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Space as a pedagogical tool for children with additional educational needs participation and empowerment

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The paper explores the dialectical relationship between children and space and the empowering role of space in the development of disabled children. The research presented in this paper was conducted at a special primary school in Athens through participatory design workshops with teachers and children with special educational needs such as autism and Down's syndrome. The children at the school were regarded as designers of space and were consulted for the design of a creative play and learning environment in their school ground. The findings of the research include an analysis and synthesis of children's and teachers' ideas in an architectural plan of a play and learning environment for children with special educational needs. They also include the creation of six spatial categories that a creative play space should incorporate in order to reinforce children's development and contribute to their empowerment.

Keywords: *special educational needs, additional educational needs, space, creative play and learning environment, critical pedagogy of space, participation, empowerment.*

Critical pedagogy of space and children's participation

Research and innovative applications have indicated the need for children to participate in their environment and community, and especially in the design of their space (Ward, 1978; Moore, 1986; Hart, 1997; Matthews, 2001; Chawla, 2002; Sutton and Kemp, 2002; Horelli, 1997; Horelli and Kaaja, 2002; Tsevreni, 2011a). The participation of children in the design of their environment contributes significantly to their development. Children are given the opportunity to develop their social and cognitive abilities, their sense of connection with other people, with nature and their natural environment. They can also develop their ability to manage their environment and significant aspects of their lives, thus contributing to the establishment of a balanced life (Sutton and Kemp, 2002; Chawla and Heft, 2002).

Children involved in participatory procedures are given the opportunity to comprehend social structures and to develop their critical thinking, their aesthetic choices, their communicative abilities and their ability to plan and implement changes. They can also avoid alienation by being empowered (Sutton and Kemp, 2002) and by developing a sense of caring for nature and the planet (Hart, 1997).

Through participatory procedures, children are taught to become active and responsible citizens and to act on these abilities and attitudes (Chawla and Heft, 2002). The benefits from children's participation are not limited to their social groups. They also include the

development of more ecological and solidarist societies (Horelli, 1997; Horelli and Kaaja, 2002). They are also a condition for social justice (Bojer, 2000).

In this paper, critical pedagogy of space is presented as an interdisciplinary space with a social-critical orientation that can be used as a teaching and learning tool for children with additional educational needs. Critical pedagogy of space as a synthesis of critical pedagogy, participatory design and children's participation offers an ideal interdisciplinary space that can encourage children's liberation from oppression. The research presented in this paper is an attempt to show that space can be used pedagogically to provide the tools for the creation of an empowering framework. Within this framework, children with special educational needs can learn to reflect upon their own condition, to express and communicate their ideas and needs, to be involved in the design process and to take important steps towards their empowerment (Tsevreni, 2011b).

Space-based learning and children's empowerment

Like place-based education, space-based education is regarded as a way of cultivating the critical analysis and activism required for human communities to move in more equitable, just and sustainable directions. Place-based educational experiences connect children to their communities and their environments. These pedagogical processes provide the foundation for civic participation (Tsevreni and Panayotatos, 2011).

Within this tradition there is a strong strand of children's empowerment and emancipation through place-based learning and acting. For example, Gruenewald's (2003, p.10-11) critical pedagogy of place uses elements from critical pedagogy and place-based learning, embraces the experience of being human in its connection with others and with nature and includes cultural, political, economic and ecological dynamics. Hart (1995, p.1) writes that "we need now a more radical social science research with children in which children themselves learn to reflect upon their own conditions, so that they can gradually begin to take greater responsibility in creating communities different from the ones they inherited". Malone (2007), Ataöv and Haider (2006) also propose that children actively participate in their environments.

The participation of children in the design of their environment is an ideal basis and a valuable methodological tool for the development of their self-confidence and sense of belonging. Participation allows children to achieve self-confidence and action-competence, both of which are essential for their adult life (Tsevreni and Panayotatos, 2011; Tsevreni, 2011b).

A critical pedagogy of space project can be an ideal basis for children with special educational needs to connect with their environment. Through it they can gain valuable cognitive, communicative and emotional skills and abilities. Children's involvement in participatory design processes helps them create a strong attachment with their environment and community. It allows them to build a sense of personal and collective efficacy and to become competent in managing their environment (Tsevreni, 2011b).

A critical pedagogy of space that is based on principles such as working on authentic issues, free and creative expression through art, a deepening of insights, collaborative work,

participation and involvement in the creation of knowledge (Tsevreni and Panayotatos 2011; Tsevreni 2011b) can be a teaching and learning tool that reinforces children's empowerment and emancipation.

Children's participation contributes to the democratization of public space

As Feyerabend (1978) claims, people's participation and not only experts' contribution in decision-making procedures is essential in a free society. Schnack (2000, p.116) writes that "even though we often need to trust experts and the systems created by experts, this trust must not be blind if we are not to abandon the democratic idea... We may listen to experts of various hues, but the final decision and the ultimate authority is a question for the common man". According to Jensen (2004), the scientific imperialism that pervades our entire culture has created a need for an alternative to this "scientific" vision based on interdisciplinarity, participation and action-orientation.

In the modern city, many social groups experience discrimination and socio-spatial exclusion because of their sex, age, economic disadvantage, national identity and physical or mental difference (Sibley, 1997). Social inequality produces and sustains spaces of exclusion for the elite as well as for oppressed social groups, preventing inclusion and collectivity within the city structure and establishing a structure for social injustice and antagonism.

Sandercock (1998, p.97-8) argues "radical practice emerged from experiences with and a critique of existing unequal relations and distribution of power, opportunities and resources. The goal of these practices is to work for structural transformation of systematic inequalities and, in the process to empower those who have been systematically disempowered". According to Friedmann (1987), radical planning aims at the emancipation of humanity from social oppression by the state and market-generated inequality.

Planning is not an apolitical, technical tool that "experts" can use, but a social and political issue that aims at the investigation and satisfaction of the needs of all social groups. This new form of planning emphasizes inclusion and redistribution of power and resources from the elite groups towards the excluded social groups (Davidoff, 1965; Krumholz, 1994).

This planning approach includes the enforcement of place diversity (Talen, 2006) and the integration of social groups in the city (Sarkissian, 1976). Planning that emphasizes equity and social justice is included in initiatives and innovative implementations of planning in which excluded social groups participate in the decision-making procedures (Krumholz and Clavel, 1994; Krumholz and Forester, 1990; Sandercock, 1998; Ikonen-Graafmans and Graafmans, 2003) and in the development of collectivities and movements that reclaim the city and fight socio-spatial discrimination and exclusion (Portaliou, 2007).

The aim of this paper is to formulate design principles for inclusive play spaces for disabled children in the city planning and design. The research is based on the need to investigate and actively address all social groups, especially disempowered citizens who experience social and spatial exclusion within the city. The research of the dialectical relationship between space and disabled children is part of a broader planning and design approach that focuses on the democratization of social space and on the creation of a city that is open, accessible and functional for all its citizens.

The aim of the research

The research sets out to examine how participatory design of a school garden promotes and fosters pedagogies that enable children to develop abilities that are crucial for their development.

The research consisted of an action research project that was carried out at a special primary school in Athens - the “Rosa Imvrioti” Special Primary School of Marasleio Didaskaleio of Kaissariani, during the 2010-2011 school year. The paper presents the findings of the participatory design process, in which children and their teachers researched and designed their school ground.

The participatory design project included:

- the exploration of children’s ideas, experiences and feelings for their school ground
- the creation of a vision for the school ground
- the involvement of children in the research and design process

Furthermore, children’s and teachers’ ideas were categorised, creating design principles for creative play spaces for disabled children. Six main categories have emerged that included the spatial categories and the main activities that the school garden should sustain.

The school

The “Rosa Imvrioti” Special Primary School of Marasleio Didaskaleio of Kaissariani has a long history. It was established by the pioneer educator Rosa Imvrioti in 1937 for children with ‘*mental retardation*’ and operated for three years. Imvrioti introduced to the school the radical pedagogical influences of Montessori, Decroly, and Hiltfshule among others. School life revolved around the school garden, which was an essential part of the school’s teaching methods. Walks and cultivation of the garden were parts of everyday life.



Figure 1 The Special Primary School of Marasleio Didaskaleio of Kaissariani

Today, the special school includes children with autism and Down’s syndrome. In deference to the school’s history, its headmaster envisioned the school ground as a creative outdoor space for play and learning. The research was based on this idea and was conducted with the participation of the school’s older children and their teachers through the implementation of two participatory design workshops. The section of the school ground that we wanted to transform into a creative play and learning environment appears in Figure 2.

Research methodology

The theoretical context of the action research programme was inspired by Freire's liberatory education. According to Freire (1972), by reflecting and acting, children activate their critical consciousness. This is a liberatory pedagogical process whereby the oppressed are helped to reflect and act towards their empowerment. It is also based on the interdisciplinary space of children's participation and participatory planning and design that aims to involve adult and young citizens in their environment and community.

Figure 2 The section of the school ground that we wanted to transform



The methods include a combination of action research with participatory planning and design methods chosen specifically for children, such as photography, drawings and discussion. Action research was chosen because it combines education with emancipatory ideals (Kemmis, 2006) and aims to understand reality in order to transform it and to transform reality in order to understand it (Kemmis and McTaggart, 2001). The participatory planning and design methods that were used in the research are specially created for children and recommended in the literature on children's participation (Hart 1979, 1992, 1995, 1997; Iltus and Hart 1995; Sanoff, 2000; Mathews 2001; Cele, 2006; Tsevreni, 2008, 2011a; Tsevreni and Panayotatos 2011; Play England/ Participation Works 2009).

Participatory design workshops

The research took place through two participatory design workshops with teachers and children. The first participatory design workshop was implemented with the teachers of the school. The teachers attended an interactive design project in which they expressed their ideas and needs for the school ground. The project also led to three collective proposals for the school garden (Tsevreni, 2011b).

The second participatory design workshop was implemented with the children. It included walks in the school ground, taking photographs of the spaces that they wanted to change, discussions in the classroom and making drawings of the components and the activities that they wanted to see included in the new school garden (Tsevreni, 2011b).

Finally, there was also a presentation of children's ideas for the school garden to the whole school community. Children presented their ideas to the teachers and their schoolmates helped them through a computer presentation. Children's and teachers' ideas are presented in Table 1.

Children's ideas	Teachers' ideas
<ul style="list-style-type: none"> • cultivation of flowers, plants and vegetables • taking care of animals • cycling • water • space for painting • space for cooking • space for climbing 	<ul style="list-style-type: none"> • gardening • natural materials (sand, water, wood) • space for painting • outdoor class • space for climbing • space for relaxation • space for walking and running • space for privacy • space for cooking

Table 1 Children's and teachers' ideas

Children create their own design principles for their play and learning environment

Children were regarded as skilful participants in the design process. The research methods allowed them to express their own experiences, opinions and needs. The observations of the children and the teachers were analysed and classified into a common pool of ideas that formed a framework for design principles for a creative play environment. Six spatial categories emerged: connection with nature, relaxation and meditation, communication, free play, science and art and active play. The spatial categories of the school garden were incorporated into an architectural plan (Figure 3).



Figure 3 The architectural plan of the creative school garden

The spatial categories cater to the development of disabled children's cognitive, communicative, motor and emotional abilities, as well as their need for self-initiated activity (Table 2).

The development of children's abilities in a creative play and learning environment					
Spaces/Abilities	cognitive	self-initiated activity	communication	emotional	motor
connection with nature	•	•		•	•
relaxation and meditation		•	•	•	
communication		•	•	•	
free play		•			•
science and art	•				
active play		•			•

Table 2 The abilities that children can develop in the creative school garden

1. Connection with nature

There is a great need for environments that offer direct contact with nature (Moore and Wong, 1997; Tai et al. 2006; Louv, 2005) and provide designed outdoor learning experiences (Bengtsson, 1972; Greayer, 2010) through an inclusive approach towards all children (for instance, children with disabilities and minority children) (Beckwith 1985; Allen 1968; KIDS 2008, 2009; Play England/Participation Works 2009). In view of the well-known fact that this generation suffers from environmental amnesia, it is essential for children's cognitive, physical and emotional development to involve nature in the design of play and learning environments (Tai et al. 2006).

The greening of children's environments and the proximity of nature in their play and learning spaces are elements in the creation of high-quality physical settings. In such settings, children can learn to respect each other and their environment, to engage in environmental learning and to reconnect with nature. This is the idea of the development of "the whole child", whereby children's social, cognitive, and creative abilities are geared towards their empowerment (Moore and Wong, 1997).

The interaction of children with nature is one of the most significant teaching and learning methods. A culinary garden, for example, can become a teaching resource for many academic subjects like biology, maths, art, history and nutrition. Schoolyard-based outdoor classroom education can become a vital part of an engaging, hands-on teaching methodology. Furthermore, it makes learning more relevant to students and it helps children acquire knowledge on their own. Finally, it empowers students to improve their local environment (Danks, 2010).

Figures 4 and 5 depict nature in the school garden: there is a space for gardening and water in the form of a pond, as children and teachers proposed in the participatory design workshops. In these spaces children can form a bond with nature by cultivating plants,



Figure 4 A space for gardening

flowers and vegetables. They can also play by the pond and experience a relaxing and creative connection with the water.



Figure 5 Water in the garden

2. Space for relaxation and meditation

Children expressed their need for spaces that are dedicated to relaxation and quietness. Retreat areas contribute to the development of their sense of self and personal identity. Moore et al. (1979, p68) suggest that "when children are alone they have come to terms with self, how the "I" relates to a tree, space or the self. Being alone is more conducive to imagination, adding hypothetical activity and meaning to a simpler situation... Good breakaway points encourage greater exploration by providing face-saving exits from unfavorable situations". This is a kind of meditation, which is generally regarded as a way of gaining improved physical and mental consciousness (Anderton, 2003).

These spaces can also be used as areas where the child can observe the activities of other children from a distance, which is also an essential dimension of its development. A setting should provide shelter but also privacy. There should also be observation points from which children can view the activity areas. All sections should include features and areas for children to retire to, if the activity becomes demanding and stressful (Moore et al. 1979).

These settings can include quiet zones: outdoor sitting areas with comfortable chairs and tables or benches in a green garden space where children can sit, talk, study or eat (Danks, 2010). In the architectural plan of the school garden, a meditation cabin was included in which children can relax, experience the quietness and reflect on the activities that just took place.



Figure 6 The meditation cabin



Figure 7 The sitting place

3. Space for communication

There is also a need for space that enforces communication and social abilities. Moore et al. (1979) suggest that there should be a variety of spaces, from small to large, where a child and a staff member can work on a one to one basis or for a small group of three to five children. There is also need for big open spaces for group experiences. When many types and sizes of spaces are available, the opportunity for different social grouping increases. Small places are ideal for solitude and togetherness, while large open fields can be used for team sports.

Outdoor classrooms operate as gathering places, areas for collaborative work and communication. These can vary in size, from amphitheatres to smaller sitting areas where children can sit, talk or eat. These settings can be made out of natural materials like logs and rocks or they can be makeshift settings to fit a specific environment. Local artists, working along with children, can also contribute to the design of alternative sitting areas (Danks 2010). In the architectural plan, a sitting area in the school garden was added (Figure 7), where children can sit, eat or discuss. This is the main meeting point of the creative school garden.

4. Space for free play

Children expressed a need for spaces and structures in their play areas that will increase their freedom and personal activity. Children do not experience freedom of movement in their everyday life because of the limitations of the existing play spaces and because of parental fears and anxiety. Specifically, children asked for space for cycling, ropes for climbing, a trampoline and large open spaces for running. They also expressed their need for free play and for spaces that enable them to explore and expand their motor and creative abilities.

All children love to interact with a variety of man-made and natural materials, sounds and music, other people, plants and animals, words, concepts and ideas (Nicholson, 1971). Children need to satisfy their curiosity and to experience the joy of discovery and invention. “Unstructured play” enables children to learn new skills, gain self-confidence, take pride in their achievements and extend their knowledge of the real world (Moore et al. 1979).

This ability can be fostered through materials that can be manipulated, enabling children to use their self-initiated and creative abilities (Lady Allen 1968). These materials include sand, water, wood and stone, but also loose materials, such as boxes, wires, bricks, which can be used for building projects. (Moore et al. 1979). Furthermore, role play can be introduced in spaces like play houses, tree houses or a puppet stage (Danks 2010). Unstructured spaces contribute to the development of the imagination, the emotions and representational abilities (Moore et al. 1979).

In the creative school garden, a sandpit that can be combined with loose parts in order to create a space for free and impromptu play for children (Figure 8).



Figure 8 A sandpit that can be combined with loose parts for free play

5. Space that supports science and art

Children and teachers expressed a need for spaces that support a variety of activities that focus on knowledge and creativity. They proposed the creation of an outdoor classroom, knowledge corners, a library, a space for cooking and a space for constructions.

Outdoor classes can be easily set up in a circle to encourage collaborative group discussions. This can be a circular seating area made of concrete or natural materials like wood or stone. Some British schools have created outdoor story venues in which the storytellers' chair is surrounded by seats for children. This setup supports literature studies and makes reading an enjoyable activity (Danks, 2010). In the architectural plan for the creative school-garden, there is an outdoor class where children can attend outdoor lessons on different subjects (Figure 9).



Figure 9 The outdoor class

Other schools used the school walls for murals on which children wrote poems, but also texts on subjects such as history and human rights (Danks, 2010). History, social science and geography can be also supported in a creative play space. For example, traditional products can be cultivated in a school garden. Plants from different countries can be planted to represent the school's multicultural population. Peace gardens or murals can be created to celebrate the peaceful coexistence of people. Geographical knowledge can be also be promoted through outdoor country, continent or neighborhood maps (Danks, 2010).

Research with children has also revealed that art, music and theatre are necessary ingredients of a school ground. Portable painting tables, boards as well as the walls and ground can be used for painting (Danks, 2010). Portable painting easels were added to the school garden plan for a space where children can paint and create, as well as painting boards on the walls of the school garden (Figures 10 and 11).

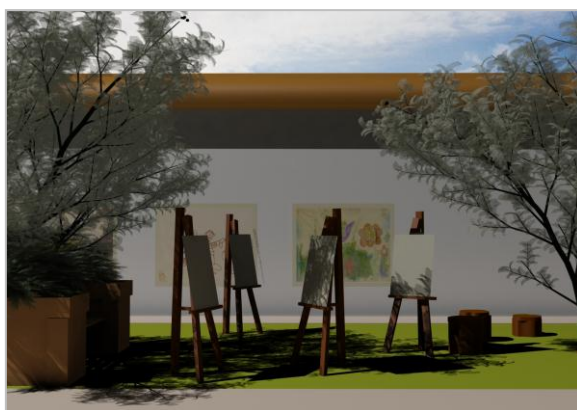


Figure 6 Portable painting easels for artistic expression

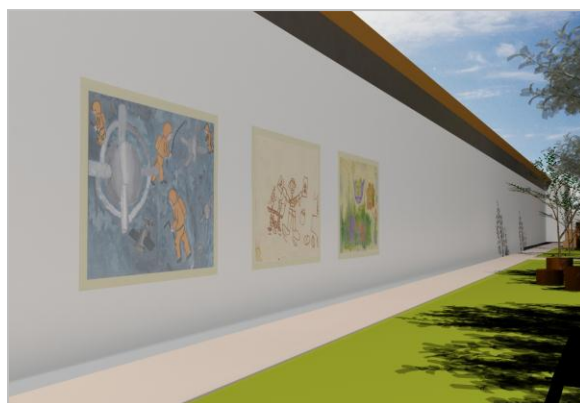


Figure 7 Painting boards on the walls

6. Space for active play

Active play that involves movement and muscular exercise such as running, jumping, skipping, balancing, sliding and climbing is a favorite activity among children. Active play includes sport games, the use of climbing equipment, nature exploration and impromptu play. A standard school playground emphasizes active play. However, at the same time, it lacks diversity and variety. It is also premised on games with rules that have been set by adults, at the expense of imaginative play (Danks, 2010).

There are a variety of alternative design patterns that encourage children's free movement, including climbing features like tire walls, ropes and rocks, walls and climbing-oriented schoolyard landscaping (Danks, 2010). In fact, climbing came up repeatedly as a request from the children during the research.

Another feature for active play can be earth mounds that are planted, paved with hard materials or covered with soft surfacing or hillside slides that combine climbing with the excitement of sliding down. Other features can include tunnels to crawl through, mazes and labyrinths. Children also enjoy balancing activities and linear play structures made out of different materials such as tires, ropes and wood (Danks, 2010).

A rope ladder for climbing, which was tied to an olive tree, was added to the school garden plan (Figure 8). Following another request made by the children, there is also a bicycle path around the garden where children can cycle.

Concluding thoughts

Space as a pedagogical tool for disabled children

In this paper, we attempted to emerge the role of space as a valuable pedagogical tool for children with non-physical special educational needs. The dialectical relationship between children and their environment is an unexplored space that has not been widely used as an educational tool and is not included in the curriculum. Children's playgrounds and play spaces hide so much more than the obvious – the opportunity for play. They contain a

creative power that can transform and improve children's cognitive, social and emotional development.

Children's involvement in the design of their play spaces offers them valuable abilities, like the enforcement of their self-confidence and self-activity. Children's engagement in the design of their school environment is considered in this research as a methodological pathway for their participation and empowerment.

Critical pedagogy of space projects help children create a strong attachment to their environment. It allows them to build a sense of personal and collective efficacy and to become competent in the management of their environment.

Though the traditional classroom and teaching model is still the dominant pedagogical methodology, especially in Greece, there is also a growing interest in the role of place or space in the primary school curriculum and the use of school grounds for pedagogical purposes (Adam, 1990; Grant and Littlejohn, 2001; Spencer and Blades, 2005; Somerville et al. 2011).

Children as designers of space

Children participated in all stages of the design workshop. In fact, they were co-researchers in the process of transforming the school ground. They walked around the garden, took photographs, drew plans of the garden, and expressed their ideas and their vision for the new garden.

When the research began, the teachers were slightly hesitant as to the ability of the children to understand the aim and the content of the educational programme. They also expressed reservations about the children's ability to participate. However, when the children presented their ideas for the school garden to their teachers and schoolmates, the teachers realised that the children's ideas had a lot in common with their own (see Table 1). In the participatory design workshop with the teachers, there was also a presentation of slides and design principles to stimulate their imagination and creativity. It is important to observe that the children's ideas came exclusively from their experiences, perceptions and emotions for the school garden. It was a surprise to witness the similarity between the ideas of the children and those of the teachers, which revealed the children's potential for critical thought and action.

The ideas of children as space designers were comparable to those of professional designers. The wealth and variety of these ideas and proposals is proof that mentally disabled children are able to participate as equals in the creation of their play environment. It is also proof of their ability to collaborate, express their needs and to create a vision for the future. In the research, children were also able to express their critical thought, imagination and creativity.

Furthermore, the children's participation in the creation of their play space is in itself a statement that highlights the need for social groups to participate in the design and decision-making process of their environment. The democratization of public space presupposes the ability of people to be involved, to express their needs and preferences and to participate in

the design process. Children's participation and especially children with special educational needs' participation is a precondition for the establishment of social justice in the urban environment.

When the pedagogical use of space is combined with children's participation in the creation of space, one sees the emergence of a dynamic pedagogical tool. Space design helped children overcome obstacles such as difficulties in communication, collaboration, their passivity and their low self-esteem. They used their critical thinking and imagination, they analysed and synthesised their environment, and proposed ideas for its improvement. A critical pedagogy of space offers children with additional educational needs a radical pedagogical path that can set free their creative abilities and establish their design ideas as equal compared to every other social group, including experts and designers.

Note

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Konstantina Bentenidi has studied Architecture at the School of Architecture, National Technical University of Athens, Greece. She also holds a M.A. on "Art in Context" from the Universität der Künste, Berlin, Germany. She works as an architect, 3D Artist and cultural mediator.

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