



# Benefits of Animal Assisted Intervention for students with verbal language disorders

## Benefícios das Intervenções Assistidas por Animais para estudantes com alteração de linguagem verbal

## Los Beneficios de las Intervenciones Asistidas por Animales para estudiantes con trastornos del lenguaje verbal

*Fernanda Celeste Sánchez Weber\** 

*Dayane Stephanie Potgurski\** 

*Camilla Fernandes Diniz\*\** 

*Maria Beatriz Paludo Pizzolotto\** 

*Luana Zimmer Sarzi\** 

*Renata Gomes Camargo\** 

### Abstract

**Introduction:** The Animal Assisted Intervention with the mediation of dogs comprises activities for therapeutic and / or educational purposes, in which the dog is the main mediator. **Objective:** To present and analyze the partial results of the activities developed in a Research and Extension Project, carried out at the Colégio de Aplicação da Universidade Federal de Santa Catarina- CA/UFSC, showing the benefits of Animal Assisted Intervention with the mediation of dogs in the process of development and learning, especially of the verbal language (speaking, reading and writing) for participating students. **Method:** The qualitative research approach was followed and Content Analysis<sup>1</sup> was carried out on the records in the daily field of the activities developed. **Results:** The results of three actions carried out in

\* Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil.

\*\* Colégio Santa Terezinha, Florianópolis, SC, Brazil.

FCSW: conception of the study; data collection; drafting of the article.

DSP: conception of the study; methodology; data collection; drafting of the article; critical review.

CFD: methodology; data collection; drafting of the article.

MBPP: methodology; drafting of the article.

LZS, RGC: conception of the study; methodology; data collection; drafting of the article; critical review; advising.

**Correspondence email address:** Dayane Stephanie Potgurski - [dayanepotgurski@gmail.com](mailto:dayanepotgurski@gmail.com)

**Received:** 06/10/2020

**Accepted:** 22/02/2021



the project during the first semester of 2019 are presented. The analysis of these activities showed that the students' verbal language skills were instigated. **Conclusion:** It is considered that during the project, the participants of Animal Assisted Intervention with the mediation of dogs have been showing improvement in learning, as well as improvement in speaking, reading and writing skills.

**Keywords:** Animal Assisted Therapy; Language Development; Learning.

## Resumo

**Introdução:** As Intervenções Assistidas por Animais- IAA- com a mediação de cães compreendem atividades com fins terapêuticos e/ou educacionais, nas quais o cachorro é o principal mediador. **Objetivo:** Apresentar e analisar os resultados parciais das atividades desenvolvidas em um Projeto de Pesquisa e de Extensão, realizado no Colégio de Aplicação da Universidade Federal de Santa Catarina- CA/UFSC, evidenciando os benefícios das IAA com a mediação de cães, no processo de desenvolvimento e aprendizagem, sobretudo da linguagem verbal (fala, leitura e escrita) para os estudantes participantes. **Método:** Seguiu-se a abordagem qualitativa da pesquisa e realizou-se a Análise de Conteúdo<sup>1</sup> dos registros em diário de campo das atividades desenvolvidas. **Resultados:** São apresentados os resultados de três ações realizadas no projeto durante o primeiro semestre de 2019. A análise dessas atividades demonstrou que foram favorecidas as habilidades relacionadas à linguagem verbal dos estudantes. **Conclusão:** Considera-se que no decorrer do projeto, os participantes das IAA com a mediação de cães vêm demonstrando melhora nas aprendizagens, bem como aperfeiçoamento nas habilidades de fala, leitura e escrita.

**Palavras-chave:** Terapia Assistida com Animais; Desenvolvimento da Linguagem; Aprendizagem.

## Resumen

**Introducción:** Las intervenciones asistidas por animales con la mediación de perros comprende actividades con fines terapéuticos y / o educativos, en las que el perro es el principal mediador. **Objetivo:** Presentar y analizar los resultados parciales de las actividades desarrolladas en un Proyecto de Investigación y Extensión, realizado en el Colégio de Aplicação da Universidade Federal de Santa Catarina- CA/UFSC, mostrando los beneficios de las intervenciones asistidas por animales con la mediación de perros en el proceso de desarrollo y aprendizaje, especialmente del lenguaje verbal (hablar, leer y escribir) para los estudiantes participantes. **Método:** Se siguió el enfoque de investigación cualitativa y se realizó el Análisis de Contenido Content de los registros en el campo diario de las actividades desarrolladas. **Resultados:** Se presentan los resultados de tres acciones llevadas a cabo en el proyecto durante el primer semestre de 2019. El análisis de estas actividades mostró que las habilidades del lenguaje verbal de los estudiantes fueron instigadas. **Conclusión:** Se considera que durante el proyecto, los participantes de las intervenciones asistidas por animales con la mediación de perros han ido mostrando una mejora en el aprendizaje, así como una mejora en las habilidades de expresión oral, lectura y escritura.

**Palabras clave:** Terapia Asistida por Animales; Desarrollo del Lenguaje; Aprendizaje.

## Introduction

Dog therapy has started in Brazil in the 1950's, in the State of Rio de Janeiro. This activity was inserted in the country by psychiatrist Nise da Silveira, who became a pioneer and a reference in the studies of emotional relationships between patients and animals, establishing the dog as a co-therapist. Nise took animals, mainly dogs, and the relationship with them to the interior of psychiatric hospitals<sup>2</sup>.

Assuming that the dog can be a reference element and a safe harbor, different studies<sup>2-5</sup> point to the benefits of their non-invasive presence in activities. The transmission of conditions of care and its trust for human beings stand out in the most diverse spaces and in different ways of acting (activities, therapies, education).

According to current evidence, kinotherapy is defined as actions with educational and/or therapeutic purposes in which the dog becomes the main mediator. Such actions are currently called Animal

Assisted Interventions – AAI – with the mediation of dogs. It acts as an instigating work agent, mediating practices with specific objectives and consequently having an impact on the interpersonal and collective relationships of the individuals involved, in a way that promotes the social, emotional, physical and/or cognitive improvement of humans<sup>6-8</sup>.

As to the comprehension of AAI with the mediation of dogs, the dog also acts as a facilitating agent in a way that through its participation the previously established activities are developed, also aiming at educational inclusion<sup>2</sup>. In this sense, Animal Assisted Education – AAE, more specifically, means an educational activity in which the animals contribute to the process of teaching/learning, once they become a motivating influence on its development and quality<sup>5</sup>.

In this sense, in the Laboratory School of the Federal University of Santa Catarina – CA/UFSC, the project named “Proposal of activities mediated by animals in the Laboratory School through kinotherapy” is developed since 2015, and the activities carried out by the project happen on a weekly basis. The project aims to provide education and assisted therapy with dogs with the objective of investigating the benefits of these activities for the qualification and development of oral and/or written language abilities in the participant students, which present disturbances in verbal language and/or learning difficulties, bearing in mind that language is important not only for thought organization but also for comprehension and categorization of the world around us<sup>9</sup>.

Currently the AAI project with the mediation of dogs at CA/UFSC comprises therapy and animal assisted education. These actions are carried out by a transdisciplinary team composed by Special Education and Mathematics teachers, undergraduate academics from the Speech-language and Audiology, and Pedagogy courses, and two co-therapist dogs and their guardians. The work conducted can provide to professionals, especially those in education and health, a vision about the theoretical-practical resources available that can subsidize interventions aimed at AAI with the mediation of dogs.

Throughout the five years of the project, it was possible to understand that the AAI with dog mediation can aid in the promotion and development of orality, reading and writing, providing an improvement in comprehension, oral production

and phonological awareness<sup>10</sup>. In this sense, this article aims at presenting and analyzing the partial results of the activities carried out throughout 2019 in this project, through dog mediation, pointing out the benefits of these practices in the process of development and learning, especially in verbal language (speech, reading and writing).

## Method

The project that substantiates this work is configured as an action of research and extension and for this purpose, it is registered on the Integrated System of Research and Extension Projects Management (SIGPEX-UFSC). In order to implement its practices on the Laboratory School at UFSC in 2015, it was submitted and approved at the Collegiate body. Besides that, it was also approved on the Ethics and Research Committee (CEP) and on the Ethics Commission on Animal Use (CEUA-UFSC).

The methodology of this work presents a qualitative characteristic, thus, it stresses the constitutive feature of this approach, as a descriptive character of investigation, substantiating the discussion in the process of development of actions, not only on the final result<sup>11,12</sup>. Thus, the interactions performed by the participants during the AAI activities with dog mediation will be analyzed qualitatively, as well as the benefits of said activities for the development of verbal language. The qualitative analysis brings theoretical-practical contributions to the fields of education and therapy, in which the researchers exercise the subjective role of participants and the objective role of investigators.

The student inclusion criteria for participation in the project stem initially from the conversation the team had with the CA/UFSC teaching staff, from the articulation among Special Education professors, project coordinators and the common class teachers that in grade meetings indicate the students that present the target public characteristics suited for the project: disturbances in oral language and/or learning difficulties in reading and writing. Following the teachers' recommendations, a meeting is conducted in order to clarify information, in which the project is presented to the parents and/or guardians of the students referred and the invitation to participate on the project is made.

The students referred, with the authorization of their guardians to participate in the project (through

a Free and Informed Consent Form), take part on the evaluations conducted at the CA/UFSC with the Special Education teachers and scholarship holders. The above-mentioned activities are composed by activities that involve speech, writing, phonological awareness, attention abilities and memory.

One example of an activity used as an instrument in the evaluation process is the oral and written account of a narrative based on a figure previously chosen by the student. This evaluation is registered through the recording of videos subsequently used as much for the observation of specific disturbances as for contrastive analysis of speech and oral language components. After a year of the student's participation in the project a new evaluation is conducted, with the objective of comparing the results before and after the participation of the students in the AAI with dogs.

Currently 20 students participate in the AAI activities with dog mediation, divided in two groups for the work; group 1 is composed of students from the early years of Elementary School and group 2 is composed of students from the final years of Elementary School and High School. The meetings are carried through weekly with interspersed

participation of the groups, that is, on the first week of the month the students from group 1 participate in the project's activities, and in the second week group 2 students participate, while in the third week, group 1 participates in the activities again, and so on.

The project encounters have approximately 1 hour of duration and are carried out soon after the end of classes in the afternoon period, at CA/UFSC. In order to develop the proposals, many spaces of the School are used, such as the classrooms and the external areas available, providing different experiences and activities, which are previously planned by the team and mediated with the dog.

The observation and register of all activities conducted in a field diary is done by the researchers who are part of the project team and catalogued in the archive. The weekly reports of the encounters are described with general observations about the activity: the objective, the necessary resources, the methodology and the description of the execution of the activity and the registers of the perceptions on individual and collective development of the students, as it is shown on Chart 1.

**Chart 1.** Example of the organization and systematization of information by the project team.

Figuration activity	
Objectives	To favor figuration, bodily movements, expressive language, focus and attention.
Necessary materials	Miniature toys (frog, rooster, horse, fish, lion...)
Methodology	With the help of the dog, students have to look for a box in the School's warehouse.
Collective results	The students presented empathy in helping their colleagues with difficulty to carry out the task.
Individual results	Student 1: presented fear at the dog's barks, but with the aid of the teachers was able to conclude the activity with success.

On the field diaries the registers consider speech, reading, writing and phonological awareness abilities, the executive functions of attention and memory, the participation and social interaction among students, besides their relationship with the dog. The dissertation of this article presents the AAI activities with dog mediation developed and registered in a field diary and their benefits to the verbal language development process of the students.

Bardin<sup>1</sup> points out that the analysis of content can also be an analysis of meaning, because it

minds a description of the content extracted from communication and/or registers and conducts the necessary interpretation. Thus, from this analysis<sup>1</sup> the registers in a field diary of three activity proposals carried out on the first semester of 2019 were selected and analyzed, with the main objective of qualifying verbal language. The time slice analyzed comprised the meetings conducted in the first semester of 2019, as well as the elements registered on Chart 2.

Bardin<sup>1</sup> points out that the analysis of content can also be an analysis of meaning, because it minds a description of the content extracted from communication and/or registers and conducts the necessary interpretation. Thus, from this analysis<sup>1</sup> the registers in a field diary of three activity propos-

als carried out on the first semester of 2019 were selected and analyzed, with the main objective of qualifying verbal language. The time slice analyzed comprised the meetings conducted in the first semester of 2019, as well as the elements registered on Chart 2.

**Chart 2.** Activity elements registered on the time slice analyzed.

Activity developed	Participant group	Activity objective	Mediating dogs	Description of the dog's mediation
Hidden box and figuration	Group 1 and group 2	Instigating oral language, reading, writing, attention, planning and verbal memory	Argos and Rescue	Argos: using the nose, mediating the search for a small box hidden on the patio. Rescue: finding the hidden students and indicating the place through barks
Oral story	Group 1	Broadening expressiveness and instigating verbal memory	Teobaldo	Choosing biscuits to define the order of participation of each student and thus motivating student participation
Questions for the dog	Group 1 and group 2	Favoring oral production, attention/memory skills and qualification of reading and writing	Argos	Expressing answers to the questions made by students through barks

## Results

The results of three actions carried out in the project during the first semester of 2019 are presented. The first activity, conducted with both groups (1 and 2), presented as an objective to instigate oral language, reading, writing, attention, planning and verbal memory.

In order to execute this activity some toys in animal shapes were used: frogs, roosters, horses, fish, lions and a small box in which the toys were hidden. The participant dog's mediation was relied upon: Argos (a 6-year-old American Staffordshire) and Rescue (6-year-old Labrador). Both dogs present characteristics of active, obedient and focused temperament<sup>1</sup>; they like to play a lot, being euphoric when interacting with the students and project team. Both Argos and Rescue found themselves in the same external school environment, along with the students; however, they participated in the activity

in an interspersed manner, being still and close to the guardian until it was their time to act.

Initially some students presented fear to approach the dog. However, throughout the meetings, with peer support, they began to show breakthroughs in relation to interpersonal skills, presenting confidence to approach and pet the dog, as Figure 1 shows.

The AAI encounters with dogs carried through at the CA/UFSC explored and reframed the different spaces available. This activity demanded a broad space, in a way that the student in partnership with the dog could find the hidden objects; for this reason, the activity was conducted on the external area of the school, known as the "warehouse", as Figure 2 shows.

Initially, there was an explanation about the activity that was divided into two phases. On the first phase with the help of Argos, the students had to look for a hidden box in the patio, which possessed a toy animal inside. When finding it, the student had to memorize the sound produced by the animal hidden in the box.

The second phase was based on the use of figuration, carried out by the students in order to summon the dog's attention. Figuration consisted

<sup>1</sup> It is believed that it is acceptable to discuss dog personality considering "the usual pattern of behavior and their individual traits", which is directly related to biological aspects stemming from their race, as well as the training received by the dog throughout its life.



SOURCE: PROJECT ARCHIVE

**Figure 1.** Students from the early years approaching and petting the dog.



SOURCE: PROJECT ARCHIVE

**Figure 2.** Students from the early years of Elementary School performing the activity on the external area of CA/UFSC.

in doing a series of body movements and sounds, with the objective of directing the dog's attention to the person who was doing the activity.

Thus, in order to do the figuration, the students had to imitate the sound and the movements of the animal found in the box and get the attention of Rescue, the dog. Following that, with a toy that had an odor recognized by the dog, the student should hide in a place in the warehouse in a way that it could find them. In the moment that the dog found the student, it would begin to bark, and it would be up to the students to count ten barks and throw the toy as far away as possible, in order for the dog to go after it, as a way to award it.

During the activity, two students stood out by helping the colleagues that showed more difficulty in maintaining a focused attention. These students, by showing empathy and a more skilled communicative profile during activities, provided the qualification on the group's interactions and in the communicative intention of colleagues that presented difficulty in this aspect. When it comes to orality, on the whole, the students showed good performance.

The students that presented phonological disorders manifested difficulties in pronouncing the animal sounds, for example, "*cocoricó*" instead of "*corocicó*" (cock-a-doodle-doo) and "*clocodilo*"

instead of "*crocodilo*" (crocodile). By presenting these difficulties the students were aided by the project team, mainly the academics of the Speech Therapy course, which conducted orientation and monitoring for the correct pronunciation of the phonemes.

The second activity conducted with group 1 that was composed by students of the early years of Elementary School presented as a purpose to elaborate a collective oral story, with the objective of qualifying oral language, broadening expressiveness and instigating verbal memory. In an individual manner each student had to orally create a piece of the story, adding an object and an animal, the one found on the first activity described. The order of participation on the story was mediated by the dog Teobaldo (7-year-old Pekingese with calm temperament, passive, patient and playful), and it chose who was going to start or continue with the story, a motivating factor for the student's involvement.

Chart 3 illustrates the final result of the collective story created, evidencing the transcription of the contributions of each student, as well as how they developed the narrative, inserting the objects and animals found on the previous activity, with the dog Argos.

**Chart 3.** Elements of the collective story elaborated by the students.

Student	Object	Animal	Transcription of contribution to the story
Student 1	Hat	Horse	Once upon a time there was a cowboy horse named Mr. Horse. He began to walk in a village that he didn't know, and then he saw a hat.
Student 2	Book	Fish	The horse found a little fish that was diving on this village. That was when, all of a sudden, a sea horse appeared carrying a book called "fish book". The little fish then asked "why are you carrying this book?", then the sea horse answered that "it is because I need to take the book home to read". The little fish was sad because he didn't want to carry the book, but he took it home anyway. When he arrived, there were two fish there: the father and the mother, and then were very united and happy to meet the fish with the book. They hugged the fish and the book and went to bed.
Student 3	Sharpener	Duck	The other day when the fish awoke, it realized that it had turned into a duck. It did not know what had happened, and that was when it found a sharpener of truth and found out that a horse was responsible for all of it. Then the mystery was revealed: the guilty one in this whole story was Mr. Horse.
Student 4	Comb	Cricket/ grasshopper	The duck was also a magician, so it transformed the horse into a cricket/grasshopper. That was when the cricket/grasshopper asked: "How can I comb my hair if I don't have hair anymore?"
Student 5	Glasses	Frog	Mr. Cricket fell into a hole and inside the hole he found a crazy frog that was a scientist. So, the crazy frog threw dust on top of the cricket. He looked up and saw it written there that this was Arena 51, which was forbidden. That was when he got a flashlight and went back there and found a book that wanted to kill him. The scientist frog ran to his lab and the fish was there, he wanted to transform the fish into a pair of glasses that shot a bunch of things. All of a sudden, the cricket ran with the machine that turned animals into other animals, and then he was able to transform with the glasses, shooting at everything the scientist frog into a duck.
Student 6	Glue	Duck	The scientist frog was very mad and transformed the little duck into a glue stick.
Student 7	Microphone	Rooster	The glue stick threw a magic microphone and transformed the scientist frog into a rooster. Then he went to live as a rooster in a farm with his chicken friends. The magic microphone exploded.

Throughout the creation of the collective oral story, several aspects could be worked and favored, qualifying the development of verbal language of students with: bodily and facial expressiveness, creative and imaginary repertoire, orality, voice tone. Motivated by Teobaldo's presence choosing who was next in order to continue the story, the

students showed concern about the coherence in continuing what was being told, which provided them the ability to maintain attention and instigated verbal memory in the moment when the colleagues were talking, as well as planning and thought organization in order to tell their part in a way that all of them could understand, as Figure 3 shows.



SOURCE: PROJECT ARCHIVE

**Figure 3.** Students from the early years doing the activity.

The third activity, conducted with both groups, had as an objective to favor oral production, attention and memory skills and the qualification of reading and writing. In order to develop those, question cards were used, in which the students themselves produced questions directed at dog Argos, with the intention of elaborating, writing and reading their questions to it. Soon afterwards, the student had to throw the toy and present to the dog one of the commands already learned, for example.

Initially the students wrote the questions about curiosities they had about Argos. Some students had difficulty thinking of possible questions, but with the help of Special Education teachers and of the academics of the Speech Therapy course, they were

able to fulfill the task. Next, the students directed themselves to the school's external area, where the activity was continued, as Figure 4 shows.

Through a raffle, the order in which each student should read a question to the dog was defined, and everyone was excited for the moment when they would be summoned. Chart 4 shows the questions elaborated by the students that were present in the meeting in which the activity was developed.

The students seemed interested in the dog's answers, and it expressed with a bark the representation of "yes" and with silence the representation of "no". The answers that demanded numbers, for example, the dog's age and the languages it understands were registered by the amount of Ar-





SOURCE: PROJECT ARCHIVE

**Figure 4.** Students from the early years doing the activity.

**Chart 4.** Questions elaborated by the students to the dog.

Student	Question for the dog
Student 1	How old are you?
Student 2	What color do you like?
Student 3	Do you like me? Do you like dog food/water?
Student 4	Are my friends beautiful? Does the dog bark?
Student 5	Where did you come from? Which country?
Student 6	Do you have a girlfriend?
Student 7	How many languages do you speak?

gos's barks, as counted by the students. All of the dog's reactions to the participant's questions were conducted by commands of its guardian. Some students manifested comprehension difficulties and in maintaining a focused attention, especially students 4 and 8. In contrast, they presented easiness to memorize the questions and read for the dog.

During the activity, the students were guided concerning the importance of silence and self-control of their behavior, in order for the dog to understand and obey the commands given.

Although each of the three activities had different configurations, the objective of working with verbal language and developing and/or enhancing the social, emotional and cognitive aspects of the students involved was maintained. In face of the observations and registers in the field diary, it was also possible to identify that the AAI with dog mediation comprises and allows broader aspects to be worked, which surpass the learnings developed on the school setting, such as transdisciplinary work, social interaction and empathy.

## Discussion

The AAI mediated by animals in the educational field can motivate students during the activities developed in school, for example, in

reading and writing<sup>3</sup>. There are several benefits to these interventions and the dog can be an important mediator for the emotional, social and cognitive development<sup>14,15</sup>.

The first activity reported involved aspects of figuration, bodily movement, attention and expressive language. There is a strong connection between motor skills and the development of language, and thus the authors recommend the participation of dogs in activities that seek to promote the development of oral language on children<sup>3</sup>. For this reason, activities that involve this type of ability favor the development of the project's target students.

In this sense, it is asserted that children with linguistic difficulties can possess unsatisfactory motor skills<sup>16</sup>. It is then presupposed that motor and speech skills are connected to the control centers of the brain, highlighting the importance of motor movement consciousness during the activity, as a way to favor speech development<sup>17</sup>.

It was noted that, initially, some students presented apprehension due to the dog's barks during counting. However, during the activity, with the aid of the project team and the colleagues, they began to approach and develop an emotional bond with the animal, managing to conclude their performance with success. Thus, the approximation of children and animals builds a series of benefits, such as facilitating and mediating the relation between educator or therapist and the participants of the AAI, promoting the acquisition of new skills in an efficient manner by the students<sup>18,19</sup>.

The Phonological Disorder, as in the definition described on the DSM-5, involves phonological and speech production/articulation disturbances compromising speech intelligibility on the subject<sup>20</sup>. In relation to these aspects, it was possible to observe examples in face of some of the student's speeches, manifestation of difficulties in pronouncing animal sounds, such as “*cocoricó*” instead of “*corocicó*” (cock-a-doodle-doo) and “*clocodilo*” instead of “*crocodilo*” (crocodile), among others. The students counted on the mediation of the undergraduate academics in Speech Therapy and the incentive of the dog during the activity.

Concerning the second activity reported, it was noticed that the students were excited and organized in the activity, besides presenting plenty of creativity. The story is a text genre that presents constitution principles, and, among them, linguistic organization and its structural components<sup>21</sup>.

It can be noticed that the story elaborated by the students presents character preservation, in a way that the concern with object insertion and previously found animal is evident and occurs in a coherent and creative manner. As an example, one can observe the insertion of the animal “duck” and object “sharpener” in the story's events, in the segment created by student 3:

The other day when the fish awoke, it realized that it had turned into a *duck*. It did not know what had happened, and that was when it found a *sharpener* of truth and found out that a horse was responsible for all of it [...].

Some scientific articles<sup>16,17,22</sup> describe the association between imagination and the development of verbal skills. This aspect, associated with increasing self-control and attention to perform the activity with the dog, configures as an aid in the minimization of difficulties related to speech rhythm, a pragmatic component in the language and also collaborates to better comprehension and performance in activities. Overall, it is noted that in the development of actions like activity 2 there was a qualification in the oral and written expression of students.

The third activity involved written production and reading for the dog. Reading assisted by dogs aims at understanding the text that is being read and the interactive communication in a more secure and comfortable reading context, once it happens with the mediation of a trained dog that is highly sociable and non-judgmental, making the learning environment more favorable to students who present reading and writing difficulties<sup>19,23,24</sup>.

Even if the activity started with agitation, little by little the students demonstrated self-control and cognitive flexibility, because they were motivated to make the question, throw the toy and give commands to Argos. Studies suggest that dogs become socially attractive to kids who present communication shortfalls, and so their presence becomes an element of motivation for learning<sup>4,25</sup>.

The activity records presented results that ratify the benefits of AAI mediated by dogs for kids who demonstrated difficulty initiating interactions, attention and emotional problems, particularly in reading instructions that demand that they speak<sup>26,27,28</sup>. Besides that, as it was revealed by recent studies, the incorporation of trained dogs in reading programs can be particularly beneficial to these kids<sup>23</sup>.



The three activities presented in this studied displayed numerous benefits to the students, among them the promotion of the cognitive process of linguistic information, influencing the qualification of verbal language directly<sup>29, 30</sup>. The presence of the dog became the most significant activity, and it also promoted benefits for the executive functions, such as verbal memory, focused attention and self-control in the students, when reflecting and analyzing the commands and the answers presented by the dog, thus motivating interaction and favoring the qualification of different skills and learnings<sup>27, 28</sup>.

### Final considerations

It is perceived that over the project's term the participants of the AAI with dog mediation demonstrated an improvement in speech, reading and writing. Besides that, it was noted that with the progression of activities, the students also obtained stimuli related to memory and attention. The promotion of skills related to verbal language gained space with the development of practices that are not conducted routinely, both in school and in conventional therapies, for example, elaboration and storytelling. These activities were reframed by the presence of the dog, which acted as the main mediator and provided the expansion of the skills that were being explored with the students through the emotional bond established.

Among other benefits, one can also observe the increase in self-esteem and in the quality of interactions, intensified by the collaboration and effective participation on the activities with the dog. Thus, a predominantly significant improvement was observed in oral, emotional and educational language.

In conclusion, it was also noted that there is a wide diversity of practices when it comes to AAI with dog mediation, carried out by several professionals in the areas of Health and Education. However, there is still a lack of scientific studies addressing this theme, thus making it necessary to broaden the amount of research in Brazil approaching AAI with dogs and scientifically analyzing their benefits to human beings.

### References

1. Bardin L. Análise de conteúdo. São Paulo: Edições 70; 2011.
2. Fidler MD. A educação mediada por animais como atividade desenvolvete no processo de aprendizagem de estudantes com deficiência. [dissertação]. Santa Maria: Universidade Federal de Santa Maria - UFSM; 2016.
3. Gee NR, Harris SL, Johnson KL. The Tole of therapy dogs in speed and accuracy to complete motor skills tasks for preschool children. *Anthrozoös* [Internet]. 2015 [acesso em 2020 set 8]; 20(4): 375-86. Disponível em: <https://www.tandfonline.com/doi/abs/10.2752/089279307X245509>
4. Prothmann AC, Ettrich C, Prothmann S. Preference and responsiveness to people, dogs and objects in children with autism. *Anthrozoös* [Internet]. 2009 [acesso em 2020 set 8]; 22(2): 161-71. Disponível em: <https://www.tandfonline.com/doi/abs/10.2752/175303709X434185>
5. Martins MF. Animais na escola. In: Dotti J. *Terapia & Animais*. Osasco: Noética; 2006.
6. Duque JAV. Actividades y terapia asistida por animales desde la mirada del Modelo de Ocupación Humana. *Revista Chilena de Terapia Ocupacional* [Internet]. 2011 [acesso em 2020 set 8]; 1(11): 29-36. Disponível em: <https://revistaterapiaocupacional.uchile.cl/index.php/RTO/article/view/17080>
7. Dotti J. *Terapia e animais*. São Paulo: Noética; 2005.
8. Garcia PM, Batomé PS. Da Domesticação à Terapia: o Uso de Animais para Fins Terapêuticos. *Interação em Psicologia* [Internet]. 2008 [acesso em 2020 set 8]; 12(1): 165-7. Disponível em: <https://revistas.ufpr.br/psicologia/article/view/9676>
9. Saussure F. *Curso de lingüística geral*. São Paulo: Cultrix; 2002.
10. Camargo RG, Potgurski DS, Sarzi LZ, Diniz CF, Weber FCS. Cinoterapia: práticas transdisciplinares em Educação e Fonoaudiologia. In: Monteiro SAS. *A educação no Brasil e no mundo*. 5. Ponta Grossa: Atena; 2020. P. 39-48.
11. Gil AC. *Como elaborar projetos de pesquisa*. São Paulo: Atlas; 2010.
12. Silva, MJP. Percebendo o ser humano além da doença- o não verbal detectado pelo enfermeiro. *Nursing (São Paulo)* [Internet]. 2001 [acesso em 2020 set 8]; 4 (41): 14-20. Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/bde-11080>
13. Costa PP, Mezzomo CL, Soares MK. Verificação da eficiência da abordagem terapêutica miofuncional em casos de desvio fonológico, fonético e fonético-fonológico. *Rev. CEFAC* [internet]. 2013 [acesso em 2020 set 8] 15(6): 1703-11. Disponível em: <https://www.scielo.br/pdf/rcefac/v15n6/54-11.pdf>
14. Caetano, EC. *As Contribuições da TAA – Terapia Assistida por Animais a Psicologia*. [Trabalho de Conclusão de Curso]. Criciúma: Universidade do Extremo Sul Catarinense - UNESC; 2010.
15. Lima CM, Nunes DM, Krug DM, Nobre M. Educação assistida por animais: estratégia promissora no âmbito escolar. *Revista Brasileira de Educação e Saúde* [Internet]. 2018 [acesso em 2020 set 7]; 8(1): 54-7. Disponível em: <https://www.gvaa.com.br/revista/index.php/REBES/article/view/5946>



16. Marton K. Imitation of body postures and hand movements in children with specific language impairment. *Journal of Experimental Child Psychology* [Internet]. 2009 [acesso em 2020 set 8]; (102): 1–13. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2584158/>
17. Vukovic M, Vukovic I, Stojanovic V. Investigation of language and motor skills in Serbian speaking children with specific language impairment and in typically developing children. *Research on developmental disabilities* [Internet]. 2010 [acesso em 2020 set 8]; 31: 1633–44. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0891422210000995>
18. Ferreira JM. A Cinoterapia na APAE/SG: um estudo orientado pela teoria bioecológica do desenvolvimento humano. *Conhecimento & amp. Diversidade* [Internet]. 2012 [acesso em 2020 set 8]; (7): 98–108. Disponível em: [https://revistas.unilasalle.edu.br/index.php/conhecimento\\_diversidade/article/view/626](https://revistas.unilasalle.edu.br/index.php/conhecimento_diversidade/article/view/626)
19. Squilasse AF, Squilasse JFT. Intervenções assistidas por animais: considerações gerais. *Educação Continuada em Medicina Veterinária e Zootecnia do CRMV-SP*. São Paulo: Conselho Regional de Medicina Veterinária [Internet]. 2018 [acesso em 2020 set 8]; 16(2): 30-5. Disponível em: <https://www.revistamvez-crmvsp.com.br/index.php/recmvz/article/view/37778>
20. American Psychiatric Association - DSM-5: manual diagnóstico e estatístico de transtornos mentais. Porto Alegre: 2014.
21. Spinillo AG, Martins RA. Uma análise da produção de histórias coerentes por crianças. *Psicologia Reflexão e Crítica* [Internet]. 1997 [acesso em 2020 set 8]; 10(2): 219-48. Disponível em: [https://www.scielo.br/scielo.php?pid=S0102-79721997000200004&script=sci\\_abstract&tlng=pt](https://www.scielo.br/scielo.php?pid=S0102-79721997000200004&script=sci_abstract&tlng=pt)
22. Toomela A. Drawing as a verbally mediated activity: a study of relationships between verbal, motor, and visuospatial skills and drawing in children. *International Journal of Behavioral Development* [Internet]. 2002 [acesso em 2020 set 8]; 26: 134–247. Disponível em: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.122.3660&rep=rep1&type=pdf>
23. Suk-chun F. Canine-assisted reading programs for children with special educational needs: rationale and recommendations for the use of dogs in assisting learning. *Educational Review* [Internet]. 2017 [acesso em 2020 set 8]; 69(4): 435-50. Disponível em: <https://www.tandfonline.com/doi/abs/10.1080/00131911.2016.1228611?journalCode=cedr20>
24. Petenucci AL. Efeitos da Educação Assistida por Animais na leitura em um grupo de estudantes do Ensino Fundamental. [dissertação]. Pontifícia São Paulo: Universidade Católica de São Paulo - PUC/SP; 2018.
25. Celani, G. Human Beings, Animals and Inanimate Objects: What do People with Autism Like? SAGE [Internet]. 2002 [acesso em 2020 set 8]; 6 (1): 93-102. Disponível em: <https://journals.sagepub.com/doi/abs/10.1177/1362361302006001007>
26. Berget B, Ekeberg O, Pedersen, Braastad B. Animal-Assisted therapy with farm animals for persons with psychiatric disorders: effects on anxiety and depression, a randomized controlled trial. *Occupational Therapy in Mental Health* [Internet]. 2011 [acesso em 2020 set 8]; 27(1): 50-64. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2323374/>
27. Oliveira GR, Ichitani T, Cunha MC. Atividade Assistida por Animais: efeitos na comunicação e interação social em ambiente escolar. *Distúrb Comun* [Internet]. 2016 [acesso em 2020 set 7]; 28(4): 759-63. Disponível em: <https://revistas.pucsp.br/dic/article/view/28017>
28. Machado JAC, Rocha JR, Santos LM, Piccinin A. Terapia Assistida por Animais (TAA). *Revista Científica Eletrônica de Medicina Veterinária* [Internet]. 2008 [acesso em 2020 set 8]; 5(10): 7. Disponível em: [http://faef.revista.inf.br/imagens\\_arquivos/arquivos\\_destaque/yBDakPBzygjaglw\\_2013-5-28-12-0-12.pdf](http://faef.revista.inf.br/imagens_arquivos/arquivos_destaque/yBDakPBzygjaglw_2013-5-28-12-0-12.pdf)
29. Pagliarin KC. Abordagem contrastiva na terapia fonológica em diferentes gravidades do desvio fonológico [dissertação]. Santa Maria: Universidade Federal de Santa Maria - UFSM; 2009.
30. Potgurski DS, Sarzi LZ, Camargo, RG. Cinoterapia: práticas transdisciplinares para qualificação do atendimento em Educação Especial. *Colóquio Internacional de Educação Especial e Inclusão Escolar* [Internet]. 2019 [acesso em 2020 set 8]; 1: 11. Disponível em: <https://proceedings.science/cintedes-2019/papers/cinoterapia--praticas-transdisciplinares-para-a-qualificacao-do-atendimento-em-educacao-especial>