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Constructing design knowledge built up on the kindergarten education

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Abstract: *This study aims to further the growing body of knowledge about design education with an alternative view; discussing the importance of beginning it at the kindergarten which ideally suits to the approach "develop the creative-thinking skills". In an environment where children "imagines, creates, practices, modifies, recognises, manipulates, shares etc..." knowledge, experiences and objects through play are crucial issues in the design education. Derived from this concern the study brings the argument of advancing and directing early childhood education on the basis of 'basic design issues' such as design principles, conceptualization, 2D/3D spatial allocation and composition more comprehensively which will provide to construct children perceptual, critical and analytic point of view in a very early age and the ability to develop in the future. This hypothetical study's argument is to establish a curriculum of design education in the kindergarten which will constitute children the basis of a strong ability of design knowledge, enable and stimulate their cognitive development.*

Keywords: *child-design education, basis design knowledge, develop creative thinking..*

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Introduction

The child gains different skills in different stages of his/her maturation period. In order to improve skills, the child should find sufficient interest and support in accurate time within his/her environment. Components of a learning system are targets, physical environments, social texture, learning units, methods and teacher. Different socio-philosophical-pedagogical theories on the construction of children knowledge. What is important here is enabling and directing children in an accurate way in the period time when children develop and learn very fast and construct their knowledge. In addition children are very creative in these ages they *imagines, creates, practices, modifies, discovers, recognises, manipulates, shares etc...* These skills are effective in design education, but not covered in the early childhood curriculum professionally in terms of design issues.

The paper's argument is advancing creative-thinking skills is only possible starting in the early childhood education. Since, as mentioed before artistic development between the ages of 2 and 6 years are occur more than at any time. In this four year period, a child progresses from scribbles to representation, disorganized to organized representations. Drawings and modellings produced by children during these years are filled with a vitality and freshness that diminishes rapidly in the older ages.

On the other hand Preschools are undergoing a dramatic change. For nearly 200 years, since the first kindergarten opened in 1837, kindergarten has been a time for telling stories, building castles, drawing pictures, and learning to share. But that is starting to change. In effect, Froebel was designing for designers – he designed objects that enabled children in his kindergarten to do their own designing. Froebel's work can be viewed as an early example of Seymour Papert's *constructionist* approach to education, which aims to engage learners in personally meaningful design experiences. In creating his Gifts, Froebel was limited by the materials available in the early 19th century. With today's electronic and digital materials, we can create new types of construction kits, expanding Froebel's kindergarten approach to older students working on more advanced projects and learning more advanced ideas. With Mindstorms and Crickets, for example, children can create dynamic, interactive constructions – and, in the process, learn concepts related to sensing, feedback, and control (Dudek, 1998).

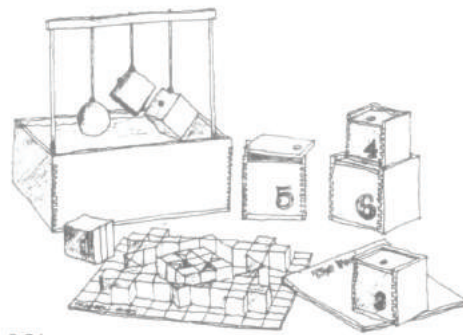


Figure 1. Shapes and building blocks Froebel's gifts and occupations' (Dudek, 2000)

Creativity is at the root of perceptual, critical and analytic point of view in a very early age to be developed in the future.. If we want children to develop as creative thinkers, we need to provide them with more opportunities to create. Friedrich Froebel understood this idea when he opened the world's first kindergarten in 1837. Froebel filled his kindergarten with physical objects (such as blocks, beads, and tiles) that children could use for building, designing, and creating. These objects became known as Froebel's Gifts (Resnick, 1998). Providing knowledge, experiences and objects through play are crucial issues in the design education. However these issues have to be professionally processed and integrated with design principles, conceptualization, 2D/3D spatial allocation, color, texture and light composition more comprehensively in a curriculum.

Basic Design Education in the Kindergarten

Education medium of pre-school education entities directly or indirectly affect systematic learning, formation of specific objectives. the child should be presented with the opportunity to live at free and well-processed programmes providing unlimited freedom where he/she can experience himself/herself and skills. It is essential to direct childrens unlimited imagination, creativity and curiosity corresponding children development and to provide them broad scanning.

In going through this process, kindergarten students develop and refine their abilities as creative thinkers. They learn to develop their own ideas, try them out, test the boundaries, experiment with alternatives, get input from others – and, perhaps most significantly, generate new ideas based on their experiences. In reality, the steps in the process are not as distinct or sequential as indicated in the diagram. Imagining, creating, playing, sharing, and reflecting are mixed together in many different ways (Fulghum, 1986). But the key elements are always there, in one form or another. Some of the most creative artists and inventors of the 20th century credit their kindergarten experiences with laying the foundation for their later success which children **imagine** what they want to do, **create** a project based on their ideas, **play** with their creations, **share** their ideas and creations with others, **reflect** on their experiences – all of which leads them to **imagine** new ideas and new projects. The visual art curriculum for early childhood education is quite noncommittal. It underlines that art activities should provide experience, self-expression, fun and satisfaction and an opportunity for children to show their own view of life. It also points out that child depicts objects and events idiosyncratically; uses different medium and techniques; observes and describes their product. In an age in which art and scientific curiosity are not a prominent part of educational systems and are deemed less important than acquiring competencies aimed at technological development, providing clear answers and solutions to the afore-mentioned questions is truly crucial, especially bearing (Resnick, 1998).

Children before the age of 6, show many examples of aesthetic pleasure and pleasure in their own art making. Teachers of young children provide material, motivation, structure and psychological environment for the visual art education of their charges. Interaction between preschool children and their teachers has been studied by Rosario and Collazo (1981) and Brittain (1979). Brittain (1979) found that the quality of art experiences of nursery school or kindergarten children is particularly vulnerable to the expertise of the teacher. Younger children generally are unable to seek children out of information from libraries or effectively discuss subject matter with peers, teachers or parents. The young child depends on the teacher to determine the

art activities, and praise or criticism for their performance. The children in nursery school and kindergarten are totally dependent on the teacher to provide design materials and activities in the school setting.

Circumstantial combining two applied disciplines, pedagogy and design, can contribute to the improvement of the quality of life. The challenge for design education in the older aged students configured the understanding build up creative skills up on the early childhood education and complementary construction in the future. In order to design objects, sense of 2D/3D space allocation, stimulate children to be capable to provoke questions, suggest answers, inspiring action and thought of acquiring new skills.

In addition children have a special way of looking at spaces and objects. Often, the tools with which the children interact become objects with their own visual identity, different for each child, in which tactile capabilities of the child are also enhanced through education and freedom to decide the final use.

Constraction design knowledge in the early childhood

Recently, design educators have started to explore the characteristics of learning styles of students that can be used for the enhancement of learning in design (Demirbas, Demirkan, 2003; Demirbas, 2002; Kvan, Yungan, 2000; Uluoğlu, 2000). This literature suggests that design students should learn by experiencing, reflecting, thinking and doing in the process of finding solutions to assigned design problems. Therefore, design education can be considered as being in line with the Experiential Learning Theory (ELT) of Kolb (1984). This study aims to focus on learning in design education using Kolb's learning styles and explores the relationship between learning styles, gender and academic performance. Describes learning styles in the ELT of Kolb "as the individual's intellectual approach to the processing of information". Consequently, each child has her/his preferred way of perceiving, organising and retaining that are distinctive and consistent (Chou and Wang, 2000) explicit instruction in certain key skills.

Iteration is at the heart of the creative process. Mentioned before the process of Imagine, Create, Play, Share, and Reflect inevitably leads to new ideas – leading back to Imagine and the beginning of a new cycle.. Within the process of constantly critiquing, adjusting, modifying, revising. This is for becoming a creative thinker is itself an iterative. Historically, kindergarten has provided a good foundation for creative thinking. Thinking of kindergarten as the first time through the creative-thinking cycle. Unfortunately, after leaving kindergarten, children have not had the opportunity to iterate on what they learned as in kindergarten, to continue to develop as creative thinkers (Resnick, 1998) . By extending the kindergarten approach and provide opportunities for learners of all ages to build on their kindergarten experiences, iteratively refining their abilities as creative thinkers throughout their future academic life.

Whereas the practices of designing learning in early childhood education should be developed to facilitate The designing process in terms of can be considered as an crucial activity where educators and children share experiences. Participation also includes the participatory skills, such as negotiation and sharing (Göncü & al. 2009), which, according to the educator descriptions, aim to develop result in common decision making and shared planning together with educators and children. When

design learning involves planning of educational practices beforehand (Härkönen, 2002), it could also involve planning of design learning practices beforehand. Children ages impact on the participatory practices available to them. The older the children in group.

Whereas, reflection is a critical part of the creative process, but all too often overlooked in the classroom. In recent years, schools have adopted more “hands-on” design activities, but the focus is usually on the creation of an artifact rather than critical reflection on the ideas that guided the design, or strategies for refining and improving the design, or connections to underlying scientific concepts and related real-world phenomena (Resnick, 1998) .

In this context, the process of planning activities is an important part of the design teaching process. Not only should educators and participation, but children should also take part in the creative thinking cycle mutually. Enabling children to apply basic design principles, attitudes and manipulation of materials, essential to classroom activities in the kindergarten level covers many aspects. Emphasis is placed on the developmental stages of design and how these are affected by the intellectual, physical, perceptual, aesthetic, creative, emotional, and social growth of the child. So, Design education of the preschool children covers rather extensive and complicated issues. Up to the present the curriculum of creative art and design activities have been applying. However, their relevancy and efficiency have been limited with the knowledge educator or equipments of the preschool centre. This education supposed to be not only pedagogical but also professional assessed by academic designer. Derived from these issues following model been proposed;

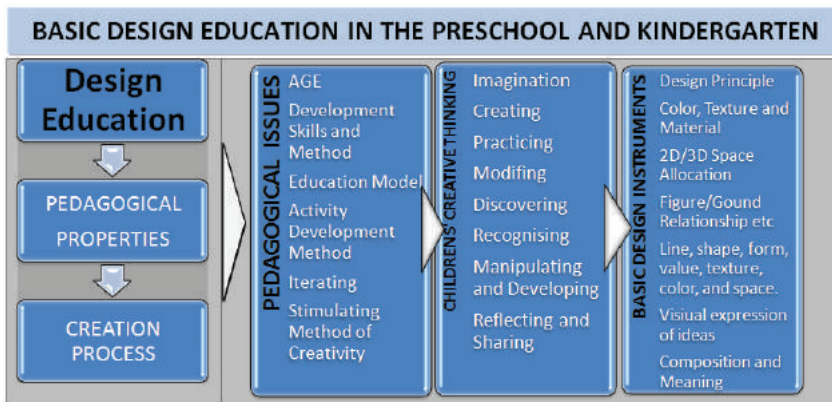


Table 1. Model of 'Basic Design Education in the Preschool and Kindergarten' . Pedagogical issues, childrens creative thinking skills and basic design instruments are issues which supposed to be evaluated as a whole.

This table summarises the creative thinking cycle, dependent and independent variables of 'Constructing design knowledge with in the kindergarten education' model. Pedagogical Issues, childrens' creative thinking approach and basic design elements are explained as following;

Pedagogical Issues

Different socio-philosophical-pedagogical theories on the education models built for and around the child led to the construction of understanding current issues and curriculum of basic design in early childhood education. "It was found that there were statistically significant differences between the performance scores of students having diverse learning styles at various stages of design process" (Demirbas and Demirkan, 2003: 437). The important point is to provide various learning experiences and methods that emphasize different learning styles during design process. Each design instructor has his/her strategy while communicating with the student. As (Schön, 1984) proposed, the instructor should refer to all communication means as reflection-in-action. Furthermore, it is important to stimulate the diverging children for bringing to the class their range of ideas and ways of creative process. While composing a design facilities for appropriate age and skill development, in a harmonious and balanced way, the sensory, perceptual, motor, linguistic and intellectual abilities of early children have to indicated. Flexible teaching methods application and iteration will enhance children motivation and stimulate their imagination.

- The role of creativity in learning of children
- The developmental stages of childrens' basic design education
- The philosophy, social context and attitudes of design education on the preschool level
- Knowledge of the curriculum (goals, organization, materials, vocabulary) as
- contribute to the growth of the children.

Children Creative Thinking Skills

Aesthetic education had a spectacular evolution which is able to say that by making a comparison between the studied curriculum. which imposed immobile, certain subjects, in time we had a very permissive one, in which we have professional terms and which allows the options to be taken by the children and the teacher. The accent is more and more on creativity, on stimulating children creativity, on improving pre-school children talent from this early age. The relation between this branch of aesthetical education with other disciplines from the school field in order to create together an ensemble, needed in developing children personality is also important.

The process of becoming a creative thinker is itself an iterative process. Historically, kindergarten has provided a good foundation for creative thinking. Think of kindergarten as the first time through the creative-thinking cycle. Unfortunately, after leaving kindergarten, children have not had the opportunity to iterate on what they learned in kindergarten, to continue to develop as creative thinkers. By extending the kindergarten approach, we hope to provide opportunities for learners of all ages to build on their kindergarten experiences, iteratively refining their abilities as creative thinkers throughout their lives (Resnick, 1998).

In a way that, a child gets an idea and begins to implement it. He knows what equipment and materials he will need and gets them. An educator is an enabler who

offers the child any materials that are unavailable, but necessary. Such an idea often sparks other new ideas, and the original idea develops during the process. The participation is seen from the child, who is excited and involved. The activity draws attention from other children. All of them are sufficient for the creative process consisting ; imagination, creating, practicing, modifying, discovering, recognising, manipulating and developing, reflecting and sharing. As mentioned these issues have been present in the early childhood education and relevant issues for the design process. However children have to be stimulated and directed professional as well to construct the basis perceptual, critical and analytic point of view in a very early age and the ability to develop in the future.

Basic Design Instruments

Basic design principles are the fundamental issues. What is important here is the medium of instruction for children such as; Play, storytelling, puzzle, cartoons etc...could turn into an experience of design. So, the curriculum could provide children to build up a model that will guide them to understand and apply the knowledge, skills, process and theories of design and to provide a balanced synthesis between the conceptual and physical aspects of design.

- Perceptual awareness by identifying and using the elements of design - - line, shape, form, value, texture, colour, and space.
- Design concepts based upon using the elements of design and the contrast,
- principles of 2D/3D space organization - - balance, rhythm, emphasis, unity etc...
- Cultural heritage through the interaction of design and art in society.
- The processes and materials appropriate to the preschool children.
- To understand self - expression through visual communication of ideas, experiences and feeling.
- Getting know the vocabulary peculiar to the design issues.
- Use of natural and ecological materials allowing healthy growth of a child and his/her awareness on basic design issues in the perspective of order, proportion, principles etc...
- Experimentation creative designs, geometrical and structural forms with colour, and texture engaging, imaginative and innovative technologies and materials.
- Designing spaces, perspectives and environments, whose purpose is to enhance intuition, imagination and creativity of the child along with development of his/her aesthetic and scientific thoughts.

On the other hand to form an efficient the design curriculum for children contemporary design education has to be studied. Demirbas, Demirkan, 2007 studied them under four categories. In the first category, there are fundamental courses that

develop the design formation; the knowledge in these courses is generally theoretical rather than practice based. Secondly, there are technology-based courses that provide the scientific formation of design; the acquired knowledge in these courses is both theoretical and practice based. The third category consists of artistic courses that strengthen the base of design and expression; the acquired knowledge from these kinds of courses is the presentation techniques of preparing and expressing design ideas, so the expected outcomes are directly related to the application of them. childrens' playful creativity in the preschool period can be regarded as artistic and are capable of appreciating design and various activities involved or engage in it. There can be numerous different kind creative activity practices which will support childrens' full development and personality in an age in which art, design and scientific curiosity has been arisen.

Conclusion and Recommendations

The graduates of a design department are expected to be highly motivated, technically competent and mentally prepared to deal with ideas at a professional level (Demirbas, Demirkan, 2007). Achieving these outcomes in a four or five year education

is both for the student and instructor very complicated and discouraging. This paper makes the emphasis that Design Education is accumulation of knowledge, like most other disciplines, and foundation of this knowledge has to be given in the early childhood education.

Another offer of the study is the model for the basis construction design education; presenting and identifying all relevant independent and dependent variables in terms of pedagogical, creativity, basic design issues. In such way that, learning and teaching methods which aim to balance the creative process with a critical awareness considering methods and mediums in terms of developmental aspects of children. Each design outcome tends to be unique, non-repetitive and immanent in its conception and development. During a design process each children transforms a field of inquiry into a proposition or scheme. Children have special point of view but the learning process could classified in terms of age and gender.

Even practically or conceptually design has been integrated in almost all aspects of our life. the traditional kindergarten approach to learning is ideally suited to the needs of the 21st century (Resnick, 1998). In a society characterized by uncertainty and rapid change, the ability to think creatively is becoming the key to success and satisfaction, both professionally and personally (Florida, 2002). For today's children, nothing is more important than learning to think creatively – learning to come up with innovative *Constructing Design Knowledge Built up on the Kindergarten Education* solutions to the unexpected situations that will continually arise in their lives (Sawyer, 2002). Unfortunately, most schools are out-of-step with contemporary necessities: they were not designed to help students develop as creative thinkers (Resnick, 1998). However, the traditional kindergarten approach has to be professionally reorganised in terms of contemporary design approach, materials and medium of education. Preschool curriculum should cover and comprise both pedagogy and design - multidisciplinary goals, contents and methods of early design education and get continues knowledge and skills in perceiving, planning, implementing, evaluating and developing design skills in their future academic and professional life.

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