

Bloque en Sistema Braille

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Abstract

Play is the tool that has proven to be the most effective and efficient in learning resources for children. They learn to forge bonds with others, and negotiate and resolve conflicts in their environment. It is known that there are specialized study centers, toys, and other technologies for people with low vision; however, there is still a gap between teachers and students in these techniques and tools. A more practical and accessible solution is presented in academic, social, and economic issues. The learning block in braille system, which is designed in Autodesk Inventor and printed in 3D to make the high relief using PET as printing material, not only in braille system, but also in Arabic, which represent numbers, letters and two basic operators of mathematics to obtain complete material and achieve a better inclusion of the use of the system. The learning block is also divided into three blocks: basic math operations, word formation, and short sentences. The developed system was tested with the help of ten children with low vision at the San Francisco de Asis school in Lima, Perú, where we were able to observe the errors and deficiencies of the developed product and to enhance it. Finally, this braille block offers an accessible and stimulating way for children with low vision to develop math and literacy skills, as this toy provides a unique tactile experience that favors active learning and the integral development of children with low vision.

Keywords

Low Vision, Braille Lego Kit, Educational Inclusion, Learning for Children and Links.

Biographies

Andrea Reyes Vergara holds a bachelor's degree in industrial engineering from Universidad de Lima (2020). She has four years of work experience in the mass consumption, retail, and transportation sectors. Reyes worked at INTEGRA RETAIL as a commercial assistant, supervising the operation of the household appliances category, and is currently in the position of marketing analyst at DELFIN GROUP CO., Peru's number one company as an

international freight forwarder. She specialized in front-end development at Laboratoria, where she later carried out web and innovation projects for MYPE consulting company. Her research interest includes digital marketing, e-commerce, optimization, and trade marketing.

Brenda Cotrina holds a bachelor's in industrial engineering from the University of Lima (2020), with three years of work experience, oriented to multidisciplinary teams, knowledge in strategic and transformational project management, data analysis skills, cost control, and process optimization. She stood out for his systemic vision, commitment to excellence, change management and continuous improvement in all facets of his work. Cotrina worked at APM TERMINALS as a quality and reliability trainee, at SMURFIT KAPPA as a production trainee, and currently plays the role of operations trainee at TECNOLÓGICA DE ALIMENTOS (TASA), a leading Peruvian fishing company in the production of ingredients and seafood.

Fabricio Humberto Paredes Larroca is a Research Professor at the University of Lima. He holds a doctorate in systems engineering from the National University of Engineering. Msc., in automation and instrumentation from the National University of Engineering. He is an industrial engineer from the University of Lima. Scopus Author ID:57212214534 Orcid:0000-0001-8857-9253 Qualified as Renacyt Researcher - Level V.