

Intervention Program in Deaf-blind Students: An Educational Plan for Body Schema Awareness

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ABSTRACT

The purpose of the study is to develop an interventional educational plan for a deaf-blind student with screened difficulties in body schema awareness. This is part of a more extensive research in developing the screening inventory for the deaf-blind students' cognitive and communicative profile. The study uses a qualitative research methodology and adopts an interpretative position. The aim of the inquiry was descriptive. We followed the case study methodology. The application of the interventional program aimed to help the deaf-blind student in promoting early concept development (body schema). The student was offered multisensory and concrete experiences in order to promote the body schema awareness. After the intervention, it was observed that the student became aware of having a body with a center (midline) and two sides. The student succeeded in naming her body parts and matching them to others. From the application of the interventional program has emerged the need for the programs' expansion at home with the involvement of family members.

1. INTRODUCTION

The multisensory impaired students receive limited and distorted sensory information, through which they define their relation to the word and construct their conceptual background. Their perception may differ and the concept development may be impeded, since multisensory deprivation imposes limitations on communication and cognitive development. Children understand the world through their interaction with the wider natural and social environment. Simultaneously, children explore the environment using all their senses in order to learn about the people and the objects in it. Students with deaf-blindness may miss or misinterpret natural cues and necessary for world understanding incidental information due to their sensory loss [1].

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1.1 Towards a Definition

Deaf-blindness is defined "as a concomitant hearing and visual impairment, the combination of which creates such severe communication and other developmental and educational needs that cannot be supported and accommodated in special educational programs aiming solely at children with deafness or blindness" [4]. The basic concept of heterogeneity is especially apparent among the deaf-blind population. Each child has a particular degree of visual and auditory loss, ranging from moderate to total. The sensory loss may be gradual or immediate, it may occur before birth or at any age and may be lost at a different or at the same time [5].

1.2 The Deaf-blind Population: Implications in Communication and Learning

Deaf-blind children cannot learn from interaction with their environment as easily as their non-handicapped peers due to their multi-sensory deprivation, because the information perceived is not always clear, simultaneous or consistent. Their environment is often limited to what is approachable by their hands, or by means of their sensory potential. Therefore, deaf-blind children usually express limited motivation to explore their environment [2, 1, 6, 7].

2. CONCEPT DEVELOPMENT

The child's level of cognitive functioning and its ability to establish and elaborate on meaningful concepts relies to a large extent on its ability to receive and assimilate input from the world around it. The ability to assimilate sensory input influences communication and concept development [2]. The combined loss of both vision and hearing imposes limitations on communication and the perception of primary concepts (e.g. time, space, body schema), which are important for the concept formation of the natural and social environment [3].

Children who cannot rely on their distance senses to accumulate information about their world may learn less effectively, because the received information is unreliable, distorted or inadequate. Hence, learning and experience are restricted, and the child's relation to the

world and conceptual background is difficult to be defined [8, 9, 10, 11].

2.1 The Body Schema

The body schema concept refers to the body unity perception. It refers to the representation that each person has for its own body. Simultaneously, it involves the basic point of reference in the person's relationship and interaction with the wider social and natural environment [12, 13, 14].

The body schema concept is important for the development of the child's personality. Through the gradual perception of the body and its potential in action, the child becomes aware of itself and the way he/she can influence the environment. The following cognitive areas are connected to the body schema perception:

- Perception of time and space
- Movement development and coordination
- Communication development
- Self-control and self-esteem [15, 16].

For the deaf-blind child the body schema perception and body awareness may not occur naturally. The deaf-blind child should be introduced to the fact that he/she constitutes a separate individual, different from others and his/her environment, who can influence others and its environment. In this way, he/she encouraged to develop his/her self-awareness.

Deaf-blindness impedes also the child's opportunity to model and imitate the way other people move and act, which is an important factor in building the body schema. Therefore, forming an accurate body image becomes an interventional goal which is further analyzed in daily routine activities and games. Every movement should be demonstrated by physical manipulation and appropriate movement of the child's body parts.

For the deaf-blind child, its body becomes the basic means of communication and information perception. The deaf-blind baby has usually limited interaction with his mother, due to difficulty in perceiving the non-verbal signs (such as facial expressions); a fact that influences the emotional bonding between the mother and the child. The visual communication is replaced by tactual communication. The deaf-blind child understands that tactile cognitive signs and information can be perceived and transmitted through the body [2, 1, 17, 18].

Gradually, the deaf-blind child becomes aware through experience that it he/she has a body with different body parts performing different functions, and in turn learns to recognize them. The development of body awareness is connected to the conceptualization of the spatial orientation and therefore to the child's movement and orientation.

The educational program with deaf-blind students starts with the senses, moves to perception and ends up in cognition [19]. Deaf-blind students should be introduced to concepts which rely on their emotional experiences and sensory exploration [20]. The deaf-blind student needs not only to perceive and evaluate the sources of information, but also to develop and widen their conceptual background in order to correlate new experiences to previous ones by understanding, reasoning

and interpreting the sensory inputs. Thus, an active and communicative environment is needed, which offers the child opportunities for interaction. As a result, early concept development is promoted and grounded on concrete experiences [2, 1, 21, 22].

An educational program of intervention is presented in this article, which aims at introducing the body schema concepts through a tactile and more concrete perspective. In planning this intervention we took into consideration the difficulties in concept formation and in the body schema perception, the limited incidental interaction with the environment and the significance of the concept development, through which the child defines relation to the world and conceptual background.

3. METHODOLOGY

The presented study is part of a more extensive research in developing the screening inventory for the deaf-blind students' cognitive and communicative profile. The study uses a qualitative research methodology and adopts an interpretative position. The aim of the inquiry was descriptive. The case study methodology was followed and data were collected using the method of direct observation.

The Laboratory of Special and Curative Education (LABESPEC) at the University of Ioannina, in Greece, has implemented a research program which aims at developing a screening inventory of the deaf-blind students' cognitive and communicative profile. The students' profile is screened through the use of alternative and adapted multisensory approaches. The recorded difficulties aim to define and direct the planning of the individual educational interventional program.

The profile aspires to present an initial and structured framework of the deaf-blind students' potential focusing on specific sections (communication, sensory, social-emotional, motor, cognitive development and daily living skills). The gathered elements will be used for the purpose of developing an interventional educational plan which will be addressing the students' personal need and it will be incorporated into an adapted curriculum.

The individual educational plan consists of and elaborates on the elements of communication, motor, cognitive and social-emotional development. Undoubtedly, the limited interaction with the environment and the restricted visual and auditory stimulation may impede concept formation and especially the acquisition of the concepts of time, space and body schema. The conceptual background of learning and communication is founded on the acquisition of the concepts of time, space and body schema. The individual educational plan aims at encouraging the active presence and direct interaction of deafblind students in their environment which they can control, understand and anticipate through multisensory and accessible approaches [23].

The screening inventory and the interventional program are implemented through specially designed educational material (multisensory activities which focus on the use of the remaining senses of touch, smell and sensory cues from temperature, air blow and vibration), assistive

technology (assistive devices, Braille), and augmentative and alternative expressive and receptive communication systems (tactile sign language, pictograms, objects of reference, tactile symbols).

The uniqueness of each deaf-blind child and the heterogeneity among the deaf-blind population has led us to the application of the methodological approach of case study and observation method.

The research design employed in this research is a case study conducted in two phases. In the first phase the student's communicative and cognitive profile was screened with a screening inventory. In the second phase, the recorded difficulties framed the planning and implementation of the educational plan of intervention. In all phases, the observation method of data collection was followed. The application of the interventional program focused on promoting the deaf-blind student's early concept development (body schema). The student was offered multisensory and concrete experiences in order for her body schema awareness to be increased.

3.1 Program Description

The case study reported here was conducted at a school for deaf-blind students and was incorporated in the educational program for school-age students who are deafblind. The student is diagnosed with brain damage, congenital blindness and deafness due to viral infection, and therefore was eligible to follow a special educational program for deaf-blind students. The student communicates in others people's hands through tactile sign language. She also uses objects of reference, pictograms, tactile symbols, tactile cues and Braille, as means of receptive and expressive communication. Due to congenital deaf-blindness she cannot have access to any other assistive technology devices. The sense of touch is her main link to the world and the people around her. She communicates also through facial expressions to show interest, pleasure, and annoyance. She understands the structure and function of "calendar" (daily, weekly, monthly) to communicate her preferences and choices, to get prepared and to anticipate forthcoming events and activities. She has established an emotional bond with her educator. She is a bright, active girl, who is highly interested in what is happening around her. The student likes to share social interaction with other students and educators. When she is annoyed or distressed, she chooses to withdraw from the communication exchange and the activity.

The case study presented here constitutes part of a broader research program aimed at developing the communicative and cognitive profile of the deaf-blind student and at implementing a program of intervention. It is expected to last 4 months consisting of three stages; the screened communicative and cognitive profile, the implementation of the program of intervention based on the screened difficulties and the assessment of the educational program of intervention.

In this presentation we focus on the student's screened difficulty to form the concept of body schema. The program of intervention is designed according to the screened difficulties of the student. More specifically, the

student can partially locate the stimulated body parts but she cannot always name and match her body parts. Through this program of intervention the student is expected to name the body parts (through tactile sign language, tactile and touch cues), locate them in herself and others, and recognize their function.

The educator chooses activities that encourage the student to tactually locate the body parts and areas that are stimulated. Student's interest is stimulated and triggered using multisensory material (such as body lotion, skin cream, cloths, sticky tape, clips), while the student is asked, through tactile sign language and tactile, touch cues, to locate the body part, find and remove what has being attached to.

The activities are structured experientially, designed in sequences of movements and focusing on daily activities in which the student is actively participating (dressing, washing, role playing). At the beginning the student's hand is guided to find the named body part co-actively with the educator. Gradually, the student controls the interaction and initiates movements and sequence of sensory activities. The student is asked, through tactile sign language, tactile and touch cues, to move the appropriate body part and match it to those of the educator or a doll. The student communicates through alternative communicative systems (tactile sign language, tactile symbols, tactile and touch cues). In parallel, objects (plastic rings, bracelets, cloth) are placed on the students' named body parts as cues to discerning them. In the next level she expands her body schema awareness through the activity of sorting clothes. The student seemed to enjoy participating in rhythmical activities. These activities are enriched with songs in tactile sign language and finger games involving naming and matching body parts.

Gradually, guidance is given to family members to emphasize naming the body parts as the child is actively participating in her daily routines at home (dressing, bathing, eating). The deaf-blind students, because of the restricted sensory information, may benefit from exposure to multiple opportunities to generalize a concept in different contexts [9].

The process that may at first be described as a sequence of sensory activities has been gradually developed to trigger internal representations. The student becomes aware of her body and controls her body parts, while matching them with those of the educator. Associated with the body schema formation is the fact that the student becomes aware of having a body with a center (midline) and two sides. Thus, cognitive development is fostered through the expansion of experiences [24, 2, 1, 25].

4. CONCLUSIONS

In the case of deaf-blind students, who face a combination of visual and hearing loss, the deprivation of environmental stimuli is often profound and of primary concern for their educators. The learning capacity is often so greatly reduced that special intervention is required in the form of alternative communication and teaching techniques. The education of deaf-blind students presents

a special challenge underlined by a key concept; a structured, predictable, adapted and accessible environment leads to controlled, intelligible and anticipated received information and stimuli. As a result, the communication and concept development, together with the student's autonomy should be promoted when teaching this student population.

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