

# THE USE OF DIDACTIC GAMES AS A REHABILITATIVE AID FOR VISUALLY IMPAIRED CHILDREN

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## 1 Context

Children with visual impairments (both partially or totally, either congenital or acquired) present a number of difficulties during their physical, cognitive and sensorial development, especially due to the lack of materials specifically produced for the improvement of these attributes. In such situations, the use of didactic games as a form of rehabilitative assistance to the child seems to be effective, since they present both educational and playful characteristics, which are necessary for rehabilitation processes.

According to reports issued by the World Health Organization (WHO, 2010), about 285 million people worldwide have some kind of disability, 39 million have blindness (or low vision) and 90% of this portion of the population live in low income environments. Nationally, 6.2% of Brazilians are considered disabled, of which 3.6% have some kind of visual impairment (IBGE, 2013). According to data provided by the Lions Club International Foundation (2016), about 6 million school-aged children have some kind of visual impairment and less than one in ten actually have access to formal education. According to the same source, the unemployment rate of this group is between 75 - 90% (approximately 5 times bigger than the general population).

The various obstacles faced by visually impaired children may de-motivate and even make it impossible for them to stay in their own educational institutions (WHO, 2007). In the midst of such problems (which include issues such as transportation, infrastructure, professional preparation and adaptation of diverse activities), it is observed the importance and, at the same time, lack of specific didactics that integrate general values of learning and development of the skills considered essential for the student's adaptation to their condition, according to Decree 6,571 (State Interventions) and also according to the requirements elaborated and documented by ABNT - NBR 9050 (referring to the standards of the physical adaptations for students with disabilities).

Considering this context and presented data, it was sought, as a general objective, to identify the needs of users related to the problem, which is, how to assist visually impaired children to adapt to lack or loss of vision through Development and training of their remaining physical, cognitive and sensory abilities. This research also points out the stages through which the studies were submitted during its course, including bibliographical and field analyzes that enabled the understanding of theoretical and practical knowledge, aiming to provide informational assistance to professionals, tutors and even family members involved in child rehabilitation processes.

## 2 Method

The research was performed through systematic observations to recognize the behavior patterns of the children during the execution of diversified tasks, attending to their difficulties and successes (ALVARES, 2000). Interviews were also conducted in the form of semi-structured qualitative questionnaires to teachers,

specialists and other professionals (TURATO, 2004). Finally, data analyzes (from the surveys) were carried out to compare and identify the main aspects related to the use of educational games as a rehabilitation aid for visually impaired children.

The data collection used to formulate both the questionnaire inquiries and the activities perceived in the observations was done according to the theoretical principles addressed in the bibliographies and other references mentioned throughout the research itself.

### **3 Results**

After completing the field surveys (interviews and observations), it is concluded that it is possible to establish relationships between the elements worked on the child and the functional characteristics that the educational games present, making the rehabilitation process even more effective. It is also possible to perceive that the method, that is, the order of steps to be followed in the process, is of equal importance, since it considers the evolution of the child in the game during different sessions (and also different days of the week/month), clarifying more precisely the benefits that the use of educational games provide in short, medium and long terms.

The following is a list of relationships between the physical, cognitive and sensory aspects of the child and their recommended matching games (based on the results obtained in the observations and inquiries):

- Cognition - puzzles, memory games (with different formats or high / low reliefs) and tic-tac-toe games;
- Hearing - games with sound stimulation (rattles or whistles, for example) and activities in which there are sounds that vary according to the distance of their emission;
- Tact - games in which there are varied surface textures (high / low reliefs, cloths with different types of weft and softness, tactile mats, fabrics and flaps);
- Synesthesia - games that require orientation, mobility and positioning associated with sounds, smells, notions of space and distances traveled.

### **4 Conclusions**

At the end of these studies, it was found that the use of didactic games for the rehabilitation of visually impaired children is done according to theoretical foundations approached by many of the authors who deal with the subject. Despite the marketing and financial limitations to which this process is most often submitted, it is possible to affirm that the contribution of didactic games is indispensable for the increase of autonomy and consequent improvement in the quality of life of visually impaired children.

The present studies also intend to provide informational bases considered necessary for future research (to be conducted by other researchers interested in the subject) in which the theme and its ramifications can be further elaborated.

Here is a list of suggestions for future research:

- Usability analysis of the interactions between product (didactic games) and users (visually impaired children and instructors);
- Carrying out case studies to compare different methods used in the rehabilitation of visually impaired children;

- Verification of the relationships between age and physical, cognitive and sensory development of blind children during the use of didactic games.
- Conversion of the results obtained in this research into design prerequisites for elaboration and production of didactic games for rehabilitation purposes.

## 5 References

- BIZ, V. A. *et al.*. **Processo de inclusão de alunos deficientes visuais na rede regular de ensino**: confecção e utilização de recursos didáticos adaptados. Disponível em: <<http://www.unesp.br/prograd/PDFNE2003/Processo%20de%20inclusao%20de%20alunos%20deficientes%20visuais.pdf>>. p. 6-7, 2002. Acesso em 23 out. 2016.
- BRITO, P. R.; VIETZMAN, S.. **Causas de cegueira e baixa visão em crianças**. Arq. Bras. Oftalmol., n.1, p. 49, 2000.
- CAMPOS, L. M. L. C.; FELÍCIO, A. K. C.; BORTOLO, T. M.. **A produção de jogos didáticos para o ensino de ciências e biologia**: uma proposta para favorecer a aprendizagem. Caderno dos Núcleos de Ensino, p. 48, 2003.
- CUNHA, N.. **Brinquedo, desafio e descoberta**. Rio de Janeiro: FAE, 1988.
- GOLDENBERG, Mirian.. **A arte de pesquisar**. Rio de Janeiro: Record, p.10, 2004.
- GOMES, R. R.; FRIEDRICH, M.. **A Contribuição dos jogos didáticos na aprendizagem de conteúdos de Ciências e Biologia**. Rio de Janeiro: Erebio, 2001.
- INMETRO:<<http://www.inmetro.gov.br/imprensa/releases/Inmetro-indica-brinquedos-mais-a-dequados-por-faixa-etaria.pdf>>. Acesso em 20 out. 2016
- LAPLANE, A. L. F. de; BATISTA, C. G.. **Ver, não ver e aprender**: a participação de crianças com baixa visão e cegueira na escola. Cad. CEDES [online]., n.75, p. 11, 2008.
- LIONS CLUBS INTERNARTIONAL FOUNDATION: <<http://www.lcif.org/PO/our-work/sight/education-and-rehabilitation.php>>. 2016. Acesso em 20 out. 2016
- MASINI, E. F. S.. **Educação do portador de deficiência visual**: as perspectivas do vidente e do não vidente. Brasília: Ministério da Ação Social, CORDE, p. 62, 1993.
- MIRANDA, S.. **No fascínio do jogo**: a alegria de aprender. In: Ciência Hoje, p. 64. 2001.
- ORGANIZAÇÃO MUNDIAL DA SAÚDE. The World Bank. **Relatório Mundial Sobre a Deficiência**. Trad Lexicus Serviços Linguísticos. São Paulo: SEDPcD, p. 04-29, 2011.
- PÁDUA, L. D. de. **Epistemologia Genética de Jean Piaget**. Revista FACEVV., n.2, p. 01, 2009.
- PALÁCIO DO PLANALTO (Casa Civil), **Decreto Nº 3.298, de 20 de dezembro de 1999**, <[http://www.planalto.gov.br/ccivil\\_03/decreto/d3298.htm](http://www.planalto.gov.br/ccivil_03/decreto/d3298.htm)>. 1999. Acesso em 20 out. 2016
- PALÁCIO DO PLANALTO (Casa Civil), **Decreto Nº 5.296, de 02 de dezembro de 2004**, <[http://www.planalto.gov.br/ccivil\\_03/decreto/d3298.htm](http://www.planalto.gov.br/ccivil_03/decreto/d3298.htm)>. 2004. Acesso em 20 out. 2016
- SANTIN, S.; SIMMONS, J. N.. **Problems in the construction of reality in congenitally blind children**. Journal of Visual Impairment & Blindness, Volume 71, 1977.

SOUZA *et al.*. **Descrição do desenvolvimento neuropsicomotor e visual de crianças com deficiência visual.** Arq. Bras. Oftalmol., 2010.

UNESCO. Traduzido do inglês e digitado em São Paulo por Maria Amélia Vampré Xavier. **Understanding and responding to children's needs in inclusive classrooms.** p. 53, 2009. World Health Organization International. Classification of impairments, disabilities, and handicaps: a manual of classification relating to the consequences of disease. Geneva, 2004.

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