EDUCATIONAL – DIDACTIC FORMAT FOR NURSERY SCHOOLS

NATURE AND FANTASY

A proposal to produce scientific knowledge with 3-to-5-year-old children

BASIC IDEA

This project aims at offering an empirical educational experience which, following the real learning possibilities of the target and the individuals, promotes the development of skills and behaviours at the basis of scientific knowledge and "doing"[1], and supports the growth of an eco-friendly thinking, starting from nursery school.

From a didactic point of view, the idea is to **experiment an integrated path, which promotes the exploration and the discovery of environmental and naturalistic features of the setting, through the immersion in the context and the activation of "doing" and fantasy**, used as main channels of involvement and development of basic and learning skills.

[1] It refers to empirical activities: observing, experimenting, verifying and using observational and research tools, which prepare for knowledge and processes of conceptualisation, generalization and transferability of knowledge.

The project aims at answering the following questions:

1. How can natural curiosity of children towards the world around them be developed?
2. Which didactic experience in the scientific field can be performed with 3-to-5-year-old children?
3. How can we combine scientific rigour with real potentials of children thinking and with a didactic practise which respects those potentials and the personal process of growth?
4. How can we put children in contact with specific scientific language without stretching or trivializing it?
5. How can school intercept educational and cultural resources of extra-school?

NEEDS WE TRIED TO MEET

We tried **to build a new approach towards science**, which is traditionally considered "critical" in nursery schools. The aim is to leave behind the idea of "doing science" as an abstract experience, as a passive and mnemonic reception of information and concepts, as a research field unsuitable for age groups attending nursery schools. **The "scientific doing" here is related to classical standards and joined with reality and experience, so that it is accessible to the target;**

methodological innovation aimed at coordinating the various players involved in the project (school / experts and specialists/ families) and among school teachers, through shared planning, opening of classrooms, research and constant assessment. **Exploration, narration, laboratory activity, theatrical entertainment and games are considered favoured resources for learning and relational life, complying with the features of children thinking, which is both fantastic and concrete;**

curricular innovation by opening to activities and languages which allow to emotionally strengthen involvement and learning, to significantly reorganize experiences, to take a challenge on a personal and collective level; in particular, through theatrical entertainment, narration, fantastic paths;

collaboration between educational associations and "extra-school", in terms of active partnership. Children's families, the local library, groups and cultural and theatrical associations, as bearers of cultural proposals, specific skills and knowledge, contribute to enrich the education provided by the school and the teachers' training, creating a virtuous circle between school and environment, between formal / non formal / informal education.

PEDAGOGICAL PARADIGMS, OBJECTIVES, STRATEGIES

The format is based on the following pillars:

1. Methodological innovation: the school becomes a laboratory

2. Openness to the environment: the environment becomes a school

1. Methodological innovation

The methodological innovation is justified by teachers' choice to make active-experiential didactic paths, which they experienced previously, more systematic. They aim at integrating various actions and experiences, from a perspective able to constantly combine didactic action with educational relation and attention to the single child.

Action, observation at first hand, manipulation and experimentation are considered positive experiences for shared discovery, direct relationship with the world of things and people, development of basic skills and building of new knowledge.

THE FANTASTIC DIMENSION *"…enriches children's life: it stimulates their imagination, helps them to develop their mind and clarifies their emotions, helps them to detect hurdles and suggests solutions to problems …"* (Bettelheim- The Uses of Enchantment).

It is considered:

- a feature of children thinking;
- an interpretative potential;
- a communication channel, able to strengthen motivation and participation.

The aim is not to create science-fiction or fantasy literature, but to offer some **fantastic and fantacognitive**[2] **inputs**, in order to:

- transmit information (i.e. the speaking trees narrate stories …) and experiences (i.e. meetings with characters from traditional fairy literature which "lead" to sensorial activities);
- discover some behavioural rules in a shared and aware way (i.e. the fairy of the wood gives rules to be "friend of the wood");
- build personal interpretation and production (i.e. from experience to problem solving, imitative games, simulations, role playing, it is/seems ...).

The planning is focused on the laboratory activity and on a careful preparation of the setting.

THE LABORATORY stops being an independent space or an occasional experience, a one-time input in the "everyday" activities, and becomes the core and the continuum of school life. In the classroom and in the extra-school environment, children are prepared to act on material, sensorial and motor levels, supported by fantastic and theatrical operational inputs and by a relational atmosphere open to listening and to comparison with peers and adults.

INCLUSIVE DIMENSION: the entire exploration project combines with the maturity of the self and the individual growth processes; the laboratory activity supports the personalization of actions, allowing children to progress according to their personal pace, feeling part of the team.

[2] FANTACOGNITION is a stimulation to paths which lead children to understanding and re-examination of learning, supporting subjective interpretation.

2. Openness to the environment

The environment is considered in various dimensions:

- **physical** – typical local environments with their naturalistic features (i.e. the wood on the hill and near the lake, the Natural Park); places to know, explore, admire; places suitable for learning and cooperating;
- **ecological:** various living beings and their relationships, the link between man and environment, rules to follow;
- **human and cultural resources**: it is a reference to specialist wealth, offered both by associations and cultural organizations and by single experts, specialists and professionals.

The openness to the environment is put into effect with an active partnership, with the collaboration between teachers/experts and specialists in managing the experimentation. The experts come into the school with their professional and specialist knowledge, and cooperate with the teachers, giving them an opportunity to refresh their skills.

The cooperation of several professionals in the didactic field involves the need of a coordination of didactic choices, selection of contents and tasks.
It is fundamental to organize:

- a starting focus group: choosing the theme and defining roles, tasks, objectives, contents and modes of action and relation; defining and preparing the setting;
- periodic meetings and team work: preparing searching tools suitable for the target and explanation and divulgation material;
- critical reflection: shared assessment during and after the activity;
- outsourcing of work through an exhibition and a collective experience (*see theatrical format/animated path*).

The family is involved:

- in discovery activities – outings, guided by experts;
- in collective activities – walking between nature and fantasy, namely the animated path in the wood;
- with continuous information about the activity in general (presentation of the program, development and results).

FOCUS: CHILD – SCIENCE – DIDACTIC

The children approach the world with a nearly scientific attitude:

- they are naturally attracted by the surrounding;
- they are intrigued by phenomena and want to know their hidden aspects;
- they are spontaneously pushed to actions aimed at exploring reality and matter: they manipulate, watch, dismantle, and try again and again…;
- their activity is increasingly organized and gradually enriched by previous experiences and discoveries;
- they precociously use "tools" to meet a target ;
- they create knowledge, abilities, first concepts and basic skills, through the experience.

On a didactic level, "doing science" at nursery school is:

- an experience ground, performed in the "real context" where children are immersed;
- an opportunity for concrete, sensorial, motor and perceptive experiences, which are essential for maturing an abstract thinking;
- a field of exploration, research, shared action, which allow children to think, create knowledge and learn basic skills, also from a technological and instrumental point of view;
- an opportunity suitable for developing creativity and personal constructiveness;
- an activity which promotes the development of collaboration skills.

EDUCATIONAL OBJECTIVES

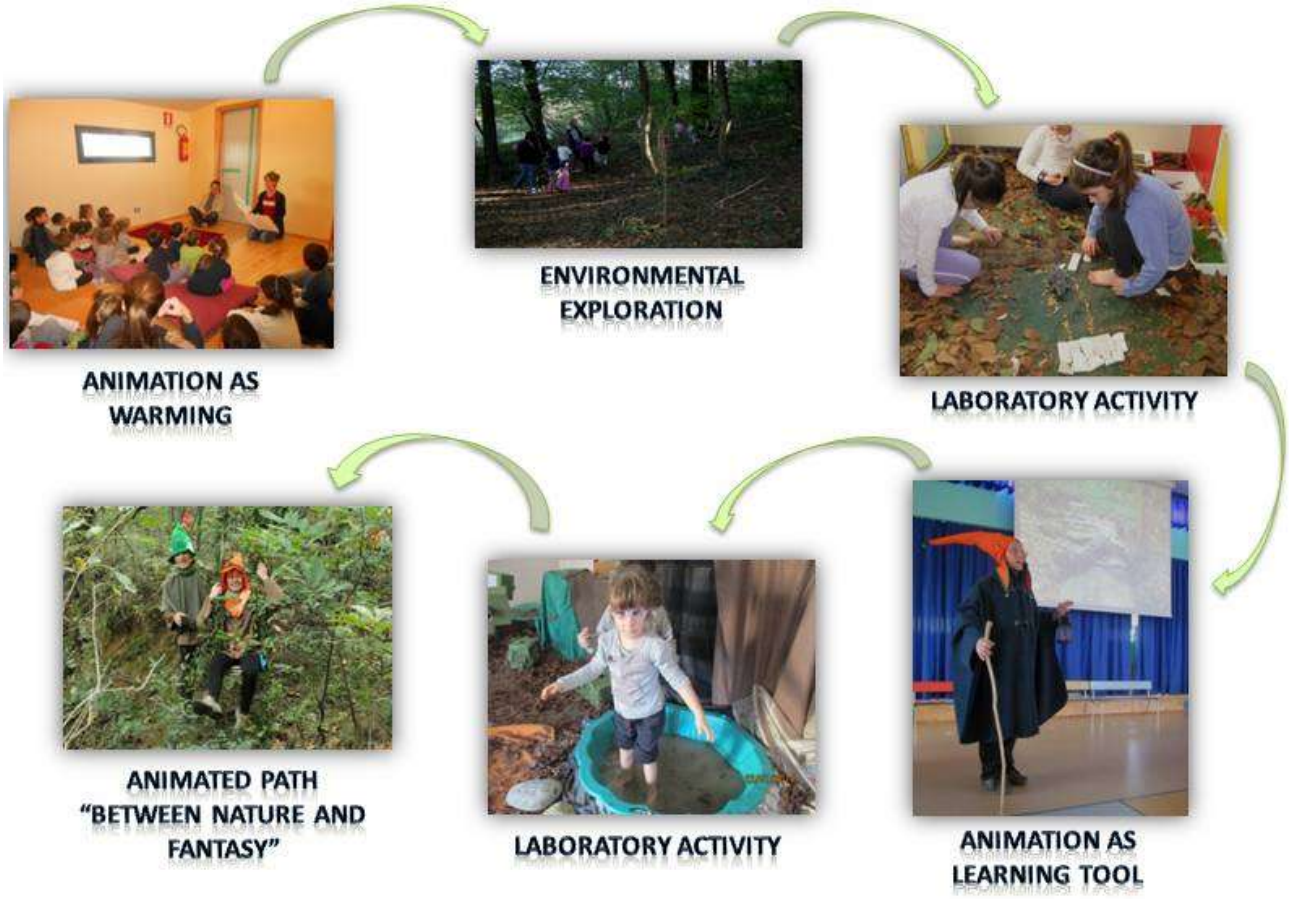
The project complies with 4 fields indicated by the National Guidance	**Objectives** They have to be suitable for the age and the individual maturity
Development of personal identity	○ Developing curiosity towards the external world and its phenomena; ○ being able to approach with people and the environment; ○ strengthening personal confidence; ○ finding a role in the team; ○ developing a respectful attitude towards the environment.
Improving personal autonomy	○ Opening to new and different things; ○ wondering about phenomena; ○ improving personal and operational organization.
Development of basic skills	○ Development of sensorial and perceptive skills; ○ linguistic and conceptual enhancement; ○ enhancement of expression and communication skills; ○ development of observation and understanding skills; ○ development of logical skills used to order, gather, quantify and measure; ○ ability to locate and move in the real and graphic space; ○ ability to use technological tools.
Development of the sense of citizenship	○ Developing a positive attitude in the relationship man-environment; ○ discovering the importance of rules and respect; ○ improving the relationship among peers and with adults, also from the extra-school environment.

THE ASSESSMENT

The assessment goes through every stage of the project and has a didactic aim. Considering the target, it is made on a qualitative and descriptive level, with a careful observation of processes, more than of knowledge.

LEVEL	SUBJECTS	SCHEDULE/DOCUMENTS	PROCEDURE
Lev.1	The teachers and their partners assess the evolution of the activities	During and after every activity At the end of the entire experience	**Critical reflection** -about the evolution of the activity; weak and strong points relating to roles/tasks; contents, communication, levels of participation; - analysis of unexpected events; - adjustment of planning and organization during the activity.
Lev. 2	The team of teachers and educators assess the endurance of planning and organization	Periodic assessment every fifteen days Register	**Critical reflection** -comparison of data emerged from every class and from the overall group, in relation to interest, participation and elaboration. Adjustment and development of the activity.
Lev. 3	Every teacher observes the group and the individuals, in order to adjust the activities and to react to individual potentials, also from an inclusive point of view	Across and after the activities. Teacher's register	**Systematic observation** of behaviours, answers, execution skills, rhythm and styles of learning and of relational and cooperative dynamics; **Active listening of children,** who describe, reinterpret, repeat, use information **Operative sheets, games and expressive activities** as procedures to notice everyone's acquisition in relation to the starting point and to the level of personal maturation.
Lev. 4	Involvement of families The families express their level of approval about the practical activities in which they are involved, and about the final exhibition.	During the project Individual and single class meetings	"Opinion" box After the project, with a survey sheet

GENERAL MAP OF ACTIVITIES



PRELIMINARY STAGE

Building of a partnership: use of extra-school organizations which can be potentially involved in the project, provisional presentation of the project, census of human and instrumental resources, planning of a schedule of meetings.

Shared planning among teachers: the basic idea is illustrated with aims and didactic actions, pointing out its planning and its strategies**.**

ENVIRONMENTAL EXPLORATION

Children, after immersing in the context, discover the wood both independently and guided; the expert suggests some starting ideas and interpretation games, offers information with a method similar to a frontal lesson, and suggests tactile and sensorial experiences.

OBJECTIVES	**Cognitive plan:** • knowing, discovering and reflecting about the variety of natural elements; • observing and noticing changes; • understanding words and discourses; • enriching the lexicon; • stimulating logical and creative thinking; • expressing and communicating the experiences through verbal language; • orienting themselves in the space following some indications. **Discovery plan:** ○ knowing how to watch, distinguish, getting analogies and differences; ○ detecting clues and sensations; ○ using the investigation scheme: Who? What? How? Why? ○ making hypothesis. **Relational plan:** ○ establishing relationships with external people; ○ moving in team and individually in the space.
ACTIVITY	The project consists of 4 guided outgoings in different seasons, in the wood on the hill and near the lake. ***Documents*** : *Guided outgoing in the wood on the hill (ITA)(click here)*

CONTENTS	o Research and collection of material (leaves, fruits, branches, barks, seeds …); o discovery of clues (tracks, shells, feathers …) and changes; o sensorial, tactile, olfactory, visual, auditory experiences; o listening of voices; o from experience to problem solving; o guided learning of trees, seeds, herbs, animals.
RESOURCES	Teachers, educators, experts, specialists, volunteers.
SETTING	The bound paths are suitable for their length and their didactic content; they twist and turn into the wood on the hill and into the wood near the lake. The children are divided in teams with mixed age groups; they move in the same wood, following two different paths. The children are provided with baskets, bags, sacks, and wear suitable clothes. An educator takes some photographs. A volunteer takes note and records experts' information, children's observations and unexpected events.
SCHEDULE	Two mornings. Two groups every morning.

LABORATORY ACTIVITY

The project offers different kinds of experience, focused on learning through children's and groups' "doing". Children are divided according to their age group and their class.

OBJECTIVES	**Cognitive plan:** o developing curiosity, interest and attention; o reconstructing and narrating experiences; o remembering and reorganising material; o identifying and explaining; o matching and classifying, according to independent and guided parameters; o using new words: matching and identification; o getting temporal and logical relations; o using senses; o memorizing short nursery rhymes; o knowing features of scientific tools, in order to understand measurement conversion; o getting the concepts of identity and similarity in measurement conversion. **Discovery plan:** o detecting and analysing basic properties of natural material; o comparing and getting changes, analogies, similarities and differences, even on a tactile level; o explaining and representing with drawings and body; o discovering the micro-world; o knowing and respecting environmental rules; **Technological plan:** o knowing the purpose of using tools; o following the temporal phases of an experiment and understanding their meaning; o discovering and using observational tools (lenses and microscopes);

ACTIVITY	The material which is gathered in the wood is observed, manipulated, classified, interpreted, and represented through: games, collective works, frontal lessons, brainstorming, simulations, tactile paths, experiments, figurative inputs, expressive inputs. The experts manage the experimental activity, aimed at discovering the micro-world, using specific tools such as: magnifying glasses, microscopes, lamps with lenses. They prepare summarizing posters about some trees observed in the wood and their features (shape, foliage, kind of bark, seeds, leaves ...) ***Documents (ITA)*** 1. *Let's work with the material found in the wood* 2. *Use of tools to discover the world of mushrooms* 3. *The classroom of the wood (younger children)* 4. *The classroom of the wood (older children)* 5. *Exploration of water: 3 age groups* 6. *Art Colors and Nature Project* 7. *L'Aula della neve*
CONTENTS	Meeting with the world of mushrooms and discovery of their features: o observation/manipulation of champignon mushrooms and graphic representation; o observation of pictures of different kinds of mushrooms, projected on the wall; o reading of tales and nursery rhymes. Events with the mycological association: o the world we do not see (experience with mushroom spores which leave a mark); o the plant world around us (narration of a tale, using posters about features of plants with leaves and fruits) and answers to questions posed by children. Examples: o How do trees bring water up to the leaves? o How do trees change the colour of their leaves? o How do fruits grow? o presentation and use of scientific research tools. Discovery of water as a resource.

RESOURCES	Teachers, educators, external experts every 4/5 people.
SETTING	Hall: tables, benches and tools are prepared for practical activities, as well as a space for information material (posters and books). Classroom: every class develops a theme according to its interest. The material is placed on the tables and in the specific containers.
SCHEDULE	Experts' activity: One morning for the theme: "The world of mushrooms" One morning: "Trees and their features" One morning: Experience with specific tools. Class activity: some mornings.

FINAL CONSIDERATIONS

STRONG POINTS	***WEAK POINTS***
o Circulation of scientific culture; o the school becomes a laboratory and a place for lively and shared discovery; o significance of experiences and integration of activities; o development of basic cross skills (cognitive, social, identity-making, technological); o methodological and curricular innovation; o education to an eco-friendly thinking; o re-appropriation of local environment; o positive network with extra-school partners.	o The schedule is sometimes inconvenient for school organization (i.e. coming back for lunch …); o unexpected meteorological conditions; o problems in combining the schedules with different partners.
OPPORTUNITIES	***RISKS***
o Involvement and increase in value of extra-school organizations; o opportunity of acting from an inter-disciplinary point of view; o opportunity for teachers of refreshing their skills, from a research-action perspective; o involvement of and among families; o availability of specific tools.	o Prevalence of a technical-specialist interest, at the expense of a complete educational perspective; o problems in managing the activities, which have to be planned and assessed commonly; o inappropriateness of specific language in the communication with children.