An important factor in the evaluation of the whole project is certainly represented by the big amount of data collected through the daily self-evaluation forms (table 3).

Table 3.
Children self-evaluation distribution. The data represent the average frequency of each choice expressed in percentage.

		1	2	3	4
Period	Marks	Did I behave according to the class rules?	Did I listen to my schoolmates' ideas?	Did I get new ideas during the discussions?	Did I express my opinions in the group?
October-December	☺	17 %	21 %	44 %	32 %
	😐	67 %	24 %	35 %	59 %
	☹	16 %	55 %	21 %	9 %
January-March	☺	32 %	25 %	63 %	36 %
	😐	44 %	32 %	32 %	55 %
	☹	24 %	43 %	5 %	7 %
April-June	☺	37 %	56 %	52 %	52 %
	😐	48 %	36 %	32 %	47 %
	☹	15%	8 %	16 %	1 %

On the whole, the table above highlights a positive framework: the children usually follow the rules, improve their ability in listening to their schoolmates', get new ideas from the discussions and express them with increasing confidence.

Nevertheless, a deeper and wider analysis explains an incongruity among the data. In the data referred to the rule-abiding attitudes of the children (first column), the average frequency of each period suggests that the children, even in the last part of the project, weren't really respectful. This information isn't totally correct because it doesn't take into account the context. As confirmed by conversations with the teachers, pupils' growing critical thinking brought the students to consider their own behaviour not correct (☹) or partially correct (😐), even if they had received only a single warning by one of their schoolmates or by the teacher. It seems that, thanks to the self-evaluation process, the children's sense of responsibility has raised during the project.

As regards to the listening of schoolmates' ideas (second column), we can observe a quite poor starting point (55% of the children affirming that they didn't listen to the schoolmates' ideas). In the third period, when the project demanded a strong sharing activity to reach a final version of the garden's project, there is a significant increase of interests to the schoolmates' opinions.

Concerning to the suggestion of new ideas (third column), there is a meaningful growth of positive answers during the second phase (when it reached 63% of happy smiles), certainly related to the fact that children had to think about the garden of dreams first singularly and then in groups. These results are proofs of an active participation because the data remain high (52%), even in the third period, when the children had to synthesize many ideas and points of view in the common project of the garden.

As regard to the fourth column, the data present an encouraging situation. From the beginning, the children express themselves spontaneously and grow thanks to the activities and the discussions. It is a great success and an important clue to notice that just 9 sad faces (less than the 1%) were drawn on the fourth column during the last period.

In a final analysis, a significant change appears in children's attitudes and way to communicate. They learnt to listen to each other's and to mediate from their different points of view reaching a common solution.

Conclusion

This case of study demonstrates that it is possible to promote a participative approach, applying the Agenda 21 methodology, also in nursery schools. This approach produces changes both in terms of visible effects on the territory and of cognitive effects on the learning. The project "Small steps of Agenda 21" improved

the green area of the school and, at the same time, developed the dialogue among the children making them aware of the importance of taking actively part in the learning process.

The dynamic participation in the activities represents the pedagogical element which makes this project a true experience of Local Agenda 21 at school. Thanks to the numerous discussions and group reflections, the children enhanced their ability to share their opinions and so to take part in a common project. The project trained the children to exchange ideas to become more flexible, to experience collaboration and cooperation, to think in a reticular way, to discover connections between actions and consequences and to look for solutions for contingent problems. Moreover, the children have acquired creativity and critical sense.

Therefore, this project demonstrates the children's ability to work with democratic processes and to make changes. Children are part of the community, that "puts the issues at the forefront" (Johansson, 2009, p. 91), and they benefit by being involved in participatory processes that allow them to care for the nearest territory.

Acknowledgements

Our thanks goes to Giovanna Rizzato for sharing the project; to Francesco Bussi for the long shared ponders about Agenda21 at school; to Cristina Minelle and Giulia Polettini for the translation; to the anonymous reviewer for the very helpful suggestions.

The present article is the result of a collaboration among the authors. In particular, section "Method" was written by Lorena Rocca; sections "The project: Small steps of Agenda 21" and "Evaluation" were written by Giovanni Donadelli; section "Introduction" was written by Sonia Ziliotto; "Results and discussion" and "Conclusion" are the result of the collaboration of the authors.

Biographical statements

Dr. Lorena ROCCA is currently researcher and aggregate professor of geography and teaching of geography in the Department of Historical, Geographical and Antiquity Sciences – section of Geography – at the University of Padua, in Italy. Her focus area is teachers' perceptions on geography, educative participation practices, outdoor learning, sustainability education, Agenda 21 at school, ICT, and learning and teaching methodologies in geography education.

Giovanni DONADELLI is a PhD candidate in geography education at the University of Padua, in Italy. His dissertation research investigates the effect of using geo-media in teaching and learning geography at primary school level. He is

also interested in outdoor learning, teachers' perceptions on geography and teaching methodologies in geography education.

Dr. Sonia ZILIOTTO is scientific collaborator in the Department of Education at the Free University of Bozen, South Tirol, Italy. Her doctoral thesis, based on an international comparison between the city of Padua (Italy) and of Würzburg (Germany), focused on ESD in nursery and primary school from a geographical point of view. She is actively involved in sustainability education processes in the formal and non-formal education sector and is currently carrying out projects about sustainability and geographical education with children and young people in the Province of Bozen.

References

Backer, S. (2006). Sustainable Development. London: Routledge.

Branca, P., & Colombo, F. (2003). La ricerca-azione come metodo di empowerment delle comunità locali. Animazione sociale, 1, 10-15.

Brundtland, G. H. (1987). Report of the World Commission on Environment and Development: Our Common Future. Retrieved from: http://www.un-documents.net/wced-ocf.htm

Calvani, A. (1995). Manuale di tecnologie dell'educazione. Pisa: ETS.

Cherubini, G. (2007). Crescere e apprendere. Lecce: Pensa Multimedia.

Cisotto, L. (2005). Psicopedagogia e didattica. Roma: Carocci.

Commission on Geographical Education of the International Geographical Union. (1992). International Charter on Geographical Education. Retrieved from: http://www.igu-cge.org

Council of the European Union. (2010). Conclusions of 19 November 2010 on Education for Sustainable Development. 2010/C 327/05. Retrieved from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:327:0011:0014:EN:PDF

De Rossi, M. (2006). Mettersi in gioco e giocare a scuola corsi abilitanti speciali per gli insegnanti della scuola dell'infanzia e della scuola primaria. Lecce: Pensa Multimedia.

Felisatti, E. (2006). Cooperare in team e in classe. Lecce: Pensa Multimedia.

General Assembly. (2002). Resolution 57/254. United Nations Decade of Education for Sustainable Development. 20 December 2002. Retrieved from: http://www.un.org/Depts/dhl/resguide/r59.htm

Goldstein, F. C., & Levin, H. S. (1987). Disorders of reasoning and problem-solving ability. In M. Meier, A. Benton, & L. Diller (Ed.), Neuropsychological rehabilitation. London: Taylor & Francis Group.

Goleman, D. (1995). Emotional intelligence. London: Bloomsbury.

Haubrich, H. (2007). Geography Education for Sustainable Development. In S. Reinfried, Y. Schleicher, & A. Rempfler (Ed.), Geographical Views on Education for Sustainable Development. Proceedings of the Lucerne-Symposium, Switzerland, July 29-31, 2007 (pp. 27-38). Geographiedidaktische Forschungen, vol. 42.

Haubrich, H., Reinfried, S., & Schleicher, Y. (2007). Lucerne Declaration on Geographical Education for Sustainable Development. Lucerne: IGU.

Jonasson, E. (2009). The preschool child of today – the world citizen of tomorrow? International Journal of Early Childhood, 41 (2), 79-95.

Lamedica, I. (2003). Conoscere e pensare la città itinerari didattici di progettazione partecipata. Gardolo: Erickson.

Mayer, R. E. (1992). Thinking, problem solving, cognition. Second edition. New York: W. H. Freeman and Company.

Meadows, D. H. et al. (1972). The Limits to Growth. New York: Universe Books.

Ministero della Pubblica Istruzione. (2007). Indicazioni per il curricolo per la scuola dell'infanzia e per il primo ciclo d'istruzione. Roma. Retrieved from: www.istruzione.it

Pento, G. (2007). Crescere in movimento. Lecce: Pensa Multimedia.

Piaget, J. (1969). Psicologia e pedagogia. Torino: Loescher.

Pramling Samuelsson, I., & Kaga, Y. (2008). The contribution of early childhood education to a sustainable society. Paris: UNESCO.

Rizzato, G. (2009). Piccoli passi di Agenda21. Un'esperienza di progettazione partecipata in una scuola dell'Infanzia di Padova. Unpublished master's thesis, University of Padua, Padua.

Rocca, L. (2007a). Geo-scoprire il mondo. Lecce: Pensa Multimedia.

Rocca, L. (2007b). Human governance per un'educazione alla cittadinanza e allo sviluppo sostenibile. In B. Castiglioni, & M. De Marchi (Ed.), Paesaggio, sostenibilità, valutazione (pp. 67-81). Padova: Servizi Grafici Territoriali.

Salmaso, P. et al. (2002). Agenda 21 a scuola. Un percorso partecipato e condiviso all'interno della scuola. Padova: Comune di Padova.

Schön, D. A. (1993). Il professionista riflessivo. Bari: Dedalo.

Stoltenberg, U. (2010). Bildung für eine nachhaltige Entwicklung als innovatives Konzept für Qualitätsentwicklung und Professionalisierung in der LehrerInnenbildung. In R. Steiner, F. Rauch, & A. Felbinger (Ed.), Professionalisierung und Forschung in der LehrerInnenbildung. Einblicke in der Universitätslehrgang BINE (pp. 39-65). Wien: FORUM Umweltbildung im Umweltdachverband.

Turco, A. (1988). Verso una teoria geografica della complessità. Milano: Unicopli.

UNCED - United Nations Conference on Environment and Development. (1992a). Rio Declaration on Environment and Development. Rio de Janeiro, 14 June 1992, A/CONF.151/26 (Vol. I). Retrieved from: http://www.un-documents.net/rio-dec.htm

UNCED - United Nations Conference on Environment and Development. (1992b). Agenda 21. Rio de Janeiro, 14 June 1992, A/CONF.151/26 (Vol. I). Retrieved from: http://www.un-documents.net/agenda21.htm

UNCHE – United Nations Conference on Human Environment. (1972). Declaration of the United Nations Conference on the Human Environment. Stockholm. Retrieved from: http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503

UNECE – United Nations Economic Commission for Europe. (2005). UNECE Strategy on Education for Sustainable Development. Vilnius, 23 March 2005, CEP/AC.13/2005/3/Rev.1. Retrieved from: http://www.unece.org

UNESCO. (2005a). United Nations Decade of Education for Sustainable Development (2005-2014). International Implementation Scheme. Retrieved from: http://unesdoc.unesco.org/images/0014/001486/148654e.pdf

UNESCO. (2005b). Towards Knowledge Societies. Paris: UNESCO Publishing. Retrieved from: http://unesdoc.unesco.org/images/0014/001418/141843e.pdf

UNESCO. (2009). Bonn Declaration. Retrieved from: http://www.esd-world-conference-2009.org/fileadmin/download/ESD2009_BonnDeclaration080409.pdf

UNFPA - United Nations Population Fund. (2007). State of World Population 2007. Unleashing the Potential of Urban Growth. Retrieved from: http://www.unfpa.org/swp/2007/presskit/pdf/sowp2007_eng.pdf

Varisco, B. M. (2002). Costruttivismo socio-culturale. Roma: Carocci.

Vygotskij, L. S. (1978). Il processo cognitivo. Torino: Boringhieri.

WSSD – World Summit on Sustainable Development. (2002). Johannesburg Declaration on Sustainable Development. Johannesburg-South Africa, A/CONF.199/20. Retrieved from: http://www.un-documents.net/k-001303.htm

Ziliotto, S. (2010). Analisi geodidattica sui temi dell'educazione allo sviluppo sostenibile nella scuola dell'infanzia e nella scuola primaria in Veneto e in Baviera. Confronto tra Padova e Würzburg. (Doctoral Dissertation, University of Padua & University of Würzburg, 2010). Retrieved from: http://paduaresearch.cab.unipd.it/4279/