

VI - SUMMARY

This study was performed aiming to design appropriate garden for kindergarten from the functional , environmental and aesthetic aspects , and to study the role of plants represented by their color in the displaying of kindergarten garden . The study was executed during the period between 1993 - 1998 at the Faculty of Agriculture , Moshtohor , and Faculty of Agriculture , Bologna Univ. - Italy .

- The study comprised the following points : -

1 - To determine the educational aspects that children can learn in the garden , a questionnaire was designed and presented to professors of education in the University of Bologna and University of Alexandria .

2 - To determine the garden's components actually present in those kindergarten gardens . Nine gardens for kindergarten in Bologna city were served .

3 - Children's behaviors with materials and play equipment in five kindergarten garden were studied to determine children's requirements of materials and play equipment .

4 - A servay was made on (27) teachers in nine kindergarten gardens to determine the components needed in the garden .

5 - Bolzani kindergarten in Bologna city was chosen for design appropriate garden from the functional , environmental and aesthetic aspects . The suggested design consisted of seven basic areas in natural style namely : Sea garden , Open play area , Vegetables and fruit garden , paved area , Rainbow garden , Nature garden and Butterfly garden .

6 - The plants utilized were studied for the effect of their colors (leaves - flowers - fruits) on kindergarten garden within the employed the design .

7 - Kindergarten garden under Egyptian conditions were determined for design appropriate kindergarten garden .

The study can be summarized as follow :-

1- The professors in both Alexandria and Bologna University determined the educational aspects that children can learn in the garden . These aspect comprised a group of Concepts , skills and values . The Concepts determined were classified into Scientific , Environmental , Mathematical and Language concepts . The Skills were Physical , Art , and Music Skills . The Values were Social values and Aesthetic values . The Scientific concepts included the color , development , texture , smell , sound , light , shade , temperature and float concepts . The importance degree for children learn the color concept in the garden was (100 %) while for the float concept was (66.7 %) . The Environmental concepts included the plants , animals , air , water , rain , sun , snow earth , food , life and death concept . The importance degree for learning each of plants , food and life concept were (100 %) while that for death concept was (50 %) . The Mathematical concepts included the formal shapes and volumes concepts and the importance degree was determined for each . the Language concept included the Alphabet and vocabulary , and the importance for learning in the garden was determine for each .

The Physical skills included run jump , cache , push , throw , balance and skating , and the importance degree for learning in the garden of each was determined . Art skills included drawing , formation and manipulation skill and the importance degree was determined of each also . Music skills included rhythm and sound differentiation and the importance degree for learning in the garden was determined . The Aesthetic values that included balance , harmony , rhythm and contrast , also the importance degree for learning in the garden was determined . The Social values included cooperation , systematic , obedience , independence , care and cleanness and the importance degree for learning in the garden was determined .

2 - By studying the components of kindergarten gardens , there were appeared (13) types of materials and play equipment . Sand was present in all kindergarten gardens (100 %) , either boxes or sand holes . Also , Water play equipment , huts, spring play equipment , swings and slides were present in (100 %) of the gardens . Bridges were present in (67 %) , while tunnels in (44 %) of the gardens servyed .

3 - The study of the children's behaviors towards materials and play equipment indicated that (13.2 %) of the children play in sand , (6 %) with different types of swings , (15.4 %) with huts and play houses , (4 %) with spring play equipment , (14.2 %) with slides , (12.2 %) with Water play equipment and (17.6 %) of children play with structure play equipment . The study also indicated that (2 %) of children always with teachers in the garden , and (20.4 %) of children play without use any kind of materials and play equipment .

4 - The study indicated that (92 %) of teachers demanded that the garden should comprise plants with colored flowers , (89 %) asked for an area devoted for vegetables and fruit plants . The teachers (82 %) asked for a safe border for the garden , protecting from the out side animals intruders , (87 %) of the teachers asked for appropriate gate for the garden . Concerning the paved area , (71 %) of the teachers asked for paved area for outdoor classroom and (67 %) of the teachers demanded for safety paths in the garden .

5 - The design used for Bolzani kindergarten fulfilled all the educational aspects (concepts , skills , values) . Sea garden for play equipment achieved (41.7 %) of the concepts , skills and values , while vegetables and fruit garden achieved (29.2 %) of the educational aspects .The Butterfly garden , Suspension bridge , Rainbow garden and Alphabet / music board achieved (20.8 % , 18.8 % , 12.2 % , 10.4 % , 10.4 %) respectively of the educational aspects .

6 - The study on plant colors indicated that the color of leaves for trees affected the garden during September , October , June with (98.7 % , 96.3 % , 99.7) respectively . The effect decreased during December , January , February and March (52.3 % , 50 % , 50 % , 51 %) respectively . The study also, indicated that the colors due leaves for shrubs affected the garden during September , October , May and June by (96.5 % , 94 % , 100 % , 100 %) respectively . The color due to leaves for herbaceous affected the garden during May and June by (100 %) each and the effects decreased in the other months .

Regarding the color due to flowers for trees , the study indicated that trees affected the garden during March , April , May and June by (16 % , 38 % , 30.7 % , 21.3 %) respectively . The flowers of *Magnolia soulangeana* gave the highest color values while the flowers of *Malus Robusta* gave the lowest values (4 %) . The flowers due to shrubs affected the garden during the month of June by (36 %) , while its effects decreased during September , October and November by (1.33 % , 0 % , 3.3 %) respectively. The flowers of *Jasminium nudiflorum* gave the highest values of color (16.7 %) while the flowers of *Viburnum opulus* gave the lowest values (2 %) . The flowers of the herbaceous affected the garden during the June by (39.6 %) and the values decreased during the month of December and January . The flowers of *Callauna vulgaris* gave the highest values (28.7 %) , while the flowers of *Gerbera jamisonii* gave the lowest values (9.3 %) among the months of the study .

The study due to fruits indicated that the colors of fruits affected the garden during , September , October and November by (73.3 % , 83.3 % , 79.3 %) respectively and the effect decreased during other months . The fruits of *Citrus sp.* gave the highest values (100 %) due to fruits , while *Aucuba japonica* gave the lowest values (10 %) .

7 - Based on the result of the study , the components of kindergarten gardens under Egyptian conditions were determined and it was shown that 600 sq .m . are the minimum requirements for appropriate kindergarten garden serving 25 children and the garden comprised five main areas : -

- A - An sandy area of 160 sq. m. comprised five play equipment , (structure plat equipment , Two spring play equipment , slide , swing and water pay equipment) .
- B - An open play area of 180 sq. from lawn for free play of children .
- C- Paved area of 100 sq. . as outdoor classroom and for driving moving play equipment .
- D- An adventure area for discovery contain a kind of huts , bridge, tunnel , and a place for birds or small pool with color fish .
- E- An area planted with vegetables and fruit plant with place as a nursery for children .

VI - LITERATURE

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