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New Explorations With Waste Materials in Early Childhood Education*

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Creativity is innately brought with secret power which can emerge at any time throughout life and be enhanced if fostered. Properly designed art activities serve as a potential for emergence and the enhancement of children's creativities in their early childhood educations. Those children who cannot express their emotions through oral language or other activities are provided with such an opportunity to express themselves and reflect their thoughts, emotions and views on daily experiences. Art experiences foster creative thinking by stimulating imagination. There are a great variety of techniques to be used in art activities, and a lot of various materials and equipments are available. One of the options for material selection is that of waste materials which help children attain new experiences and ideas. Waste materials include boxes, plastic bottles, pieces of cloth, rolls of paper towels, reels, beads, nutshells, tree shells and leaves with different shapes and sizes. Another advantage of using waste materials is that children learn how to recycle these materials while they gain a sense of texture, shape, weight, wideness and space. Furthermore, this kind of an activity fosters creative thinking and enhances visual and tactual perceptions while the children create unique things. In this study, the status and the importance of the use of waste materials in art activities mentioned in early childhood programs including the points to be born in mind while preparing and using such materials will be discussed and eventually sample products made with waste materials by the children will be presented.

Keywords: early childhood education, art activities, waste materials

Introduction

Creativity was considered as the ability to feel the gaps in problems or information, to develop thoughts

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and hypotheses, check and improve hypotheses, and put forward new experiences and products within a new thought scheme by forming new relationships among connections which have not been made before (San, 1995; Torrance, 1995). In creative process, old experiences and new experiences come together. Even though creativity is an innate characteristic of an individual, research has proven the necessity of a suitable environment and adequacy of the stimulants in this environment to be essential in emergence and development of this characteristic (Sternberg, 2005). Starting from early ages, children begin to organize information in a creative way (Gelman & Gottfried, 2006).

Beetlestone (1998) stated that creativity and art are closely related and children need to own the product to get motivated. Art helps the child to gain an aesthetic perspective, be sensitive toward the environment, and realize oneself, express opinion and thoughts in different ways, improve communication skills, better perceive the world around him/her, and improve creativity. In order to achieve these goals, artistic power, interests, needs and abilities of the child should be discovered since his/her early childhood (Isbell & Raines, 2003; San, 2003; Artut, 2007).

Early childhood is an era when the learning potential and creativity of the child is high and it is also an era when these characteristics are getting shaped (Oktay, 2004). Creativity in early childhood could be improved in various areas. However, art has a special place in these areas. Studies done freely by the child using different materials suitable for his/her developments contribute greatly to his/her emotional and aesthetic developments (Abacı, 2003).

The purpose of the art education to be delivered in early childhood education is to enable the child to gain artistic perspective and aesthetic values, and raise individuals who can think creatively (Kefi, 2002).

According to Mayesky (2006), creative art experiences are one of the most important aspects of early childhood education programs. With these experiences the child finds the opportunity to try out various materials while expressing him/her using different techniques. Lloyd and Howe (2003) stated in their research that studying with open-ended materials (waste materials) encouraged problem solving and creative thinking skills. In addition to being a self-expression tool, one of the dimensions of enjoyable and satisfactory art activities which encourage creativity and all development areas of the child includes working with paint, paper, molding materials and waste materials which are pass time activities.

Painting activities among art activities commonly taking place in early childhood education support the child to express his/her thoughts and emotions, use his/her body in a coordinating way, develop language and concepts, and enable the child to gain the skills to manipulate different tools. Cutting-tearing-pasting-folding-rolling techniques play an important role in the development of skills such as decision making, choosing, reasoning, and finishing what has been started. Besides encouraging the child to relax emotionally, display his/her creativity and imagination with unique products he/she has created, and improve craftwork skills and small muscle motor skills, molding materials enable the child to manipulate, construct and think about spatial relationships with three dimensional materials. In studies with waste materials, the child found the chance to improve his/her creativity, imagination and problem solving skills bringing various materials in different ways (Kandır, Özbey, & Inal, 2010).

Art studies carried out with waste materials help children to learn to make use of materials around them by reusing, and improve concepts like texture, shape, weight and position. With this respect, this study aimed to discuss the place and importance of waste materials, their preparation and points to be considered in their use in art activities which are among pass-time activities in early childhood education programs, and give examples of

activities including products created by children using waste materials.

The Place and Importance of Waste Materials

Waste materials could be defined as everything that could be preserved in time without losing its characteristic, everything that is thrown away after use at home or work considering they are now useless, something that is preserved by saving and keeping in another place, and something that is natural, factory-made or hand-made suitable for sanitary conditions (Ozatağan & Baran, 2001; Parlakyıldız & Yıldızbaş, 2006; Sert, 2009). Although the restriction of waste materials was out of the question, these materials could be classified as practical everyday objects and natural products (Sert, 2009). Waste materials include materials, such as buttons, empty reels, wool, cloth, ribbon, raffia, plastic bottles and lids, corks, decorative tools, foil, cable, cover paper, cartoon, boxes in different shapes and features (household appliances, tooth paste, detergent, drug, biscuits, etc.), wood, leather and sponge pieces, parcel elastic bands, hairpins, beads, magazines, brochures and old books, waste paper, crusts of nuts, such as hazel nuts, peanut and walnut, peels of orange, tangerine and apple, egg shell, legume, such as lentil, chickpea, corn, wheat, bean and pasta, pine cone, leaves, branches and rust, various seeds, dried flower and plants, pebble, rock pieces, shells of sea animals, feathers of various animals like chicken, turkey and bird, sand and sand types and other various materials that could help the emergence of new ideas (Ozatağan & Baran, 2001; Eliason & Jenkins, 2003; Isbell & Raines, 2003; Mayesky, 2006; S. Buyurgan & U. Buyurgan, 2007; Sert, 2009).

Studying with waste materials is an important part of “active learning” method where the child learns by doing, experiencing and experimenting. Children were encouraged to use waste materials freely in active learning process where they interacted with people, objects and actions, and constructed new understandings (Kandır et al., 2010). Active learning starts when children use their bodies and all senses to explore waste materials. In this process, children choose what to do and which materials to use according to their own preferences. These studies that they start with their own choices make learning more permanent and meaningful. Children who taste the delicacy of creating a unique product grow up as individuals with high self-esteem, who can think independently, come up with different solutions to problems and are conscious of what they can do in the future. Studying with waste materials creates the perfect environment in raising children who can question creativity, express themselves freely, and discuss. In addition to causing children to encounter different experiences, the freedom of children to use materials in different ways plays an important role in developing new concepts along with their imaginations (Sert, 2009). For example, while working on waste materials children see the reusability, in other words, recyclability of these materials, which is important in supporting environment education. Interacting with waste material activates scientific process skills providing a “real experience” to think, and question what, why and how to do, and discusses with others (Hohman & Weikart, 2000).

Children ask questions when they are working with waste materials that arouse innate emotions of research and curiosity and seek answers to these questions. They experiment to solve the problems encountered during this purposeful process (Hohman & Weikart, 2000). Waste materials which help children to construct new things enable them to think in the process by widening the possibilities at their disposals, focus on a theme and relax emotionally, and enhances self-esteem by improving hand-eye coordination (Özatağan & Baran, 2001; Isbell & Raines, 2003).

Features of Waste Material

Waste materials to be used by children in their early childhood period in art activities or other activities

should have some features.

These features could be as follows:

Economy. Because waste materials are those which have not lost their characteristics after use, they do not require expenditure and are of little tangible value. In this respect, waste materials that could be gathered from any environment present children more meaningful experiences than an expensive toy, and are more interesting than a new and expensive toy car or baby doll. Because shapes are ready, they help save time and enable children to create unique products with a wide range of tryouts. Furthermore, the preparation and presentation of waste materials help parents and teachers save time. The fact that these materials that may mean more than one thing for the child can be stored for a long time and reused again and again adds up to the value of the materials (Yılmaz, 2005; Mayesky, 2006).

Safety. The most important feature that a most suitable product for the child should bear is that it doesn't endanger the health and safety of the child. Being one of the most important features of education and game materials presented to children, safety is also an important feature for waste materials. The fact that the waste materials naturally make cleaning, painting and additions easy, increases the safety of the materials (Mayesky, 2006).

Durability. Most of the waste materials can be stored without corruption for a long time. Especially, the preparation and presentation of these products suitable for health conditions will increase durability.

Appeal. Most teachers and parents opt to provide children with ready-made games and education materials. The cost of most of these ready-made materials is high. These reasons make it difficult to provide as many materials as to children especially at schools. Although these expensive materials are provided for children, they tend to use their appeal in time. For children, most waste materials at home and school might be more appealing than ready-made expensive toys. While children are working on waste materials they can try out freely without feeling afraid of experimenting and express themselves comfortably without pondering too much on details (Mayesky, 2006).

Practicality. There are lots of waste materials around the environment. They could be easily attained from nature (pine cone, stone, sea shell, etc.), food products (egg shell, fruit seeds, pasta, etc.) and everyday items (shampoo bottle or tins, toilet paper roll, etc.) (Oğuzkan, Tezcan, Tür, & Demiral, 1981). Because shapes are ready in waste materials, children can use them practically and experiment freely (Yılmaz, 2005). Moreover, the fact that waste materials could be combined easily encourages children in their creations.

Multiple uses. Most waste materials are suitable for multiple uses. Children can convert familiar materials that they collect and think of where and how to use while collecting into something else beyond their original functions. This is both an enjoyable activity for them, and also a contribution to their cognitive development processes (Abacı, 2003). For instance, toilet paper rolls could be turned into a binocular, a wheel, a nose or an ear of a human figure, or legs and arms of a puppet figure when added back to back. Depending on the child's imagination any parcel box could take several shapes. For example, the child can imagine the box as a boat, plane, space craft or a car by sitting in it. When turned over, the box turns into a table, a garage or a dinosaur's house (Yalçınkaya, 1993; Ozatağan & Baran, 2001). In addition to making any changes they want on the waste material, children have the chance to use them as the most constructivist materials in coming up with practical solutions as they imagine (Abacı, 2003).

Recyclability. Children work with waste materials provided in any way they want using their imaginations. These kinds of studies improve children's creative thinking skills. At the end of the study, the

child would taste success and be happy with the emergence of a new product. While doing this, the child would recycle by creating a new material out of something useful and valued that was once considered useless (Oğuzkan, Demiral, Tür & Tezcan, 1987). Furthermore, the fact that their friends make use of the same material in different ways enables children to take advantage of similarities and differences, and develop convertible thinking skills (Yıldız & Şener, 2007). Children gain personality traits of productive rather than consumers by collecting, saving waste materials and thinking what, where and how to use. Through the studies with waste materials, children learned to reuse, thus recycling these materials rather than throwing away the wastes into the environment. Recycle attained by waste materials makes it easy for the children to gain concepts related to environment and increases sensitivity towards it. It helps children foster positive interaction with the environment by creating life-long preservation sensation. It enables children to use exhausting resources economically, save waste, and learn to be respectful for natural habitats of plants and animals (Eliason & Jenkins, 2003; Jackman, 2005).

The Preparation and Presentation of Waste Materials for Children

Starting from the beginning of the education year, children and parents should be guided about collection of wasted materials and suitable environment should be prepared, because having a variety and sufficient supply in waste materials is difficult. Environment could be prepared by creating material boxes in a suitable corner in the classroom during saving (Yılmaz, 2005).

Waste materials should be presented to children after processing and making them ready for use considering their age, development levels, interests and needs, health and safety conditions because saved waste materials might not be clean and safe for children or in unsuitable shapes for their level. Some waste materials might need to be cleaned, broken into pieces or painted for aesthetical appearance or health conditions. For instance, chemical substance including boxes, such as shampoo or detergent boxes should be presented to children after careful cleaning and ventilating. Sharp and cutting edges of wooden waste materials should be ground not to hurt children and be varnished with odorless materials. On materials to be used painted, natural paints like fabric dyes that will not harm the child should be used or they should be covered with washable cloth. If cloth is to be used in covering, it should definitely be stitched. During pasting rather than chemical substance including adhesives in the market that are harmful for health, harmless wood glue should be used. The lids of bottles and boxes should be closed tightly. Materials with small particles that pose choking dangers (beads, stones and seed, etc.) should be presented under adults' supervision. Waste materials should be categorized considering their types, dimensions, textures, colors, shapes and substances after cleaning for children's use. Categorized waste materials should be kept cupboards with open shells or baskets which children can access easily. Categorizing and shelving with children's helps assists them in encouraging concept development and cognitive process skills. Organizing and making children organize materials give children order and control consciousness. Besides developing social skills, such as taking responsibility, carrying out this responsibility and helping each other, amusement felt with collaborative work help children relax emotionally. Orderly put materials, organized shelves and boxes make it easy to find everything easily and tidy up again after use (Oğuzkan et al., 1992; Yalçınkaya, 1993; Özatağan & Baran, 2001; Mayesky, 2006; Can-Yasar & Aral, 2008; Sert, 2009).

While preparing the environment for waste materials, equal importance should be attached to the aesthetical presentation of the materials as the suitability of the environment. The environment should be wide

enough for children to interact with materials with different dimensions safely and comfortably and design new products. Children especially in their early childhoods prefer to work with big sized materials in art activities taking place in their spare time activity zones. Waste materials are items suitable for big size studies. These kinds of studies are valuable for children in terms of presenting social experiences, such as collaboration, helping each other and sharing (Yıldız & Şener, 2007).

The closeness of waste material study environment to the window will enable children to pay attention to items in their surroundings and be inspired by the environment in their products. For this reason, the fact that the study area is in a light and silent part of the classroom will help children concentrate more comfortably on their studies. The place and walls of the study environment should be covered with easily cleaned materials (Eliason & Jenkins, 2003; Isbell & Raines, 2003; Mayesky, 2006; Can-Yasar & Aral, 2008).

Before starting to practice with waste material, possibilities of materials at hand should be discussed with children. Children should be encouraged to put forward which materials and what part of these materials they can make use of in expressing themselves with the alternatives. Therefore, children are guided to think. It is expected from children to be researchers and designers in their studies with waste materials. It was aimed to develop creative thinking skills of the child, and turn these thoughts into designs with different materials (S. Buyurgan & U. Buyurgan, 2007). Stories, rhymes and songs suitable to the theme to motivate children could be found with them. Music suitable to the rhythm of the emotion during the practice could be made use of. In this way, practice could be started after drawing children's attentions to the study. In the meantime, the aim was to assist children to put forward their product by activating basic cognitive processes (Ozatağan & Baran, 2001).

One of the most important points to be considered in practice is not to present a wide range of waste materials to the children, which could cause stimulant confusion in them. The presentation of certain number of categorized waste materials helps children to choose more comfortably, simplify decision making about what to create, thus, design unique products. Children should be left free in choosing other materials than those presented to them (Yıldız & Şener, 2007).

Children should be spoken to about the products they make after working on waste materials, be made to share their products with their friends and their products should be displayed in a certain area. Children's products should never be compared to any other child's products. Even though each child seems to be doing the same thing, they work according to their own perspectives and perceptions. Children's studies were unique, valuable and a part of their personalities. Making use of products created as a result of the study process carries high importance for reasons, such as increasing self-respect, sharing of ideas and thoughts about the products and showing the value given to studies with waste products in the classroom. Therefore, children's products should be valued, and attention and praise should be paid immediately (Darıca, 1993; Mayesky, 2006; Can-Yasar & Aral, 2008).

Sample Activities to Be Implemented With Waste Materials

Activities to be done with waste materials, study themes and environments are limitless, because with these materials, any kind of products could be studied. As a sample in the scope of the project with dinosaur theme done by children:

(1) Bases that will enable dinosaur models to stand could be made from cardboard boxes from household appliances, such as fridges, washing machines and be presented to children. Decoration environment could be prepared by putting waste materials, such as strings, wools, stones, egg shells, wood crusts, and cloth and

leather pieces, dried fruit peels for the children to decorate dinosaur moulds according to their preferences. Kinds of size used dishwashing gloves could be filled with wool, paper and sponge and be left in the environment. Children can make dinosaur's feet out of them or use them as something completely different. Besides, children can form a dinosaur family with different sizes and features;

(2) One side of big size boxes could be opened and children can use them as dinosaur houses. They can design living areas for the dinosaur family from waste materials such as tree crusts and leaves, stones and rock pieces of different size of cartoon boxes;

(3) Big size plastic bags could be filled with paper and sponge to swell them so that a big ball is formed. Children could cover these balls with plaster and paint them to look like dinosaur eggs.

Conclusions and Suggestions

The use of visually rich waste materials that enrich children's activities has an important place especially in early childhood education institutions. Waste materials spared for their use give the children a sense of love, trust and value. The child's free choice of materials presented to him/her, his/her own decision making about how to use them improve self-esteem and the skill of reaching a conclusion. Studies done with waste materials bring along collaboration, respect, different perspectives, pride and happiness of forming and discovering something cooperatively. They teach the child to use the time efficiently by enabling emotional relaxation. Teachers and parents have important responsibilities in preparation and presentation of waste materials that support all development areas of children and in making use of children's products. With this respect, the following suggestions could be made for teachers and parents:

(1) Teachers primarily should be correct models in saving and recycling the waste materials and should believe in the value of waste materials in encouraging the child's development areas;

(2) Families could do art studies by saving waste materials together which children can make use of. They can bring these materials to school;

(3) Teachers could make waste material boxes in classrooms to save waste materials children and parents bring from home. They can rearrange these items with children;

(4) Teachers could make plans to make use of waste materials in game, drama, music, language, science-nature, math and early literacy activities apart from art activities done in free time in early childhood education programs.

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