

# THE ROLE OF THE SCHOOL SPACE IN PRESCHOOLERS' LEARNING PROCESSES

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## ABSTRACT

### Purpose of the study

The first aim of the present article was to investigate the role of school environment as an important factor in the learning process of children attending preschools in Istria (i.e. a part of Croatia where many people speak Italian).

The school space is also called “Third educator” by famous pedagogues and it is constituted by labs, corridors, materials shape of the building, colours of the walls, quality of the lightings, type of furnishings and all didactic materials. It is a specific environment where the children live, learn, experience, get in touch with other people.

### Methodology

The method used in our research was both quantitative as qualitative analyses of pedagogical documentation, observation of the environment of preschools and interviews with the educational boards of every school.

### Results

The results showed that the school space is mostly in accordance with the requirements of the current legislation of the Country of Croatia and also confirmed the importance of it as “Third educator”, especially when the educators themselves were able to ameliorate the richness of corners and materials made available for children, encouraging in this way the development of the child's independence, maturation of identity and development of competencies.

### Implications

In conclusion, school environment significantly affects child's learning, both because of the influence of architectural structures as because relational contexts and stimuli offered by the environment and by the educators. It means that the Ministry of Education in any Country should pay attention to the way buildings are constructed, especially regarding the richness of corners and materials at disposal of the children and of the educators.

**Keywords:** *child; school environment; preschoolers; learning process*

## INTRODUCTION

The concept of the environment has many different definitions depending on the function that needs to be highlighted. In this paper, the school environment shall be considered as an essential factor in the learning process in preschool. According to several scholars, the influence of the school environment on the physical/mental development of the child attending preschool is very high ([Malaguzzi, 2010](#); [Miljak, 2009](#), [Mlinarević, 2004](#)). Each element of this environment influences child's behaviour and actions and allows him/her to build significant relationships, thanks to which he/she can communicate his/her nature and express his/her personality. The school environment consists of physical and social aspects, among which we shall consider only the physical ones, including both the interior and exterior of the school, as well as the available didactic instruments. A large physical environment, which is flexible and stimulating, offers several opportunities to children to acquire new knowledge, to practice skills, to express their creativity, to make hypotheses, to discover, experiment, draw conclusions, thus improving their competences and life skills. ([Miljak, 1996, 2009](#)). At the same time, it helps the development of child's identity and his/her sense of belonging to a place and a to social group. The richness of materials is also needed to satisfy various interests and abilities of children, allowing them to choose among the activities offered by the environment.

During the last two centuries, the preschools' environment has undergone various modifications, as it has been a subject of many types of research, experiments and opposing views by philosophers, psychologists, pedagogies, and architects. The school buildings created in that period can be divided into three categories ([Paolino, 2011: 203](#)).

- Buildings designed in line with a program of development and diffusion of the educational system which involves pedagogical standards according to which the environment is structured based on the needs of the adults.

- Constructions following pedagogical guidelines according to which the spaces are adapted according to the needs of the children. This stream includes the contributions of some of the most famous pedagogies like Friedrich Fröbel, Maria Montessori, Rudolf Steiner, LorisMalaguzzi.
- Buildings designed by architects who let their childhood experiences inflict on their mindset. A famous example is the Avery Coonley Kindergarden, designed by the architect Frank Lloyd Wright, in the suburbs of Chicago. This Kindergarten was created based on Fröbel Gifts theory. The architect himself stated that the smooth cardboard triangles and the polished wooden maple blocks remained impressed in his memory from his early childhood and for him, they were an unforgettable experience.

### Space as an essential element of an educational project

Designing a preschool space is a process that requires great creativity, not only pedagogical and architectural but also social, cultural and political (Ceppi&Zini, 1998). From a pedagogical point of view, the preschools must offer an environment that promotes learning in line with the new pedagogical theories. Today the traditional teaching method, based on knowledge transfer has been outdated; the emphasis is, actually, on the fact that learning is an active and constructive process in which every child is a "protagonist." As a result, the educational institution is not seen as a place of reproduction and transfer of knowledge, but as a space of creativity. It is therefore essential that the environment is organized in line with the needs of the children, rich in materials and proposals for the creation of real experiences. To implement a development process in means of doing, feeling, thinking, acting, expressing, communicating; it is, therefore, a space that supports the development of cognitive, practical and creative skills. In this case, it needs to look more like laboratories, ateliers, rooms equipped with materials, tools, devices that allow adaptations, transformations, construction, experiments, games, and learning, as the children do not assimilate their knowledge passively, but they build it themselves (Hoyuelos, 2004). When entering an environment intended for children, the notions regarding the quality of choices and care that underlie an educational project are immediately noticed. The traditional classroom reflects a rigid relationship between the educator and the children and the structure of the space adapted to the needs of the adults. To shape it according to the needs of the children, the preschool should be designed using new pedagogical, architectural, social and educational parameters. The starting point should be the thorough knowledge of a child's development, as the ideas regarding children tend to largely influence the interpretation of messages transmitted by the space to its users (Ceppi&Zini, 1998).

According to Ljubetić (2009), the educational experts analyse the quality of school functioning based on two criteria: educational process and school structure. In order to define the educational process, they analyse the interaction between the subjects, the didactic activities, the used materials and instruments, as well as the possibilities of learning, and children's health and safety, whereas the school structure considers the number of children in relation to the space, the ratio of children and adults, and the educational and training level of the educators and the entire school staff.

Miljak (1996, 2009) states that the preschool environment consists of all physical and social aspects which influence the growth and learning of the child. The physical environment includes the lobby, hallways, material shape of the building, the context where it is located, the size of the room, walls, floors, furniture, toys, didactic materials, available equipment, gym, playground, garden and other external spaces, whereas the social environment consists of all the human potentials that are revealed in the relations and the interconnection between the parties involved in the educational project. By ensuring a suitable environment for a healthy and happy growth of the children and the development of their infinite potentials, the educator plays a decisive role in organizing the spaces at their disposal.

The pedagogue (Minarević 2004, according to Isenberg and Jalongo, 1997), believes that the educator while structuring that environment, should consider the following five criteria:

1. Perception of the desired behaviour of the child (message to the child regarding free interaction or not, by offering corresponding environment and materials);
2. Easily controllable environment (enables the educator to follow the activities of all the children allowing him/her to satisfy the various needs of each child);
3. Accessibility of materials (open shelves, toys and educational means at hand to make the child feel comfortable, to increase his sense of belonging to the environment and the readiness to use materials available to solve problems);
4. Different perception of the space (based on the difference between children and adults in means of quantity of experience, body proportions, sight level, etc.);
5. Free movement around the space (no obstacles to decreasing the number of conflicts, interference in the activities of others and enhanced sense of safety).

Designing a school requires creating a living space where it is possible to connect pedagogy, architecture, sociology, and anthropology - disciplines and sciences that state their epistemology, confront their languages and symbolic systems in a new freedom arising from the wish of confrontation and dialogue. Research that opens up to the contribution of the most advanced experimentation in the field of architecture, choreography, design in function of education and well-being of the child (Ceppi&Zini, 1998). Every opportunity created by the interaction between architecture, pedagogy and other disciplines must be seized to create better spaces, more complete and more adequate for a variety of educational activities. The creation of preschools with innovative methods leads to spaces capable of absorbing new ideas and adapting to the variations in the learning theories (O'Donnell, Wicklund, Pigozzi & Peterson, 2010).

In the past, many preschools were built without educational parameters bringing out the children's creativity. Moreover, the general idea was to create strong and safe buildings, without regards to the needs of spaces suitable for expression, exploration, experimentation and children's play. Children, however, do not need only schools offering physical protection and sense of security, but also places suited for exercising their cognitive, emotional and social capabilities. Space must allow the child to relate to others, to make decisions, to experiment and explore. Moreover, it must encourage reasoning allowing the child being the protagonist, learning to know himself, establishing a trusting relationship with himself and with the others, by reasoning about his actions. The learning space must be pleasant, must make the child feel comfortable, allow the exchange of ideas, offer security, happiness, entertainment, and emotions. It is also considering the importance of the aesthetic dimension, which becomes a pedagogical quality of the school space (Malaguzzi, 2004, 2010, Miljak, 2009).

### **The child and his/her space requirements**

Since their tender age, children possess an extremely high sensitivity and perceptive competence towards space. At this stage of life, all the senses are highly active, although not at a fully conscious level. In fact, children are capable of analysing and distinguishing the reality not only by eyes and ears but also by other sensory receptors. According to Rinaldi (1998), the preschool space is a fundamental element for the creation of the mindset, and it has a strong and incisive language. The language of the space is multi-sensory, it involves the distance receptors (eyes, ears, nose) and the immediate receptors (skin, membranes, and muscles). The perception of space is subjective and holistic (tactile, visual, olfactory and kinaesthetic). Given the importance of the sensations provoked by the environment, the design of preschool spaces must pay great attention to the lights, colours, sounds, tactile and olfactory elements which spread the sensitive qualities. A fundamental factor in the preschools are also the surfaces: ceilings, walls, and floors on which the children spend a part of their time sitting or lying. In nurseries, for example, they crawl or roll on the floor for a certain period. It is essential to take into account the arrangement of objects in space and to have a greater awareness of the fact that children, through those objects, build their story and identity using both real and fantastic elements that can be modified according to their needs. Also, a personal space must be considered, space where a child finds familiar things, affections and emotional connections, which must be valued and recognized both by his peers and by the educator (Ceppi&Zini, 1998; Bonfiglioli&Volpicella, 1992).

To design a preschool environment, the needs and interests of a child in an environmental context must be analysed. The adults often do not see the potentials of a child; they do not provide to the child enough freedom and experimentation possibilities, they do not recognize all his qualities. The analysis of the child's image is however essential in defining the social and ethical identity of a subject, in defining his rights and educational contexts to be set. The educator who poses questions prepares experimenting materials, facilitates the confrontation, promotes the direct verification of the child's abilities, accepts the differences of a group and transfers an open and flexible communication, and knowledge model makes the child an active protagonist of his learning process. It results that, as much as the ideas, construction, and functioning of the school space are important, it is also relevant the work of the educators and their trust in the independent use of the space by each child (Ceppi&Zini, 1998; Alegiani&Lenoci, 2013; Rinaldi, 2009).

Nurseries and preschools are environments that must make the child feel safe and welcomed with wide opened arms. These are living environments which are continuously marked and modified by personal and social events and stories. Careful observations of those changes lead to a need of reorganization of spaces and school architecture, transforming the existing buildings radically (Ceppi&Zini, 1998.; Frabboni, 1992).

**The child:** a) to express his potentials, curiosities, competences; b) to explore, research alone and with others; c) to reinforce his identity, autonomy, and safety; d) to be able to communicate with his peers; e) to have his identity and privacy respected;

**The educator:** a) to feel integrated in the relationship with children and parents; b) to feel supported in the realization, organization and archiving of projects; c) to have his/her need of privacy respected; d) to have the possibility to encounter experts, colleagues, and parents in suitable environments; e) to be supported in the process of professional refreshing and training;

**The parent:** to be welcomed, informed and to be able to collaborate and meet with other parents and educators.

Therefore, both the nursery and the preschools must be environments that transmit the pleasure of exploration, empathy, that capture and provide meaning to the experiences, which stimulate additional progress and development of a child through social interactions with the environment and people.

### **Preschool environment according to famous pedagogues**

Among the great pedagogues which have studied the importance of the space in the learning process of the children in preschools, only a few have been chosen.

According to Friedrich Fröbel, a German pedagogue who lived between the end of the 18th and the beginning of the 19th century, creator of the Kindergarten, corresponding to what is called today a preschool. The child's education must enhance his religious autonomy as a human being; his/her creativity is achieved through games, as well as cutting, folding, interweaving, modelling, gardening in an adequate environment ([Fröbel, 2001](#)).

1. The external environment consists of small surfaces dedicated to planting cultivation, together with a wide area planned for group work. In this concept of space, the author reflects the need to put the child into contact with nature, both by individual and group work.
2. The internal environment: in the interior of the preschool, the children learn by using educational material structured and designed by Fröbel, *i.e.* the gifts. The gifts are wooden items (ball, cube, cylinder, either integral or divided into small parts), offered to a child at different times to motivate him/her to discover the reality and himself/herself.

[Maria Montessori \(2004\)](#) claims that the child is a whole being, capable of developing creative energies and learning independently. She founds her methods on allowing the child to freely explore his world, with a certainty that there is an impulse which is pushing him towards learning. It is important to bring out his curiosity and the desire to discover, as the discovery makes him develop the maximum of his capabilities and conquer the world with the power of his intelligence. It is, therefore, necessary to take care of the educational environment which needs to be organized and ready to welcome the children and allow them to choose and use the proposed material. According to Montessori's theory, the school needs to be child-oriented. Therefore the spaces must be conceived and created with furniture and materials at hand. The environment must stimulate and offer opportunities to actualize and express the potentials of the child, to ease his movements, to propose a limited number of activities, but in an organized way, to gradually follow the cognitive development, to stimulate the aesthetics and love towards the environment. Based on this theory, in 1907 in Rome the first Casa Dei Bambini (Children's House) was opened, a special place, created thus the children can completely live it according to their needs and abilities.

[Rudolf Steiner \(2010\)](#), the creator of the Waldorf schools, believes that a child is a subject rich in abilities and potential which need to be awakened during the growth. An important factor in this process is the environment, which needs to be welcoming and stimulating. Both the interior and the exterior should try to offer to children spaces and objects created from natural materials: wood, wool, plants, and recycled materials. For an effective education and preparation of a child for his future, close cooperation between school and family is fundamental. Therefore, the school program must be prepared by the teachers in cooperation with the pupils and parents who often participate in school's celebrations, birthday parties, artistic courses, laboratories, etc. Events of this kind create great advantages for the child, as they promote the socialization between the parent and the educators. In these schools, the children are stimulated to maximize the use of the school's exteriors, allowing them to be in contact with nature as much as possible, even during winter days.

Loris Malaguzzi ([Edwards, Gandini& Forman, 2010](#)), the founder of the Reggio Emilia philosophy, assigns to the child a central role in the primary schools, being seen as a subject with precise rights, needs, potentials and ability to build his knowledge and experience independently. Convinced that the quality of spaces goes hand in hand with the quality of learning, [Malaguzzi \(2010\)](#) defined the space as the "third educator," together with the educators and parents. The task of the school, in collaboration with the family, is to help the child to express all of his potentials and to bring out the creativity. The children do not learn from what one teaches them, but by using their cognitive resources. As a result, the environment needs to be pleasant, friendly, well-kept and rich in materials stimulating the children to work with pleasure and to collaborate with their peers. [Malaguzzi \(2010\)](#) finds that the appearance of the environment is significant as it produces aesthetic pleasure for children. It is not so relevant whether the walls of the school are painted in bright colours, but the environment needs to be equipped with mirrors, transparent surfaces, and beautiful materials. Thus the children are stimulated to explore and appreciate more closely their physical environment, which emits signals to support their efforts and interests. In Malaguzzi's concept of environment a special meaning is given to the central square, a common area for the children, dedicated to games, learning, activities that are then transferred and continued inside the classrooms. "For us, it is like the square of a renaissance

city; space where we meet, talk, discuss, where we deal with trade, politics, where theatre and events take place. A square is a place of continuous encounter, where the quality of exchange, both of children and adults is intensified. As they are together, the more they meet, the more ideas circulate both between adults and children. We might say that a square is a place from where the ideas depart and where they arrive." (Edwards, Gandini, Forman, 2010).

Malaguzzi is the first one to theorize the necessity to foresee an area specific for meeting with the parents. It enables the creation of social relations, which are the basis of education: "One thing is a school that speaks; another thing is a school that remains silent. If it is a school that speaks, then we must think of it, we would need a place that allows the parents to stay. A specific environment with armchairs and sofas, where the parents can take a break and become part of this flow, receive this continuous transformation of messages. Where the people, parents, and teachers, exchange their thoughts." (Edwards, Gandini, Forman, 2010).

## METHOD

The objective in the experimental part of the research was to establish the level of conformity of educational environment of preschool with the pedagogical criteria established by the authors analysed in the theoretical part and by the national regulations. The categories for analysis and the registration units are determined based on the used literature and national regulations for the organization and operation of the preschools in Croatia. The research has taken into consideration the characteristics of the spaces in certain schools on the territory of the Istrian peninsula, based on the following categories: external and internal spaces, and section spaces.

The specific research objectives have been deduced from the general objective, *i.e.*:

1. Verification, whether the primary preschools included in the research, are buildings created according to precise architectural projects, functioning as buildings for accommodation and education of children of preschool age;
2. Verification whether the criteria established by the national regulations on the spaces needed for a proper functioning of a preschool, as well as the established dimensions for each of them were respected.
3. Verification whether the physical aspect of the exterior and interior in preschools respected national regulations and pedagogical criteria requiring functional spaces for the development of the potentials of each child;
4. Verification whether the didactic corners were rich in materials and incentives, thus to encourage the development of child's independence, maturation of his identity and the development of his competencies.

We made:

1. Quantitative and qualitative analyses of the pedagogical documentation
2. Observation of certain preschools,
3. Interview with the management board and of the educators of the preschools included in the research.

Documents used to establish the observation categories of the specific environments of certain preschools in Pula, Dignano and Rovigno (Croatia) were the *Pedagogical standards for preschools in Croatia* and the indications by the chosen authors.

The analysis was performed based on the following categories and registration units:

1. **External spaces:** levelled and regular-shaped terrain; distance from the traffic noise; proximity to user; presence of an access reachable by car; a walled playground; a sports field; an external terrace; building adjacent to an elementary school; ratio of the total space and the number of children; building with toys and equipment;
2. **Interior common spaces:** arrangement of interior spaces; accessibility for children with disabilities (ramps; lifts); greeting area (illustrative panels, information boards, children works; waiting area); wall colours; kitchen and dining area; infirmary; storage room for the equipment; rooms for parent-teacher interviews; educators room; archive;
3. **Interior spaces of the educational sections:** adjoining restrooms; children's wardrobe; room size; number of children in a section; wall colour; furniture and shelving at children's height; diversity of structured/non-structured didactic materials; open/closed cabinets or closets accessible to children; boards and showcases of children's works.

**Presence of didactic corners:** Reading and Communication corner; logical-mathematical corner, graphics and painting corner; theatre and music corner, family corner, construction corner, experimentation corner, board games corner, crafts corner; other corners, all to be seen in accordance with the presence of structured, non-structured materials, created by the educators with the help of the children.

The *methodological categories* were individual schools and educational sections included in the research.

## Research Subjects

The research was carried out in the following preschools in the territory of the city of Pola and the small towns of Dignano, Gallesano, Rovigno, and Valle (Croatia):

1. **Pola:** Preschool Rin Tin Tin -(Central school)- Branches: Delfini, Cip&Ciop, Pinguino, Calimero, Mondo bimbo, Titti); Preschool Zvezdice, Preschool Veruda;
2. **Dignano** - Preschool Peter Pan (Central school in Dignano and branch in Gallesano);
3. **Rovigno** - Preschool Naridola (Central school in Rovigno and branch in Valle).

## MAIN RESULTS:

Main results are described in the following six tables:

**Table 1: The external space in the first group of preschools**

Sections of the external spaces	Headquarter	Pinguino	Mondo Bimbo	Ttti	Delfini	Cip&Ciop	Calimero
Total number of children and m <sup>2</sup> of external space	80/1200 m <sup>2</sup>	23/without external space	23/without external space	23/without external space	25/1100 m <sup>2</sup>	100/670 m <sup>2</sup>	23/without external space
Access by car	NO	YES	NO	YES	YES	YES	YES
Car parking	NO	YES	NO	NO	YES	YES	NO
Presence of a fenced garden	YES	NO	NO	NO	YES	YES	NO
Presence of a sport field	NO	NO	NO	NO	YES	YES	NO
Building next to elementary school	NO	NO	NO	NO	YES	YES	NO
Games and various equipment in the garden	YES	NO	NO	NO	NO	YES	NO

**Table 2: The external spaces of the second group of preschools**

Section of the external spaces	PETER PAN (DIGNANO)	PETER PAN (GALLESANO)	ZVIJEZDICE (POLA)	VERUDA (POLA)	NARIDOLA (ROVIGNO)	NARIDOLA (VALLE)
Total number of children and m <sup>2</sup> of external space	119/1816 m <sup>2</sup>	53/2500 m <sup>2</sup>	100/1500 m <sup>2</sup>	95/830 m <sup>2</sup>	110/900 m <sup>2</sup>	40/750 m <sup>2</sup>
Access by car	YES	YES	YES	YES	YES	YES
Car parking	YES	YES	YES	NO	YES	YES
Presence of a fenced garden	YES	YES	YES	YES	YES	NO
Presence of a sport field	YES	YES	YES	YES	YES	YES
Presence of a covered terrace	NO	YES	YES	NO	YES	YES

Building next to elementary school	NO	NO	NO	YES	YES	YES
Games and various equipment in the garden	YES	YES	YES	YES	YES	YES

**Table 3: The internal spaces of the first group of preschools**

Section of the internal spaces	Headquarters	PINGUINO	MONDO BIMBO	TITTI	DELFINI	CIP&CIOP	CALIMERO
Total number of children and internal space in m <sup>2</sup>	80/550 m <sup>2</sup>	23/110 m <sup>2</sup>	19/75 m <sup>2</sup>	23/70 m <sup>2</sup>	25/960 m <sup>2</sup>	100/700 m <sup>2</sup>	20/80 m <sup>2</sup>
Environments adapted to disabled children	NO	NO	NO	NO	NO	YES	NO
Building with a children's canteen	NO	NO	NO	NO	YES	YES	NO
Building equipped with a room for educators	NO	NO	NO	NO	NO	NO	NO
Building equipped with a room or other spaces for parents	YES	NO	NO	NO	NO	YES	NO
Building with a gym	NO	NO	NO	NO	YES	NO	NO
Building with a magna classroom	NO	NO	NO	NO	NO	YES	NO

**Table 4: The internal spaces of the second group of preschools**

Internal spaces for single preschool	Peter pan (DIGNANO)	Peter pan (GALLESANO)	Zvijezdica (POLA)	Veruda (POLA)	Naridola (ROVIGNO)	Naridola (VALE)
Total number of children and internal space in m <sup>2</sup>	119/360 m <sup>2</sup>	53/500 m <sup>2</sup>	100/300 m <sup>2</sup>	95/470 m <sup>2</sup>	110/850 m <sup>2</sup>	40/350 m <sup>2</sup>
Environments adapted to disabled children	NO	NO	YES	NO	YES	NO
Building with a children's canteen	NO	NO	YES	YES	NO	YES
Building equipped with a room for educators	YES	YES	YES	YES	YES	YES
Building equipped with a room or other spaces for parents	NO	NO	NO	YES	NO	NO
Building with a gym	YES	NO	YES	YES	YES	YES
Building with a magna classroom	NO	NO	NO	YES	NO	NO

**Table 5: The internal spaces of the classrooms for the first group of preschools**

Internal space of the classrooms	TOPO GIGIO	PINGUINO	MONDO BIMBO	TITTI	DELFINI	CIP&CI OP	CALIMERO
Number of children belonging to the specific section and classrooms in m <sup>2</sup>	25/65 m <sup>2</sup>	23/80 m <sup>2</sup>	19/40 m <sup>2</sup>	23/35 m <sup>2</sup>	25/80 m <sup>2</sup>	15/40 m <sup>2</sup>	20/40 m <sup>2</sup>
Bright colours of the walls	NO	YES	NO	NO	YES	NO	YES
<b>Corner for various activities</b>							
Corner for reading and communicational activities	YES	YES	YES	YES	YES	YES	YES
Corner for logics and mathematic activities	NO	YES	NO	YES	YES	YES	YES
Corner for pictorial activities	YES	YES	YES	YES	YES	YES	YES
Corner for theatrical and musical activities	NO	YES	NO	NO	YES	NO	NO
Corner for timbering activities	YES	YES	YES	YES	YES	YES	YES
Corner for parents and families	YES	YES	YES	YES	YES	YES	YES
Corner for experimentation activities	NO	NO	NO	YES	YES	NO	NO
Corner for social activities	YES	YES	YES	YES	YES	YES	YES
Corner for disguise activities	NO	NO	NO	NO	NO	YES	NO

**Table 6. The internal space of the classrooms for the second group of preschools**

Internal space of the classrooms	Coniglietti (Dignano-Peterpan)	Delfini (Gallesano-Peterpan)	Ribece (Pola-Stelline)	Allegri (Pola-Veruda)	Naridola (Rovigno)	Naridola (Valle)
Number of children belonging to the specific section and classrooms in m <sup>2</sup>	21/45 m <sup>2</sup>	19/70 m <sup>2</sup>	24/35 m <sup>2</sup>	23/50 m <sup>2</sup>	24/60 m <sup>2</sup>	20/60 m <sup>2</sup>
Bright colours of the walls	YES	NO	NO	NO	NO	NO
<b>Corner for various activities</b>						
Corner for reading and communicational activities	YES	YES	YES	YES	YES	YES
Corner for logics and mathematic activities	YES	NO	YES	YES	NO	YES



Corner pictorial activities for	YES	YES	YES	YES	YES	YES
Corner theatrical and musical activities for and	YES	YES	YES	NO	NO	NO
Corner timbering activities for	YES	YES	YES	YES	YES	YES
Corner parents and families for and	YES	NO	YES	YES	YES	YES
Corner experimentation for	NO	NO	NO	NO	NO	NO
Corner social activities for	YES	YES	YES	YES	YES	YES
Corner disguise activities for	NO	NO	NO	NO	NO	NO

It is clear that the largest external area is the one in Gallesano with 2500 m<sup>2</sup>, resulting in 47 m<sup>2</sup> per child. On the other hand, the school with least outer space at disposal is the branch Cip & Ciop of the preschool Rin Tin Tin in Pula, having only 6.7 m<sup>2</sup> of external space per child. All the schools included in the research have a levelled and regularly shaped external space, they are distant from the traffic noise and close to the populated areas of the users. Only 15% of the structures are not accessible by car, and 38% does not have a parking lot. 38% of the schools do not have a walled garden or a sports field. Therefore physical activities are practiced on a sports field distant from the school. 54% of the preschools do not have an external terrace due to the position or to the lack of space, and only one school has a covered external terrace.

As far as equipment and toys are concerned, all schools with a playground have similar or same means at disposal: tricycles, seesaws, slides with a playhouse, recycled materials such as tires, wood pallets, benches, spring toys. The only school having something innovative in its external space is the one in Gallesano. Besides having the usual toys in the playground, it also has playing equipment built by the parents using recycled materials. By interviewing the educators, it appears that the children prefer playing with equipment created by parents, and they choose it more frequently than the other equipment and toys.

Analysing and comparing the interior of the preschools it appears that the school structure with the least internal space is the peripheral section Titti of the preschool Rin Tin Tin, located in an apartment of 70 m<sup>2</sup>, accommodating 23 children. The school with the largest internal space is the branch Delfini of the Rin Tin Tinschool, having 960 m<sup>2</sup> for 25 children. All the furnishings of the examined schools are easily reachable by the little ones, but only three of them have environments adapted to the requirements of the children with disabilities. Not all schools have a kitchen, and 62% of them do not have a dining area. Therefore the children must eat in the rooms. The sections with a dining area are usually adjoining primary schools or are located in new buildings that have been recently designed and built. Only 31% of schools have a space acting as an infirmary, and only three schools out of thirteen have a space for parent-teacher meetings. In other schools, the parents can speak to the educators in the section's room. 54% of the schools have no gym, requiring the educators to perform physical activity inside the classroom, in the lobby or on the sports field (if available). Only two preschools have a great hall, while the others have multipurpose spaces, used for interacting with parents, school director, etc. Also, 54% of the analysed schools have no rooms for educators, who therefore need to keep their personal belongings inside wardrobes and meet with their colleagues in the rooms of the sections to exchange experiences and compare ideas on the activities planned for the day.

The preschools with the largest space for the sections are the sections Pinguino and Delfini of the school Rin Tin Tin, while the smallest space is found in the section Titti of Rin Tin Tin, in the sections Stelline and Pesciolini. The lowest number of registered children is in the section Cip & Ciop of the primary school Rin Tin Tin, with as little as fifteen children, while in the sections Topo Gigio and Delfini there are large groups of twenty-five children. All the sections of the analysed schools have a wardrobe for children and toilets adjacent to the rooms. Not always the walls inside the rooms are brightly coloured: among the brightest colours, there are purple and green, often combined with yellow and white, as well as pink and peach, in balance with the furniture. All the sections are rich in objects created by the children, boards with their artworks, furniture, and shelves within their reach, thus to make the environment welcoming, warm and relaxing.

All the schools included in the research have electronic devices inside their rooms (*e. g.* computers, radios, TVs, DVD players, video-projectors), a reading and communication corner, graphic and painting corner, construction corner, board games corner and the family corner with materials structured or prepared by the educators together with the children. The logical-mathematical corner, experimentation, musical and costume corners are found only in a few schools. Besides the traditional corners, the sections have also some unusual ones, created by the children with the help of the educators showing a remarkable creativity both of the educators and of the children.

Analysing altogether the data collected during the research, we may say that the institutions included in the research do not have any innovative aspects, such as movable walls that ensure a multi-functional environment, making the boundaries of a section vague and flexible. They do not have a square or *ateliers*, as proposed by the Reggio Emilia pedagogy, or environments adapted to the needs of disabled children. The centrality of the room has not yet been outdone. In fact, there are many preschools that use spaces designed for other purposes, such as family apartments, while others had inherited buildings constructed in times when the traffic was not as intense as it is today. The pedagogical-didactic theories were based on the transmission of knowledge, the role of the educator was in the center of the educational process, and participation of the parents in school life was not foreseen.

It is clear that the limits imposed by small spaces cannot be easily overcome (for example schools without external spaces), as it requires substantial financing, which is always scarce in the education field. On the other hand, the design criteria dictated by the applicable laws are applied by recently built, restructured or expanded schools. They have an outside walled terrace/garden, a welcome area for the children, a room for the educators, toilets adjacent to the room, furniture and shelves at children's height. Most surprising are the aspects depending on the educators, such as the number and the design of the corners, the fitting of the hallways, of the lobby, of the playground, expressing fantasy, inventiveness and creativity, as well as a continuous attention aimed at satisfying the needs of the children by creating a motivating space adapted to them. From the interviews and observations, it results that the educators keep in mind the needs of the little ones and they try to include the children and the parents in the modifications and the improvements of their school's environment.

## CONCLUSIONS

It can be concluded that the relationship between the pedagogical-didactic intentions and architectural projects is becoming closer and often leads to a request of buildings characterized by a maximal flexibility, where the richness and variety of spaces needed for the new didactic demands can be obtained. The schools are required to have environments of different sizes, able to welcome small groups of children dealing with group research, individual activities, as well as spaces of important dimensions for meetings, interviews with the parents and other sections, shows, parties and other activities. According to the theoretical research, it appears that the environment has an influence on learning and it has a great importance in the physical, intellectual, emotional and social developing process of the children, especially if learning is considered to be an active and constructive process. For this reason, continuous investments in the preschool environment should be promoted, connecting architectural designs with educational projects.

We may conclude that the situation in the analysed preschools is, in most of the cases, adequate to the legislation in force. The interest in educational innovation implemented by the schools is increasing, but in certain schools, included in the research, there are still space limitations about the number of children in a group, as well as spaces that have not been designed to act like a preschool. It is clear that this goes beyond the responsibilities of the educators who give special attention to the aesthetic, perceptual and social aspects of the educational space, to answer to the needs due to children's different ages. Their efforts aimed at improving the relationship between the child and the school environment, as well as the results obtained, is shown by the richness of spaces and materials at the disposal of the children.

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