

AN EDUCATIONAL INTERVENTION IN A STUDENT WITH INTELLECTUAL, VISUAL, HEARING AND MOTOR DISABILITIES

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ABSTRACT

This paper presents the design, implementation and evaluation of an educational intervention program for a student with a diagnosis of severe hearing loss, congenital blindness and intellectual and motor disability. The aim of the intervention is to improve the child's connection with the environment and to work on anticipating events in his daily life. For that purpose, three areas of development are mainly worked: adaptive, motor and cognitive. The results obtained in pretest and posttest evaluation reflect slight improvements in the three areas after the intervention, and therefore, an evolution in the student's developmental age. Some of the most relevant conclusions are that individualized work with people with multiple disabilities positively influences their development, and that there is a lack of standardized assessment instruments adapted to the characteristics of people with multiple and severe disabilities.

Keywords: blindness; hearing disability; special education

Intervenção educativa em um estudante com deficiência intelectual, visual, auditiva e motora

RESUMO

Neste estudo apresenta-se a configuração, a implementação e a avaliação de um programa de intervenção educativa para um estudante com diagnóstico de hipoacusia severa, cegueira congênita, deficiência intelectual e motora. A finalidade da intervenção é melhorar a conexão da criança com o entorno e trabalhar a antecipação de acontecimentos em sua vida diária. Para isso trabalham-se principalmente três áreas de desenvolvimento: adaptativa, motora e cognitiva. Os resultados obtidos nas avaliações pré-teste e pós-teste indicam melhora nos três âmbitos após a intervenção, e por tanto, uma leve evolução na idade de desenvolvimento do estudante. Algumas das conclusões mais relevantes são que o trabalho individualizado com pessoas com deficiência múltipla influi positivamente em seu desenvolvimento, e que existe uma falta de instrumentos de avaliação estandarizadas que se adaptem às características das pessoas com deficiências múltiplas e severas.

Palavras-chave: cegueira; deficiência auditiva; educação especial

Intervención educativa en un estudiante con discapacidad intelectual, visual, auditiva y motriz

RESUMEN

En este trabajo se presenta el diseño, la implementación y la evaluación de un programa de intervención educativa para un estudiante con diagnóstico de hipoacusia severa, ceguera congénita, discapacidad intelectual y motriz. La finalidad de la intervención es mejorar la conexión del niño con el entorno y trabajar la anticipación de acontecimientos en su vida diaria. Para ello se trabajan principalmente tres áreas de desarrollo: adaptativa, motora y cognitiva. Los resultados obtenidos en las evaluaciones pretest y posttest reflejan ligeras mejoras en los tres ámbitos tras la intervención, y por tanto, una evolución en la edad de desarrollo del estudiante. Algunas de las conclusiones más relevantes son que el trabajo individualizado con personas con discapacidad múltiple influye positivamente en su desarrollo, y que existe una falta de instrumentos de evaluación estandarizados que se adapten a las características de las personas con discapacidades múltiples y severas.

Palabras clave: ceguera; discapacidad auditiva; educación especial

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INTRODUCTION

Multiple disabilities are the result of the comorbid presentation of significant difficulties in two or more areas of a person's development, the most common being intellectual, motor and sensory.

In the educational field, work with students with multiple and severe disabilities focuses mainly on objectives related to improving their life quality. Specifically, it is usually oriented towards the acquisition of strategies for communication, socialization, independence and interaction with the immediate environment, since they are integral factors in the life quality of an individual (Foreman, Arthur-Kelly, Bennett, Neilands, & Colyvas, 2014).

When working with students with multiple disabilities, the adult must provide the student with access to information and provide opportunities for interaction with the context by establishing a communication system (Boas, Ferreira, De Moura, Maia, & Amaral, 2016; Foreman *et al.*, 2014).

Fellinger, Holzinger, Dirmhirn, Van Dijk, and Goldberg (2009) highlighted that people with deaf blindness need to have a structured environment and anticipation of daily activities. When faced with new situations, the companion must announce through tactile signs what is going to happen in order to reduce anxiety levels. According to Bruce and Borders (2015), the intervention with people with multiple disabilities has three focuses: subject, companion and environment.

The objective of this work is to present the design, implementation and evaluation of an educational intervention program for a student with visual, hearing, intellectual and motor disabilities.

METHOD

Participants

The intervention is aimed at an eleven-year-old child with a diagnosis of severe hearing loss, visual, intellectual and motor disabilities. Some notable behaviors are the lack of expression of basic needs, lack of exploration of the environment and contact rejection with unknown objects and people.

A multiprofessional team from the specific special education school in which the student is enrolled participates in the intervention, composed of: tutor, educator, physiotherapist, therapeutic pedagogy teacher, psychopedagogue and student intern. In addition, there is the family collaboration to get information related to the student.

Evaluation instruments

Battelle Developmental Inventory (Newborg, Stock, & Wnek, 1984). It evaluates five areas: personal/social, adaptive, motor, communicative and cognitive. The results are reflected in equivalent development ages for each area.

Guía en los zapatos de los niños ciegos (Lucerga, & Gastón, 2004). It is an instrument aimed at children's caregivers with severe visual disabilities. It gets together the most significant objectives in the children growth by age groups and development areas. Within each area, up to ten objectives are included that allow the child's development to be guided towards another stage.

Intervention

The main objectives of the intervention are to enhance the student's connection with the environment and work on the events anticipation in their daily life. The intervention is carried out in the child's educational school (in their reference classroom and the multisensory stimulation classroom). The duration is 5 months, with 3 weekly sessions of 90 minutes. Box 1 shows the areas, items, general and specific objectives covered in the intervention and some examples of educational activities proposed for this (based on a pretest evaluation).

Before the intervention, the implementers established a simple communication code with the student. In order to start an interaction, the same object is always used. To start an activity, touch the student's shoulder. When the child does the exercise, his cheeks are touched as reinforcement. The end of exercise is marked by crossing the student's arms over his chest.

RESULTS

The effectiveness of the intervention program has been evaluated by comparing the results of the pretest and posttest evaluation, reflected in Boxes 2 and 3.

CONCLUSIONS

Three main conclusions are derived from the implementation of the intervention program described. Firstly, the intervention has produced a slight improvement in the child's adaptive, motor and cognitive areas. Therefore, it could be stated that their evolutionary development improves with individualized attention.

Second, according to Foreman *et al.* (2014), in an intervention of this type, the communicative skills of the implementer are significantly influenced. Thus, one of the key aspects of this program has been the communication code established with the student. This has contributed to improving communication between the child and the implementers, to interpreting the student's responses and, therefore, to increasing the reliability of the evaluation.

Finally, this study shows the lack of standardized instruments to evaluate cognitive, motor, sensory and communicative functions in people with multiple disabilities. In our case, the Battelle Development Inventory (Newborg, *et al.*, 1984) does not fully adapt to the student's situation, so some items could not be assessed. Although the *Guía en los zapatos de los niños ciegos* (Lucerga & Gastón, 2004) does adapt to

Box 1 - Areas, Items, Objectives to Cover in the Intervention and Examples of Proposed Activities.

Areas	Tech Items	Objectives	Specific objectives	Educational activities (examples)
Battelle Developmental Inventory (Newborg et al., 1984)				
Adaptive (food subarea).	Ask for food or drink with words or gestures. Drinks from a cup or glass without help.	Reduce the confusion of the regular succession of events.	Recognize familiar objects.	Work on a tactile schedule with objects that represent the consequences of tasks that he will follow throughout the day (wipe, water bottle, work box, spoon, etc.)
Motor (fine motor subarea).	Pick up a candy with your index fingers and thumb (upper clamp)	Perform proper grip with different objects.	Get objects that promote cylindrical, spherical and digital grasping.	Play with objects such as pompoms, rattles or zipper pulls (located in a backpack and toiletry bag, for example).
Cognitive (perceptual discrimination subarea).	Explore or investigate the environment.	Encourage crawling of limited spaces.	Track and remove objects from a shallow box.	Put objects of different sizes in a shallow box so that he can find them one by one and take them out. Repeat it three times and tell him to repeat it.
Guía En los zapatos de los niños ciegos (Lucerga & Gastón, 2004)				
Handling.	Change the object from hand to hand.	Improve bimanual coordination. Increase acceptance of different kinesthetic tactile sensations.	Hit objects horizontally and vertically. Explore objects with different textures, shapes and sizes.	With two small balls with a bell, guide the horizontal movement until they collide. Repeat it three times and tell him to repeat it. Play a drum, guiding the vertical movement, helping you feel the vibration
Habits and autonomy.	Drink from a glass offered to him. He knows the plate and the spoon and knows what they are used for.	Reduce the confusion of the regular succession of events.	Recognize the spoon in the tactile schedule and know what it is used for.	Use the glass to drink liquids. Anticipate an activity by exploring the object that represents it (wipe, water bottle, work box, spoon, etc.)

Source: Made by the authors.

Box 2 - Equivalent Age of Pretest and Posttest.

Equivalent age in each area of development, pretest and posttest, according to the Batelle Development Inventory (Newborg et al., 1984).		
	Equivalent age	
Development areas	Pre-test	Post-test
Social/personal	2 months	4 months
Adaptive	7 months	9 months
Motor	6 months	8 months
Communication	1 month	2 months
Cognitive	4 months	8 months
Total score	4 months	6 months
Evolution in different areas of development according to Guía en los zapatos de los niños ciegos (Lucerga & Gastón, 2004).		
	Equivalent age	
Development areas	Pre-test	Post-test
Manipulative.	6 - 12 months	6 - 12 months
Habits and autonomy.	12 - 18 months	12 - 18 months
Communication, language and socialization.	0 - 6 months	0 - 6 months
Sensorimotor understanding and cognition.	6 - 12 months	6 - 12 months
Gross motor skills, body outline and spatial organization.	6 - 12 months	6 - 12 months

Source: Made by the authors.

Box 3 - Achieving Objectives According to Guía en los Zapatos de Los Niños Ciegos (Lucerga & Gastón, 2004).

Area	Tech Objective	Objectives to work on	Achieved	Not achieved
Handling	Change the object from hand to hand.	Hit horizontally		X
		Hit vertically.	x	
		Explore objects with different textures, shapes and sizes.	x	
		Use different objects that favor different grips due to their thickness.	x	
Habits and autonomy area	Drink from a cup or glass that is attached to him.	Drink from a cup/glass that is attached to him.	x	
	Know the plate and spoon and know what they are used for.	Know the spoon and know what it is used for	x	

Source: Made by the authors.

visual disabilities, it does not consider deaf-blindness or intellectual disabilities.

This agrees with what was previously concluded by authors such as Vaan, Vervloed, Knoors and Verhoeven (2013) who explain that most standardized tests, questionnaires and development scales do not take into account the effect of the comorbidity of different disabilities.

This work has some limitations: the limited duration of the intervention; It is a case study, so the results are not generalizable; and the evaluation instruments are not totally adequate. As a future line of research, we propose that the intervention covers the development of the child's communication not only as a receiver, but also as a sender.

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