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Application of Textile Surface on Stimulative Toy

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Abstract

This research is qualitative research, divided into two parts i.e. the research base and the practice base. It is the study of insight and practice, concurrently according to the objectives, which are 1. to study and analyze the local hand weaving material and handicraft technique in the North Eastern area, 2. to study preschooler development and learning behavior ability to create a proper set of toy for preschooler development, and 3. to apply a developed material and technique on a set of toy for the preschooler. The research base of the study is in accordance with the topics and theories related to the development and learning of preschoolers. Practice base of needlework practice is emphasizing on sensory perception to playing and learning, to help children develop their intellect and creativity. Development of production quality ,meets the standards of the research conceptual framework. The tools used in the research were participatory observation used in the community area to collect information and practice of the needlework, questionnaire used to collect information from the manufacturers in the production process and sensory surface created by needlework, non-Participant observation used to observe the preschooler play, and unstructured interviews used to query expert opinions on designed toys from the surfaces manufactured by needlework, including other useful suggestions for the research.

The results of the data collected were found that the process of creating the textile sensory surface can be summarized as follows: in term of fluffy texture, knitting crochet method has the maximum fluffiness, followed by sewing and weaving. For terms of production time, weaving takes less time, followed by knitting crochet and sewing which took longer time

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in production; in term of durability, the most durable content was produced with weaving technique, followed by knitting crochet and sewing, with least durability. From the observation behavior in play, it revealed that preschoolers interested in sensory surfaces in each surface were different. Their attentions were drawn on the surface that have more volume rather than the flat surface; sensory surface that is soft makes the children's feel safer and the toy with sound stimulates children's attention very well. Combined with the experience and methods of play that can be applied to play in different ways, children can learn and play again even with the same toy.

Keyword : Textile Surface, Craft Toy, Creative Play, Sensory Stimulation

Introduction and Objective

Textile industry in Thailand is one of the most important businesses for shifting Thailand economy. Textiles in each regions of Thailand were unique with their own style and techniques that were inherited from ancestors by generations to generations. From this importance, there were many research studies discussing achievement of the quality and aesthetics of textile. Many textiles were analyzed from various points of view and created with various techniques and various textures with the curious question that which one could make fabric more interesting and attractive. The different textures could be also useful for stimulating human's sensory perception especially young children. Sensory stimulation is important and useful because it would send some signals to children's brains that improve their nervous system for all types of learning. The young learners improve their age development through their sense of touching which would be the basis of learning other skills such as identifying objects by touch, and using fine-motor muscles (Suzanne Gainsley, 2011). A notable feature of the fabric is soft that leads to safe feeling when touching. After it is combined with processes of handicraft production, it will be suitable for making children's products such as soft toy. The seeing and touching provides perception of quality, light, color, depth of an object by awakening our nerves because the body is ready to perceive (Nithikul Nimkulrat, Faith Kane and Kerry Walton, 2016). This feature is important for toy designer including 3D toy products which are produced in limited amounts and most of those products were made of vinyl, resin, or wood that was sewn with soft material. It could serve for only niche players (Phoenix, 2006 : 11)

Cognitive or mental flexibility: It is an ability to quickly shift our attention and switch mental gears when faced with new information, circumstances, perspectives, or priorities. Cognitive flexibility also allows out-of-the-box thinking- allowing us to apply different rules to different circumstance.(Laura Jana, 2017). Children also increasingly adept by using symbols, as evidenced from the more playing and pretending.(Kendra Cherry, 2018). Since most students could learn through multiple ways, it will be good to present information in multiple ways. (Carol Vorderman, 2016)

Skill in the craft of people in the community with interesting processes can be developed into a variety of products that are more useful including local materials in each locality that is unique. The researcher analyzed the production process and the benefits of production results according to each process. There are different results, especially for skin contact. Therefore, it was found that different surface types have a great effect on the learning of preschool children in the matter of learning stimulation of the system like touching and feeling which is an important basis for the development of children during this age. In addition, it is also possible to use local materials in an opportunity that can be further expanded from the same product that is available in the future.

According to “Touch”, it is important in several domains of life across the life span, particularly in early life – touch helps us learn about the world around us – plays an integral role in biological, cognitive, and social development. Tactile defensiveness: the tactile system is our sense of touch. It protects us from dangers and helps us identify different objects in the environment. A child showing signs of tactile defensiveness may : overreact to ordinary touch experiences (e.g., touching play dough or being touched by someone), avoid daily activities (e.g., washing face/hands or brushing hair) Avoid light touch (e.g., a kiss), but seek out deep touch (e.g., a bear hug). The world is a confusing and overwhelming place for children whose sensory systems routinely overreact to the sensations they receive from the environment. If left untreated, this disorder can result in the avoidance of daily routines as well as an overall delay in a child’s social, emotional, and motor development. If you are concerned that your child may be demonstrating signs of sensory defensiveness, contact a pediatric occupational therapist trained in addressing sensory – integration issues. Look, Listen, Touch, Feel, Taste : The Importance of sensory early childhood educators like to emphasize that “young children learn with all their senses” to actively use their senses as they explore the world, especially once they get past the infant and toddler years key developmental indicators (KDIs). Children have learned about the world by touching, tasting, smelling, seeing, and hearing. “Food for the

brain" stimulating the senses sends signals to children's brains that helps to strengthen neural pathways important for all types of learning. For example, as children explore sensory materials, they develop their sense of touch, which lays the foundation for learning other skills, such as identifying objects by touch, and using fine – motor muscles. The materials children work with at the sand and water table have many sensory attributes. They may be warm or cool, wet or dry, rough or smooth, hard or soft, textured or slimy. Discovering and differentiating these characteristics is the first step in classification, or sorting an important part of preschoolers, science learning and discovery.

How to play it. Designers must take into account the principles that must be met in order to play the game, because each toy with different ways of playing results in different learning outcomes. In this study, the researcher adopted the framework of learning and assessment based on the conceptual framework according to Montessori, from 2-6-year-old children experience a "sensitive period" in which vital skills such as language acquisition, socialization and, kinesiology need to be identified and strategically applied and advanced. Any deficiency in intellect, ethics or socialization later in life can be attributed to a lack of cognitive development during the "sensitive period" (Ruenze, 1997, p.31). Assessment Method focuses on cooperation rather than competition and personal growth rather than peer evaluation. Students are assessed based on a descriptive summary of the child's daily interactions and performance on independent and collaborative tasks not just this core idea. Different playing styles result in different playing methods. Each type is as follows; style and types of play can be classified in two ways : Overall style is "structures play" that is planned, guided and led by adult. Structured play can be useful, but there is a risk that if it is too adult – led, children will lose interest. Offering the right amount of support is absolutely essential in providing valuable structured play. Adults can provide support by demonstrating skills that the child can then try out for themselves. "Free play" is not adult – led. Adults provide equipment, materials and resources for free play, but they do not direct it in any way. Advocates of free play believe that children learn much more from this style of play than from structured play, since they are more motivated by having created it themselves. In free play, children direct and figure things out for themselves and it is believed that children gain deeper understanding of what they are doing as a result of this.

Knowing the importance of each play, designers can choose the playing style to suit the desired result. The design of each toy is based on the technique and material. The researcher was interested in and studied the design of the toy. Froebel, play as a form of

artful expression : Perhaps their greatest parallel with regard to play has to do with how play is related to art and artful expression. Froebel believed the child "wishes to make something so that his inward desire may also appear externally". He believed that the education of child should start shortly after birth. His ideas emphasized the spiritual dimensions of a child, and he developed a theory based on what he believed was a child's natural need for activity. The gifts literally functioned as tools with which to awaken and develop a child's recognition of the common, God – given elements found in nature. Froebel's gifts were not only clever inventions, but wonderfully appropriate in term of the cognitive and developmental needs of children. The first gift, for example, was a collection of six soft woolen balls, each one on a string. The three main balls are red, blue, and yellow (the primary colors). The remaining three balls were violet, orange, and green (the secondary colors), representing the combination or synthesis of the colors for each of the three mail balls (red + blue = violet; red + yellow = orange; and blue + yellow = green). Frobel used the ball with perfectly round shape or sphere because it was an idealized form (equally proportioned on all sides, without end or beginning, in term of its surface, and so on.) On the surface, it is easy to dismiss Frobel's work as simply "child's play". In fact, his educational devices and the philosophical system underlying them were profoundly spiritual and aesthetic. Frobel's system clearly relates to how children develop according to the theories of Jean Piaget and his followers. Frobel's gift progresses from the simple to the complex, which makes its use compatible with Piaget's ideas. The gifts' hands – on element reinforces the idea of concrete learning – an essential part of Piaget's work and almost certainly his most significant contribution to educational practice.

Objective

1. To study and analyze the local hand weaving materials and handicraft techniques in the North Eastern area.

2. To study preschooler development and learning behavior ability to create a proper set of toys for preschooler development.

3. To apply a developed material and technique on a set of toy for the preschooler.

Method of Study

For research methodology in carrying out processes researcher studied the tools used to collect data with the following issues to collect information, research tool consisted of the research process divided into 3 phases according to the research objectives. It can be divided as follows.

Phase 1 To obtain information of local materials, the researcher surveyed the study areas in a province in northeastern region in Thailand. The instrument used to collect data for further analysis of the result was participant observation. The researcher participated in observing and learned production methods with different techniques used to generate surface in cloths in that community. Perceiving such information, the researcher employed the questionnaire to ask opinions of producers in the community such as advantages in any issues approved by experts after validating their suitability.

1) For participant observation to collect data in textile surface at this stage, the researchers used participatory observation methods to collaborate in each province to explore and collect the data of making surface process, there are various methods available in the local community in the research area. The researcher make a note and practice to create the surface from the local manufacturer in the community, to understand the scope of production capacity.

2) The questionnaire is used to collect information from the manufacturers in the production process. After the production process that the questionnaire was used to ask the producers in the community for their opinions on each process. and the results of the production process, to be used as a design information.

Phase 2 Non-participant observation on play Behavior and the development of preschool children by starting to design basic toys. Then bring that toy to the children to play. Then observe the playing behavior and unstructured interviews.After playing the toy researcher discusses with the experts and specialists about the playing behavior about the result of playing the toy and more for further improvement in the design process.

1) Non-participant behavior observation is used to observe the preschooler play. While designing toys based on the research process during the research period, the researcher brings designing toy to preschool to play. Researchers and experts observed play behavior without involvement to the preschooler's play to be fully expressive with no time limit to get the true behavior of the playing toy. In the beginning. Two observing behaviors were observed with 11 preschoolers at Phranakhon Rajabhat University Demonstration School and 10 preschoolers in the Sense Art Tutor recorded results and then summarized.

Phase 3 To develop textile surface for stimulate sensory perception of preschoolers and design a product for preschoolers from new textile surface, the researcher summarize and collected all the results from the research tools used above. The results are synthesized to process for creating the right design for preschoolers by way of crafting in this research, it is the needle works, from concept to acquisition. After that, it was put to test and experiment on the standard level to get a set of toys with quality crafts.

1) Unstructured interviews was used to inquire expert about their opinions on the designed toys. Unstructured interview within the framework of the research to ask the experts then observing the behavior of preschoolers for reaction with a proper play or not and how that set of toy can promote the development include suggestions that will be useful for further design.

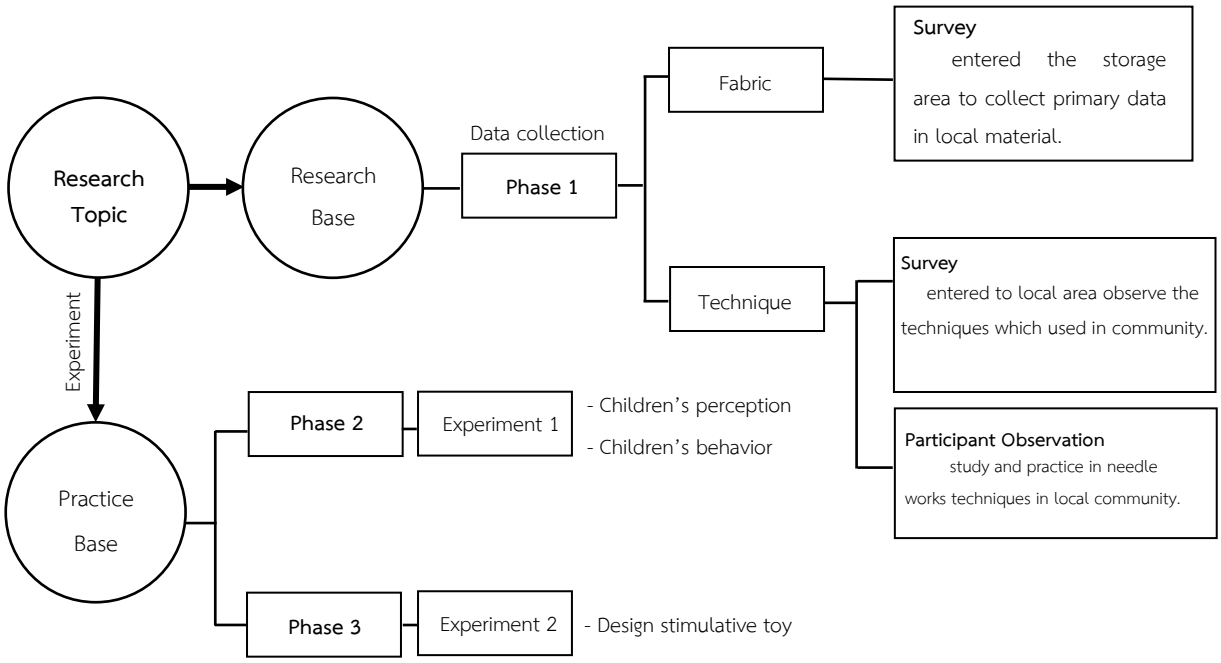

Figure 1 Frame work of research methodology

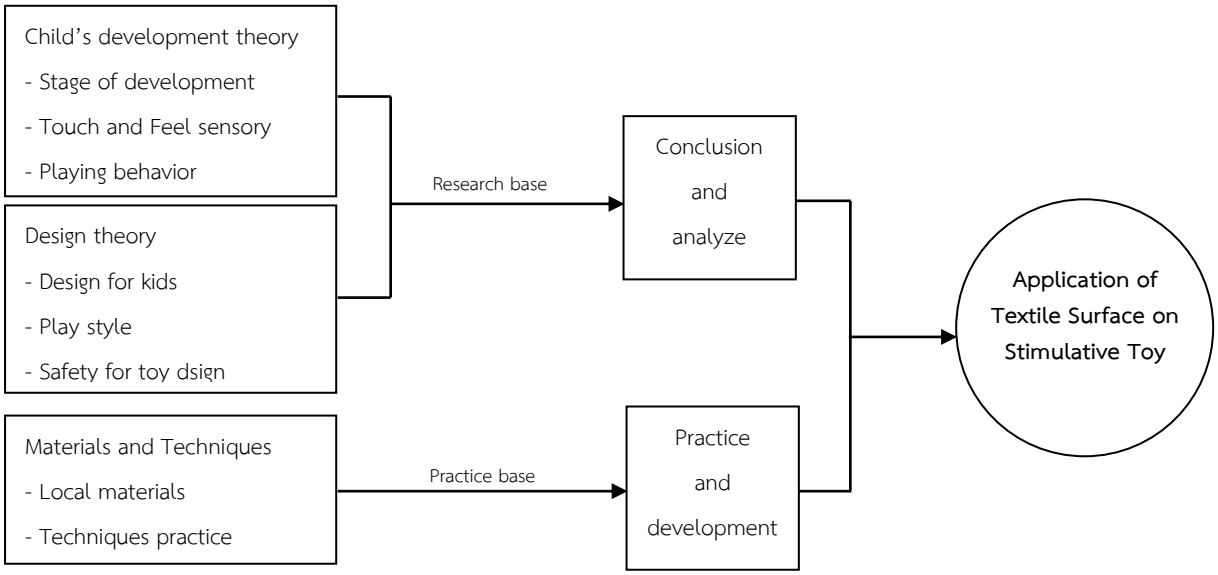

Figure 2 The research conceptual frame work

Results

Analysis of Qualitative data : The scoring of process and the texture of the surface in each techniques. Research tool consisted of participant observation to collect data in textile surface observation operated in Southern Isan provinces called as "NAKHONCHAIBURIN" which stands for Nakhonratchasima, Chaiyaphum, Buriram and Surin. It could be divided into three categories of handicrafts; Sewing, Crocheting and Weaving according to the grouped products by The Industrial Promotion Center Region 6 and Community Development Department.

The researcher surveyed the area to collect data and create an instrument after gathering methods of close surfacing in different techniques. Furthermore, the study issues beneficial to the designing were determined under approval from experts in relation with local products groups, production categorization, and practices with suggestions from the local knowledgeable persons. Finally, a questionnaire was created to collect local production information to realize potentials, advantages, drawbacks of each technique as well as its durability.

1) The process of textile surface production by sewing, crocheting and weaving could be divided into three parts; the fluffiness of the texture, production time and the durability of textile rating by the 40 local producers in local manufacturer based on the scoring criteria with 5 rating scales (5 = Excellent, 4=Good, 3=Average, 2= Fair, 1= Poor)

Table 1.1 Table of content analysis of textile surface design by types and methods

Topic		Sewing Technique					Crocheting Technique					Weaving Technique				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1.	Fluffiness			●							●		●			
2.	Production time			●						●						●
3.	Durability			●						●						●

The result of gathering the questionnaire from 40 local producers in relation with creating surface on woven articles with the needle work method was found in following issues. 1) Fluffiness: the knitting method ranked the highest score (5), followed by sewing (3) and weaving which produced least fluffiness. 2) production time: the method with least time spent was weaving at 5 scores, followed by knitting (4) and sewing, which took the longest time (3). The final issue was durability, and the findings revealed that the weaving method was most durable with 5 scores, followed by knitting (4) and sewing (4) score, which was least durable.

2) The 1st experiment is to produce a basic toy with different surfaces by applying a needle work method in order to observe children's behaviors on playing such toys.

Figure 3 sample of toys by needlework techniques

Non-participant behavior observation of 2-4 years old children observation on behavioral study of preschool children. Children behavior observation was operated for two days. On the first day, the researcher observed 11 preschoolers at the Center for Demonstration of Early Childhood Development and Care in Phranakhon Rajabhat University for 3 hours (2 hours for observation and 1 hour for discussion with the teachers and the instructors) and on the second day, the researcher observed 10 preschoolers at Sense Art,

which is an art tutor, for 3 hours (2 hours for observation and 1 hour for discussion with the teachers and the instructors). 2) Children in each age range are observed and they have different playing behaviors during the 2-3 years and 3-4 years. The group of 3-4 years old children showed their throwing object more than the group of 2-3 years old children that liked to dig and observe the object with a convex surface.

Figure 4 Children's behavior with the surface

Figure 5 Children's behavior with the surface

The toys were given to 2 to 4 year-old children. Researcher had to observe their behavior with the first piece of picking toys and their playing behavior. The toys and the results were compiled and then taken for the design in the next step. The results of the questionnaire were under 4 topics, including perception, material, design, and safety by the ratings scale of 1 to 5. The results are as follows; rating by professionals, teachers and parents, totaling 20 persons, based on the scoring criteria with 5 rating scales (5 = Excellent, 4=Good, 3=Average, 2= Fair, 1= Poor), with perception at 4.66 = Good, Material at 4.5 = Good, Design at 4.16 = Good and Safety at 4.66 = Good. Respondents mostly agree with the needle work technique and feel safe to play. The researcher realized that the children were not afraid to play and believed that children will be able to learn with the surface and enjoy when playing while

some feel new to the technique especially with the smocking technique which is not popular in producing toys for children. For non-participant observation according to the research topic by face validity process with the adviser and specialist with 2 set of toys were given to children to play, children in each range age with different playing behavior are observed during the 2-3 years and 3-4 years. The group of 3-4 years old children showed their throwing object more than group of 2-3 years old children which liked to dig and observe the object with a convex surface.

3) to design stimulative toy with new surface from the needle work technique were combination of both touch and style direct and indirect matters Active touch (focus on the object properties) and Passive (focus on the sensation experienced) Roope Raisamo and Jakka Raisamo , 2011 The directly and indirectly touched surface method was applied because of effects on behavior and attention of the children. The toys in this experiment included 2 sets: toys produced with direct touch method that the surface was clearly and noticeably different and the toys produced with indirect touch method that the surface looked the same when looking at it. The children had to touch and observe and would find that the surface was actually distinct as Internal surface of this toy set is made of different materials.

Experiment 2

Two sets of toys were given to the group of 20 children with 2-4 years old and non-participant observation were used on observed behavioral study of preschool children. Children behavior observation was operated for two days. On the first day, the researcher observed 10 preschoolers at the Center for Demonstration of Early Childhood Development and Care in Phranakhon Rajabhat University for 3 hours (2 hours for observation and 1 hour for discussion with the teachers and the instructors) and on the second day, the researcher observed 10 preschoolers at Sense Art, which is an art tutor, for 3 hours (2 hours for observation and 1 hour for discussion with the teachers and the instructors)

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Figure 7 Set of Active Touch and Passive Touch

Most children spend 20 to 25 minutes playing instructed or thrown by the teacher as it is a free-play style that players can create and customize the gameplay itself. Ball with rough surface is attractive. While the child like the smooth ball when thrown and found that bounced over more than another ball. For the second set, there are different surfaces of shelter to choose and inside the ball were different as well as an active touch and passive touch, children will be amazed when they catch each ball. The ball that most attractive children is the ball with small bells inside because of the sound coming out when they throw with surface that looks like flower petals, mostly picked than others. To play with construction style, children need to concentrate while playing. Girls played at longer time than boys and children with 2-3 years old take longer time than 3-4-year-old children who like running and throwing object. Average attention span time in this set is 15-20 minutes, which is less than the first set.

Conclusion

The findings focusing on the design process of textile surface were as follow; for the softest and fluffiest textile, surface was found on crocheting, sewing, and weaving respectively. The making duration was found that crocheting spent the shortest time while sewing spent the longest time. For durability, the most durable technique was weaving, crocheting and sewing, respectively. On the children's sensory perception observation after playing craft toys, it was found that preschool children were interested in textile surface of craft toys differently. They preferred volume surface to flat surface, while fluffy surface let them feel safe, and sound craft toys attract children's attention very well. Needle works techniques were used in process to produce the craft toys together with suitable materials or local materials.

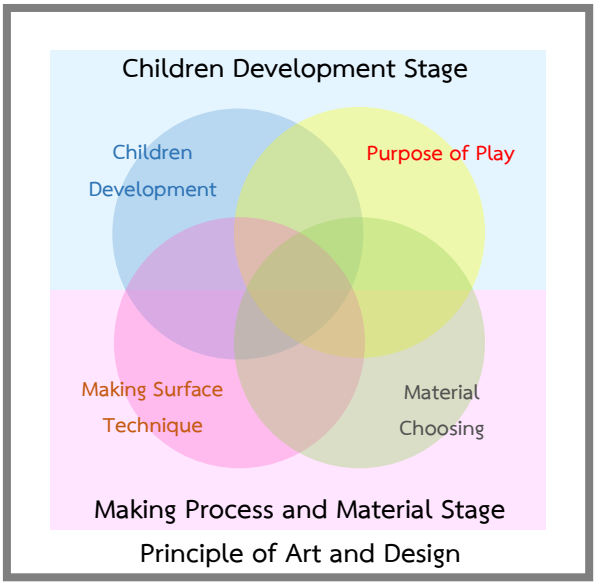

Figure 8 Concept of Apply Surface Design to Touch and Feel Stimulation Toy for Children

The concept of Apply Surface Design to Touch and Feel Stimulation Toy, consists of 2 main stages. The first one is "Children Development Stage" including children development (from figure, it's the blue circle) by age of both physical and cognitive learning merged with beneficial purpose (represented by yellow circle) of play that children will get and how the toy can promote their touch and feel perception. Second is "Making Process and Material Stage". This stage is also important as it concerns techniques (Pink circle) and materials (green circle) that designer chooses. It must be suitable for the first stage as above. Techniques and Materials should not be complicated in term of industrial process. It refers to time and cost that would be spent in the production line, and all of these must be aware of the safety and remind the principle of art and design in every steps of designing .It can be concluded that, from 4 circles representing the importance of what we must recognize in designing and producing toys with handicraft methods, the essentiality of 4 items including children development, purpose, techniques and materials shall be interrelated with proper merging point under the theory of children development and making process and material for safety of children as well as quality production. All of these must be under the principle of art and designs so that the design works are aesthetically proportionate and beautiful. The data was analyzed in each process, based on the synthesis of all the above information. It will be able to design the suitable toys and the play process that will match with the requirements of the play. According to Watson & Shove (2008), studies of ordinary (as distinct from spectacular) forms of consumption have generated new questions and new ways of thinking about

mechanisms and processes of change and about the conceptual status of consumer goods. But products are not catch the everyday needs or tastes. It is obvious that mass products couldn't respond private demands. In that point, activities of DIY are shaped with anti-capitalist statements. They create counter culture. It goes beyond the stitching to the life styles, sharing, designing, acting, criticized anything with active participation. Some issues of product and design utility belong to DIY conceptions (N. Şule Atılgan , 2013) Moreover, safety measures must be taken at all stages of production in order to get the complete handicraft and high quality of products to enhance the value of handicraft in the community.

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