

Influence of the characteristics of the inner space on the development of the child

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ABSTRACT

Institutions for pre-schoolers have had, in their great majority, the first social function of care for children with working parents, and were also playgrounds, and spaced for socialization and education. The educational function widened with time. The need for continuing education, designed and organized according to needs and possibilities, extended forms has become the dominant idea.

Starting from the idea that environmental education is a priority for our days, the child must be learned from an early age to feel directly responsible and involved in activities relating to the protection of the environment such as: waste recovery, selective waste collection, energy consumption reduction through the use of solar energy and care of vegetation. The educational environment in the kindergarten is essential to sustainable mental, physical and harmonious development, which is why it shall be arranged on a weekly basis depending on the thematic project planned in the week in question. The furniture made will be appropriate depending on the age and the particularities of children, attractive, and must be organized and adapted to be accessible for the children.

Research and practice, more and more involved in preschool education have highlighted the influence of the characteristics of the inner space on the development of the child.

Keywords: light, colour, pedagogy, space, child

I. INTRODUCTION

The modern preschool education started after the year 1920 and has evolved according to the historical and social conditions until nowadays, the most representative trends being: the Fröbel, Waldorf, Freinet or Montessori educational methods, which have a strong impact on the development of higher education in Europe.

The process of education and training of children aged 3-6 years is currently known under the name of "kindergarten" which takes into account both the methodical as well as the sensory knowledge, which are the topic of the current study.

II. HISTORY OF KINDERGARTENS

There were attempts to develop education methods since the time of the Romans. But the need for education has evolved and has been emphasized more and more in time, leading to the appearance of a pedagogic elite, which was involved in the implementation of different education methods from the most tender age.

The institution itself has been designed at its beginnings, not as an educational institution, but more as a space suitable for the care of children from families in which both parents were working. In the middle of the 17th century, John Amos Comenius supported and developed the idea of education of children until the age of six. The implementation of the Nuremberg teaching method started in the Czech Republic, expanding to Germany and the Netherlands.

In the 18th century, Jean Jaques Rousseau advocated for the promotion of early education of the children. During the same period, in Germany, Frederick Oberlin initiated the first schools for small children.

Another program of preschool education has appeared due to Johann Heinrich Pestalozzi which is promoting education by observation and speaking.

The Fröbel educational method, which has the motto "Come, let us live for children!" includes a principle of rational education. This revolutionary idea was developed Frederick Fröbel, was first used in Germany, in 1816 focusing on individual work, socializing, creativity, expressing emotion and body language. He also intro-

duced activities like gardening, dancing and music, being the first pedagogue who has designed and implemented special methods suitable for the education of children, under the guidance of specialized personnel.

The Waldorf, Freinet and Montessori educational methods are having a strong impact on the development of the contemporary European cultural spirit.

In 1838 in Switzerland, J. G. Durand Wirth has designed the first building for a kindergarten (Fig. 1a) and Margarethe Schurz, one of Frobel female students, founded the first kindergarten in the USA in the year 1856.

Between the years 1896-1910 166 kindergartens which used the Frobel method were established. In the second half of the 19th century, the first public charity buildings appeared, intended for the protection of children were part of poor families. In the same time, ideas favoring education and culture were exposed in the press.

Approximately 200 years ago, in the year 1798, in Bucharest the "Manea Brutaru" asylum was established, which could care for the education of about 80 children. On the 1st of April 1881, the teacher dr. Barbu Constantinescu, director of the "Boy school", established by the "Romanian Society for the gardens of children" having its registered office in the capital city of the country, set up the first kindergarten in Romania.

The kindergarten was organized after the model of Fröbel, where depending on the social status parents had to pay a monthly fee (wealthy parents) or were exempted to pay for the care of the children (poor parents) (Fig. 1).

The first law regarding kindergarten children in Romania was issued by the state about 115 years ago. Up until today, the legislation has undergone many changes [1, 2].

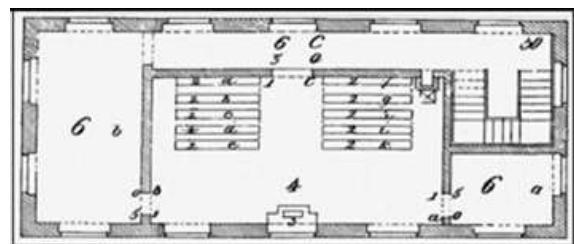


Fig. 1a. The first plan of a kindergarten - J.G. Wirth [3]



Fig. 1b. Exterior view Montessori kindergarten [3]

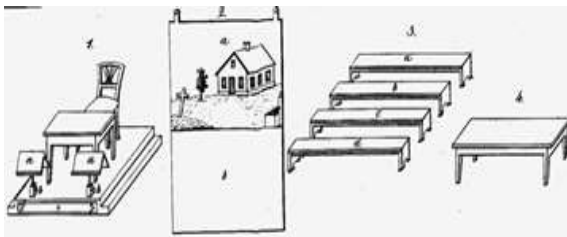


Fig. 1.c. Kindergarten furniture [3]

III. HISTORY PEDAGOGICAL METHODS

III.1. Fröbel education method

The concept of early education, has been non-existent in the Western world up to Fröbel. He was noticed for introducing the term “kindergarten”, which was taken over by all cultures of the world. The term appeared from the idea to include gardens of flowers and vegetables in the spaces planned for the children. Fröbel was also the one who introduced a set of toys in these spaces, which could be decomposed by the children and used to form new objects, like cubes, circles or a simple lines, therefore developing the skills of children from an early age (Fig. 2). In this way, he is highlighting the fact that the environment in which the children are educated is as important as the teachers who are involved in the activities of the children [2,4,5].



Fig. 2. Frobel “gifts” [6]

III.2. Freinet education method

The main features of the Freinet (Fig. 3) education method are: emphasis on individual work and human interaction compared to the traditional education, in which the child is mainly listening and memorizing what the teacher is presenting. In the vision of Freinet teaching should be child-centred and the main purpose of the teacher should be to help and not to control or threaten. The essence of his education method is based on five principles: “child centred teaching, motivated work; personalized activity, free expression and communication” [7].

In his theories he is also focusing on teamwork and games in small groups. Among the most important techniques of learning according to the Freinet education method, lies in individual work, which is placing the child in the centre of the educational system and taking the particularities of age, own rhythm and ability to evolve into account. In the same time, it introduces specific techniques, setting a series of relations within the framework of the class, like:

- free texts;
- school journal;
- documentary investigation;
- plastic expression;
- body language;
- handmade creations;
- dramatic expression;

These techniques are the result of group activities, thus leaving a deep lesson about life that consists in joining efforts, collaboration, human relationships and common work [4, 9].



Fig. 3. Célestin Freinet and his students [8]

III.3. Pestalozzi education method

The two movements who influenced the education method developed by Johann Heinrich Pestalozzi were the Enlightenment and Romanticism. In his theories he states that the welfare of society can only rise through education. His innovative ideas in the field of education started to be put into practice in the Institute for orphan children, Neuhof, which was set up and led him between 1774-1780.

In Romania these theories were brought by Stephan Ludwig Roth, who was a collaborator and disciple of Pestalozzi at Yverdon [9-11].

III.4. Montessori education method

The first woman doctor and pedagogue in Italy was Maria Montessori, which established in 1907 the first house for children aged between two and six years. Her principles refer to the child as a “being born to be free”.

She has developed her ideas and their application when she was named leader of a group of crèches and kindergartens in a very poor area of Rome.

The lack of grades, tests and other forms of formal evaluation have led to a sense of understanding in the classes, and not to competition.

The Montessori education method are based in the psychological development of children:

- 0-3 years is the period in which the child is learning based on sensorial experiences;
- At an age of 3 to 6 years, children manifest the first signs of free will, and from the age of 7 they develop interest in the surrounding, which is leading to the desire to gain more knowledge.
- From 12 to 18 years is the period in which the child feels that he can take his own decisions.

The Montessori classrooms (Fig. 4) are equipped with materials which allow, first sensorial learning and later on learning through reading, writing and mathematics [1,12,13].

A survey conducted in 2006, which compared the results of children from a public school that uses the Montessori education method with a traditional school, has provided evidence that the Montessori education method is forming children with better social and academic skills.

Among the numerous celebrities who can confirm the value of such education are the co-

founders of Google, Sergey Brin and Lawrence Page.



Fig. 4. Montessori classroom [14]

III.5. Waldorf education method

The Waldorf education method was created at the beginning of the 20th century by Rudolf Steiner. He was the founder of the first “Waldorf” school for children of the workers from the factory of cigarettes “Waldorf-Austria”. Within a period of ten years, Steiner’s school in Stuttgart was the largest private school in Germany.

The main feature of the Waldorf education method is addressing the human being as a whole, in accordance with the age, the activities being organised in order to capture the interest of the children for learning and not force them. Steiner considered that there are three major stages in the development of children up to the age of seven. Therefore, the educational process has to be based on the creative game and practical activities at the pre-school level, on the development of communication and artistic skills at the elementary level and on the development of critical thinking at secondary level of education.

The purpose of the Waldorf education reflects the development of the child as a responsible person which is integrated in the society [15, 16].

IV. CASE STUDIES

The presented methods highlight the importance of the used surface finishes and of the space division made following the needs of every child. The desire to be independent, is determining children to do things on their own,

from an early age, by using all their senses in order to develop their personality, communication skills and human relationships. For this reason, an organised space is necessary.

The studied spaces present a minimalist design with a special emphasis on the internal open which is organised and full of colour. The light inside the space is very important and is one of the main features of the minimalist style in the field of architecture. It can be noticed that all the spaces have the required quantity of natural light. In the same time, the presence of clear lines, a furniture adapted to the age and the needs of each child, the connection with the organic texture and relationship with nature can be seen. Each classroom is divided into areas with clear functions. The orange roof is the space in which the child develops very good sense of tactile skills, and not only. The used earth tones create a sense of comfort and harmony. The sense of touch and balance is highlighted by the niches made in the wall (Fig. 5).

The green room of the Chroscice kindergarten (Fig. 6) or the niche in the classroom of a kindergarten in Sweden (Fig. 7) ensure a contact with nature, the used green colour of the predominant used being green, highlighting a feeling of relaxation, peace, stability and emotional balance.



Fig. 5. Orange roof - Kindergarten in Chroscice [17]



Fig. 6. Green room - Kindergarten in Chroscice [17]



Fig. 7. Sjötorget Kindergarten [18]

The spaces adapted for the needs of the children presented, provide comfort and functionality and create a sensation of a large space due to the used colour [19, 20].

V. DEFINING SPACE IN KINDERGARTENS

“The house in the house” is a method that offers diversity in small spaces, thereby creating a place to develop the imagination of children, a sense of adventure and the illusion of independence. This method is more often encountered in the design part of buildings and implemented at a later stage in interior spaces by using space-defining elements like horizontal or vertical planes, ladders, etc., which create smaller spaces related to the boundaries of the building: roof, walls, etc (Fig. 8).



Fig. 8. Kindergarten in Chroscice [17]

“Objects in the house” is a method which is often found in the Montessori classrooms, offering the advantage of a space which is opened towards the outside. Is used when the architect is using a generous space which he does not wish to divide. Such a space may be reconfigured permanently. Considering that the method is using furniture to divide the space, children can be taught to help set up a new space, encouraging a dynamic activity and leading to an understanding of the relationship between volume and space.

“Taking into possession” (Fig. 8) is another method approved in spatial planning which is using planes and textures in defining space [21].



Fig. 8. Kindergarten in Chroscice [17]

VI. SPATIAL ORGANIZATION

VI.1. Equipment and material organization

For a harmonious development, children need a lot of positive activities and movement and therefore large spaces for their activities. At the same time, they also need smaller spaces, which are more isolated and well organized. Each child is special, defined by his own personality, but there are a few things children have in common. All children, regardless of the space or persons around them, feel the need of love, protection and acceptance. Children will not grow after the same model or the same pace, however they have to be guided in developing their self-confidence from a mental, social an emotional point of view. The desire of exploring the space and gain knowledge exists within children, for many of them, the kindergarten being the first contact with other places outside their home. The age at which a child is starting to attend a kinder-

garten is different in various parts of the world, from 2 to 5 years.

Nowadays, as most of the mothers are also choosing a professional career, but want to also have a family life, there are different alternatives for day-cares, which have limited places available.

Therefore, since after-school programs or kindergartens with afternoon activities are having a high demand these days, the presented topic is of high interest and up to date.

A survey conducted in the USA has highlighted that children who go to the kindergarten from the age of three years have a higher IQ, as well as more developed language skills, compared with those who spend their first years at home in the care of the baby-sitter or grandparents. At the same time, the regular attendance of the kindergarten at an early age has a long-term effect, preventing school abandonment.

VI.2. Nature in space

This principle has been developed based on studies related to the response of humans during a visual or non-visual contact with nature. In an interior space this connection can be accomplished by using sounds form nature, introducing textured materials which are similar to natural ones or even use natural materials (Fig. 9).



Fig. 9. Introducing nature in the interior space on the walls

Although the studies regarding the impact of the materials on the mental and/or physical health is limited, there are certain studies related to the reaction of people in the presence of a certain natural material, or a colour found in the environment, especially green which has proved to have a positive influence.

The idea to spend more time in nature is excellent

for both adults but especially for children. Unfortunately, in Romania, there are very few kindergartens benefiting from wide spaces which are in a close relationship with nature. This is why children get to spend a lot of time in the classroom. Therefore, nature itself is represented by organic forms, curved lines, which can be used in interior spaces of various shapes [16,22-24].

VI.3. Using the “outdoor” concept in designing spaces for children

Most of the times the activities are carried out between the four walls of the classroom, but the existence of an decorative element which would make the mind think of nature can change the attitude and behaviour of children towards environment in a positive way. The use of various natural materials in the space, placed for children to handle, like boxes with sand, jars with sweet chestnuts, leaves, sticks, etc. can enhance their creativity and imagination. If given the opportunity to also attend activities in exterior spaces of the, kindergarten, children will learn to play with any object from nature and will find a way to use it. Creating a green space within the kindergarten increases the children's responsibility towards the environment, teaching them to care and protect it.

VII. CONCLUSIONS

The performed studies have highlighted that following spaces are necessary when designing a kindergarten with extended program: resting area, workshop rooms, dining room, vestibule, offices for the administration, toilets and technical facilities.

The shared areas, other than the classrooms, such as the entrance hall and the dining room are more informal and invite to conversation, excitement and play. The entrance hall is the first space that people see when they enter a building. The furniture, typical for this area may include chairs or small tables, to invite to short conversations. This space is the place in which the pre-schoolers gather for fun and conversation. The used furniture should reflect these emotions through bold colours, full of energy. Classroom are those which must support the most main scope of the place, encouraging active learning. For this reason, the colour of a

classroom should encourage participation. In the area dedicated for workshops or playing, it is important to choose pieces of furniture which are equally useful and convenient for pre-schoolers. Due to this fact, circular tables made of wood, which also provided small storage spaces excavate in their surface area (Fig. 10), are being the most suitable for educational activities but also for playing games [21,26,27].



Fig. 10. Proposed round table for workshop spaces

The table is equipped with storage spaces, suitable for writing instruments, tools or other materials used in the activities of the teaching staff. In this way children also learn how to be organized and to collect and store the materials used in the designated spaces after using them.

The circular shape is also advantageous since the injury danger for children is low and it also encourages group activities, making them feel all equal. The table are designed with 4 seats, but for group activities they can be used by several children. The table height is relatively small and does not require the use of additional pillows.

An adequately equipped room, which complies with the particular needs of the children can help the development of their personality, by encouraging them to choose their own activities and the persons to pay with. By providing the opportunity for free play and creative activities, this space encourages a healthy mental development of the children giving them a chance to choose the desired tasks and to assume responsibility for the decision.

An important moment in kindergartens with extended program, is sleep and the period of the afternoon rest. Children who sleep for the first time in the kindergarten require a prior discussion with the parents and teacher in order to ensure them

that they are not abandoned and that after the sleep they will go home. In the bedroom of the kindergarten children learn how to undress and dress and organize their clothes. These activities are performed at the beginning in a clumsy way but in time they learn how to do it better, enhancing their psychomotor functions. This period involves calmness, gentleness, care and a good organization of the teacher, offering every child support and guidance.

The size of the bedroom, as the other rooms, has to be adapted for children but must comply with the ratio 1/3 of the space – furniture, the other 2/3, free space.

Another stage of kindergartens with extended program is lunchtime. During the lunch, children learn to socialize and practice their senses: sight, taste and smell. At the same time, they can express if they like or do not like a specific food. During lunch they also learn how to use tableware and how to eat independently, without noise and without getting dirty.

Specialized studies have come to the conclusion that the preschool age is the most suitable for the formation of hygienic skills. It is recommended that the furniture in the sanitary groups, should be attractive, respecting, of course, the legislation in force.

If bad weather condition does not allow outside activities, the interior space of the kindergarten becomes particularly important. But a too large interior space can make a child feel lost. Each kindergarten must be a positive space for children, with various activities involving them while offering them an opportunity to develop in a stimulating and open environment.

I think that the decoration of the walls of the kindergarten with paintings of characters from different stories is creating an attractive space for children, but only for a limited amount of time, after which they become boring.

A particular importance should be given to the psychological and sociological values of games. Studies have shown that games are a powerful factor in



Fig. 11. Proposed bedroom area

the development of the children from an early age. Since children learn best through games, they need a space to enable them to explore, while offering them a feeling of independence. Thus, in the construction of kindergartens, an important aspect is the flexibility of space.

The interest of the children for the natural environment can start with plants grown in pots, located inside the kindergarten and may continue until the most sophisticated contemporary systems used for interior gardens, fragments of nature in interior spaces, which create a strong connection with the outside. It is considered that the protection of the environment is a priority in the context of the national law, in which human intervention in nature creates sometimes true disasters.

REFERENCES

- [1] Maria Montessori „Descoperirea Copilului” – Editura Didactica și Pedagogia, București 1977, traducere în limba română, <https://virginia33.files.wordpress.com/2009/04/descoperirea-copilului-1977-necenzurat.pdf>(12.02.2018 - 15:30)
- [2] <https://www.early-education.org.uk/about-froebel> (12.02.2018 - 15:50)
- [3] <http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-32446/Histor-Synop.pdf>
- [4] <http://www.ibe.unesco.org/sites/default/files/frobels.PDF> (16.02.2018 - 17:30)
- [5] <https://vdocuments.site/invprescolarinromania.html> (23.04.2018 - 00:20)
- [6] <http://www.froebelgifts.com/gift5.htm>
- [7] „Freinet și tehnicile sale” – editura CEDC 1992 (22.04.2018 - 20:46)
- [8] http://www.mhaensel.de/nw_unterricht/freinet-paedagogik/celestin_freinet.html
- [9] http://www.aiarad.ro/pdf/publicatii/quovadis_nr4_2004.pdf (16.02.2018 - 21:30)
- [10] „How Gertrude Teachers Her Children” – Editura Swan Sonnenschein, Londra – 1894 – Johann Henrich Pestalozzi (20.04.2018 - 21:30)
- [11] <http://www.heinrich-pestalozzi.de/en/documentation/index.htm> (20.04.2018 - 22:00)
- [12] <https://earlychildhoodhistory.weebly.com/the-montessori-method.html> (21.04.2018 - 22:30)
- [13] <http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-32446/Histor-Synop.pdf> (22.04.2018 - 19:30)

- [14] <https://imaginemontessori.es/en/the-prepared-environment/>
- [15] <https://earlychildhoodhistory.weebly.com/waldorf-education.html> (27.04.2018 - 19:00)
- [16] <http://mentalfloss.com/article/21824/5-alternative-teaching-methods>(23.04.2018- 23:20)
- [17] <https://www.archdaily.com/521495/kindeergarten-in-chroscice-port>
- [18] <http://www.dezeen.com/2013/10/06/sjotorget-kindeergarten-by-rotstein-arkitekter/>
- [19] <https://www.archdaily.com/777438/smartno-timeshare-kindeergarten-arhitektura-jure-kotnik/564d43c2e58ece4d73002ce-smartno-timeshare-kindeergarten-arhitektura-jure-kotnik-image> (23.04.2018 - 18:26)
- [20] <http://www.dezeen.com/2013/10/06/sjotorget-kindeergarten-by-rotstein-arkitekter/> (27.04.2018 - 20:20)
- [21] Stan Alina Ioana Cristina, Racoța Andrei-Gheorghe, Concepte în amenajarea grădinițelor, Disertatii 2015-2016 - Editura Politehnica Timișoara, 2016, p. 115-122 (21.03.2018 -15:00)
- [22] Mark Dudek „Schools and Kindergartens” a Design Manual – 2007 (28.04.2018 - 21:20)
- [23] Mark Dudek „Children’s Spaces” 2009 <http://architecturalnetworks.research.mcgill.ca/assets/children-s-space-min.pdf> (28.04.2018 - 22:00)
- [24] Didactica preșcolară – Autor: Elionor Schulman Kolumbus; Editura: V & I INTEGRAL (2008) (28.04.2018 - 21:50)
- [25] Pedagogie pentru învățământul preprimar – Autor Alexandra Mateias; Editura Didactica și Pedagogică (21.04.2018 - 10:00)
- [26] Noi repere ale educației timpurii în grădiniță – Ministerul Educației, Cercetării și Tineretului (21.04.2018 - 12:00)
- [27] INDICATIV NP011-97 - Normativ privind proiectarea, realizarea și exploatarea construcțiilor pentru grădinițe de copii. (14.03.2018 - 15:00)