

Original articles

The use of Augmentative and Alternative Communication as a resource for the children literature books interpretation

O uso da comunicação suplementar e alternativa como recurso para a interpretação de livros de literatura infantil

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ABSTRACT

Purpose: to analyze the use of augmentative and alternative communication as resource interpretation of children's literature books for a participant with cerebral palsy and with complex communication needs.

Methods: to this end, it used single subject design with a seven year old child diagnosed with cerebral palsy and with complex communication needs. The dependent variable was constituted in communication and interpretation skills and the independent variable was constituted in the interpretation of children's stories activities, using books and pictures adapted by augmentative and alternative communication. The activities were conducted in three stages, as follows: Baseline, Intervention and Maintenance. The sessions were filmed and recorded in record sheet, and then the data were analyzed quantitatively.

Results: the results showed remarkable advance in the number of successes achieved by the participant during the sessions correctly answering questions with autonomy and independence using the figures and some utterances.

Conclusion: it was possible to verify the effectiveness of the augmentative and alternative communication as an educational resource and support in comprehension and interpretation activities of stories in the classroom for students with complex communication needs.

Keywords: Education, Special; Cerebral Palsy; Juvenile Literature

RESUMO

Objetivo: analisar o uso da Comunicação Suplementar e Alternativa como recurso de interpretação de livros de literatura infantil por uma criança com paralisia cerebral e necessidades complexas de comunicação.

Métodos: para isso, realizou-se um estudo por meio do delineamento de sujeito único com um participante de sete anos com diagnóstico de paralisia cerebral e com necessidades complexas de comunicação. A variável dependente constituiu-se nas habilidades de comunicação e interpretação e a variável independente constituiu-se nas atividades de interpretação de histórias infantis, utilizando livros e figuras adaptadas por meio da Comunicação Suplementar e Alternativa. As atividades realizadas foram conduzidas em três etapas, sendo: Linha de Base, Intervenção e Manutenção. As sessões foram filmadas e anotadas em folhas de registro, e, posteriormente, os dados obtidos foram analisados quantitativamente.

Resultados: os resultados obtidos permitiram identificar notável avanço no número de êxitos alcançados pelo participante durante as sessões realizadas, respondendo de forma autônoma, independente e assertiva às indagações, por meio das figuras e algumas verbalizações.-

Conclusão: foi possível constatar a eficácia da Comunicação Suplementar e Alternativa como recurso pedagógico e de apoio nas atividades de compreensão e interpretação de histórias na sala de aula por alunos com necessidades complexas de comunicação.

Descritores: Educação Especial; Paralisia Cerebral; Literatura Infantojuvenil

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INTRODUCTION

Educational inclusion policies in the Brazilian reality have promoted several studies designed to develop and implement strategies to promote and/or facilitate the monitoring and learning of the target group of special education students (PAEE) in regular schools. Among this student body, there are those who have severe communication disorders and, consequently, have their interaction process often compromised. The teacher, in turn, finds it difficult to create and develop communication and education strategies to promote student access to activities and disseminated knowledge on the school environment^{1,2}.

This way, we have in the Augmentative and Alternative Communication (AAC) a possibility to promote or facilitate the communication of people with complex communication needs (NCC), using substitutive or complementary communication methods. People with NCC are those who, due to a wide range of physical, sensory and environmental causes have restrictions and limitations in their communication skills that directly interfere in their ability to participate independently in society³. In this sense, the resources used involves graphics, images, pictures, software, programs, gestures and facial expressions to promote communication between people with speech disorders and the environment. Therefore, communication is supplementary when one uses other means of communication to complement or compensate limitations that speech features, but without replacing it completely. Communication is alternative when one uses other means (plates, figures or concrete objects) to communicate instead of speech, due to the inability to articulate and produce sounds properly⁴.

Cerebral palsy is defined as a postural disorder and movement caused by damage to the immature brain, causing sensory, cognitive, communicative, behavioral, perceptual and convulsive disorders⁵.

The individuals affected show a delayed psychomotor development, characterized in muscle tone and quality of movement changes, and in some cases affects also the perception and ability to learn and interpret environmental stimuli. In some individuals with cerebral palsy, certain limitations may be accentuated by the difficulties they have to explore the environment and to communicate with the outside world^{6,7}.

In the school environment, commitment or lack of speech may hinder student participation in various activities, interfering, therefore, on their performance and learning⁸. Thus, AAC is interpreted as a link^{9,10}

between children with communication difficulties and others and can thus act as a communication mediator between students and their peers and teachers.

The fact that AAC has techniques aimed at the subject's orality and literacy development allows such a feature is used not only to promote the student's communication, but also enable academic teaching in the classroom, assisting in the development of concepts and reading and writing skills. The implementation of AAC procedures and systematic adjustments can contribute to a greater participation of students with complex communication needs in situations of academic teaching and learning, and thus ensure greater permanence of the student in regular education¹.

Thus, the teacher can and should insert in his activities various teaching resources activities of AAC in order to, qualitatively improve the process of teaching and learning, providing opportunities for the PAEE student the concrete participation in schooling. So, an educational resource that has had its positive effects seen is the use of materials adapted by AAC in activities involving adaptation, storytelling and interpretation of stories. Adapting stories books through low-tech AAC resources can be a valid strategy to provide access to students with disabilities to the various contents, making them more motivated and favoring the learning process¹¹.

In order to facilitate the acquisition and expansion of vocabulary and phrasal structure of children with cerebral palsy, a survey was developed with three children with oral commitment. To develop the research, two stories, from books that have been adapted, were told, using the figures from Boardmaker-Picture Communication Symbols (PCS). After analyzing the data, it was found that the subjects required less intervention in the second story, compared to the first story. Furthermore, an increase was found in the lexical repertoire and also the adhesion of other forms of expression by children, such as gestures, facial expressions and sound emission. It was possible to conclude, therefore, that this feature is important as it favored the expressive and receptive language, allowing subjects to express themselves, and consequently, demonstrate their potential and abilities¹¹.

It can be observed, therefore, that the use of AAC in academic activities, mainly involving stories, is a viable tool to be used by educators in the teaching/learning process of students with complex communication needs in the classroom. However, there is the need to

investigate which results would be obtained using AAC as an interpretation of stories instrument by this student body. Thus, the objective of this study was to analyze the use of AAC as interpretation feature of children's literature books for a child with cerebral palsy and complex communication needs.

METHODS

Ethical Procedures

This study was approved by the Research Ethics Committee of the Federal University of São Carlos, in the opinion CAAE: 26974314.2.0000.5504.

Then the guardians received and signed the Free Consent and Informed Term (FCIT). At the time of reading the FCIT completely, the researchers highlighted the objectives, procedures and intervention, and risks and benefits of research, leaving at school available to all a copy of the research project and also the opinion of the Ethics Committee approval.

Participant's selection and characterization

This research was conducted with a seven-year-old participant, diagnosed with Cerebral Palsy, also called chronic nonprogressive encephalopathy of childhood, characterized by interference in the musculoskeletal system functioning with moderate level of neuromotor impairment. In addition to the neuromotor disabilities, he also had limitations performing daily life activities from which the participant could not go to the bathroom alone, dressing, limitations in mobility such as lifting and sitting alone and walk by the school, depending on someone to help him. Regarding motor skills, the participant was using walker and orthopedic boots, had muscle rigidity, thus compromising his coordination. In academic skills, held very few educational tasks, most of the school year, did not perform any activity. His communication skills were limited, with complex communication needs characterized by limitations in intelligibility by the interlocutors, issuing some words such as aunt, water, no and yes (through gestures with the head) and not formulating sentences.

For participant selection were used as criteria for inclusion in the study: a) the student has cerebral palsy; b) present complex communication needs, as specified above; d) be attending school.

The researchers established contact with audiologists, with the psychologist and the social worker of the

institution explaining the research objectives and the participant selection criteria, asking these professionals a list of students diagnosed with cerebral palsy and complex communication needs.

The list of students indicated by the professionals contained a total of six students and only one of these met the selection criteria.

Place

Data collection took place in a special education school in a city in the state of São Paulo. In this school, there are enrolled 159 students with various diagnoses.

Materials

For the research development, adjustments were made from children's story books, as illustrated in Figure 1: Little Red Riding Hood, Snow White and The Three Little Pigs. Along with these books, were drawn up books of questions with seven, eight and seven questions respectively, with which the student would use figures to provide answers concerning the interpretation of the stories. The figures were plasticized and contained Velcro on the back so that they could be attached to the books of questions. These figures were made with 8x8 cm, due to the vision problem presented by the participant. Also were used: digital camera, support for the camera and the Boardmaker Software¹².

Data Collection Instrument

The log sheet used was composed of participant's name, session number, phase, date and session length. Below there was a table consisting of a horizontal axis which is noted the number of questions held in the session, crossing with the vertical axis containing numbers from zero to three that corresponded to the participant's performance in answering to questions referring to the history, follows:

- 3- Independence (intelligible verbal response, pick up or point right figure)
- 2- Verbal Assistance (researcher offers some verbal cue to pick up or pointing the figure)
- 1- Physical Assistance (researcher helped the participant take the picture when he did not show initiative to get it)
- 0- Unsuccessful (when he took the wrong picture or did not respond in any way).

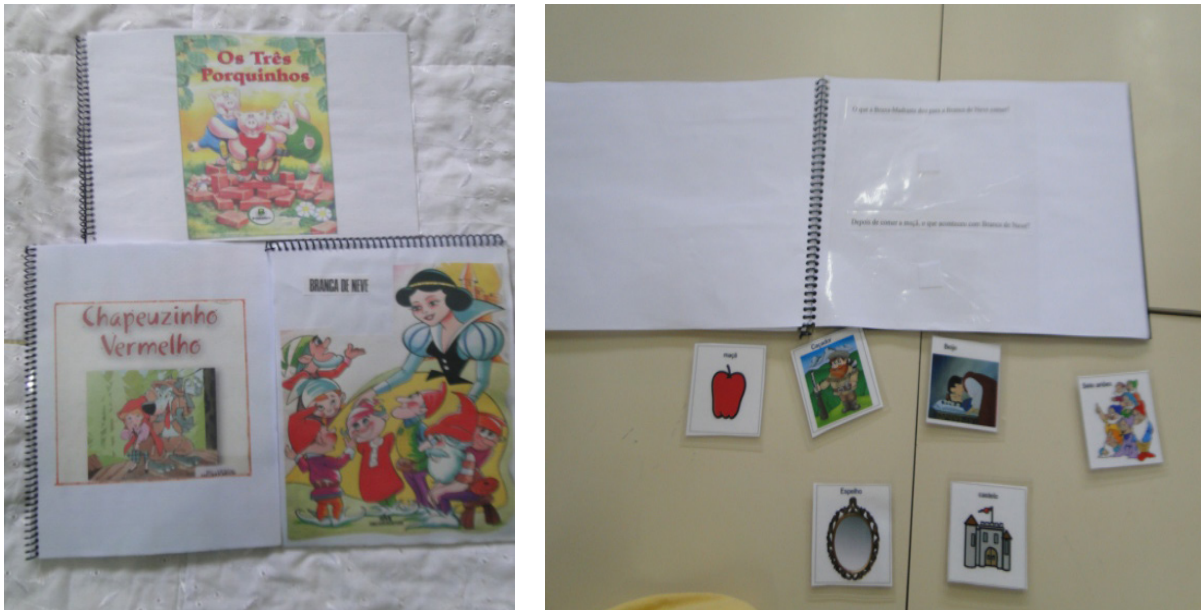


Figure 1. Adapted stories of children's literature

Research Design

To determine the relation between the dependent variable (stories interpretation) and the independent variable (stories adapted by AAC) this research was conducted by AB design, in which the subject is compared to himself. Data collection happened in three stages: Baseline, Intervention and Maintenance. In total, nine sessions were conducted (three of baseline, three of intervention and three of maintenance), conducted over five months¹³.

Experimental Procedures

Step 1: Baseline

First the children's story was read to the student. Later, some questions about the story were made from the book of questions, so that the student did the interpretation, with a waiting time of 30 seconds for the answer. The figures were available, but at this point no verbal or physical stimulus was offered. There were three sessions in three days, and used a different story every day. All sessions were videotaped for later analysis.

Step 2: Intervention

First, a story was read and then were asked some questions, once at a time, with a waiting time of 30

seconds for the participant's answer. The student should take or point the corresponding figure to provide the answer to the researcher, or, if possible, answer verbally. There were three sessions in three days, with a different story every day.

Step 3: Maintenance

To assess the maintenance of the participant's intervention, the data were collected three months after the intervention. All maintenance sessions were identical to baseline sessions, ie, without any stimulation or reinforcement, with a waiting time of 30 seconds for the participant's answer.

Reliability Index

In order to assess the reliability index of the study stages, the second author coded 25% of the sessions of each stage, randomly selected. The concordance calculation was 95%, indicating adequate reliability.

Data analysis

The log sheet data could also be analyzed for the participant's level of independence during the sessions. Data were expressed in bar graphs considering the score for the level of independence and the participant's performance.

RESULTS

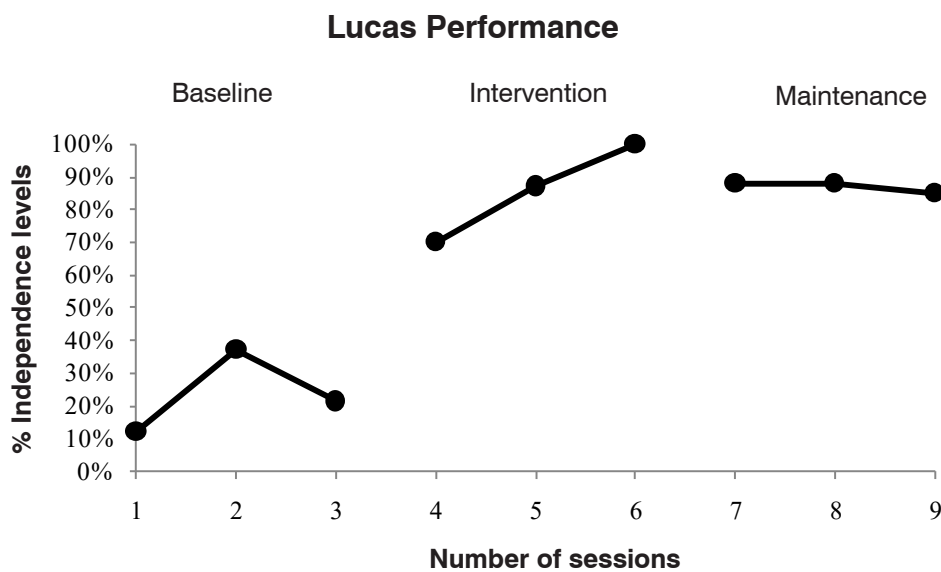


Figure 2. Participant's performance in Baseline, intervention and maintenance sessions

According to Figure 2, in Step 1 - Baseline: it is observed that the participant did not use the figure anytime, ignoring it completely in the three sessions, issuing verbal responses on some questions. In Session 1, in question four, the participant verbally answered to a question, in which the researcher asked: "What was made the home of the oldest little pig?" And he answered: *brick*, reaching a percentage of 12%. In Section 2, verbally answered the question six, which was asked: "After eating the poisoned apple, what happened to Snow White?" the participant said: *died*, and in question eight, when asked him: "When Snow White and the prince got married, where they went to live?" and the participant replied: *castle*, reaching a total of 37% of correct answers. In the Session 3, answered verbally only question three, in which the researcher asked: "Who did the Little Red Riding Hood meet in the forest?" the participant said: *bad wolf*. In the other questions there was no kind of answer, with a total of 14% accuracy.

In Step 2 - Intervention: it is possible to observe significant changes in the responses given by the participant. In the first three questions of Session 1 (The Three Little Pigs), the participant needed physical assistance (the researcher conducted the participant's hand so that he caught the figure and put in the answer book), in the fourth question held the answer independently ie took the picture and put in the answer book without the researcher's assistance. Question five was carried out with researcher's verbal assistance, and

questions six and seven were answered independently (in a question took the correct figure and placed in the answer book and in another question answered verbally). In the first session the participant reached a percentage of 70% accuracy.

In Section 2 (Snow White), from the eight questions, six were answered with independence, that is, the participant took the figure corresponding to answer the question asked by the researcher and two required verbal assistance to complete, thus presenting, a total of 87% of accuracy.

In Section 3 (Red Riding Hood), all seven questions have been answered independently, that is, the participant pointed to the correct figures alone, without any physical or verbal assistance, reaching a total of 100% success.

In Step 3 - Maintenance: no assistance was offered to the participant at this time, and held three sessions, as shown by Figure 2. The first maintenance session, Session 7, was crafted story "The Three Little Pigs," there were seven questions in the book of questions, and only in question two the participant answered incorrectly, taking the wrong figure to provide the answer, getting 88% accuracy. In the other seven questions he answered correctly, taking or appointed independently correct figure. In Session 8, the second session of maintenance, we used the "Snow White" story with eight questions, and the question two the student took the incorrect figure to provide the answer in the other seven questions answered correctly independently,

obtaining 88 % accuracy. In the third maintenance session, Session 9, was used the “Red Riding Hood” story with seven questions, with six questions the student answered alone and all answered correctly, except for question three, in which the student took the incorrect figure to provide the answer, thus obtaining 85% accuracy.

It was found that in Stage 1, a total of 22 items, participant showed 04 verbal responses correct and 18 absence of verbal or physical responses. In Step 2, a total of 22 questions, the participant needed assistance in 06 questions and answered correctly and independently to 16 questions, 01 verbally and 15 using the figures. In Step 3, a total of 22 items, 19 questions were answered correctly and independently using figures and three were answered incorrectly, with the use of figures.

It appears that there was a decrease in the number of verbal responses provided by the student during the research, but a considerable increase in the number of assertive responses by figures.

DISCUSSION

The results allow to identify remarkable advance in the number of correct answers achieved by the participant during the sessions.

In conducting the Baseline stage it was possible to verify that the participant did not use the figures available as support to provide answers to the researcher, with only occasional verbal responses.

Such information may raise questions such as: how was the communication between teacher and student during activities? How did the student answer the questions asked by the teacher? How did the teacher receive these answers? And also, how did the teacher assess the student's performance and success in academic activities, and specifically in the interpretation of stories and texts?

Considering the student with cerebral palsy without the support of features such as CSA in a classroom context in which they are only evaluated by the results of the activities (errors/hits), it could be considered that he did not understand the contents worked because the number of errors is power greater than the correct. Once alternative methods of communication and expression are offered, there is considerable increase in the number of hits, demonstrating that his performance in the activity was not caused by difficulties in comprehension or understanding, but by the absence of communication alternative methods, making it

impossible to express himself. This finding indicates the need for the students learning evaluation go beyond the accounting errors, because often the method used in the evaluation does not consider the student's specifics and interferes negatively on his performance, omitting his actual evolution.

When a teacher only values the final product of a production or activity of the student, all the committed effort to the realization is ignored, as well as the design and creation of knowledge complexity. However, making adjustments and making use of resources that promote/encourage communication of the student with strong communication difficulties, it is possible that he gets involved more deeply in the activities and support in the figures to provide the required answers. In this sense, it is important that the implementation of these features are compatible to the students' needs⁸, allowing them to express themselves in alternative ways in the classroom¹⁴. This way you can check more effectively the understanding and interpretation of history ability, by the child, which is the purpose of the activity carried out in the classroom.

In the second step, it is possible to see a gradual success of the student hits regarding to answers. In the first phase, a greater number of physical assistance was needed, which is common, since the participants had no previous contact with the CSA, and therefore was not aware of its use. After the physical assistance, it was perceived a hit sequence independently, alternating with a few verbal assistance.

This result indicates, in this case, the effectiveness of the CSA insertion as an educational resource to be recommended and used for the interpretation of stories activities in the classroom for students with strong communication difficulties, being a useful resource. Besides allowing/encouraging student's participation and involvement in classroom activities and promote the success of his performance, the CSA in this context can also contribute to the increase in the lexical repertoire of students with communication difficulties, as the student can use the figure in other contexts and expand his vocabulary¹¹, considering that this does not refer only to the spoken language, but the various forms of expression and communication.

In the third stage, Maintenance, the participant was successful on most questions, making the entire process of selecting the right figure independently, demonstrating that he has learned to use the figure as a support to answer questions of interpretation and also, that he has capacity to understand what was said to

him, contrary to what his teacher believed. By choosing the correct figure after being asked by the researcher, the student demonstrated present preserved receptive skills and therefore understands what you say. However, due to limitations in expressive skills, the participant may have his school performance impaired and, through this study, it appears that in these specific activities, such limitations were addressed by the use of the CSA, which enabled the issue of answers.

The participant has no problems related to reception and understanding of information, however, due to the difficulty of speech, ie speech restricted, could not express his skills and abilities. AAC, as a supporting feature, enabled the participants could express, through the figures, which other students would express through speech. Although the number of verbal responses has declined over the sessions, it identified considerable increase in the number of responses hits, as well as independence and autonomy in the use of figures, with this advance, the demonstration. That is, in situations of verbal response requirement (as in the classroom) the student has his performance committed and when alternative means of communication are offered, his performance increases, indicating the effectiveness of these resources in this situation.

As has been identified in another study¹⁵, it was found that the AAC assists in the process of teaching and learning, providing development of narrative discourse, lexical repertoire increase and proper syntactic organization to the child. These authors claim that, through the use of AAC in activities involving stories, the teacher encourages learning new lexical repertoires (vocabulary increase, because each story involves a context, characters and different plot), extends the phrase structure (marking the sentence's components as subject, verb and adjective, noun, etc., through the figures, facilitates learning by children, because the figures are visible and each in its place), and the narration acquisition and development (understand that the story has a beginning, middle and end), contributing to the interaction and communication evolution of the student (oral language is encouraged, because when the student delivers the figure, the mediator provides the model for the student to repeat by speech).

Still, have been described¹⁶ the AAC use benefits to person with NCC, in the sense that it may provide a vocabulary increase and facilitates language syntax acquisition, due to the fact that AAC brands specifically syntactic relations. The AAC can compensate

the phonological and articulatory difficulties clarifying words that would be difficult to produce and allowing the child an opportunity to communicate.

The AAC use is seen as an opportunity to promote oral communication as it offers a support by means of visual processing. The use of the AAC can be a transitional strategy to help children understand the idea that words represent objects, people, thoughts, and that can be used to interact and communicate with others¹⁷.

However, it is noteworthy that there must be sensitivity and knowledge by teachers and other professionals who work in that environment to understand and identify the needs and demands of these students, so that, they can seek strategies, methods and resources that meet them. Often the implementation of these tools may require the performance of professionals from other areas such as health, adapting resources and materials to educational activities¹⁸, suggesting the need for a collaborative work among professionals. Thus, it is possible to ensure access of PAEE students with complex communication needs not only to the school as a physical location, but also to the ideas and content disseminated in the environment.

Often, the skills and abilities of these students are inhibited and omitted by methodologies, practices and resources that do not consider their particularities. Such issues can cause deficits in the teaching and learning of PAEE students because, since their specifics are not met by the school environment, their participation, involvement and performance may be affected. This fact was verified by the participant student teacher's reaction, being surprised with his performance on the activity performed.

CONCLUSION

CSA as a pedagogical resource enabled the student with communication problems demonstrate his academic skills (in this case, understanding and interpretation). This way, he can enter in the academic activities performed routinely in the classroom, without prejudice to their learning and performance.

The study presented makes possible to verify the effectiveness of the AAC as an educational resource and support in understanding and interpretation of stories activities in the classroom and may support further research. However, it is suggested that it be performed with a greater number of participants with different age groups and/or different educational modes, thus enabling more generalized and reliability of the results.

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