

Designing clothing Accessories to protective kinder garden children against potential danger accident injuries according to the objectives of ergonomics

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Summary of the research

- Ergonomics aims at setting the rules and guidelines with the aim to increase the efficiency and quality of everything used by human beings through applying the scientific theories, principles, data and appropriate methods of design in order to achieve a safe and comfortable life for humans and better performance of their personal and practical lives.

- Since the care and protection for today's kindergarten children is the backbone of any national buildup where investment in the human element is the key to any sustainable development, and therefore we must work with the aim to strengthen the protection of children in general and kindergarten children in particular and the interest to support their rights guaranteed by the state mainly their right to have a high quality clothing that provides them with safety and security along with beauty and satisfies their diverse needs and requirements.

- According to the personal observation of the researcher for kindergarten children (as a field survey study in Giza Governorate), the researcher registered some of the observations, most notably, as follows:

- The kindergarten children are scrambling and stampeding during descending or ascending the stairs and entering or exiting the classroom.
- Children are falling during running in the playground and during the break.
- Some children are quarrelling with each other and pushing each other while playing or quarreling.
- Falling off the stairs.
- Children are beating each other at some parts of the body such as chest - hand - back - head - face, which may cause them some injuries such as wounds, bruises, fractures, contusions, bleeding and falling from the top places.

Statement of the problem:

Accordingly, the problem of the current statement emerged and is represented in the following questions:

1. What is the possibility of applying the objectives of the science of Ergonomics in the design of "protective Accessories clothing "for kindergarten children?
2. What are the proposed "protective Accessories clothing for kindergarten children against the risk of accident injuries?
3. What are the views of ("A" of Experts - "B" Consumers) towards the proposed designs?
4. What is the possibility of implementing the best proposed designs based on the opinions of the arbitrators?

Objectives of the study:

1. Setting Ergonomics designs for "protective Accessories clothing "for kindergarten children for the purpose of prevention and protection from the risk of accident injuries (wounds - bruises - bleeding - falling from the top places)
2. Determining the opinions of (a) experts and (b) consumers towards the proposed designs.
3. Implementation of the best proposed designs based on the opinions of the arbitrators.
4. Improvement of the lifestyle of children by reducing the sensation of pain resulting from their injury in one of the incidents under this study.

Significance of the study:

1. Contribution to creating a safe and healthy environment for kindergarten children, which free from accidents.
2. Scarcity of Arab scientific researches addressing the relationship between ergonomics and the design of clothing in general and protective clothing for children in particular.
3. Contribution to the development of proactive solutions and treatments to help kindergarten children in their physical and psychological protection, which motivates them to interact positively within their communities.
4. The study may be a novice and distinct addition in the field of designing children's clothing in general and protective clothing in particular.
5. Working to increase the competitiveness of local markets through providing protective clothing and supplements to kindergarten children.

The research utilized the descriptive analytical applied methodology: to collect data related to the following issues:

A- The availability of "protective clothing and supplements" for kindergarten children through the use of field sampling method.

B- Designing questionnaires to measure the opinions and responses of the arbitrators regarding the proposed designs.

B- Analyzing the opinions of the arbitrators regarding the proposed designs.

Applied methodology: where the design, which won the highest response by the arbitrators, was applied.

Delimitations: The current study is limited to:

1- Kindergarten children "early childhood stage", age "3-6" years.

2- Submission of (24) preventive design proposals, which were divided as follows:

(First group) and their number (6) design proposals for protective clothing "vest",

(Group 2) and the number of "18" design proposals for separate preventive supplements to protect different body parts were classified as follows: "3" proposals for each of: (head and neck - chest or back, chest only - knee and legs - arms), acting as added values of clothing

Can be worn alone depending on the nature of movement and activity of each child and the area to be protected and focus on it due to repeated injuries, or may be disassembled and installed on any piece of clothing where the design is provided with "buckle" () or adhesive

tape "Velcro" () can be easily dismantled and installed as design solutions Integral to increase the level of security and safety of the child, also can Its production and marketing as

independent production lines, thus creating more areas and employment opportunities for young people.

3 - Implementation of the design that has the highest response by the arbitrators of the research.

Sample of the research:

The sample of the research consisted of experts in the field of clothing and textiles, 15 experts in the field of clothing and textiles, and 50 consumers, they are the community of the study ,they are women comprising some kindergarten children's mothers and superintendents at some Kindergartens located in Giza Governorate, in the districts of Haram and Faisal, being areas with high population density and having numerous kindergartens ,with a large variety of social, economic, cultural and educational capabilities, and thus the sample is representative of many communities, with the aim to identify their views regarding the proposed designs.

Results of the research:

- The study presented (24) proposed designs, divided into two groups: the first group is designing protective clothing "vests" totaling "6" proposals, the second group is supplementary protective clothing totaling (18) subdivided into four groups, as follows: "A - head and neck, B - chest or back, C - chest only, D-knee and legs, E-arms "
- Submitting a technical production file for the fourth design in the first group, which won the highest results whereby the approval of the arbitrators.

The arbitrators' results

- indicated that the proposed designs in both groups have been considerably approved, since they may protect the health of kindergarten children from the harms of the potential accidents that they may be exposed to. The designs are also in accordance with the requirements of kindergarten children, and they allow them to exercise their movement and perform their various activities comfortably and safely. They are also easy to wear, and have suitable means of closing and they are characterized with light weight so as not cause pressure on the muscles and do not add weight to the spine as well as meeting the psychological and aesthetic needs of the children of this stage. This was confirmed by their agreement that the proposed designs have achieved unanimity on the availability of the bases of rhythm, proportion and compatibility in the use of lines and the division of spaces and the drafting of the outer line of the design "form". It was also confirmed that the designs have achieved a great deal of marketability and they allow to open new areas for extinguished production lines. They are also suitable as a marketable clothing product within the local market and they are considerably enforceable. In addition, they contribute to the protection of kindergarten children from the risk of injury accidents that they may be exposed to. Thus, the main objective of the research is achieved, that is: **“the use of ergonomic design to protect children during their movement and activity increase their psychological and physical balance, which in turn contributes to improving their overall lifestyles”**.

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