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ARTICLE

Individualized Educational Plan: implementation and influence on collaborative work for the inclusion of students with autism

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ABSTRACT
The Individualized Educational Plan is important in the inclusion of students with Autism Spectrum Disorder because it leads the pedagogical practice of teachers towards the educational needs of these students, from collaborative work with parents and a multidisciplinary team. This study sought to describe, from a case study, the implementation of the Individualized Educational Plan in the elaboration phase and verify its influence on the collaborative work of the school team in an elementary school. The school team answered a questionnaire about collaborative work before and after four months of the Individualized Educational Plan elaboration for a student with autism. The results showed improvement in each dimension of the school team's collaborative work. The potential of Individualized Educational Plan for greater teacher involvement around common goals for the learning of students with Autism Spectrum Disorder through collaborative work are discussed.

KEYWORDS
autism; Individualized Educational Plan; collaborative work.

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PLANO EDUCACIONAL INDIVIDUALIZADO: IMPLEMENTAÇÃO E INFLUÊNCIA NO TRABALHO COLABORATIVO PARA A INCLUSÃO DE ALUNOS COM AUTISMO

RESUMO

O Plano Educacional Individualizado é importante na inclusão de estudantes com Transtorno do Espectro Autista por conduzir a prática pedagógica dos professores em direção às necessidades educacionais desses alunos, com base em um trabalho colaborativo com os pais e equipe multiprofissional. Este estudo buscou descrever, por meio de um estudo de caso, a implementação do Plano Educacional Individualizado na fase de elaboração e verificar sua influência sobre o trabalho colaborativo da equipe docente em uma escola de ensino fundamental. A equipe escolar respondeu a um questionário sobre trabalho colaborativo antes e depois de quatro meses da elaboração do Plano Educacional Individualizado para um estudante com autismo. Os resultados mostraram melhora em cada dimensão do trabalho colaborativo da equipe escolar. O potencial do Plano Educacional Individualizado para o maior envolvimento dos professores em torno de objetivos comuns para a aprendizagem de alunos com Transtorno do Espectro Autista por meio do trabalho colaborativo é discutido.

PALAVRAS-CHAVE

autismo; Plano Educacional Individualizado; trabalho colaborativo.

PLAN EDUCATIVO INDIVIDUALIZADO: IMPLEMENTACIÓN E INFLUENCIA EN EL TRABAJO COLABORATIVO PARA LA INCLUSIÓN DE ALUMNOS CON AUTISMO

RESUMEN

El Plan Educativo Individualizado es importante en la inclusión de alumnos con Trastorno del Espectro Autista ya que orienta la práctica pedagógica de los docentes hacia las necesidades educativas de estos alumnos, a partir del trabajo colaborativo con los padres y un equipo multidisciplinario. Este estudio buscó describir, a partir de un estudio de caso, la implementación del Plan Educativo Individualizado en la fase de elaboración y verificar su influencia en el trabajo colaborativo del profesorado de una escuela primaria. El equipo de la escuela respondió un cuestionario sobre trabajo colaborativo antes y después de cuatro meses de la elaboración del Plan Educativo Individualizado para un estudiante con autismo. Los resultados mostraron una mejora en cada dimensión del trabajo colaborativo del equipo escolar. Se discute el potencial del Plan Educativo Individualizado para una mayor participación docente en torno a objetivos comunes para el aprendizaje de los estudiantes con Trastorno del Espectro Autista a través del trabajo colaborativo.

PALABRAS-CLAVE

autismo; Plan Educativo Individualizado; trabajo colaborativo.

INTRODUCTION

The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders — DSM-5 (APA, 2013) currently classifies autism as autism spectrum disorder (ASD). The main areas affected are socio-communicative, which encompasses communication and socialization, and behavioral (Schmidt, 2013). The current classification of ASD clearly indicates the broad spectrum of symptomatic variation, thus going beyond an understanding of the disorder as divided into self-contained categories. There are several levels of the disorder in which an individual may be situated, from the most severely affected, or level three of severity with the need for substantial support, to the least affected, or level one of severity, with little need for support (APA, 2013). Given this heterogeneity, it is assumed that not all individuals with ASD respond similarly to the same intervention, making the application of a single therapeutic or pedagogical approach impossible.

In the educational field, research on the inclusion of students with ASD in Brazil demonstrates the challenging reality of such a process. Enrollment of individuals with ASD has increased considerably in recent years in general education schools (Gomes and Mendes, 2010; Nunes, Azevedo, and Schmidt, 2013; Brasil, 2019). However, there is little participation of students in the school context and a failure to provide quality teaching and academic advancement for these students. This is exemplified by situations such as trainees having low degree of education and no specific training for assisting these students; academic retention of students for not meeting the evaluation benchmarks in progress nor those of the subsequent years; low classroom attendance by students, causing gaps in pedagogical content that is important for their school progress; lack of methodological adaptation in didactic terms and in the topographic presentation of contents; teacher's lack of knowledge about the student; lack of teaching strategies; the teaching conceptions themselves, and limited use of validated practices, among others (Gomes and Mendes, 2010; Nunes, Azevedo, and Schmidt, 2013; Pereira and Nunes, 2018). This can be explained by teachers' difficulties regarding behavioral and pedagogical aspects (what and how to evaluate and teach) involved in the inclusion process for autistic students, widely documented in the national literature (Bosa, 2006; Schmidt *et al.*, 2016; Camargo *et al.*, 2020).

In education, this reality means it is important to have pedagogical and curricular flexibility (for students who have well-differentiated learning backgrounds) and to provide tools that guide the work of teachers in this direction within an inclusive context. Among the pedagogical-methodological alternatives for students with ASD, the literature highlights the Individualized Educational Plan (IEP) as an important tool that can assist in this process (Nunes, Azevedo, and Schmidt, 2013; Costa, 2016; Costa and Schmidt, 2019).

The IEP is an instrument that has been used internationally, in European countries and North America, to enable appropriate conditions for the inclusion of children and young people with special needs in general education (Tannús-Valadão, 2010). The IEP can be understood as an instructional tool that guides teaching while meeting the individual needs of students with a disability in a documented manner.

Its composition is defined by the student's updated performance level, annual goals, supplemental services, and necessary accommodations or modifications compiled from an accurate assessment of the student's development in academic and functional areas. In this way, the IEP provides opportunities for student advancement in critical areas and documents appropriate education and services that go beyond mere compliance with legal specifications. In this sense, it is characterized as a regulatory tool that seeks to connect legal requirements, academic objectives, and the daily work of education for the inclusion of students with disabilities (Yell *et al.*, 2016; Bray and Russel, 2018; Tran, Patton, and Brohammer, 2018).

The meeting of the team that drafts the IEP takes place at least once a year (Burke and Goldman, 2017), depending on the demands of the student, and is considered a "key" environment for implementation, where parents work together with the school to discuss the needs of the student and build their plan. It is, therefore, an opportunity for parents to defend their children's rights in schools. Many decisions are made at these meetings about eligibility, educational programs, and service locations for students with disabilities when school professionals, together with parents, define the student's final educational program, with learning objectives and goals to be achieved (Meirelles, Dainese, and Friso, 2017; Schanding *et al.*, 2017).

The use of IEP in Brazil is still in its early stages and consists of limited and isolated initiatives (Glat and Pletsch, 2013). Although its adoption is encouraged in Brazil, there is no legal determination for the specific use of the IEP as a tool to assist in the inclusion process of students with special educational needs in schools (Tannús-Valadão, 2010; Tannús-Valadão *et al.*, 2016). However, the IEP can significantly contribute to the instrumentalization of teachers in a very objective and practical way (Pereira and Nunes, 2018).

International research presents the IEP as an essential tool for documenting the teaching process for special education students (Tran, Patton, and Brohammer, 2018). The IEP seeks to ensure the contents of the student's plan are relevant and appropriate to their needs, to enable parental involvement in planning as well as significant educational gains, to give the student opportunities to progress in essential areas, and to rely on an assessment that considers the student's level of cognitive potential and current functional performance (Yell *et al.*, 2016). From an analysis of the dynamics between institutional demands and practice for implementing the IEP, it is understood that this legal document seeks to guide student education through teaching directed to individual learning needs. In addition, it is a regulatory instrument to connect legal requirements and objectives with daily work in the education of students with disabilities (Bray and Russel, 2018). One of the most critical aspects that contribute to the effectiveness of special education is the implementation or execution of the IEP itself (as opposed to the mere existence of a bureaucratic tool) after the student's evaluation process. In addition, this plan enables the monitoring of student progress, influences student participation in the curriculum, guides adaptations in teaching methods and means of student assessment, and is considered by most countries a universal practice and an essential element to be provided to students with disabilities in schools (Sackes and Halder, 2017). In an article discussing the main failures of education professionals in the

development of the IEP, Yell *et al*. (2016) analyze the legal scenario and cite Bateman (2011), who describes the great importance of the IEP in that it is at the center of most special education disputes in American courts. The effectiveness of the IEP is described as positive in Ahmed's (2015) research, which investigated its use by teachers of students with learning difficulties, given the challenge encountered in managing learning situations that increase students' competencies and develop their academic skills. Despite some mistaken positions suggesting that inclusion requires a reconfiguration, replacement, and/or development of a new curriculum, the practice of the IEP in the international scenario suggests a progression of actions, starting from discrete accommodations and adjustments by differentiated teaching to more significant modifications in content and evaluation, to support the student's learning process, from the same curriculum used with typical development peers (Osarti, 2013; Costa, 2016; Pereira and Nunes, 2018).

Therefore, there is a need for research to investigate the contributions of the IEP in the Brazilian educational context, where it presents particular aspects regarding its basic conditions, such as: student evaluation, presentation of student's current development level, qualification of goals (specific, measurable, realistic and with adequate time/deadline), operationalization of goals (clear methodology for evaluating progress, as well as responsibility for monitoring it) and the perspectives and wishes of parents; when compared to other countries. These actions may form a more robust scope of evidence that justifies the possibility of future implementation of the IEP, within a legal framework, in all educational institutions.

THE INDIVIDUALIZED EDUCATIONAL PLAN AND COLLABORATIVE WORK

The IEP is a methodology that can be very useful when drawing on certain principles of functionality, such as collaboration, individualization, and training. All are necessary, but the importance of collaboration, as highlighted in other studies (Costa, 2016; Pereira and Nunes, 2018), becomes more relevant in this research because it is the focus of analysis.

One characteristic that defines the IEP as unique in relation to other school planning is the performance of the team of professionals who participate in its design, not only in mechanical, articulated, or cooperative execution. This aspect is particularly well-described by Glat and Pletsch (2013, p. 32, emphasis added, our translation), who highlight that "[...] it is fundamental that the IEP proposal be elaborated collaboratively among teachers [...]". Tannús-Valadão (2010) corroborates the same operability indicating the need for the IEP to be developed collaboratively with participation by the school, parents, the student (whenever possible), and other relevant professionals and educational agencies.

Therefore, this perspective of collective construction brings with it the assumption of collaborative work as a way of conducting the entire process. For Damiani (2008), collaborative work is a joint effort, not only in operating a ready-made system but in its own generation, triggered by shared decision-making and mutual

accountability. More clearly, teamwork can be conducted as a cooperative venture between individuals.

The study by Tucker and Schwartz (2013), on the perspective of parents regarding collaboration with school professionals, reports that information from parents in the IEP process is an important component for creating a collaborative partnership and that this initiative is one of the best practices to help children with ASD. When parents are very involved, the teacher also engages more with those students, and by working together and receiving tips from parents, the teacher can more easily recognize the student's difficulties and provide early assistance in his academic life. Students, then, start to present fewer behavioral problems and reach higher academic levels (Roe, 2008). The study by Fontes (2009), although dealing with collaborative work in co-teaching, points out the importance of building a collaborative network between school and health institutions so that decisions and actions are consensual and positively impact the pedagogical work of the teacher in school. Finally, there is a need to emphasize collaborative work and build a space for knowledge about special education to reduce technical conversation and provide a more comfortable communication environment that is favorable to the student's educational interests (Roe, 2008).

Authors such as Ferreira *et al*. (2007) and Friend and Cook (1990) understand collaborative work not as a dichotomous condition where collaboration is or is not present but where collaborative work can be understood based on degrees or levels of collaboration. In this sense, we observe eight dimensions that influence the level of collaboration of a work team, which can be summarized as:

1. common goals;
2. shared participation;
3. shared responsibility;
4. equivalence between participants;
5. shared resources;
6. administrative support;
7. realistic expectations; and
8. voluntarism.

Common goals are considered essential, requiring the group to have at least one significant goal in common (Friend and Cook, 1990). These goals should be characterized by reciprocal awareness of members' motivations, concerns, and commitment (Kingdon, 1973; Appley and Winder, 1977). *Shared participation* depends on the active engagement of each member (Friend and Cook, 1990). It does not necessarily imply quantitatively equivalent performances among individuals but, instead, involvement in decision-making and the division of work (Hord, 1986). Another dimension considered pivotal for a work to be more collaborative is *shared responsibility*. It is established when individuals commit themselves to each other for their results, both positive and negative (Friend and Cook, 1990). It involves a wide spectrum of attributions for managing various situations: financial, political, philosophical, and logistical, among others (Hoyt, 1978). The dimension of *equivalence between participants* means treating with equality, or equally valuing each

person's contribution to the group (Friend and Cook, 1990). *Shared resources* highlights the importance of the significant contribution of resources by professionals when in a collaborative activity, which can be characterized by objects, but also by financial actions, time allocation, management measures, incentives, appreciation, among others (De Bevoise, 1986; Friend and Cook, 1990). *Administrative support* translates as an essential act of institutional management to support meaningful collaboration among team members. This can take the form of actions to remove bureaucratic obstacles, to support resources, incentives, and recognition of the work team (De Bevoise, 1986). *Realistic expectations* is related to the need for a broader look at the context in which collaborative work is inserted. Internal and external difficulties must be considered when engaging in team activity (*ibidem*). Finally, the *voluntarism* dimension has also been identified in the literature as a premise for collaborative work. It is here understood as the self-determined availability of each member to pursue the group's goals (Friend and Cook, 1990).

In the school context, collaborative work can be seen to emphasize the shift in the epicenter of the teaching-learning process: from the professional individual, as the only responsible agent, to the multi-professional team; that is, there is a shift in focus from the individual to the collective. This emphasis is also observed in educational inclusion because "[…] collaborative work moved schools towards a new axis of action towards students with disabilities" (Givigi *et al*., 2016, p. 370). This aspect is fundamental in the current context of school inclusion of students with disabilities, in which it is recommended that the entire team, rather than only the teacher, special education teacher, or pedagogical coordinator be responsible for planning for the student. This involves both evaluation and planning, as well as monitoring and making decisions during the student's teacher-learning process. Even with parents' participation in this construction (Yell, Bateman, and Shriner, 2020), it should be remembered that quality education for students with disabilities is the duty of the State, the family, and the school community (Brasil, 2015a).

There are national and international studies that indicate potential gains from the inclusion of students with disabilities, suggesting a move away from solitary pedagogical actions and towards a collaborative action model, including the student's parents and, where possible, the students themselves (Roe, 2008; Mendes, Almeida, and Toyoda, 2011; Tucker and Schwartz, 2013). In this context, schools tend to be more inclusive, students with ASD are assisted through the use of an effective approach, teachers provide more attention and assistance to students, behavior problems are minimized, higher academic levels are reached, and it becomes increasingly more feasible to create a space for knowledge about special education to generate more fluid communication between agents involved in education work and the inclusion process. However, there is no research that verifies the relationship between the IEP and collaborative work and its implications for the inclusion process.

For this reason, the objective of this study was to describe the process of implementing the IEP in its drafting phase, organized by team training, pedagogical evaluation of the student, and writing of the IEP, and to verify the influence of this implementation on the collaborative work of teachers and family in an elementary school in the state of Rio Grande do Sul, Brazil.

METHODOLOGY

DESIGN

The social dimension of this study — collaborative work by the team — refers to a type of research with a qualitative bias in the modality of a case study (Gil, 2002; Anache, 2009). The case study is comprehensive in the social sciences and allows a theoretical deepening of one or more objects (Gil, 2002). More specifically, Alves-Mazzotti (2006) states that the case study is characterized by knowledge of the unit, which may be a small group. In this sense, the research considers the school team as a unit of analysis (the case) to observe the implications of the IEP in the group's collaborative work during the implementation process, with pre-and post-implementation measures.

Another important aspect is that the case study is characterized as the most appropriate methodology for studying a contemporary phenomenon within its real context. This aspect meets the objectives of this research, that seeks to foster knowledge about the contemporary phenomenon called "inclusion" in the real context of the "school." In addition, this research is classified as a case study in the instrumental modality, as it proposes to assist knowledge and achieve specific goals (Gil, 2002). For Alves-Mazzotti (2006), the instrumental case study is based on the belief that the specific case can support understanding of something broader, thus favoring the possibility of discovery and even the questioning of generalizations.

PARTICIPANTS

A team of seven people participated in the study: a pedagogical coordinator, a special education teacher, three general education teachers, a monitor, and the mother of a student with autism, all of whom developed the IEP based on the requirements of the selected student. In support of the team, the first author of this study, with an undergraduate degree in Special Education and a master's degree in Education from the Federal University of Santa Maria, at the time, participated as an intervention agent. An undergraduate student in Special Education from the same university participated as research assistant.

The 11-year-old boy for whom the team developed the IEP had, at the time of the study, received the clinical diagnosis of Asperger's Syndrome, or high-functioning autism. Currently, this classification has been replaced by ASD. The student does not demonstrate cognitive difficulties at his school level and prefers scientific topics and computer games. However, he needs support for personal organization and to sort out his material at school. The student is very active and has trouble sitting in the classroom for long periods. The student's greatest challenges are of the social order, as he presents an impairment of the social skills needed for typical interactions.

INSTRUMENTS

Collaborative work scale (Costa, 2016): Built specifically for this study from a literature review on collaborative work (De Bevoise, 1986; Friend and Cook, 1990; Damiani, 2008; Mendes, Almeida and Toyoda, 2011; Mendes, Vilaronga and Zerbato,

2014). This scale checks the perceptions of each team member regarding collaborative work using an 8-point Likert scale whose dimensions can be scored from 0–5:

1. common objectives;
2. shared participation;
3. shared responsibility;
4. equivalence between participants;
5. shared resources;
6. administrative support;
7. realistic expectations; and
8. voluntarism.

In this case, recording of the scale by the team member himself represents the self-report method due to the subjective nature of the phenomenon (collaborative work) observed.

Capabilities and difficulties of the student: Adapted according to the research of Goepel (2009), it collects information about the student's abilities and difficulties in the school context. It allows establishing up to 12 items for each category (skills and difficulties) from the perspective of professionals and parents/guardians.

Inventory of school skills (Pletsch, 2009): This aims to determine the student's level of development in the skills of oral communication, reading and writing, logical-mathematical and computer reasoning. It is also used to determine whether the student presents such skills with or without the need for support.

Field diary: Adapted with reference to models used in other studies that have investigated the IEP (Pletsch, 2009; Braun and Vianna, 2011; Glat, Vianna, and Redig, 2012). Its purpose is to guide the IEP team regarding the issues to be observed and reported during the classroom observation of the included student. This device contains axes of observation, such as the student's behavior in the classroom, interactions and participation, activities developed by the teacher, and other observations about the student's academic and social skills.

PROCEDURES FOR DATA COLLECTION, ORGANIZATION, AND ANALYSIS

Research procedures included the following phases:

1. pre-intervention evaluation of collaborative work;
2. IEP implementation; and
3. post-intervention evaluation of collaborative work.

The student with autism was selected from a previous consultation in the School Census of Basic Education system of the National Institute of Studies and Research Anísio Teixeira (INEP), 2015 (Brasil, 2015b). The research was presented through scheduled visits to the school for consideration by the school's management team and the student's mother. The school's own administration identified teachers who would be interested in taking part in the research and organized the IEP team according to the pre-established criteria for teachers (voluntarism for research and serving students with autism) and for the student (having the medical diagnosis of ASD, according to the Diagnostic and Statistical Manual of Mental Disorders

[APA, 2013]). The present study was submitted for analysis and approval by the Research Ethics Committee (CEP), via Plataforma Brasil, of Universidade Federal de Santa Maria, under the Certificate of Presentation for Ethical Appreciation (CAAE) number 55556016.8.0000.5346. The identity of participants was protected using fictitious names.

During the pre-intervention phase of the collaborative work, the *Collaborative Work Scale* instrument was used, which individually captured the participants' perception of the collaborative work between themselves and other professionals involved in teaching the student with autism, before the implementation of the IEP by the team. The form was completed in the school premises in a separate session, where each member was individually responsible for filling it out, as guided by the intervention agent. Also, during this phase, the teachers, together with the student's mother, filled out the *Student skills and difficulties framework* to collect data on the student for the implementation phase of the IEP.

During IEP implementation, the following intermediate steps were followed: team training, pedagogical evaluation, and writing of the IEP. At this stage, the objective was to collect data for the draft. The training was proposed to level the team's knowledge on the following topics: policies and inclusion, ASD (specifically Asperger's syndrome), the concept and structure of the IEP, and details about the procedures involved in carrying out the research at school. A total of four weekly meetings were held, each lasting four hours, during the morning shift, for a total of 16 hours of training at the school itself. Team training was produced in the form of lectures with multimedia projection. On these occasions, readings and text discussions were carried out in relation to the relevant subjects (policies, inclusion, autism, IEP, and research). New readings were delivered to the team at the end of each meeting to foster discussions and reflections on the themes for the next meetings.

In the pedagogical evaluation, the IEP team performed direct observations of the student in the classroom and in the other school environments on random days and times, over nine working days. However, the student's entire evaluation process totaled 21 working days. Note that the intervention agent accompanied the entire process to assist and guide any questions that arose during this evaluation.

The *Inventory of school skills* and *field diary* were made available during this phase of the pedagogical evaluation, after the training stage, to support the observations. After guidance on the structure and items to be considered for these two instruments, team members made individual observations. At the end of this observation period, all data collection instruments were delivered, and the information was then compiled and systematized by the intervention agent and delivered to the IEP team in the form of tables and graphs. This procedure of data systematization was designed to assist the team in facilitating the interpretation and understanding of the large volume of information on the student's potential and challenges made available in the pedagogical evaluation phase. It also aimed to support the team's eligibility and the priority of the IEP goals. Furthermore, these data enabled contributions to the analyses in this study, such as input in terms of inferences and understanding phenomena in the team's collaborative work.

All information collected in the evaluation process, including that provided by the mother, was completed in the form of a descriptive report, which was signed by the IEP team members. A copy of the report was then printed and delivered to the mother for her information and agreement on the respective evaluation.

The writing of the plan consisted of recording the main items that make up the IEP, contained in a plan template made available to the team's writers (the pedagogical coordinator and physical education teacher) chosen by the team itself to draft a plan proposal, according to the drafting protocols specified in Tannús-Valadão (2010), Autism Speaks ([s.d.]) and by the U.S. Department of Education (2000). The text was procedurally constructed by the writers, with indications as to possible curricular adjustments, flexible schedules, logistics, teaching strategies, and specialized support, among others. The writers had 13 days to draft the IEP independently of the other team members. The intervention agent accompanied the entire IEP drafting process to assist and guide any questions that arose during this stage. The draft IEP was finalized in the form of a descriptive report, signed by the team members and including the mother's consent. Subsequently, a copy of the plan was printed and delivered to the mother for knowledge and agreement of the respective planning.

The post-intervention evaluation of the collaborative work occurred after four months of IEP implementation by the team and was carried out with the replication of the *Collaborative Work Scale*. The objective of this last evaluation was to verify, in a comparative way to the pre-intervention, the IEP's contribution to the team's collaborative work from the teachers' perception. Therefore, the *Collaborative Work Scale* was analyzed comparatively between the pre-and post-implementation phases of the IEP. The overall score of the collaboration scale was verified, taking the dimensions as a whole and individually from each dimension through the sum of the scores (0–5) related to the concepts attributed to each one.

The initial evaluation of the collaborative work by the professionals and IEP team members was developed through the *Collaborative Work Scale*. It was used along with the *Student's skills and difficulties framework*. The intervention agent separately explained the concepts behind each scale dimension to the participants (teachers and the student's mother). When all doubts were resolved, the professionals and the mother filled out the scale independently, without interference from third parties, in the school premises. In the post-implementation evaluation of the IEP, application of the *Collaborative Work Scale* for each participant occurred immediately after completion of the writing, corrections, and printing of the plan, and all dimensions of the form were collectively summarized by the intervention agent. Once all questions were resolved, the same procedures of the pre-intervention were carried out.

RESULTS

The data on IEP implementation (team training, pedagogical evaluation, and writing the IEP) will be demonstrated first, and the data on the team collaboration scale, comparatively in the pre-and post-intervention moments, later.

STAFF DEVELOPMENT

The results of the training were collected from observations made by the researchers (intervention agent and research assistant) during the meetings. Thus, the data were organized into two categories: participation and relevant subjects. Regarding participation, Chart 1 indicates the frequency of team training, with the last meeting harmed by the absence of some teachers.

Chart 1 – Member participation in Individualized Educational Plan team training.

Category/Account	Meeting	Frequency	
Participation	1	Full-time	6
		Partial	1
		Null	0
	2	Full-time	4
		Partial	2
		Null	1
	3	Full-time	5
		Partial	1
		Null	1
	4	Full-time	4
		Partial	0
		Null	3

During team training, full class participation (from beginning to end) was above average at 67.8%. Partial participation (presence for a few hours) was low, with a percentage of approximately 14.2%. Null (absence of team members) was around 17.8%. It is important to highlight that there was an increasing result of null participation (non-participation) throughout the training period. Therefore, there is an unstable frequency during the team's training period, considering the few days of meetings for training (four) and the small group of people (seven). On the other hand, it is understood that in the presence of a longer training period (more hours) as well as more participants (larger group), the frequency of face-to-face meetings is more susceptible to fluctuation.

The category of relevant subjects included 26 items, presenting the main concerns that emerged from the training, as indicated by the teachers, among them: the importance of mutual exchange between institutions, development of the pedagogical policy plan, teachers' attitudinal barriers, and difficulties due to lack of time in school. This information was important to support interpretations and discussions of the data in this study.

PEDAGOGICAL ASSESSMENT OF THE STUDENT

The *Student's skills and difficulties framework* allowed access to the initial information, demonstrating the individual perspective of each member of the IEP team

about the student. The most relevant percentages (representing the majority, with a total of 68% in relation to the other activities observed) for the category *student abilities/interests* involved: computer games, general computer activities, dinosaurs, drawing, and non-electronic games. In the category *student difficulties/challenges*, the percentages given more emphasis were those that included the student having difficulty with the word "no" (when contradicted), staying in the classroom/sitting, fine and gross motor skills, food, and relationship with fellow students.

The *Inventory of school skills* enabled a more objective assessment of the student. The teachers made observations of the student in the classroom and in other school environments and recorded their skills in 45 items in the areas of oral communication, logical-mathematical reasoning, reading and writing, and computer science. The percentages of the individual observations of each team member allowed an overall arithmetic mean of agreement of all evaluations of the student's performance in the areas observed (see Figure 1).

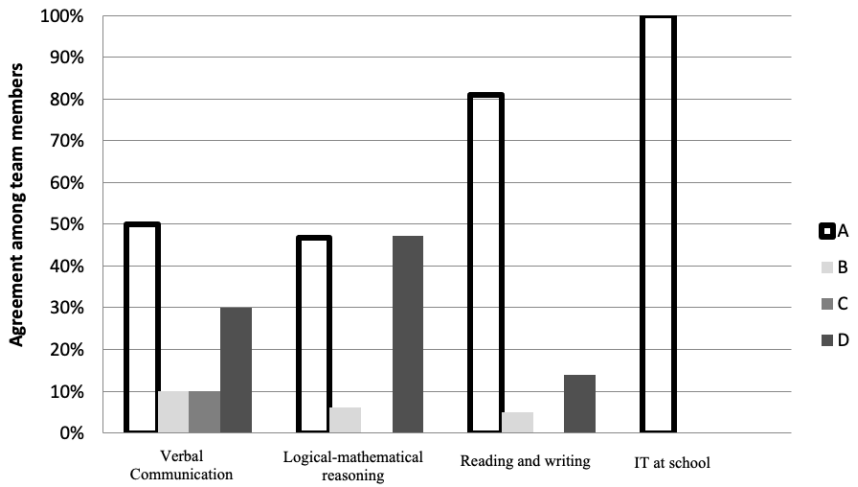

Figure 1 – Average of agreement among team members related to student´s performance inthe indicated.
A: Present without support, B: Present with support, C: Does not present, D: Not observed.

Members of the IEP team also used the instrument field diary to collect information on the classroom environment, with descriptions of the class, the student's social interactions, and activities offered and performed. According to the resulting opinions of the teachers, information could be grouped by categories: physical and social environment, learning, academic suggestions, social suggestions, and behaviors. The *physical and social* characteristics of the class were reported as very agitated and noisy, but there was social conviviality, with interactions and conversations with the student. From the learned skills, the following stood out: has difficulty in copying from the board, needs to organize school material properly, has good reading, and understands the teacher's guidelines. *Academic suggestions* were recorded with options to facilitate the student's learning, such as: using his/her interests for drawing and challenging activities and setting up well-structured

instruction with images. In *social suggestions*, emphasis was given to restricting computer use during the recess period, stimulating social interactions with colleagues, and working with the class on all issues of coexistence and social behavior. Finally, in *behavior*, it was particularly important to report episodes in which the student frequently leaves the classroom and his/her difficulties accepting limits.

Not all members participated effectively in the pedagogical evaluation, and some did not even complete the observation instruments. Due to these failures, assessment could not be thorough. Only 57% of the members, on average, were involved in the entire evaluation process, which translates into low participation in the most essential phase of developing the IEP: pedagogical evaluation of the student.

DRAFTING THE INDIVIDUALIZED EDUCATIONAL PLAN

The first part of the IEP presents the student's current level of educational development. That is, how the student's condition affects their involvement and progress in the overall curriculum. It is a current account of the student's condition based on general aspects observed during the pedagogical evaluation. Then, all the goals to be worked towards with the student during the year are listed. The number of objectives that made up the student's IEP in this study totaled 22, covering several areas of student development: cognitive (14), behavioral (4), social (3), and motor coordination (1). These objectives, along with the suggested strategies, deadlines for completing the goal, manner of evaluating the student's progress, and observations about which professional would be directly involved with the specific goal, are detailed. The next sections of the IEP list special education services at school and supplementary support that the student receives from other professionals. The IEP also presented information about the possibility of the student participating in other types of regional, state, or national assessments, such as the National High School Examination (ENEM), and the necessary modifications for the student at school. The other information contained in the IEP addressed the methodologies to be used by the IEP team to monitor the student's development, the necessary communications between the team and those responsible for the student, and the start date for implementation of the plan. All IEP team members duly acknowledged all activities involved in the plan by signing this document, although only three team members were present during the final meeting for writing the IEP.

Writing the IEP was a simpler procedure, as it only involved writing the plan previously prepared by the team by writers, guided by the pedagogical evaluation and an IEP model provided by the intervention agent, according to the drafting protocols specified in Tannús-Valadão (2010), Autism Speaks ([s.d.]) and the U.S. Department of Education (2000).

COLLABORATIVE WORK

As for collaborative work, Figure 2 shows the results of the means between the pre- and post-implementation of the IEP for each of the eight dimensions. It is noteworthy that seven members of the IEP team filled out the scale before implementation while only six completed it post-implementation.

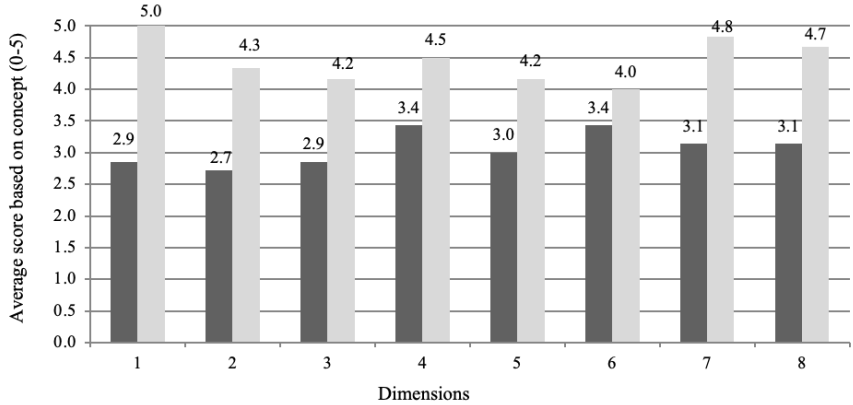

Figure 2 – Average scores for the eight dimensions of collaborative work before and after implementation of the Individualized Educational Plan.

1. common goals; 2. shared participation; 3. shared responsibility; 4. equivalence between participants; 5. shared resources; 6. administrative support; 7. realistic expectations; 8. voluntarism.

The comparative analysis shows a general growth of collaborative work after implementing the IEP. It is observed that the dimension *common objectives* showed a difference of 2.1 between the two means. This dimension was the one that presented the highest growth in scores when compared to the others. The last evaluation of this dimension reached the maximum value of the average of its scores. On the other hand, the dimension that had the lowest average increase in its scores was *administrative support*, with an additional 0.6 between the first and second averages. The other dimensions had a median increase of 1.3 in their respective means.

DISCUSSION

In this study, implementation of the IEP in the school provided collective moments to think, evaluate and plan the student's teaching-learning process. Consequently, it also made it possible to establish a space in the school routine for the team's collaborative work to be improved in all its structure. Therefore, IEP implementation also promoted an increase in the level of collaboration, directly benefiting the involvement of each group member in relation to the demands of the student's inclusion process. In this context, the role of the *equivalence between participants* dimension, for example, was fundamental. This dimension was among the highest scores in the first evaluation of collaborative work and showed an increase in participants' perception in the second evaluation. This indicates an even greater perception of equity among members in valuing the contributions of each, which is important for collaborative work (Lago, 2014). There is a feeling of personal appreciation and respect in using collaborative activities among teachers (Damiani, 2008). However, the family's participation gained prominence in this work, with the student's mother being very active in the entire process of drafting the IEP. Parents' participation level in the IEP, in addition to being critical, can be high precisely because parents perceive an appreciation of their

contributions by teachers (Santos, 2017). The *shared resources* dimension also played a significant role in raising the level of collaborative work, and resources can also comprise planning time among teachers (De Bevoise, 1986). In this sense, the team's training time, evaluation, and planning for the student provided by the IEP, in addition to the use of structured instruments of observation, may have favored an adequate observation of the student, thus generating safety and stimulus for the entire IEP team, according to reports by the teachers themselves in Costa's (2016) research.

The results of the total sum of points (based on concept) in the *Collaborative Work Scale* instrument showed growth in all dimensions, with different scores from each concept in both evaluations. Variation in the points of the dimensions proved to be important, as it reflected the perspectives of the IEP team members in relation to the collective work being carried out in the school. The concepts introduced by each team member may raise questions regarding which informs the team's collaborative work at school more accurately. However, it is unlikely to find a single explanation that justifies the various concepts, nor is it possible to determine which perspective best represents reality. Therefore, the most appropriate alternative is to consider that the data set from all members' scores ensures an overall average value (4.5) above the initial average for collaborative work (3.0), positively indicating the changes after implementing the IEP.

Regarding the specific results of the dimensions' behavior, we reiterate that the collaborative work was evaluated by applying a scale that brought the concept of the member (0–5) to the dimensions that structure it: *common objectives*, *shared participation*, *shared responsibility*, *equivalence between professionals*, *shared resources*, *administrative support*, *realistic expectations*, and *voluntarism*. Notably, of all dimensions, only *common objectives* behaved with a percentage variation of almost 100% of its scores between the tests at the beginning and end of the collaborative work. This increase in the dimension's score demonstrates a possible adherence to the objectives set for the student when the professionals worked collaboratively to develop the educational plan. Also, the clarity regarding the learning objectives of a student with disabilities that the elaboration of an IEP makes possible for team members can also explain both the increase in the score attributed by the participants and the importance of the IEP itself to guide the professional teaching performance in the face of a student with disabilities. As previously demonstrated, *shared participation* initially had the lowest score and remained among the dimensions with the lowest score in the second evaluation. This behavior may be related in general to the profile of some team members, who had little active participation in the team, not to be confused with the little participation of members, in numbers, in the implementation phases of the IEP.

The *administrative support* dimension was the one that showed the lowest percentage of variation between the two evaluations of collaborative work and the lowest score in the second evaluation. This slight variation may indicate little support from school management for the team's collaborative work during the IEP implementation activities. Some members' justifications for their absences from training meetings were directly linked to institutional administration issues.

Lack of support from school administration has been referenced as a barrier to the inclusion process, characterized by a weak support network for students with autism (Nunes, Azevedo, and Schmidt, 2013). Lack of active participation by the school administration, even lack of any support whatsoever, is perceived as an impediment to the inclusion of students with special educational needs, since "[...] from this support comes the time for joint planning between teachers […]" (Lago, 2014, p. 194, our translation). Another study presents "[...] two characteristics for a school to become more inclusive: spending time and energy forming the school team and training educational teams to make decisions in a collaborative way" (Vilaronga and Mendes, 2014, p. 140, our translation). In this regard, the studies by De Bevoise (1986) indicate that administrative support is essential for effective collaborative work.

In general, the other dimensions also presented a higher average in scores when comparing evaluation periods. This can be understood as the influence one dimension exerts on the other, even if they are independent. That is, when one is stimulated and developed, it is likely, but not necessary, that the others will also show the same behavior. In this regard, as there was an increase in the scores of all dimensions between the two evaluations, the level of collaborative work was also high. This phenomenon reflects the dependence of collaborative work on the dimensions that compose it. Even with changes in the percentage of variation between dimensions, the level of collaborative work advanced in the short period between the two evaluations (around four months). Therefore, this study can demonstrate a significant increase in the level of collaborative work of the team during drafting of the IEP in the school. It is also important to emphasize that the student's mother was the team member who presented the highest scores per instrument during the two evaluations of collaborative work, which can be interpreted as a high perspective or expectation on the part of the mother in relation to the collaborative work performed at school. This fact can be translated by the good relationship between family and school and the possibility that the school and study decided that the mother could participate in the school planning for her child.

Given the increase in scores of all dimensions and the level of collaborative work between pre- and post-implementation evaluations of the IEP, the inherent influence of IEP implementation, stimulated by this research, in raising these levels over a short period (four months) must be considered. Integrated work among members, in joint and systematic action, to develop the phases collaboratively, together with an intrinsic need for the participation of several professionals, especially the family, in drafting of the plan, was largely responsible for raising the level of team collaborative work in this short period. In addition, the possible need for each team member to see themselves as part of a process for the benefit of someone else may have stimulated collaboration. This is intrinsic to the IEP implementation process, which further highlights the importance of its use. In addition to promoting the team's collaborative work, the literature indicates that this systematic form of work has also favored the inclusion process of students with disabilities (Lago, 2014).

The benefits found in this study for the IEP team are also confirmed in other studies on collaborative work in the co-teaching modality such as: generation of mutual trust between members, feeling of support, encouragement to act with the student, expanding one's knowledge about the student, self-reflection on pedagogical practices, space for continuing education, and personal and professional development (Capellini, 2004; Damiani, 2008; Toledo, 2011; Rabelo, 2012; Lago, 2014). The teacher's empowerment is highlighted by the collaborative work that allows teachers to use other practices in the teaching-learning process, avoiding the "old exclusionary model" (Givigi *et al.*, 2016, p. 368). The importance of this operational specificity of the work and its consequent benefits is described by Mendes, Almeida, and Toyoda (2011, p. 89, our translation) as follows:

> [...] collaborative learning offers great advantages that are not available in more traditional learning environments since the group allows a more significant degree of learning and reflection than any individual could do in isolation.

The IEP development process, aligned with the curriculum, provides the benefits of collaborative work and indirectly capitalizes on advances in the process of student inclusion, as educators feel supported and motivated by the team itself, and their practices are guided by a detailed and well-founded teaching plan. This can increase fulfillment of the real special educational needs of the student and their length of stay in school, as well as offer support from special education and other services in the regular classroom, thus contributing to the students' effective inclusion and learning in school. When possible, student participation in the development of his/her own IEP can also have benefits such as increased participation, self-confidence, better quality of the IEP, and better academic results (Blackwell and Rossetti, 2014). In short, the collaborative work stimulated by implementation of the IEP in this study transcends the results of the particularized teaching action to potentially generate a significant degree of learning for the group, raising teachers' confidence, developing the team's interpersonal and communication skills, prompting attitudinal changes in each teacher and triggering potential positive results for the inclusion of students with disabilities in their developmental and learning process (Mendes, Almeida, and Toyoda, 2011; Costa, 2016).

FINAL CONSIDERATIONS

The process of implementing the IEP was characterized by the actions used to train the team, pedagogical evaluation of the student, and, finally, writing of the plan. These practices were employed sequentially, with arrangements and instruments relevant to the nature of each stage. From a holistic analysis of the data presented and the actions that involve this process, positive results were found for teachers, who became informed educational agents with broader knowledge about the student, thus developing greater awareness of their potential and difficulties. The sharing of information about the student during the process also favored

teachers' self-confidence, plus the possibility of a more detailed evaluation of the student, using more objective observation instruments. The collaborative work of the team (teachers and parents) throughout the process of implementing the IEP was visibly influenced, with each dimension being modified, causing an increase in the level of collaborative work perceived by the team. This result may have generated greater involvement by the IEP team around common goals for student learning.

However, despite offering information regarding the benefits that the implementation of an IEP can provide for the inclusion process of students with disabilities, this study presented pertinent limitations with regard to the evaluation of the team's collaborative work and in the process of implementing the IEP. We encountered difficulty in maintaining the same number of participants in the two applications of the *Collaborative Work Scale*, pre- and post-implementation of the IEP, with seven and six members, respectively. However, lack of participation by some members did not translate into the team's actual level of collaborative work, since low performance in the dimensions of collaborative work is related to the concepts attributed to each dimension and not to the number of members who participated in these evaluations. In this sense, conceptually, the *shared participation* dimension refers to the active engagement by members in team decision-making, especially in important phases of collaborative work (Friend and Cook, 1990). *Shared responsibility*, which is directly related to participation, is described as a mutual commitment to results, even more important than the hierarchy and expertise among members (Rabelo, 2012; Lago, 2014). Therefore, the hypothesis is that failures in some of these dimensions would also cause damage to collaborative work as a whole. However, due to some members' absences, this was not verifiable during the IEP implementation. Nor were the other dimensions affected by the reduced number of members involved throughout the study, such as *shared resources*. In this dimension specifically, the possibility of exchanging resources (e.g., time, professional experience) was added to the group during the collective work of pedagogical evaluation. The very reduction and difficulty in member attendance was found in the other phases of the implementation of the IEP — team training, pedagogical evaluation, and IEP writing —, which demonstrate the sense of voluntarism expressed in this dimension.

Another difficulty presented during this process was completion of the *Collaborative Work Scale* during the pre-intervention application of the IEP. During that time, one of the members did not assign a concept to the *voluntarism* dimension, leaving the score "blank." As a justification, he stated that "participation is based on legal compliance and also on self-determined availability." However, the conceptual confusion about *voluntarism* is evident when it is understood as having a double meaning — determined and self-determined. Circumstances of daily school life, where teachers are invited to participate in a course, voluntarily agree to take it and extend the invitation to other teachers, can be enlightening to represent voluntary and undetermined actions (Vilaronga and Mendes, 2014).

Through a qualitative assessment of team training and pedagogical evaluation, we can confirm that three demands influenced the effective presence of members in classes: institutional, personal, and unknown. During team training, the student's monitor was less participatory due to *institutional* demands. Two general education teachers alleged, predominantly, *personal* health problems. However, the coordinator and the student's mother demonstrated an attitude of self-determination to overcome these difficulties. There were also *unknown* reasons in this study to explain the absence of the special education teacher in the meetings. Similarly, the lack of participation by members in the pedagogical evaluation is due to the same demands. This difficulty in members' action (presence) is also perceived as a significant limitation of this research (Toledo, 2011).

All the results of this study indicated possibilities and challenges for planning the school inclusion of a student with ASD, specifically with the application of the IEP work methodology. Therefore, there is a need for continuity and expansion of this research, aiming at IEP application in more schools to add evidence in relation to its contributions to the collaborative work of teachers, and its consequent contribution to the inclusion of students with autism in the Brazilian educational context, since it presents different aspects in its basic conditions, in relation to other countries. Considering that the impact an IEP has on the academic life of a student is also largely determined by the teaching strategies adopted to achieve learning objectives, further studies are needed to investigate how the adoption of an IEP can assist in the design of more effective teaching practices to impact the academic performance of students with disabilities. These actions may establish a more robust scope of evidence, generating significant support that legally justifies the possible, future implementation of the IEP in all educational institutions.

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