

Design and Functional Requirements for School bags for children with Down Syndrome

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Abstract:

The research deals with identifying the design and functional requirements of children with Down syndrome and studying the ergonomic factors for the design of school bags and accessories that help in designing bags that suit designally, aesthetically, and functionally with the needs of children and the nature of movement and thinking.

The research followed the descriptive analytical approach in collecting the scientific material about the research, in addition to the applied study and the development of proposed design groups that achieve the ergonomic factors in the design of school bags and accessories and suit the needs of the research sample.

The results of the research reached the most important ergonomic factors that must be met in the design of school bags and accessories for children with Down syndrome, and to determine the aesthetic design and functional requirements for the design of the bag. In addition to providing (6) proposed design groups (collection) for school bags and their various accessories to achieve the needs of children aesthetically and functionally according to their physical and motor abilities. The design groups (collection) obtained the highest degrees of acceptance for specialists, parents and teachers, as the design groups were arranged according to all the opinions of the arbitrators, so the fourth design group won the first place, while the sixth design group (collection) won the second place, the second design group (collection) won the third place, and in the fourth place the fifth design group (collection) ranked, while the third design group (collection) ranked fifth, and came in last place as the sixth place of the first design group (collection).

Keywords:

Design- School Bag- Design Requirements- Aesthetic Requirements- Function Requirements- Down Syndrome child- Ergonomic.

References:

- 1- Abdo, Mennat Allah Nabil & et al :(November 2019), Measurements of the school bag according to an anthropometric measurements of the bodies of school children in the Arabic Republic of Egypt, in: Journal of International Academic Research for Multidisciplinary "JIARM", Vol.7, Issue10, pp.13 – 35.
- 2- Abdo, Mennatallah Nabil :(2019), The Scientific Basis for The Design and Production of School Bag in Basic Education, Unpublished master's Thesis, Faculty of Home Economics, Helwan University.
- 3- Al-Harbi, Maryam Mohammed - Kamel, Rania Mustafa :(2020), Clothing Problems for Saudi Children with Down Syndrome in the Light of Physical Features, Research published in the International Design Journal, Vol. 10, No. 1.
- 4- Al-Sayed, Walaa Zain Al-Abidin :(2021), Developing Contemporary Designs to Enrich the Functional and Aesthetic Values of School Uniforms for Students in Adolescence, Research Published in the International Design Journal, Issue 11, Volume 2.
- 5- Al-Shamrani, Fatimah Ahmed & Mohamed, Nermeen Abdel Basset :(2020), Ergonomic factors impacting bag design: a pilot study on Hajj and Umrah bags, in: International Design Journal, Vol. 10, Issue 2, pp.39.
- 6- Amiri, Mahdie & et al :(2012), Designing an ergonomics backpack for student aged 7-9 with user centered design approach, in Journal Work, vol. 41, no. Supplement 1, pp. 1193-1201.
- 7- Badawi, Lamia Jamil - Ahmed, Nermin Mahmoud - Beblawy, Ehab :(2020), The Most Prevalent Disabilities, First Edition, Dar Mirna for Publishing and Distribution.
- 8- Mohamed, Sahar Harbi :(2009), Design technology and pattern preparation in leather industry field and its impacts on the quality of final product, unpublished PhD thesis, Faculty of Home Economics,

Helwan University.

- 9- Mohamed, Sahar Harbi :(2020), Ergonomic considerations for working women's handbags and their impact on their functional performance, Research published in the International Design Journal, No. 10, Vol. 4.
- 10- Mohamed, Sahar Harbi :(2018), Technical specifications for the operation of the women's handbag production line and its application in the leather industries department, research published in the International Design Journal, No. 4, Volume 8.
- 11- Mohamed, Sahar Harbi - Ibrahim, Wissam Mohamed :(2014), School Bag Manufacturing Technology, research published in the Journal of Home Economics, Helwan University.
- 12- Mohammad, Aziz Ahmad-Zaghloul, Sahar Ali :(2016), Performance Requirements for Children's Clothing, Down Syndrome Category, Design and Technology, Research published at the Fourth International Conference of the Faculty of Applied Arts, February 28, 29.
- 13- Mustafa, Ahmad Wahid :(2009), Design Art for Human Comfort and Luxury, Design Information Center, Faculty of Applied Arts, Helwan University.
- 14- Riad, Abdel Fattah :(2002), Training in Fine Arts, Fourth Edition, Cairo, Color Laboratories Association.
- 15- Sanhoury, Lamia Hassan :(2016), Design Standards for Leather Industries and their Impact on Product Quality in the Arab Republic of Egypt, Unpublished PhD Thesis, Faculty of Home Economics, Helwan University.
- 16- Shawky, Sylvia Ibrahim :(2014), The effect of physical Specifications for Down syndrome's child on the function and aesthetical requirements for his clothes, Unpublished master's Thesis, Faculty of Home Economics, Helwan University.
- 17- <https://www.almaany.com>
- 18- <https://www.globaldownsyndrome.org>
- 19- <https://www.cdc.gov>

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