

## **Creating Design Solutions to increase the Usable Time of Children's Clothes by Using Automated Embroidery Technology**

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### **Abstract**

Childhood stage is one of the most important stages of a human life. Many studies and researches were made for this specific stage. The early childhood represents the most crucial stage of growing up a child would go through as it counts as the final stage of shaping the child's personality. This stage includes a lot of changes. These changes represent the base for the designing and implementing his clothes which satisfy their physiological and psychological needs and are in line with the necessity of his rapid growth. Children's clothes are one of the many things that represent a financial burden for the family due to the fact that once the child grows, the clothes won't fit his size any longer. Especially, if the clothes are free from the features of growth. By using innovative design solutions, the clothes are suitable to fit the current body size and the features of growth. The child's clothes must be suitable for many sizes of this stage and meet the child's needs. The child's clothes must be characterized by the aesthetic appearance through consideration of the aesthetic and decorative aspects.

This research aims to create design solutions to increase the usable time of children's clothing in early childhood by using appropriate production requirements which adjust the clothes size in the longitudinal and girth directions. Automated embroidery technology will be used to enrich the aesthetic aspect of innovative design solutions. The results of the research included creating ten designs for children in early childhood which carries the features of growth, so that its size can be adjusted in the longitudinal and girth directions using innovative design solutions with decorative design that suitable to this stage. Four designs were implemented for age group (3-4-5 years) using 100% cotton fabrics, mixed by 67 cotton / 33 polyester. Automated embroidery technology was used in implementing the decorative designs. To verify the research aim, an estimation scale was designed to measure the degrees of adjusting the measurements of the implemented designs to fit more than one size in early childhood (3-6 years) by specialists in the field of clothing and textiles were. The statistical analysis of the estimation scale indicates that the average degrees of adjusting measurement for the four implemented designs ranged from (22.433-50.704), and that the value of (T) ranged from (0.522-1.035), which are non-statistically significant values that perform the research aim.

### **Keywords:**

Early childhood- Children's fashion design- growth features- automated embroidery.