

ScienzAzioni

"ScienzAzioni" is a project which was born in the "children's pockets" and which is destined to kindergartens and primary schools. It proposes experiences in the scientific sector and children's activities especially focused on **doing experiences and on the collection of information from the environment to get to know the world**. It is based on a network which, through research and actions, promotes **personalization** of learning, **multi-tasking** and **didactic continuity** between kindergartens and primary schools. In general it is based on the organization of a **net of public and private schools** where the subjects interact and cooperate for the teachers' training and the joint organization of school activities. The project considers the **environment as a text** which can provide us with various **keys to analyze** it together with the world. ScienzAzioni is part of a bigger project called **C.R.E.A** in which the Educational Policies Department of Cremona Municipality and the Natural Sciences Museum cooperate. The project's goal is educating every child (with the cooperation of parents) to develop scientific knowledge and awareness for a sustainable environmental protection. ScienzAzioni is based on a pedagogic method which mixes day by day exploration and observation of natural, human, social and museum environments of the town which can be points of reference for all the children's experiences.

I can, I do, I innovate

If we consider the children's pockets as starting point it means that we respect their needs, interests, curiosities and also their skills. If we take into consideration how children can physically and ideally contribute we can have the opportunity to be close to them in the definition of the project (which at the end must be carried out by adults). Then we must focus on exploration and observation methodologies preparing a "work in progress" project which must take into consideration all the needs of the subjects involved. The focus on children activities can make them carry out analysis and researches and represent an important base for making skills.

SCHOOLS OF THE NET

Involved schools: n° 9 municipality schools and 3 state schools of first Cremona district and 2 of the fifth Cremona district
Teachers trained: n° 78
Classes involved: n° 39 (900 children)
15 meetings and visits of the museum staff in the schools and
44 visits to the natural sciences museum

The project and its reasons

Every child, especially if s/he very young, naturally has an heuristic approach, s/he wants to know "what?" "how?" "why?" of all the world which surrounds him/her. These are the three basic questions of human knowledge. Also very young children analyze events or situations and process in their minds all the parts of natural and social environment acquiring new skills to "understand" the reality. A lot of activities which are normally carried out by children have important scientific aspects, we only have to highlight them through the analysis and the contribution of the teacher.

I can, I do, I innovate

Does the experimental approach lead children and adults to be protagonists in the knowledge process? Can they both be active in the knowledge process with their different points of view? Being protagonists in doing and creating means also experimenting day by day the curiosity of asking and finding not only answers but also situations which make us think, analyze and discuss.

The progressive development of scientific methods and knowledge facilitates the harmonious and integrated improvement of the children's skills and competences.

It is necessary to underline that in his/her approach with the natural environment every child must develop his/her functions. For this reason the educator must provide opportunities to make the children observe, perceive, generalize and produce.

Working method

We think we must use the **exploration** opportunities that every child can have paying attention to the environment and to the materials, spurring the children to carry out activities and experiences concerning scientific procedures.

The experiences and the problems treated are related to the knowledge of the children and can be easily understood.

The project provides children with opportunities to express themselves and be listened to. A fundamental role is played by personalization of the intervention and by the group debate. The debate context created by the teacher reassures children who feel free to express their ideas. The goal of the didactic activity is not the acquisition of abstract knowledge but the start up of behaviors which analyze the direct experiences with the materials which are observed and touched.

I can

The goal of the proposals is not offering to the subjects who are learning a "ready world", but a point of reference to be re-interpreted with personal codes and jointly analyzed through research paths, making questions and promoting an experimental approach to support and develop the entrepreneurial spirit and creativity.

The debate represents an important element at methodological level , as it allows to make questions, explain the answers, become more aware of what you think, look for efficient strategies to solve the problems and support the transfer of skills to other situations.

I can, I do, I innovate

The power and entrepreneurial skills are very important for children also in relationship with the peer group and especially for the development of a "knowing-about-knowing" approach. An adult, then, can be a guide and direct the debate without giving answers but proposing hypothesis.

These passages are important because the child **can learn through senses and emotions** establishing contacts with the external world (which is the knowledge's object) in order to analyze what s/he learns according to the structural scheme s/he already knows (words, concepts, abstract links, cause-effect, before-after...).

Activities organized during the path:

- teachers' training and project's monitoring
- Activities with the classes carried out by teachers with small groups, workshops, visits to the natural sciences museum, trips on the territory
- animation and dissemination activities in the town.

Materials and resources

We decided to **observe the materials which characterize the territory** and which facilitate the curiosity and motivation of every child. We wanted to observe out of the school the elements studied in the classroom.

The same observed, touched, analyzed materials were used to make the children understand that they are part of the urban reality. For example, in the river environment and in our houses you can find clay, sand and gravel; trees and small animals live in the wood but also in the school garden. If children recognize their environment they **can be rooted in the territory defining their identity and sense of belonging.**

The entrepreneurial capacity can be supported also allowing the children to experiment their level of autonomy, testing, for example, the capacity of finding links and moving in the territory (classroom, garden, territory).

During the activities, the spaces and the tools available in the museum facilitate the observation, analysis, synthesis and hypothesis production. Every school prepares a permanent "scientific corner" where are stored the materials that the children can use.

ScienzAzioni (SciencesActions)

The project of the Kindergarten "Martiri della Libertà"

School years 2007/08, 2008/09, 2009/20010

Teachers: Luisa B., Isabella B.

Project: the chestnuts

When Spring arrives and the temperature rises, the playground of our school fills up with children and the teachers monitor them while they are freely playing. Some of the children climb, some gets on and off the slides, some go on the swings or play in the small houses but, if we pay more attention, somebody is out-the-way and s/he is doing something else. Among the voices of the children who are playing in the school's garden, some children are playing with the earth and the soil, others are picking up flowers, leaves, stones or grass threads; they look and gaze what they have collected. The sand-areas are full of children with bare foot who transplant plants, makes holes, riddle the sand, fill and empty shapes and buckets. They are so concentrated on their games that they do not even hear the teachers who are calling them to go back in the school because the lunch is on the table. It is evident that the structured games catch their attention only at the beginning because, immediately after, they are attracted by the environment and its objects or by some natural phenomena which can catalyze their natural attention for all the time they spend in the playground. This "attentive" time, moreover, can be repeated every time, as probably the child feels the necessity to make the same experience but in different ways. Then, when you go back in the class, the pockets of the children are full of things jealously collected and it's wonderful to look at these objects and understand the way these children analyze the world.

Entrepreneurial spirit and doing

The "pocket" can represent a metaphor of children's learning as it makes evident their entrepreneurial spirit. This skill, in particular, can be developed if the children can take to school what they discover during their autonomous observation and exploration paths.

"Enterprise": adventure and discovery dimension.

In the "Guide for childhood educators", by Rosa Agazzi, there is one interesting chapter which is dedicated to the "pockets of the children which sometimes were full of things which were ugly, dirty or dangerous... the pockets of my thirty children were full of nails, chestnuts, small stones, nutshell ... I understood that if I wanted to be trusted by my children I had to spur them to show me their objects, exactly as if I were a classmate. I would have

admired when admiration could not be a lie; I would have made suggestions, I would have kept and stored some of these things and give the children back their objects at the end of the day. And I did it! The number of the things started to increase more and more".

This incredible Cremona teacher, with her interesting analysis, suggests to us that our world is the complex "text" made up of various chapters which leads us to discover all its contents. With its biodiversity, the environment, can represent for us the "context" in which real objects represent the plot.

The experience of the class

The experience of our class started with the discovery of the garden of the kindergarten Martiri della Libertà at the end of September, when suddenly the school playground gets full of strange brown pointed husks. The children realized that there is something new and start to look at them, to collect them and to ask questions. Some children ask "What are these?", "why are they on the ground?" or "why do they fall down?".

I dare

Is there a link between the capacity of asking questions and wondering and the knowledge process?

This is the right moment to share knowledge and experiences through conversations with the children who make hypothesis and tell stories. We, as teachers, started to wonder how we could help the children to discover the environment and its elements.

How could we spur children to make things? While planning the didactic activity we thought about two things: what to do and what not to do.

What to do

Take into consideration the knowledge of the children and their previous experiences and use them as the base to organize our activities, bearing in mind that every child interacts in a special way with the acquisition of new information.

Enterprise

Is enterprise also related to the special capacity that every child has to participate to different activities and to express various kind of intelligence?

Create contexts which can facilitate the debate so that the children can feel free to express their ideas and mix them with what they learn individually and together with the others.

Remember that learning new concepts can represent a possibility to increase what children already know or can represent something completely different from the past. Some of the new concepts can also be applied to other subjects.

What not to do

Do not convey abstract ideas but be mediators of the learning process which must always start from experiences deriving from the children's life and environment, from experiences which are important for them.

Do not provide abstract explanations but spur the children to discover the environment, fostering them to touch the materials and to ask more questions.

Do not propose activities which are completely different from the interests and the children's knowledge.

Do not oblige the children to follow the processes of phenomena they are not interested in, even if we think they are important for the development of scientific skills.

The learning motivation can also spur entrepreneurial skills but adults must prepare situations and occasions to reinforce it.

Our kindergartens are similar to "construction sites" where take place various group-activities. The space is "prepared and equipped" every time and the children consider it as the place where they can make things, try, discover and be protagonist. The workshop area contains only the materials necessary for that specific activity, there aren't pieces of furniture and the children can focus their attention on the objects. The area is equipped for that specific activity and in this way the experience is spontaneous and suitable for the creative behavior of every child.

"Enterprise"

An organized space must offer precise incentives but it must also leave possibilities to explore: can "entrepreneurial spirit" be supported and nourished by a favorable environment? The good designing of the environment improves knowledge as it offers, without imposing it, the possibility to test yourself in an original and personal way.

The tools used are adequate for the children's age. At the end of every experience the tools and the objects are classified and placed in the "scientific corner".

What we did

When we planned the scientific activities we decided to leave the children free to focus their attention on environments and materials in a structured and not structured way. We worked as facilitators and answered the children's questions.

During the activities we analyzed the spontaneous relationships of the children with the environmental context: this interaction produced occasions to organize activities based on observation, classification on logic basis, search for links, differences and similarities, transformations. During these three years of experimentation we understood that the first experiences are related with water, soil, plants, animals, schools' or houses' garden. Usually the grass of the school's garden and the objects collected during the holidays fill the classes and these objects must be analyzed and properly placed in the classroom. We must decide where to put them and how to store them. This activity fosters spontaneous classification of shapes, colors, dimensions, smells...but not only: with this activity you can discover the living world. How can we store this object? Do we have all the necessary tools to observe its transformations? For all these reasons it's fundamental to find shared criteria and think about what can spur the children to focus on logical operations like classifications, making groups, naming the materials ecc....

In this way the children can spontaneously understand that it's necessary to create a specific space for the objects and can find new original criteria to store and classify them.

The children start to feel to necessity to tidy up the class and, when everything is cleaned up, it is even easier for them to understand. For this reason it was born in every school a "scientific corner", a space to store and observe things but also an area full of personal and school memories.

Final remarks

At the beginning it was not easy: the experience's idea was only embryonic, the method was unknown, the contents new. We were afraid that we could not answer the children in the right way from the scientific point of view. However, thanks to the children's enthusiasm, our first uncertainties disappeared. The previous experiences of the children were linked with the new ones and these created interesting debates in which everyone contributed to transform questions in a chain of answers and vice versa.

Our scientific adventure starts with the games in the school playground: the children use spontaneously the natural elements of the soil, they collect them and ask questions..."what are these? "... why are they on the ground ?"... why do they fall down?"..." there are lots of them"...(ex: the husks). In this way it is possible to foster children's curiosity for the elements they search or find. Then, day by day, they collected in every

environment they went with their families (mountains, seaside, countryside...) every kind of elements.

The cooperation of some families which spurred the interests of their children contributed to this "project" creating a favorable context.

The idea of creating a "project" about the chestnuts derived from the children's interest for the chestnuts of the school's horse chestnut and from the comparison with the edible ones collected by a child in the mountains during his holidays with the family. The cooperation of Ms. Cinzia Galli (natural sciences expert) was fundamental to define the evolution of the didactic path.

I, the teacher, was more a mediator not only a knowledge conveyer, and in this way I could water down my anxiety._

The project went on respecting the children's interests and it was sometimes stopped when the children were not interested anymore.

I adapt

When teachers respect the children's needs they offer to the children the possibility to experiment what it is means "to adapt".

I tried to respect their needs and in this way the children could perceive these activities in a natural way and with personal motivations: they spontaneously went close to the scientific corner to observe the classified objects.

It was exciting participating and observing the wonder of a lot of eyes eager to see, understand, perceive sensations and get knowledge, make comparisons, compare elements, touch them, smell them, notice the differences and ask "why". The wonder and satisfaction of the children when they noticed new elements gave me the opportunity to understand that the scientific method can be used not only by scientists but also by all those people who have to study new topics.