

Permaculture Playgrounds as a New Design Approach for Sustainable Society

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Abstract

Playing is an important surviving activity for children like feeding, housing and sleeping. Children often perform even their basic needs as if playing games. Landscape architects are in attempts to seek useful play-spaces for children. In today's cities, due to the rapid and distorted construction, playgrounds for children are consumed up and outdoor play-spaces are converted to the structural land uses; therefore, because of the lacking of these areas, children have to play on the streets and roads.

Studies on designing play areas that improve physical, social and mental development of children in urban and rural areas have been continuing with new approaches. One of these approaches is "permaculture playground design" approach. Permaculture playground design gets its origin from the application of permaculture designing philosophy to playgrounds. In this approach, the aim is to provide children with play spaces, constructing natural play areas using vegetation, animals, topography, water and other natural landscape elements. In this paper, brief information on the design of permaculture playgrounds is presented for explaining permaculture philosophy and proposals about their design in urban and rural areas are given.

Key words: Permaculture playgrounds, playgrounds, permaculture

INTRODUCTION

Play is the indispensable part of a child. Due to their nature, children tend to play in every growing stage. Children enjoy themselves, learn many things, gain creativeness, and consequently become happy by playing. Play is like a magical world attracting children.

Playing is a very effective recreational activity in the physical, social and mental development of children. Today many studies are present dealing with the enlarging the areas of playgrounds in cities, their safely designing [1,2,3-4], designing them in natural environments [5,6,7,8,9,10-11] and designing them convenient with the planning and designing principles [12].

With play, children learn to share things, competition, and to use their creative forces in their inner world. Common thought of both child psychologist and doctors is that playing indoor areas negatively affects the mental, physical and social development of children. For this, associations, such as The National Society for the Prevention of Cruelty to Children-NPSCC, call local authorities to constitute well designed playgrounds where children can play safely [13]. Again, another association, The International Play Association, makes decisions at their meetings on the evaluation of children's spare time, games and urban play areas; and directs children to natural playgrounds [14].

Studies about the effects of outdoor physical environment on the development of children [9,15-16] are quite new. It was stated in the recent studies [8,9,17,18,19-20] that playgrounds have positive effects on the physical, social and mental development of children.

Children recreate themselves thanks to plays. Physical activity not only is important in childhood period of a person for social, mental and physical health but also has a preservative effect in whole life health [21]. Wachs [22] focused that physical environment has a unique influence on a child's development. Many authors have reported that children must play at well-designed, safe [2,4,23,24,25,26,27-28] and natural [9,13,16-29] playgrounds.

Children use their houses, streets near them and playgrounds as play spaces. In an Australian study, it was found that 53% of the 8-12 year old children play at home, 24% outdoor natural areas and 17% at parks and playgrounds while 6% on the roads and streets [30]. In again a study carried out in Australia, using 421 child subjects between 5 and 12, it was determined that majority (59%) of the children use their or their friends' homes as play areas, 23 % parks and 9 % streets [31].

Today, the most preferred (74%) play areas by children are houses. According to the reporting of families more than one-third in Melbourne, the most preferred urban play areas by children are parks, playgrounds, bushy areas and riversides and

it was found that mostly (94%) families decide where children play, considering their security [32]. It was also stated in the same study that about half of the participating families concern about the equipment on playgrounds. Their main complaint is that equipment was designed for the newly walking children and older ones find these areas to be boring. Their demands on the existent playgrounds are bicycle ways, picnic areas, clean toilets, shaded and open green areas [32]. Conceptual models provide a suitable study path for the effects of physical activities. There are few conceptual approaches towards children's active free games. Ecological models provide opportunities for detailed studies of children's active free games and play spaces [33].

People recall elements of the natural environment (water, vegetation, animals, soil, rocks, sunlight etc.) in all play grounds. Of these natural elements, plants are the most frequently mentioned [29].

Nowadays, playing equipment of mechanical play systems gives the forms of children play areas. In today's unplanned and rapidly structured urban areas, mechanical playing equipment is placed without plantation designing in the areas left for the playing spaces and children are left no alternatives other than these areas, formed and directed by such systems. Reliability of such systems is criticized and discussed by designers [9] pedagogues. For instance, in a study where playing equipment is questioned, when children were asked about the playing elements on the playgrounds, their responses were mainly that even though equipment are good but most of them are boring [34].

With the aims of forming playgrounds which are not boring for children, applying the required design principles and sustainability philosophy on playgrounds, children began to have the opportunities of playing in natural environments, natural elements began to be used in the playground designs and consequently, playgrounds where modern playing equipments supported with natural ones began to be constituted. In natural areas used as playgrounds, variation and diversity are very important characteristics and these play areas are unstructured and manipulative environments [35]. For instance, in Norway, a natural playground was constituted and strong relationship between landscape structures and play functions was stressed [9].

According to Titman 1994 and Moore and Wong 1997, the fact that a child who plays on the ground with the natural playing elements comments that climbing rocks on the ground are more enjoyable than climbing trees but climbing trees are more enjoyable than the boring play equipments is the evidence for that children find natural play areas to be more joyful than traditional playgrounds [9].

Natural elements have important functions in play areas and these elements provide so many learning opportunities with children, which are not provided by the classical play equipments. According to Fjørtoft (1998 and 1999), for the evaluation of educational efforts, all the games played in the natural areas can affect the motor development of children [9]. The most important point to be considered while designing play spaces for children is placing environmental elements on the playgrounds [9]. Children have the opportunities of learning with/from the nature [36-37]. In the related studies

[9], significance of natural environment for growing and development of children is evaluated.

Jutras [38] evaluated the effects of environmental characteristics on children. It was focused that children who are in the connection with natural elements, such as plants, water, earth, or small animals, are more successful to understand the nature and to communicate with outer world and more creative. Natural elements have positive psychological effects to reduce stress. In order to provide a suitable environment with children where they can comfortably play; to construct secure play areas in cities; to give children more autonomy; and to improve their social skills allowing them to utilize play areas, psychologists are required to take place in every attempts related to the child development [38].

The hypothesis of the Herrington and Studtmann [8]'s study is that equipping playgrounds with natural materials and use of other landscape elements (e.g. plant material and others) may affect the various development types of children (e.g. the social, emotional and conceptional skills). This study deals with a landscape basis design approach in playgrounds for children.

Playgrounds constructed with natural play elements also have significant effects on the formation of secure play area designs. Tree bark is a natural material, which can be used for covering the grounds of play spaces, can reduce the accidents to minimum, and can be recommended for all playgrounds [1].

In this study, information about permaculture playgrounds, adopting sustainability principle in playgrounds constructed using natural landscape elements is presented, focusing on the importance of playing for children.

WHAT IS PERMACULTURE?

Permaculture is a concept, which was first introduced in the mid 1700s by two Australian scientists, Dr. Bill Mollison and David Holmgren, to support sustainable development. This concept is life philosophy adopting sustainability at all stages of life and it was derived from Permanent Agriculture (Permaculture).

Definitions related to the permaculture are following [39]; The word permaculture is composed of three words: Permanent, agriculture and culture. "Permaculture" is a relatively new word coined by Bill Mollison from Australia to give a name to the worldview and activities of the movement of eco-villages and sustainable ecological living. By using the principles of permaculture we help create a living system which takes ongoing attention and care. Take a look at the ethics of permaculture and examples given below in order to better understand it. By trying them out in the field they will become even clearer. Permaculture is a verb, not a noun-it is something we do, not something we buy [39].

Permaculture philosophy has sustainability principles which can be adapted and applied to all science branches. Using these principles at design stage, productive application stages and self efficient designs can be performed.

What is permaculture design?

Today, permaculture can be defined, with the clearest words, as a design system based on ethical rules and applicable

to land use, food production and social works. Targeting the sustainability and productivity, it is a system that integrates human life and ecology, landscape and organic growth. In this system, every kind of design that places natural products and living in human life, supports sustainability is the part of permacultural design system. The most important target of the permaculture design is directing the designs according to ecological principles.

David Holmgren has developed 12 design principles for permaculture. These are [40]; observe and interact; catch and store energy, obtain a yield, apply self-regulation and accept feedback, use and value renewable resources and services, produce no waste, design from patterns to details, integrate rather than segregate, use small and slow solutions, use and value diversity, use edges and value the marginal, creatively use and respond to change.

Permaculture is a life philosophy adopting sustainability. In the permacultural design, it is essential to apply the permaculture philosophy in designing attempts. For example, in the urban areas, while trying to provide natural-like areas with people in landscape designing, it is impossible to ignore the principles of permaculture.

All over the world, permacultural designs have been conducted taking these principles into consideration in many fields, such as agroecology, agroforestry, appropriate technology (for green technology), aquaponics (symbiosis of fish and plants), bioclimatic, deep ecology, ecological footprint, ecovillage, environmental design, ethnobotany, forest gardening, green syndicalism, holism, home gardens, organic farming, organic gardening, polyculture, renewable energy and petrofree, sustainability, sustainable agriculture, sustainable habitat systems ecology, the natural step, urban agriculture, etc [39].

In addition to them, nowadays, there exist many designs that are planned, take places in every parts of human life, adopt and adjust the permaculture philosophy and take ecological values into consideration.

One of the most important designs taking role in growing healthy individuals is playground design. Utilising permaculture principles in the design of playgrounds where an individual gains base-stones of his or her character as a child might be considerably beneficial. When considered the role of playgrounds in the physical, mental and social development of children, the importance of the constitution of them by adopting and applying the permaculture philosophy will be more definite.

3. How can we design a permaculture playspace?

When playing, children need trees they can climb in, tree trunks, green playgrounds, shrubs they can hide behind on hide-and-seek [41] and flowers they can pick and smell. Moore [29] also stated that children can perform on natural playgrounds different activities such as collecting plants, climbing and playing in trees, hide and seek games, and general exploration and plants may provide discovery, dramatic play, action research play, and learning space development on playgrounds [29].

Some principles can be developed in playgrounds inspiring from permaculture philosophy to direct the designs.

Permaculture Playground Designing Principles; Surprising elements in playground by natural elements, use of natural elements and structures, landscape ecology, and physical patterns of a landscape (plants, varied topography, water etc.) to mentally perceive the environment, use of natural landscapes as a play-space (A forest, an urban forest will be the natural play-space), the focus is environmental psychology in natural environment, creating habitats for play in natural habitats.

Frost 1992 defined and classified play activities into three categories [9]: Functional play (comprised gross-motor activities and basic skills in play like catch a tree, climbing trees and rocks, running, sliding, hide and seek etc.), construction play (play that is afforded by natural elements, constructions play elements), symbolic play (included socio-dramatic play and recorded as role play and fantasy play such as play farms with cones and sticks etc.)

In the play activities, the use of vegetation, fauna, natural play elements, topographic diversity and safe waterscapes is the base of the permaculture playground design (Figure 1).

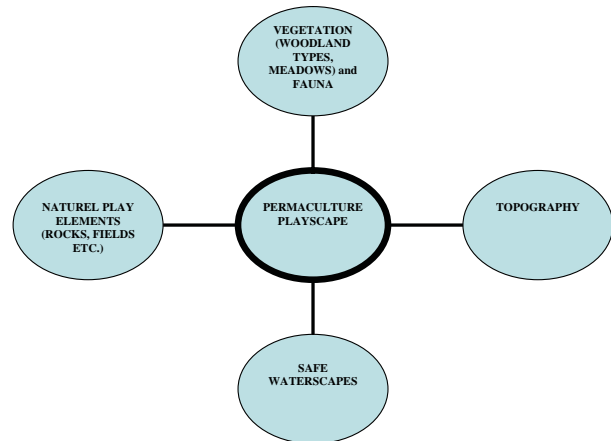


Figure 1. Natural elements of permaculture playspaces [9]

Prescott 1987 focused on the importance of three main features of the nature, these are high diversity, nature not being made by man, and the impression of timelessness [9]. For this, in many studies, it was determined that natural areas with diversity, that is, adventurous playgrounds, encourages creativeness in plays [9,9-42].

Studies on children play areas, report positive and constructive impact from playing in nature based playgrounds on the children's social play, concentration and motor ability [9,36-37].

Natural elements and play characters which can be used in permacultural playgrounds are presented below.

Vegetation and fauna

The most attracting natural elements for children in playgrounds are vegetation and small secure fauna elements. The following guidelines should be considered for plantation in children's play environments [29]:

Vary the texture of leaves: evergreen with deciduous; shiny with rough; serrate with smooth edges; thin with thick. Vary the form, size, and shape of plants. Select plants that emphasize seasonal change: evergreen contrasted with deciduous; seasonal

colour, early leaves; late flowers; seeds, nuts, and fruit. Consider opportunities for colour in trees, ground covers, vines, annuals, and perennials. Select plants for fragrance. Select plants for craft and culinary activities. Select plants for auditory stimulation. Some plants, especially in the fall, produce interesting sounds when the wind blows through their dry leaves. Plants like bamboo and pine trees produce sounds year-round.

Plants can serve; enclosure, identity, movement, climbing, play props, education, accessibility-integration, landmarks, seasonal change, wildlife enhancement, climate modification, environmental quality, introduced species in children playgrounds. Children like to play with butterflies and small animals, love to hunt for insects, many young people enjoy observing birds and small other animals [29]. Plants create valuable play areas and increase visual quality of play-spaces. Plants serve functional, construction and symbolic play areas. Plants that can be used for all these plays are below.

Plants in play

Nature serves variety of textures, colours, sounds, and smells for children in their natural play-spaces. *Fagus grandiflora*, *Ulmus parvifolia*, *Acer rubrum*, *Quercus alba*, *Sophora japonica*, *Pinus pinea*, *Platanus occidentalis* can be used for climbing and swinging; *Viburnum opulus*, *Magnolia grandiflora*, *Acer campestre*, *Acer palmatum*, *Stipa gigantea*, *Callistemon viminalis* 'Red Cascade', *Cotinus obovatus*, *Salix babylonica*, *Pittiosporum tobira* etc. can be used for hiding places; *Thuja orientalis*, *Abies veitchii*, *Pinus strobus*, *Picea glauca*, *Magnolia grandiflora*, *Quercus rubra*, *Cercis canadensis*, *Platanus occidentalis*, *Viburnum opulus*, *Rhus aromatica*, *Salix caprea* etc. can be used for play props [29].

Natural elements (Rocks, lawns, fields, water etc.)

Each of the natural elements is equipment for children. The most preferred climbing element is rock while large open lawn areas are suitable for running and natural platforms for every kind of play.

Climbing rocks is more fun than the boring playground equipment this sentence is from a playground user boy may be a reflector sample of how children consider the traditional play equipments and how they find the natural play elements [9].

The slope and roughness of play grounds cause to increase the diversity of play. For instance, on a sloppy area, children may play sliding or climbing plays. Water is a natural and a creative play element in play-spaces. Play areas where water movement is present encourage children to play. The most important point of use of water is its safety. Safe use of water in the natural areas can present creative play areas.

General targets of permaculture playgrounds can be summarized as following;

Catching natural elements of play in natural environment. Acquiring children nature love and provide opportunities with them to learn about the nature. Giving children the chances of the discovery of different play activities with natural elements and creating their plays themselves using these elements. Stressing that natural elements are today rare and nature and these elements must be conserved. Allowing children to make their plays themselves and to share with friends without intervention. Focusing that plants and animals are living things

and they must be protected, allowing them to play with them. Reducing the accident risks caused by mechanical elements and constructing more secure playgrounds. Improving their dream forces, experiencing them the pleasure of discovery, allowing them to learn and fun by discovering things. Encouraging the playing and learning by presenting the principles of the sustainability with play. Acquiring them sharing and competing ability in natural environment. Teaching them the nature with fun.

CONCLUSION

In the Child Play Rights Declaration in 1977, because of the World Child Year, it was pointed out that play is of vital importance for the development potential of each child as well as feeding, health care, housing and education [43]. Permaculture playground design is one of the steps that must be lapped in order to connect human with nature by integrating play allowance with sustainability philosophy and considering that human is one of the parts of the nature.

Main target of the use of natural environment as play and learning areas is allowing a child to play with natural elements and to learn from nature [9,29-36]. The target of permaculture playgrounds must also be this and designs must be directed from this point of view.

Natural areas are of play potential. Areas with diverse natural elements such as plants, water topographic structures and others must be evaluated for play potentials. Equipped development of children means growing physically and psychologically healthy adults. Consequently, these healthy individuals are contained in the society. When considered this sustainable social system, it can be realized that permacultural design philosophy is a life philosophy, which completes and supports the chains of this system. In today's cities, where rapid and distorted urbanisation is experienced and outdoor play areas for children are decreasing, designs of playgrounds adopting also the principles of this philosophy may be more sustainable and systematically functional. As a consequence, in order to grow healthy individuals for healthy societies, playgrounds the most effective recreational unit on shaping an individual's life from childhood to adulthood must be designed with permaculture philosophy.

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