# INTERACTIVE LEARNING ENVIRONMENTS: FOSTERING LEARNING, DEVELOPMENT, AND RELATIONSHIPS FOR CHILDREN WITH SPECIAL NEEDS

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# INTERACTIVE LEARNING ENVIRONMENTS: FOSTERING LEARNING, DEVELOPMENT, AND RELATIONSHIPS FOR CHILDREN WITH SPECIAL NEEDS

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# Editorial: Interactive learning environments: Fostering learning, development, and relationships for children with special needs

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Editorial on the Research Topic
Interactive learning environments: Fostering learning, development, and relationships for children with special needs

Research and theoretical developments in education and educational psychology have shown that interactions, especially communicative interactions through dialogue, have a crucial role to promote students' progress in learning and development (Vygotsky, 1978; Bruner, 1996; Wegerif, 2011). These interactions especially include learning with diverse peers in heterogeneous contexts, but also with other people in the community (Valls and Kyriakides, 2013). However, not all students have had the same opportunities to benefit from such interactive learning environments. Students with special needs have traditionally received an education based on separate attention and individual programs which often reduced learning objectives and contents and opportunities for social interaction. In this regard, it is a concern that students with special educational needs tend to leave school without adequate qualifications (European Agency for Special Needs and Inclusive Education, 2017), and that it is a group especially vulnerable to bullying and abuse (Rose et al., 2011).

This Research Topic aims to collect research that contributes to a better understanding of (1) how interactive learning environments can be implemented with students with special needs; (2) which are the characteristics of these learning environments that enhance learning, development, and relationships of students; (3) which are the positive impacts that can be achieved in students with and without special needs; and (4) how professional roles are challenged and transformed. This Research Topic contains 10 papers covering the above mentioned topics.

All papers provide evidence of the positive impacts of interactive learning environments that include students with special needs, from the cognitive to the relational domain. In terms of learning and cognitive development, the review conducted by Ugalde et al. concluded that interactive learning environments are an optimal context that promotes instrumental learning, academic involvement and cognitive development of children with a wide range of disabilities. For this to occur, it is important to encourage peer interaction in the classroom as well as learning interactions with other people from the community. Empirical studies conducted in different learning contexts add further evidence in this regard. Fernández-Villardón et al. studied the implementation of dialogic literary gatherings in special education and found positive learning impacts on students' reading proficiency and engagement, communicative and reasoning abilities, as well as students' self-esteem and confidence. Rangel-Rodríguez et al. focused on interactive home learning environments and concluded that these can promote emotional conversations for children with complex communication needs. Navarro-Mateu et al. studied the context of secondary education where interactive learning environments with students with and without special needs were implemented, which contributed to inclusive participation of students with special needs in learning activities, enhanced engagement in learning, and promoted the development of more socially adaptive behavior. Finally, Díez-Palomar et al. analyzed the implementation of interactive learning environments in an adult school attending people with (and without) special educational needs, observing both progress in learning and improved wellbeing and feeling of social inclusion as a result of the positive interactions found in the school.

These studies show that cognitive and socio-emotional progress can be promoted at the same time in interactive learning environments. Other studies focused on interventions specifically aimed at improving coexistence and reducing violence victimization. Duque et al. explored the implementation of the dialogic model of prevention and resolution of conflicts in the context of special education, and Rodrigues de Mello et al. analyzed the participation of girls with intellectual disabilities in dialogic feminist gatherings. Both studies show that these interactive learning environments promote solidary, safe and protective spaces for learning, thus creating contexts for the prevention and reduction of violence.

These different studies also show that the positive impacts promoted by interactive learning environments occur in different educational levels and contexts, including primary education, secondary education, adult education, and the family, demonstrating that interactive learning environments can be transferred and recreated into diverse learning situations. In this regard, it is especially relevant to highlight the contributions that focus on special education contexts that implement interactive learning environments such as dialogic literary gatherings (Fernández-Villardón et al.), dialogic feminist gatherings (Rodrigues de Mello et al.), and the dialogic model of conflict prevention and resolution (Duque et al.). These have been identified as successful educational actions that contribute to educational inclusion and success in general education (Serradell et al., 2019; Khalfaoui-Larrañaga et al., 2021), and can be successfully transferred to special education as these studies show. Moreover, the study by Álvarez-Guerrero et al. showed that this transference could be continued during the COVID-19 confinement, which allowed keeping in contact with academic content and contributed to quality distance learning for these students.

Finally, interactive learning environments that include students with special educational needs have an impact beyond these students, on others without special needs as well as teachers and schools. The study by Molina Roldán et al. found that when students with and without special needs share interactive learning environments, typically developing children benefit from learning interpersonal abilities related to empathy and helping, and from the cognitive effort to make themselves be understood, while acceptance and respect of difference increases and opportunities for new friendships are created. Rodríguez-Oramas et al. analyzed the impact of evidence-based dialogic teacher training and found it as a critical factor for implementing interactive learning environments, enhancing the inclusion of students with special needs, improving the overall quality of education of all students, and transforming teachers' approach to their profession.

In summary, this Research Topic contributes to the understanding of the viability and importance of promoting interactive learning environments including students with special needs and reports specific actions in which these optimal learning environments can be built. This evidence can be used to promote an interactive perspective in special education that is consistent with a social model of disability, that connects these students with general education and contributes to both educational and social inclusion.

## Author contributions

SM reviewed the articles and wrote a first draft of the editorial. RM and MP revised and edited it. All authors have contributed to the editorial, read the final version, and approved it for publication.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# The Impact of Evidence-Based Dialogic Training of Special Education Teachers on the Creation of More Inclusive and Interactive Learning Environments

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In the international context of a progress toward more inclusive educational systems and practices, the role of Special Education teachers is being transformed. From an inclusive perspective, these professionals increasingly support students and their teachers in the mainstream classroom, avoiding segregation. However, Special Education teachers often struggle to reach and support all students with special needs and their teachers to provide quality inclusive education. For this reason, more research is still needed on in-service training strategies for the inclusion of students with special needs that effectively translate into evidence-based school practices that improve the education of all students. This article analyses the impact of two evidence-based dialogic training programs of Special Education teachers working in mainstream schools carried out in Mexico during the 2018–2019 school year. Through in-depth interviews with participants, it was identified how, after the training, teachers increasingly grounded their actions on scientific evidence and promoted interactive learning environments that improved the educational inclusion of their students with special needs. This training also became the venue to make evidence-based educational actions available to other students without special needs, improving the quality of education provided to all students.

**Keywords: evidence-based dialogic teacher education, special educational needs, Mexico, interactive learning environments, inclusion**

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## INTRODUCTION

In the current social scenario, it is increasingly important to promote a high-quality education as a key requirement to prepare all students—including those students with diverse needs—for the acquisition of the basic skills that are necessary to actively participate in society. The Sustainable Development Goal 4 (SDG4) included in the United Nations 2030 Agenda for Sustainable Development (United Nations, 2015) highlights the need to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." Inclusive education involves "transforming education systems so they can better respond to learners' diversity and needs (...) fulfilling the right to education with equality (...) not only to access, but also to participation and

achievement of all students" (United Nations, 2016, p. 44). Thus, despite the existing differences in the definition of what inclusion means across countries (Cooc, 2019), inclusive education is today recognized as the appropriate educational strategy to promote the education of students with Special Educational Needs (SEN) or disabilities in the international scenario (Malinen et al., 2013; Chao et al., 2017; De Haro et al., 2019).

In this context of increasing support to the inclusion of children with Special Educational Needs into mainstream education (European Commission, 2019), the need to going beyond the integration of students with diverse needs in the general classroom should be noted. This becomes the necessary condition for guaranteeing a truly inclusive educational response that makes possible an adequate participation and learning for all students. In this way, as it is warned in the Global Education Monitoring report 2020 (UNESCO, 2020), including students with Special Educational needs in mainstream schools that are not prepared to provide them with an adequate inclusive response can end up leading to a worsening of the situations of exclusion experienced by these students. As recent studies point out, the mere integration of students with diverse needs into the general classroom does not immediately translate into the creation of better opportunities for interaction and collaborative work that are fruitful for the whole class (Pinto et al., 2019).

In relation to the pathways to improve the educational response for all students, prior research has pointed toward the creation of interactive learning environments as an effective strategy to transform schools into more inclusive spaces, in which shared opportunities for learning and social participation between students with special needs and their peers can emerge (Garrote et al., 2017). Different studies reveal that maximizing opportunities for contact and social interaction between students with special needs and their peers can help alleviate the obstacles to participation and social acceptance that students with diverse needs often suffer (Avramidis et al., 2018), while it can also increase their opportunities for academic development (Pinto et al., 2019). In a similar vein, recent research has provided evidence of the social impact obtained by the implementation of Successful Educational Actions (Duque et al., 2020) aimed at increasing the learning and social interactions among students with diverse needs, though the participation of family and community members in various learning activities. Interestingly, Duque et al. (2020) explored venues to develop more interactive learning environments both when including students with special needs and their typically developing peers in general classrooms, as well as among those students with special needs enrolled in Special Education schools.

Moving toward a more inclusive education through the promotion of interactive learning environments often implies reexamining and expanding the role of Special Education teachers. From the focus on responding individually to the needs of students with special needs—which often implies withdrawing them from the general classroom, thus limiting their opportunities for social interaction with their typically developing peers—recent conceptions of the role of specialist teachers are evolving toward more inclusive approaches, aimed at promoting opportunities for collaborative work and social participation among diverse peers within the general classroom (Rose and Shevlin, 2020). Consequently, if the goal is to transform classrooms into interactive environments that offer the maximum opportunities for learning and development for all students, it is necessary to better prepare and support teachers to offer adequate scaffolding to students, so that high-quality interactions among diverse students can take place (Hong et al., 2020). In fact, the pedagogical competence of professionals working in the field of Special Education has been highlighted as a determining factor in promoting interaction between peers to improve the communicative and social skills of children (Syrjämäki et al., 2017).

Despite the evidence supporting the creation of interactive learning environments that allow students with special needs to increase their opportunities for learning and socialization within the general classroom (Vetoniemi and Kärnä, 2019), the educational practice with these students in segregated classroom settings is still a persistent trend in many countries (Somma, 2020). This reveals the need to better align the educational practices carried out in schools with the evidence-based knowledge about the most effective ways to promote a more inclusive response to the learning and developmental needs of all students (Mitchell and Sutherland, 2020). Some recent studies (Brock et al., 2020) have warned that, despite the existence of evidence-based knowledge in the field of Special Education, there is a significant gap between the available research-based knowledge and the practices implemented in schools (Cook and Odom, 2013).

Improving teacher education and professional development can be a decisive factor to address this gap. The scientific literature has long pointed to the importance of teacher education and professional development, and its impact on improving the quality of education (Darling-Hammond et al., 2017). Regarding the role of teacher education in enhancing inclusion (Florian and Camedda, 2020; Ní Bhroin and King, 2020), the Salamanca Statement (UNESCO, 1994) highlighted the recruitment and training of educational personnel as one of the key axes to advance toward a more inclusive approach to Special Educational needs. Among other contributions, the Declaration stressed that one of main challenges for achieving inclusion was to provide in-service training to all teachers, considering the varied and often difficult conditions in which they provide services. Likewise, it was pointed out that training for in-service teachers should be developed, when possible, at the school level, through interaction with the trainers and with the support of distance education and other self-instruction techniques.

When it comes to examining the challenges to improve the professional development needs of Special Education teachers, Cooc (2019) identified two international trends: many schools around the world face a shortage of teachers with competency in the field of Special Education, and a significant proportion of teachers express the need for more professional development, especially those who work with a bigger share of students with special needs. If we look at the characteristics that should be present in teacher education and professional development initiatives in the field of Special Education, some studies have highlighted the need to pay attention to the self-efficacy of

teachers when it comes to providing an educational response to students with Special Educational Needs or disabilities (Sharma et al., 2012; Malinen et al., 2013). Not in vain, increasing teachers' sense of efficacy is related to the use of the best educational practices, as well as with the improvement of attitudes toward diversity and inclusion (Sharma et al., 2012). Furthermore, the scientific literature has pointed to the power of collaborative work between different types of teachers (Malinen et al., 2013; Robinson, 2017), as well as among teachers and other key actors (families, other professionals) when developing plans to improve the educational response to students with Special Educational Needs (Ní Bhroin and King, 2020). Furthermore, it should be noted that, when it comes to support teachers to getting evidence into use in the field of education (Gorard et al., 2020; Joram et al., 2020), this must go beyond sharing research trends among the teaching staff and encouraging teachers to make more use of research outcomes. It also implies promoting changes in the "research culture" at the district/regional level, so that teachers can develop a stronger sense of "agency" to take part of decision-making regarding the educational agenda in their schools or districts (Joram et al., 2020).

The present study aimed to contribute to the scholarship on how to support teachers working in the field of Special Education to get evidence-based knowledge into use in their school practice, in order to improve the learning and development opportunities of all their students. More specifically, our study analyzed the impact of two dialogic teacher education initiatives developed in Mexico City (Mexico), aimed at preparing in-service teachers working in the field of Special Education to implement evidence-based educational actions to promote more interactive learning environments for all students, including students with Special Educational Needs enrolled in general classrooms.

# MATERIALS AND METHODS

## Research Questions

The present study aimed to address two research questions:

- What has been the impact of the participation in two evidence-based dialogic teacher education programs for a group of in-service teachers in Mexico as regards the transformation of their educational response to students with Special Educational Needs enrolled in mainstream schools?
- What are the main strategies that have allowed participants to translate this evidence-based knowledge to their educational practice, with the goal of transforming their classrooms into more interactive learning environments for all students?

## Context of the Study

### Implementation of Successful Educational Actions: The Relevance of Dialogic Teacher Education

The study focused on analyzing the impact of two teacher education programs developed in Mexico City (Mexico). These training actions were put into practice within the framework of implementation of a broader educational program, entitled Schools as Learning Communities (Garcia-Carrion, 2016). This project, first developed in Spain, consists in the transformation of schools into Learning Communities, through the implementation of a set of so-called Successful Educational Actions (Flecha, 2015). Successful Educational Actions are evidence-based actions aimed at promoting dialogue and interaction among students, together with the participation of family and community members in learning activities and decision-making at school. Because of the impact obtained by the Schools as Learning Communities in Spain, which was analyzed by the FP6 INCLUD-ED research project (2006–2011) (Flecha, 2015), in recent years, the Successful Educational Actions have been transferred to a wealth of schools in different countries (Rodriguez Mello and Marini Braga, 2018; Soler et al., 2019; Diez-Palomar et al., 2020).

Among the Successful Educational Actions analyzed by the INCLUD-ED project, it is worth highlighting two of them which are expressly aimed at transforming the classroom into an interactive learning environment for all students: Interactive Groups and Dialogic Literary Gatherings. In Interactive Groups, the classroom is split into small heterogeneous groups of students (in terms of language, learning level, ethnic origin, etc.). Each small group works collaboratively on different classroom activities, accompanied by an adult volunteer, who is responsible for stimulating interaction between all students as a means to help them complete the different tasks. During a classroom session, each group completes as many activities as groups are formed in the classroom. Through this type of classroom organization, all students are encouraged to participate in learning activities on an equal footing with the rest of the class, thanks to the mutual help among peers and the support of adult volunteers (Valero et al., 2018; Zubiri-Esnaola et al., 2020). In turn, Dialogic Gatherings consist of transforming the classroom into an interactive learning environment in which students read and share their views on world literature books, in an environment marked by egalitarian dialogue and respect for the diversity of opinions. The Dialogic Gatherings support the development of communication skills and school-relevant knowledge, while creating opportunities for students to build shared meanings about socially relevant issues (Lopez de Aguileta et al., 2020). As stressed by Aguilera-Jiménez and Prados-Gallardo (2020) the implementation of both Successful Educational Actions allow teachers to intensify the interactions among all students, not only in terms of quantity (maximizing the opportunities for cooperation among students), but also in terms of quality and diversity (promoting solidarity and mutual help among students with diverse needs, with the support of adult volunteers).

One decisive feature for the rigorous transferability of the Successful Educational Actions to new schools and contexts is the dialogic teacher education (Roca et al., 2015), which seeks to promote evidence-based dialogic training among teachers, allowing them to better sustain their educational practice on the most relevant educational theories and the latest scientific developments in the field. Dialogic teacher education promotes a first-hand approach to primary scientific sources among teachers, in a context marked by egalitarian dialogue between the participants, aimed to promote reflection on how to better translate evidence-based knowledge into their teaching practice. Prior research (Roca et al., 2015; Rodriguez et al., 2020) examined

the impact of dialogic teacher education in Spain, showing that the participation in these training initiatives allowed teachers to build shared knowledge on how to provide a more effective response to the problems found in their school practice.

### Dialogic Teacher Education for Special Education Teachers in Mexico

Regarding the current scenario of inclusive education in Mexico, in recent years, different efforts has been undertaken to ensure quality education for all (Hrusa et al., 2020), aimed at transforming educational practices and policies in the field of Special Education in Mexico to promote an inclusive education (Garcia-Cedillo et al., 2014). However, research shows that a greater drive is needed to translate the inclusion discourse present in the latest reforms to the educational practices put into practice in schools (Garcia-Cedillo, 2018). Among the pending challenges to move toward the successful implementation of inclusive education in Mexico, the need for greater collaboration among all stakeholders in the education of students with Special Educational needs—teachers, administrators, families and the community as a whole—has been pointed out. Likewise, the need to advance in the implementation of educational practices and programs aimed at providing equitable and high-quality education for all students, with and without disabilities, has been highlighted (Garcia-Cedillo et al., 2014). Furthermore, improving teacher professional development has also been identified as a critical step to foster equity and inclusion (Hrusa et al., 2020).

Against this backdrop, the present study explored how dialogic teacher education can equip teachers with evidence-based knowledge, to give a new impetus to inclusive practices in schools, in order to transform their classrooms and schools into more interactive learning environments. More specifically, we analyzed the impact of two evidence-based dialogic teacher education programs for in-service teachers in Mexico City launched in 2018, during the end of the 2017–2018 and the beginning of the 2018–2019 school years. These two programs were delivered by a team of educational professionals trained in the scientific bases of the Schools as Learning Communities project, who work for the civil organization Vía Educación and the Natura Institute in Mexico. Since 2015, this team collaborates with local authorities to transfer the Successful Educational Actions to schools in the city. With this aim, in the last years they have organized numerous evidence-based dialogic training courses targeted at teachers and other education staff. Specifically, our study focused on the experiences of a group of teachers who work in the field of Special Education in Mexico City, which participated in one or both programs described below:

- **Initial dialogic professional development program:** Throughout 2018, a number of intensive training actions were carried out aimed at teachers, principals, school supervisors and technical-pedagogical advisors at various educational levels (from early childhood to secondary education), in order to train them on the scientific bases that underpin the Successful Educational Actions carried out in the Schools as Learning Communities project. Different evidence-based dialogic training initiatives were implemented, which included a 40 h online training program (which had an estimated participation of over 120 people in total, and a duration of 10 weeks), a 20 h in-person intensive training program for regular and Special Education staff (which had ∼125 participants, and lasted one week), as well as a 25 h in-person training program specifically for Special Education professionals (which had ∼200 participants and was carried out in three moments over 12 weeks; namely, a first moment, with a duration of 16 h, during the first week, a second moment, with a duration of 5 h, in the middle and, finally, a third moment, with a duration of 4 h in the last week of the training program). Despite having different formats and lengths, all the three initiatives fully covered the modules that comprise the "Raising Awareness" training course that teachers must receive prior to transform their schools into Learning Communities (Garcia-Carrion et al., 2017). Thus, the topics of the intensive trainings included the theory of Dialogic Learning and the bases of the Successful Educational Actions (Flecha, 2015), with a focus on the creation of interactive learning environments to promote the educational inclusion of all students, including students with Special Education Needs or disabilities.
- **Ongoing dialogic professional development program (dialogic pedagogical gatherings):** At the beginning of the 2018-2019 school year, a permanent teacher training seminar was created in Mexico City, based on the experience of the "On the Shoulders of Giants" seminars created in Valencia, Spain (Rodriguez et al., 2020). These are monthly encounters in which teachers and other educational professionals participate in dialogic pedagogical gatherings (Roca et al., 2015), with the aim of deepening on the theoretical foundations of the Successful Educational Actions and improving the educational practice in their schools. For that purpose, the participants read and debate, based on an egalitarian dialogue, the most important theoretical contributions of authors like Paulo Freire, Lev Vygotsky and Jerome Bruner, among others, as well as recent scientific articles published in high-profile journals and top research reports on education. Generally, these monthly encounters are divided into two parts: a first part, which is devoted to the discussion of the selected readings, and a second part, in which different committees are formed, which allow an in-depth discussion on different topics related to classroom practice which are of interest for the participants. The permanent seminar in Mexico City, which was open for anyone who completed any of the initial dialogic teacher education actions described above, had the participation of an average of 60 professionals, including teachers, principals, school supervisors and technical-pedagogical advisors, some of them working in the field of Special Education. The permanent seminar was active during the entire 2018-2019 school year, and sessions were held monthly, with a duration of 4 h per session.

## Data Collection

The study reported data collected through in-depth interviews with five teachers working with students with Special Educational Needs or disabilities enrolled in different mainstream schools

in Mexico City (Mexico). The criteria used for the selection of participants were the following: (1) participants must be teachers in the field of special education, (2) which had attended at least one of the actions within the Initial dialogic professional development program and/or had been part of the permanent seminar (Ongoing dialogic professional development program), and (3) which had expressed the improvement of their students from the work carried out in dialogic training and the implementation of Successful Educational Actions. **Table 1** describes the group of participants in the study, paying attention to their professional position, as well as their experience participating in dialogic teacher education. In order to preserve confidentiality and anonymity, all the names that appear in the study are pseudonyms.

Data collection was performed in two stages between 2019 and 2020. Firstly, between July and August 2019, we conducted two paired in-depth interviews (one with Anita and Nora, and another one with Diana and Miguel), as well as one in-depth interview with Roberta. After the preliminary analysis of the information, it was considered suitable to delve into the views and perceptions of two of the research participants, which had been previously paired-interviewed, due to their significant involvement in the dialogic teacher education initiatives conducted, and because they could provide us information of special value (Read, 2018) to shed light on the impact of the training actions conducted. Therefore, a second round of fieldwork was planned and carried out in July 2020, which included two additional individual in-depth interviews, one with Anita and one with Nora. This allowed us to obtain a deep insight of the training experiences carried out, as well as on how taking part in dialogic teacher education contributed to transform the participants' educational practice toward their students with Special Educational Needs.

In order to ensure that the study followed the international ethical guidelines for conducting research with human beings, all participants were informed about the objectives and the characteristics of the research, as well as about their rights as participants, including the possibility of withdrawing from the study at any time. Furthermore, all participants in the study provided their informed consent to participate in the research. The study was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA).

## Data Analysis

In line with the two research questions posed, the data analysis was aimed at examining the impact of their participation in the dialogic teacher education programs on the teachers involved in the project. The audio recordings from the interviews were transcribed verbatim and analyzed, in order to allow a thorough exploration of participants' experiences, perspectives and views. From this preliminary analysis, a series of themes emerged that illustrate, firstly, the impact that participation in the dialogic teacher education programs had on the participants, in relation to their adoption of evidence-based knowledge, as well as to their vision of their role as teachers in the field of Special Education. Secondly, our analysis brought out the different ways in which participants have managed to translate the evidence-based knowledge gained through the participation in dialogic teacher education into their teaching practice, in order to transform their classrooms into more inclusive learning environments for all their students, including those with Special Education needs. **Table 2** summarizes the main themes that emerged from the qualitative data analysis:

# RESULTS

## Impact of the Participation in Evidence-Based Dialogic Teacher Education

First, the findings about the impact that the dialogic teacher education had on the teachers participating in our study are presented. The transformation of their conception of the role of specialist teachers, as well as their commitment to adopt evidence-based knowledge are discussed.

**TABLE 1 |** Participants in the study.

| Name | Age | Years in service | Professional task | Experience in dialogic teacher education |
|---|---|---|---|---|
| Anita | 42 | 20 | School supervisor in the field of Special Education. She is the coordinator of a team in charge of the supervision of Special Education teachers working in a total of 42 early childhood, elementary and secondary schools. | Completed the 25 h in-person training program for Special Education professionals and then joined the permanent seminar, which she attended regularly throughout the year. |
| Nora | 47 | 24 | Technical-pedagogical advisor in the field of Special Education. She advises 15 kindergarten schools. She works under Anita's supervision. | Completed the 40 h online training program and then joined the permanent seminar, which she attended regularly throughout the year. |
| Diana | 38 | 15 | Technical-pedagogical advisor in the field of Special Education. She advises 8 kindergarten schools. | Completed the 25 h in-person training program for Special Education professionals and the 20 h in-person training program. |
| Miguel | 53 | 26 | Special Education teacher in a kindergarten school. He is advised by Diana. | Completed the 20 h in-person training program. |
| Roberta | 44 | 21 | Technical-pedagogical advisor in the field of Special Education. She serves 21 kindergarten schools. | Completed the 25 h in-person training program for Special Education professionals, the 40 h online training program and the 20 h in-person training program. |

**TABLE 2 |** Coding scheme.

| Category | Themes |
|---|---|
| 1. Impact of evidence-based dialogic teacher education on participants | 1.1 Embracing evidence-based knowledge |
| | 1.2 Rethinking the role of teachers in Special Education |
| 2. Strategies to translating the evidence-based knowledge gained through dialogic teacher education into practice, to develop more interactive learning environments | 2.1 Successful Educational Actions to promote more interactive learning environments for all |
| | 2.2 Promoting the participation of the entire community |
| | 2.3 Making dialogic training sustainable to keep improving practice |

## Embracing Evidence-based Knowledge

Dialogic teacher training was aimed at making teachers aware of the scientific bases that underlie the Successful Educational Actions (SEA), to promote their rigorous implementation in the field of Special Education. Notably, this evidence-based knowledge is aligned with the need to promote the inclusion of all students, as well as with the key role of interaction as a tool to promote learning the importance of interaction for learning and social participation of the Students with Special Needs in such inclusive settings. For so doing, an intensive initial training was established, aimed at introducing the theories and evidence that support the Successful Educational Actions to participants. The evidence-based dialogic approach that underpins this training program, which involves presenting primary scientific sources to teachers, meant for many teachers examining their prior educational practice in the light of the scientific evidence. Some participants exposed the initial difficulties to carry out this reflective analysis about their ways of teaching their students, because of their lack of experience in evidence-based training:

> For me the project was rich, but at the same time it struck me because I said, I mean, what I was trained on, is it not supported? Have I been doing it wrong all these years? (Roberta, Technical pedagogical advisor, Special Education)

> Of course, it was a shock because it is something you do not know. I have been a teacher for 25 years. And this was new to me. Totally different, it broke all the schemes (Miguel, Special Education teacher, Kindergarten).

In fact, the emphasis on putting evidence-based knowledge at the service of teachers, in the eyes of Roberta, contrasted with previous teacher professional development experiences, which used to be very focused on presenting "trendy" educational theories, without delving into their theoretical and practical foundations. In her view, that kind of teacher education, which usually run the risk of being replaced by other new approaches when political changes take place in educational administrations, do not have a profound impact on teacher practice:

> This is not common. We find a lot about the latest methodology, a lot of popular methodologies, which are "in fashion," you know? And that, depending on the six-year term, on the political moment in which you find yourself, you know that it will change. So, I feel that much of what we find as teachers is a bit of confusion, so to speak, because we know that we are going to acquire (knowledge on) what they give us, only for a short time. As soon as they change any person in a position, something else will come. So, they don't allow you to adhere to it or to embrace it, they never tell you about its foundations (Roberta, Technical pedagogical advisor, Special Education).

In contrast, the dialogic teacher education is based on presenting the results of the implementation of Successful Educational Actions, which are evidence-based actions that have been previously implemented in a sustainable way in many schools in very diverse contexts and countries. During the initial dialogic teacher training, all this accumulated knowledge was shared and discussed with teachers. In Anita's opinion, this allowed participants to obtain clear guidelines to start rethinking their practice, to transform it:

> It is not something that you have to invent, the methodology is very clear, (...) it is actually rather that you respect that methodology when implementing it, so that then it achieves the results that have been already proven (Anita, Special Education supervisor).

A key aspect for the consolidation of the evidence-based approach beyond the initial dialogic teacher training was the development of dialogic pedagogical gatherings, which are spaces for horizontal continuous training, in which teachers meet to continue deepening their training. Through the reading and discussion of scientific sources, participants build new knowledge to keep on improving their practice. The fact of promoting these spaces for continuous training have been decisive for participants to make sense of evidence-based knowledge and embrace it:

> This part of having read the books, of listening… because you put your experience, your experiences and so on at stake there, but when you listen to those of others it is like saying: I had not seen it from that perspective. And it has happened, for example, within the services, with the teachers, when we already talked about the readings, and at that moment there were some teachers who said: "I had never thought about it that way, and maybe I'll do it that way." (Anita, Special Education supervisor).

> But do you know what worked? The Dialogic Pedagogical Gathering. That was what made Linda and Laura (two teachers) convince themselves to put it into practice, to say, "Ok, I didn't want to at first, but if you give me the opportunity, and you come with me [to the classroom], I will." (Diana, Technical-pedagogical advisor, Special Education).

## Rethinking the Role of Teachers in Special Education

One of the fields in which dialogic teacher training has had the most decisive impact is the transformation of the participants' vision of their role as Special Education teachers. As described above, dialogic teacher education follows an inclusive educational approach, which aims to help teachers develop more interactive learning environments for all students through the

implementation of Successful Education Actions. This approach contrasts with the more widespread model in Special Education, focused on providing an individual and differentiated response to students with Special Educational Needs or disabilities. This shift in perspective represented an important change for Special Education teachers and raised initial concerns among participants about the feasibility of implementing the project in classrooms serving diverse students. In the words of Roberta:

> I fell in love with the project, (...) but at the same time, there were questions like "how are we going to connect it here in Special Education? How are (we going to manage) the difficult situations (...)? How are we going to let all the parents enter?" Those were questions that were being generated… (Roberta, Technical pedagogical advisor, Special Education).

In addition, the possibility of transforming classrooms into inclusive contexts aroused among the Special Education teachers the fear that their educational task with students would be blurred or could even disappear:

> The point is that the changes that have occurred in the Special Education model have been complex for some teachers, because they have gone from working directly with the child, to now no longer be able to do so. So, for some it has been like taking away, to a certain extent, the tool they had to work with children (Nora, Pedagogical Advisor, Special Education).

> Then suddenly I got into conflict and I told them: these 14 years that I have been a teacher have been of no use. Because at the end of the day in Special Education they have always told you... at the beginning of the school year we based (our work) on the characteristics and abilities of the children, then, from that diagnostic evaluation your work (is developed) throughout the school year. And when you told me that this was not supported (by evidence), I said: "I have not done anything right!" (Diana, Technical-pedagogical advisor, Special Education).

Overcoming these initial resistances involved creating opportunities for dialogue and meaning-making among participants, so that specialist teachers could see opportunities to redefine their role in supporting students' needs in an interactive learning environment. In this sense, the dialogic teacher training thus opened the door for teachers in the field of Special Education to rethink their vision about their own professional task, in line with the goal of transforming the classroom to maximize the opportunities for learning and social interaction of their students with Special Educational needs or disabilities in collaboration with their peers:

> Sometimes I do believe that in Special Education we segregate (the students), we do not include (them). Being immersed in a school and realizing that we only serve this type of student, when we should be serving the entire school, is what limits us. But I do firmly believe that this type of educational action (...) opens the door to all of us (Diana, Technical-pedagogical advisor, Special Education).

> Just the fact that you look at these other possibilities that allow you to work to favor that context, and that it is really going to have an impact on that student, and that you can really see it, that is like changing to another perspective: that you can do what you should, not focusing on the student with SEN, but that you really must see the environment, the community (Nora, Pedagogical Advisor, Special Education).

## Translating Evidence-based Knowledge into Practice

In what follows, we present the findings regarding the strategies employed by participants to translate the evidence-based knowledge acquired through their participation in dialogic teacher education to their teaching practice, in order to transform their classrooms into more inclusive interactive learning environments. Participant's efforts to implement the Successful Educational Actions, as a way to foster the learning opportunities of all their students, including those students with Special Educational Needs, together with the importance of promoting the family and community participation, as well as the need to guarantee the sustainability of the dialogic teacher education are illustrated.

### Implementing Successful Actions to Promote More Interactive Learning Environments for All

When analyzing how the dialogic teacher training helped participants to start promoting changes in the schools in which they work, they emphasized the implementation of Interactive Groups and Dialogic Gatherings in their schools as the driving force for the transformation of their educational practice, aimed at building more interactive environments for all students, including those with SEN or disability. Promoting the implementation of these evidence-based actions meant, in the eyes of the participants, putting into practice a truly inclusive approach, thus favoring the participation of students with SEN in the learning activities:

> When we were starting the school year, there was a lot of talk about inclusive policies, and all that stuff. But it was lip service, because really the teachers, in doing so, failed. But when Interactive Groups began to be held with children, very important changes occurred (Miguel, Special Education teacher, Kindergarten).

> So (with), Interactive Groups, Dialogic Literary Gatherings, which is what has been implemented in this school year with the students, you can work on it with all the children. All students, regardless of their condition. Whatever the student, you see that they learn, that they participate and that the community is involved (Anita, Special Education supervisor).

To illustrate the changes in the classroom learning environment that took place from the implementation of Interactive Groups and Dialogic Literary Gatherings, Diana and Miguel brought up the case of Marcelo, a 5-year-old pupil with an intellectual disability and a family's history of abuse, enrolled in the 3rd year of Early Childhood Education:

> This case attracted me in a special way because no one could control the poor kid. It has a very sad story (...) because the child, if we caught his attention, ran and got under the desk, as

> if to protect himself. Or he would run and crawl under his own chair. (...) (Miguel, Special Education teacher, Kindergarten).

Up to that point, the educational response to Marcelo's special needs had been focused on trying to control his behavior when in class, to the detriment of his learning objectives:

> The teacher, she was already a senior, and she had a hard time recognizing Marcelo's strengths. She was more determined in ensuring that the child was sitting than in his learning. Or to have him coloring (during class), so that he would not disturb others (Diana, Technical-pedagogical advisor, Special Education).

In his second year at school, and after the participation of part of the school's teaching staff in dialogic teacher education, Interactive Groups began to be implemented in Marcelo's classroom. At that point, Miguel, as the Special Education teacher, proposed that Marcelo participate in the groups with the rest of his classmates. The participation in Interactive Groups gave Marcelo the opportunity to increase his social interactions with his peers aimed at the acquisition of learning objectives. In Miguel's eyes, the opportunity of taking part of the learning activities in an environment marked by mutual help and collaborative learning with their peers and an adult volunteer contributed to boost Marcelo's learning:

> I said to the teacher: you know what? We are going to work on this with him. I didn't know... And we started working at Interactive Groups. The child already recognizes quantities and numbers from 1 to 10, he recognizes them, as soon as you ask him, he says them in a skipped way. And that happened because of the Interactive Groups that we did in mathematics (Miguel, Special Education teacher, Kindergarten).

Interestingly, they also highlighted how the participation in Interactive Groups meant a personal transformation for Marcelo: from being "very labeled (...) the one who hits (his classmates), the one who cannot stay still" (in Diana's words), he started to feel just like another member of the class, able to contribute to the classroom work, and to get help from his peers when needed. Hence, the implementation of Successful Educational Actions made it possible to transform the classroom climate in favor of a more stimulating environment for interaction and learning for all. Not only students with special educational needs benefited from this change, but the entire group:

> With the parents who worked with the children (as volunteers) (…) the child went unnoticed. You wouldn't say "this kid has an intellectual disability." Because he participated like the other children. (...) that was very shocking for me. And if the children themselves saw that he couldn't, they helped him.

It should be noted here that the implementation of evidence-based actions (Interactive Groups and Dialogic Literary Gatherings) meant an opportunity for participants to move from discourse to action when it comes to transforming their classroom practice to promote the full participation of students with Special Educational needs. This process required teachers to examine their own beliefs and expectations toward these students. Anita illustrates this change in perspective through the case of Marco, a 1st grade school student with a developmental disability, which caused him a speech delay, among other communication disorders. Anita explained how the student's evolution from his participation in Successful Education Actions led her and the rest of the teachers to realize their initial low expectations toward his learning possibilities:

> We saw him, and I tell you we saw him because I (saw him that way) too, and I had to "eat my words," because we saw him very far away, and then we said, "this little boy (it is enough), if he goes to school and socialize, and maybe he could learn to interact with his classmates…" Unfortunately, sometimes you resign yourself… (...) but no! When the (standardized) test was reapplied, (...) the child had already accessed literacy, in mathematical thinking the child had acquired the contents of the grade... and it was something that really surprised us a lot, because I must say that we didn't even realize when the student actually started to read! (....) With this student, our expectations, unfortunately, and yes, I accuse myself, because it wouldn't have to be that way, our expectations were very low to him.

### Involvement of the Entire Community

Another key action carried out by participants to translate the evidence-based knowledge gained through the dialogic teacher training into their classroom practice with students with special needs was promoting the participation of family and community members in the school. Among the opportunities for the engagement of family members in the learning activities of students with SEN, the participants highlight the possibility that parents enter the classroom to cooperate as volunteers in the implementation of Interactive Groups. This allowed family members to get to know the educational situation of the student and their needs, while facilitating their communication with teachers:

> Regarding other strategies that we carry out in Special Education, I think it has been a plus that, while you are applying the actions, the Interactive Groups or the Dialogic Literary Gathering, the parent is integrated. So, it doesn't require you to have an interview with the parent separately; the parent him/herself is realizing the needs (of the student), and you are not the spokesperson for what he/she should do with the child outside of (school), but it arises from the desire of the parent him/herself (Anita, Special Education supervisor).

The possibility of establishing this close contact with families allowed teachers to involve them directly in the student's learning, establishing formulas to transfer the support that students' needs beyond the school's hours:

> We need them. But I believe, well, I am sure, that this has been something decisive and with which we have struggled the most in the 8 kindergartens (whom I supervise). The fact that a parent comes (to the school) with a specific goal, which is not to bring breakfast, nor to clean the bathroom, nor fix the desk… to let them see and have a commitment to their children's learning. Or we have many family members who are the grandfather, the uncle, the tutor... but who are clear in what

> they are going to give support on. And (we have) very pleasant experiences in which they have realized how to help them (Diana, Technical-pedagogical advisor, Special Education).

Nora illustrated the possibilities that emerge from this collaboration with families through the experience of Leo, a 6-year-old student with an intellectual disability enrolled in the third year of early childhood education. In the following excerpt, she explained how Leo's Special Education teacher was able to capitalize on the participation of Leo's mother in the classroom, in order to provide her with tips to reinforce her son's learning at home:

> For example, in the case of Leo, (...) just something that allowed us to see the use of the different materials, and see what caught his attention and, later, the specialist teacher designed materials that she gave to her mother, to work at home. So, it's like saying: "we already work on this in Interactive Groups, he still has a little difficulty, but look, here is the material that you are going to take this week, to work with him at home, and in a week, we'll come and see if there was further progress." So, we would meet the following week with the material and the child (...) and see if she had favored the use of the material with him. And then, she herself would say: "well, what are you going to give me now? What have you been working on with in Interactive Groups?" (Nora, Pedagogical Advisor, Special Education).

Engaging families in their children with Special Educational needs' learning not only allows them to support them more effectively outside of the classroom, but also turn family members into firsthand spectators of their children's progress, while increasing their appreciation of the work done by teachers. This was revealed in Marcelo's case when his mother began to participate regularly in Interactive Groups as a volunteer:

> Marcelo's mother comes when we do Interactive Groups (...) when we finished and we asked them as volunteers what their reaction had been, what they liked and so on, she started to cry, and she said to the teacher Miguel: "Thank you very much, because I had never seen my son sitting for more than 5 min in an activity, thank you for what you have done with my son." So, I think that these types of situations leave a mark (Diana, Technical-pedagogical advisor, Special Education).

Building and nurturing this type of collaboration with families required a significant effort on the part of teachers when it comes to involving families in the evidence-based dialogic approach that underpins their classroom practice. At the same time, it required a transformation of expectations toward the role of families in their children's learning. The participants pointed out the relevance of their gained experience through dialogic teacher education to start promoting this dialogue with families. In Miguel's words:

> I think magic happens when you feel heard. In addition, when you don't go to school just to hear complaints, that you don't know how to be a parent, that your child doesn't behave well, that you don't know how to do things… (Miguel, Special Education teacher, Kindergarten).

### Making Dialogic Training Sustainable to Keep Improving School Practice

Transforming classrooms into interactive learning environments to promote the learning and development of all students, including those with Special Educational Needs, required an ongoing effort and commitment on the part of all educational agents, which allowed them to consolidate the transformations undertaken and to deepen the improvement of educational practice. To this end, the participating teachers highlighted the continuity of dialogic teacher education—through the participation in the dialogic pedagogical gatherings within the permanent seminar—as a key formula to make the improvements promoted in their schools sustainable. This ongoing dialogic teacher education has helped participants not to lose focus of the goal that is at the heart of all these efforts: to improve the learning opportunities of all students, especially those with special needs:

> The fact of attending monthly helps you (...) to maintain this link and this part of: "Let's remember why we are in this situation, why we are dreaming this part, what we have in common". Well, I left after the seminars, at the end, with this desire to continue, with this continuity to think about what else to propose to finally achieve these objectives that we had. That I think it helped us to have them very clear (Anita, Special Education supervisor).

Stimulating this renewed and constant commitment to evidence-based dialogic training among teachers made it possible that the transformations promoted in the school do not depend on the political initiatives of the moment, nor on the commitment of a specific group of teachers, but rather transcended them and reached the community, thus becoming part of the vision of their schools:

> We have good foundations, I think we have educated ourselves and we have created a network among ourselves, and that must sustain us. (...) It is not a burden that we say: "no, as people have already changed, here we leave it, and now let's see what they give us." On the contrary, the commitment is still there, and even greater, because perhaps there is no longer someone who is asking you for evidence of what you are carrying, but you are doing it because you are seeing the results, and you know that this is a benefit for the community (Anita, Special Education supervisor).

Participants recognized that commitment and rigor are necessary ingredients for the dialogic teacher training to become continuous and sustainable. At the same time, the creation of networks of support and collaboration between teachers has helped participants not to lose heart and cope with difficulties collectively:

> If we meet on Tuesday, come rain or shine, on Tuesday we will be there. Be very, very formal with the commitment. In that case, yes, I admire Nora because, yes, she is extremely responsible in this type of task. And the days that we stayed, those days they were there. And what is the result? Well, obviously, the community joins in, the parents, the teachers, etc (Anita, Special Education supervisor).

I do believe that the entire team is willing to follow this as far as it must go (...) We are going to carry on, and for me it is a pride to say that (so shall) despite the limitations… (Diana, Technical-pedagogical advisor, Special Education).

## DISCUSSION

The present study explored the transformative pathway undertaken by a group of in-service teachers working in the field of Special Education in Mexico. After engaging in two different dialogic teacher education programs, participants introduced changes in their educational practice with the aim of increasing the opportunities for learning and social participation of their students with Special Educational Needs enrolled in general classrooms. In addition, the study identified the forms through which the participating teachers managed to embrace this evidence-based knowledge and translate it into their daily educational practice, in order to create more inclusive and interactive learning environments for all their students, including their students with Special Educational Needs. Hence, the emphasis of dialogic teaching education on preparing participating teachers to implement interactive, evidence-based interactive learning environments had an impact on participants, helping them to redefine their practice as Special Education teachers working in mainstream schools.

While there is growing consensus regarding the relevance of creating evidence-based interactive learning environments to move toward the goal of ensuring an inclusive education for all (Pinto et al., 2019; Duque et al., 2020), segregation—usually in the form of withdrawing pupils with Special Education needs from the general classroom for support—is still a common practice in the field of Special Education in many countries (Rose and Shevlin, 2020; Somma, 2020). Faced with this reality, our study pointed to dialogic teacher education as a powerful strategy for the professional development of Special Education teachers, a field that is facing important changes (Rock et al., 2016) linked to the need to promote more transformative teacher education models aligned with the principles of inclusive education.

Our findings revealed the importance of creating spaces for dialogue and exchange that allow teachers to get familiar with evidence-based scientific knowledge, while they reflect on the role that Special Education teachers should play, to contribute to the goal of increasing the opportunities for learning and social interaction of students with Special Educational Needs within regular classrooms. Our results are in line with those of other studies placing teacher education as a critical tool to move toward more inclusive educational approaches (Robinson and Goodey, 2017; Florian and Camedda, 2020), and stressing the need to advance in the study of the tools and programs that offer better support and preparation for teachers when developing their teaching work in more inclusive contexts.

Furthermore, the study has made it possible to identify keys to transferring evidence-based knowledge regarding the relevance of interactions for learning to everyday practice in the field of Special Education, an aspect in which a gap had been identified (Cook and Odom, 2013). In this regard, the study revealed a series of strategies that have allowed participating teachers to translate the knowledge acquired through dialogic teacher education into their daily practice, in order to ground their educational actions in evidence-based knowledge. Firstly, our findings revealed how through the implementation of two evidence-based Successful Educational Actions that transform the classroom into an interactive learning environment (namely, Interactive Groups and Dialogic Literary Gatherings) they have managed to increase the interactions among students with and without Special Educational Needs, aimed at solving learning activities within the classroom. These findings coincide with those of previous studies, which have pointed to the power of Successful Educational Actions as tools that fosters inclusivity, through the social interaction between students with diverse needs (Duque et al., 2020; Zubiri-Esnaola et al., 2020). The transformation of the learning environment through the implementation of these Successful Actions not only had an impact on students with Special Educational Needs' opportunities for learning, but also on their peers, since it allowed students without special needs to actively get involved in the academic process of their peers with diverse needs, thus increasing the opportunities to maximize interactions among students in terms of quantity, quality and diversity (Aguilera-Jiménez and Prados-Gallardo, 2020). In addition, our findings revealed how, through the involvement of families and other members of the community in the classroom, teachers were able to strengthen the impact of the Successful Actions aimed at improving the learning and social outcomes of students with Special Educational needs, thus extending the impact of these interactive learning environments beyond the classroom. In line with the findings of other studies that highlight the need for teachers to join forces with key stakeholders to improve the educational response to students with special needs (Ní Bhroin and King, 2020), our study showed how engaging families in the transformation of the classroom's learning environment has been a critical tool to move from discourse to action when increasing the learning opportunities of students with Special Educational Needs. Furthermore, participants highlighted the importance of a sustainable commitment to dialogic training, in order to continue improving their educational practice through the implementation of evidence-based knowledge aimed at favoring the inclusion of their students with Special Educational Needs.

In the context of growing global agreement on the need to move toward inclusive education for all (United Nations, 2015), our study has contributed to shed light on two dialogic teacher training initiatives (initial and ongoing dialogic professional development programs) that allowed a group of teachers working in the field of Special Education to improve their preparedness to respond to the needs of Special Education students enrolled in general classrooms. Through an evidence-based dialogic approach aimed at equipping teachers with theoretical and practical tools to strengthen their collaborative work (Robinson, 2017) with general teachers and with families and other members of the community, dialogic teacher education provided an opportunity for the participants to rethink and give a new impetus to their role as teachers in the field of Special Education. In this sense, the participants' renewed vision of the centrality of Special Education teachers when it comes to transforming general classrooms into more inclusive spaces for all students—which emerged and flourished from the

participation in evidence-based training—is aligned with prior research emphasizing the need to support teacher's self-efficacy when serving students with Special Educational Needs (Sharma et al., 2012; Malinen et al., 2013; Chao et al., 2017). Furthermore, our findings are in line with those of Ruppar et al. (2018), which highlighted how the efforts of teachers to value the capacities of students with diverse needs and raise expectations toward their learning possibilities have an impact on the professionalization and recognition of teachers working in Special Education. The ways in which the participating teachers detected their (prior) low expectations regarding the learning possibilities of their students with special needs and, as a consequence, started promoting transformations in the classroom (such as the implementation of evidence-based actions like Interactive Groups or Dialogic Gatherings, the participation of families in the classroom and the creation of spaces for continuous dialogic teacher education, etc.) offered an example of the impact of involving Special Education teachers in high-quality training opportunities on the improvement of their educational work with Special Education students in the general classroom.

The study has some limitations that must be noted. First, the information collected in the study is largely based on the perspectives of the participating teachers collected through in-depth interviews. In order to gain a deeper understanding of the impact of the evidence-based dialogic teacher education on the academic experiences of their students with Special Educational Needs, further studies must delve into these processes, collecting the voices of other relevant stakeholders (families, students with Special Educational needs, peers without Special Educational needs, etc.). This may allow us to provide a more nuanced and in-depth picture of the role of the different actors involved in transforming the classroom into a more inclusive learning environment. Likewise, the study focused on the results obtained after the first year of implementation of the Successful Educational Actions. Although the information analyzed provided detailed evidence of the improvements achieved in the classrooms involved in the study, more research is needed in order to analyze the evolution of these improvements over time. In addition, further research may deepen on the necessary conditions for the dialogic training of teachers to have a direct impact on daily practice in the classrooms, which may inform future evidence-based dialogic teacher training programs in the different countries which are currently implementing Successful Educational Actions. Notwithstanding its exploratory nature, the study suggests the promising impact of dialogic teacher education on the transformation of the educational practice of a group of Special Education teachers in Mexico, a country that in recent decades is making strides to establish more inclusive educational policies (Garcia-Cedillo et al., 2014; Garcia-Cedillo, 2018) and to improve teacher professionalization (Hrusa et al., 2020). The efforts of participants to align their practice with the evidence-based knowledge gained through dialogic teacher education to transform their classrooms into more interactive learning environments that embrace students' diversity illustrate the need for further research on how to improve teacher education and professional development to contribute to the shared goal of ensuring more inclusive learning environments for all.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Board of the Community of Researchers on Excellence for All (CREA). The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

We declare that all authors have made substantial contributions. LR-E and AR-O contributed to the conceptualization of the study under the research line successful educational actions and schools as learning communities in the framework of the Ramon y Cajal grant (awarded to LR-E) and the AR-O's Ph.D. AR-O collected the data. PA drafted the manuscript. All authors contributed to the formal analysis, discussion of the data, and made edits for important intellectual content. LR-E and MR-S revised the final version of the manuscript. All authors approved the final manuscript.

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# Creating Learning Environments Free of Violence in Special Education Through the Dialogic Model of Prevention and Resolution of Conflicts

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Violence suffered by children is a violation of human rights and a global health problem. Children with disabilities are especially vulnerable to violence in the school environment, which has a negative impact on their well-being and health. Students with disabilities educated in special schools have, in addition, more reduced experiences of interaction that may reduce both their opportunities for learning and for building protective social networks of support. This study analyses the transference of evidence-based actions to prevent violence in schools – the dialogic model of prevention and resolution of conflicts (DMPRC) – in the context of a special school, and its impact on the reduction of violence, the creation of egalitarian relationships, and the prevention of bullying. A case study with a communicative approach was conducted including in-depth interviews and communicative focus groups with the diverse participants to analyze the process of transformation carried out in the school and the main actions that give students a voice in the management and creation of egalitarian non-violent relationships. The results show that the inclusion of the students' voices in the resolution and prevention of conflicts reduces violence, empowers special education students, strengthens friendship relationships, caring behavior, and active positioning among the community. The positive impact of the transference of the DMPRC to special schools contributes to students' well-being and healthy development by offering safe and protective educational spaces and quality emotional education, also contributing to the achievement of the Sustainable Development Goals related to the elimination of all forms of violence in childhood.

**Keywords: special education needs, prevention of bullying, dialogic model of prevention and resolution of conflicts, inclusion, Zero Violence Brave Club**

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## INTRODUCTION

School violence is a global problem affecting millions of children worldwide (Smith, 2002; Liang et al., 2007; Khoury-Kassabri et al., 2009; Murray-Harvey and Slee, 2010; Chen and Astor, 2012; Robers et al., 2012; UNICEF, 2014; Jiménez, 2019; UNESCO, 2019; Giavrimis, 2020). While the UN in the Convention on the Rights of Persons with Disabilities (United Nations, 2007) reaffirmed the international commitment to provide quality and inclusive primary and secondary

education on an equal basis with others, much research shows that the most vulnerable groups, such as students with disabilities, are at greater risk of violence in mainstream schools (Reiter et al., 2007; Sentenac et al., 2011; Devries et al., 2014; European Parliament, 2015; Malecki et al., 2020).

Research shows the high rates of intimidation and harassment that students with disabilities suffer and the barriers which leave them defenseless and unprotected. The data show that they are more likely to be abused than non-disabled students (Malecki et al., 2020). Some research even suggests that they are three to four times more likely to be bullied than typically developing students (Devries et al., 2014). On the other hand, research shows that students with disabilities have fewer social ties and support networks, which leaves them more exposed to attacks. In this regard, barriers to reducing or eliminating violence against children with disabilities in mainstream schools have been identified, which increase the likelihood that these students will become victims of school violence. These barriers include the lack of a strong social network, rejection by peers and difficulties in relating with others (Méndez et al., 2017), having poor communication skills or personal characteristics that differentiate them from the others (CERMI, 2017), restrictions in school participation (Sentenac et al., 2011) and the limitations in adaptive behaviors, social skills and daily practices that intellectual disability entails (APA, 2013; Olivier et al., 2020). There is less research studying students' vulnerability to violence in special education settings (Glumbić and Žunić-Pavlović, 2010), so this topic of study is still under-explored.

The consequences of violence for students with disabilities are being studied. It has been shown that students with disabilities are more likely to be victims and to have depressive symptoms due to this victimization (Olivier et al., 2020). According to research with autistic students, they are highly concerned about the possibility of being victims and the reported rates of bullying suggest that they may be at disproportionate risk of psychological harm (Ashburner et al., 2019; Gomes et al., 2020). When families in this study are asked about their concerns about the negative consequences of bullying on their children, the answers also include, among others, mental health issues, such as self-esteem, mental health, social participation, school attendance, academic performance, and behavior. Other studies continue to show that disability is associated with poorer mental health in adolescence, and that this fact is mediated by the bullying these adolescents experience. Thus, we could say that there is a harmful link between disability and mental health that seems to operate through bullying (King et al., 2018).

Therefore, it is urgent to know and implement effective interventions that can reduce the adverse effects of violence on this student body. Scientific literature shows that there is already evidence of successful interventions that have managed to reduce violence in schools (Berkowitz, 2014; Ríos-González et al., 2019). The most effective programmes so far to reduce violence towards disabled and non-disabled students, implemented in mainstream schools, coincide in enhancing peer intervention, support, friendship, and active positioning networks, as this is one of the most proved prevention factors (Bourke and Burgman, 2010; Rose et al., 2015; Hamby et al., 2016; Cook et al., 2017; Iotti et al., 2019; Clark et al., 2020; Iñiguez-Berrozpe et al., 2021). These programmes take into account the potential of bystanders to minimize or avoid damage. Evidence has shown that when programmes encourage bystanders to support or act on violence, it is possible to reduce and stop it (Banyard et al., 2004; Banyard, 2008; Swearer et al., 2010; Rose et al., 2015; Cook et al., 2017). Bystander's motivations for intervening or not intervening in violence have also been well studied. Factors that have been shown to favor witness action to stop violence include clear school anti-violence policies, teacher and peer support for those who act and for those that create safe environments, and support networks that protect when intervening on behalf of victims by preventing attacks (Thornberg et al., 2012; Howe et al., 2013; Berkowitz, 2014). Some findings suggest that there is a need to develop intervention programmes that improve the school climate, promote trusting relationships between students and teachers and remove communication barriers to increase teachers' awareness of school violence (Osher et al., 2012), as well as the feeling of belonging to the school (Syvertsen et al., 2009). Other research has analyzed aggressors' motivations for violence, demonstrating, for example, that a motivation for violence is the pursuit of power and status (Saarento and Salmivalli, 2015), so interventions that aim to break the link between violence and higher social status will be effective.

Traditionally, there has been a tendency to approach the coexistence in special education schools or classrooms in a more disciplinary way and from a more behavioral perspective, rather than from a social or dialogic one (Beam and Mueller, 2016). However, there is increasing evidence of the relevance of interactions in the learning of children with disabilities (García-Carrión et al., 2018; Fernández-Villardon et al., 2020), which play a key role in the development of both cognitive abilities and positive feelings, such as solidarity and friendship. But more research is needed to understand how this interaction-based learning can affect the prevention of violence with students with disabilities.

The dialogic model of prevention and resolution of conflicts (hereinafter DMPRC; Villarejo-Carballido et al., 2019) is an action based on dialogue and the intervention of the entire educational community, promoting active positioning and solidarity and protective networks in the face of any attack. This model aims at overcoming the dominant socialization that links attraction and violence and achieves the building of more egalitarian relationships that combine the desire for the best values and feelings and prevents violence among peers (Gómez, 2015; Navarro et al., 2018; Puigvert et al., 2019; Elboj-Saso et al., 2020; López de Aguileta et al., 2020; Torras-Gómez et al., 2020). This study aims to investigate whether the measures that have been proved to be effective to prevent violence among students in ordinary schools can work in special schools, since social links and support networks may be more limited by the very difficulties of interaction among students and by the more individualized work that is usually carried out in this type of school. More specifically, this contribution analyses how the DMPRC has

been transferred to a special school and what its impact has been on the prevention of violence in students with disabilities.

## MATERIALS AND METHODS

A case study has been carried out in which the voices of participant students and teachers have been included, contributing to the collective creation of knowledge according to the premises of the communicative methodology (Gómez et al., 2011). This methodology builds on the dialogue that is created with the end-users of the research, which includes their voices in an egalitarian dialogue to jointly build knowledge that enables a deeper and more accurate understanding of the reality under study, achieving the objective of social impact which is the transformation of such reality (Gómez et al., 2012). Several studies have demonstrated the adequacy of this methodology to conduct research regarding vulnerable groups (Puigvert et al., 2012; Gómez et al., 2019), especially when there is the objective of achieving social impact.

Following this methodology, in our study we ensured that the data collection techniques not only allowed gathering the end-users' narratives and perceptions, but also that dialogue was at the center of the process, in order to discuss with the participants their experiences as well as the existing evidence on the topic so far. In this way, we could identify the exclusionary components of reality –which refer to the barriers and difficulties that people with disabilities encounter to overcome the risk of being bullying victims, and the transformative components – those that contribute to overcome such barriers. This methodology allows, through dialogue with the participants, an agreement on these exclusionary and transformative components, which enhances the validity of the results and strengthens its potential social impact.

### Case Study

The special school that is the subject of this case study is a school that has been implementing, since the 2013–2014 academic year, successful educational actions identified in the INCLUD-ED research project of the 6th European Framework Programme, which have already demonstrated have a positive impact on students with special educational needs (García-Carrión et al., 2018). The school serves students from seven Valencian municipalities and currently has 160 students between the ages of 3 and 21, who attend preschool, primary and secondary education, the transition to adult life program, and other training programmes.

In the academic year 2016–2017, they began to apply the DMPRC, starting initially in some classrooms until it became the school approach to improve coexistence. The DMPRC is a successful educational action based on the theory of preventive socialization of gender violence and the scientific theories that emphasize two key aspects to improve education: quality interactions and community participation. This action is grounded on promoting dialogue within the community as a means to create the coexistence rules of the school-based on consensus, usually through assemblies. In this regard, the DMPRC is developed in the framework of the dialogic learning (Flecha, 2000). This is a communicative perspective of learning that understands that people learn through dialogue, and through dialogue transformations can be done in the interpersonal relationships and in the environment. In the special school, assemblies are held in the classrooms and with the classrooms representatives to include the students in the dialogic process of improving coexistence. Within this dialogic model for coexistence improvement, there is a specific action called the Zero Violence Brave Club, which was created as a strategy that helped teachers in other schools put in practice research evidence on the benefits of bystander intervention, uniting the language of ethics and the language of desire, the creation of support networks and reaching consensus on clear rules of zero tolerance to violence, all this mediated by dialogue among community members. With the aim of using a concept known in the community, in the special school they use the name of the Zero Violence Brave Club when they refer to the MDPC, as the students feel identified with it and is attractive for them.

### Data Collection and Analysis

The following techniques were used to collect information: (1) in-depth interview with a primary and a secondary school teacher, (2) focus groups with students from different educational stages, and (3) an evidence record table which was delivered to the school in the academic year 2018–2019 to collect relevant data on the implementation of the DMPRC (see **Table 1**). Due to the pandemic situation, the fieldwork was carried out taking into account all the safety measures and following the procedures agreed with the school. Following the communicative methodology, the guidelines for the data collection techniques were developed jointly in a meeting with two teachers to discuss the content of the data collection and the language to be used in the focus groups with the students. The meeting was held with these teachers because they have been involved in the implementation of the DMPRC from the beginning and because they are the ones who have worked with the students who were going to participate in the focus groups and therefore know first-hand the language that they use and how the DMPRC is carried out. With the aim of gathering the maximum number of voices, a total of eight teachers from the school held two meetings (the first involved four primary school teachers and the second four secondary school teachers and teachers from the transition to adult life program) to

**TABLE 1** | Data collection techniques.

| | |
|---|---|
| Interview | One primary education teacher |
| | One secondary education teacher |
| Focus groups | One with primary and secondary education students |
| | One with students of the transition to adult life program and of the gardening training program |
| Evidence record table | Information on the implementation of the DMPRC |

discuss and dialogue the questions and evidence that were going to be dealt with in the in-depth interview. The conclusions that emerged were collected by two of the teachers, who subsequently participated in the in-depth interview.

To ensure the anonymity of both teachers and students, each participant was assigned a code which was used in the transcription and analysis of the data. Before the fieldwork was carried out, the participants were informed of the objective of the study, of the anonymous and voluntary participation and that the data would be treated confidentially and used only for research purposes. All participants agreed to provide researchers with information relevant to the purpose of the study and signed an informed consent form. Family members of the minors also signed the informed consent. The ethical requirements were addressed following the Ethical Review Procedure established by the European Commission (2013) for EU research, the Data Protection Directive 95/46/EC and the Charter of Fundamental Rights of the European Union (2000/C 364/01). The study was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA) with the number 173 20210117.

## Communicative Focus Group

A total of two focus group sessions were held throughout the case study with school students; besides the researcher, the students' teachers were also present to facilitate communication. Seven students participated in the CFG, who had the following disabilities: pervasive development disorder (two cases), autism, moderate intellectual disability (three cases, one of them with a language disorder), and severe intellectual disability. In the first CFG with students, three students (two from primary education and one from secondary education) aged 9, 10, and 12, respectively, participated. In the second CFG with students, four students participated, three of them were in the transition to adult life program and one in the gardening training program, aged 17, 18, 19, and 20, respectively. The themes proposed for the dialogue were accompanied by evidence from previous research on the topic (violence prevention and the factors that protect from bullying), which was shared by the researchers with the participants to contrast it with their own experiences. These themes revolved around the importance of friendship to prevent violence, the need to break the silence by taking a stand against violence, the importance of seeking help and protecting those who need it, the existence and knowledge of clear rules of zero tolerance for violence and the creation of dialogic spaces in which to denounce violence and feel supported in order to increase the perception of safety and well-being. The teachers of primary and secondary education collaborated in the writing of the questions in order to facilitate the understanding of the language and worked previously with the students to ensure their comprehension. With the students in the transition to adult life program and in the gardening program, the teachers prepared the interviews in dialogue and made it possible for two students to write down their answers to give them more confidence. The teachers stayed in the two CFGs with students taking the role of communication facilitator. Sometimes they reformulated the questions using the same language they use in the classroom, and sometimes they repeated the ideas expressed by the students and added language to the gestures they used in communication. This help has been a key issue to carry out the interviews with the students and to be able to overcome the barriers in communication by making it possible to incorporate the students' voices in the research process and in the creation of the results. The CFGs were audio recorded with the prior consent of the students' families and transcribed for later analysis. These aspects of communication were taken into account in the transcription of the interviews along with the voices of the students and teachers. Two aspects need to be clarified: the first one is that when students refer to the DMPRC, they do so by talking about the "Zero Violence Brave Club," as it is usually called at school, and the second one is that, in the results section, when the students' voices are reported, they are included in a dialogue with their teachers in order to reflect, as faithfully as possible, the importance of the scaffolding in the interview.

## Interviews With a Communicative Approach

An in-depth interview was conducted with two teachers (one primary education teacher and one secondary education teacher). The objective of the interview was to learn about the process of implementation and impact of the DMPRC in the school. One of the main topics discussed in the in-depth interview with the teachers was the steps they took to implement the DMPRC from the beginning to the present day, to analyze how they made the transference of this approach to the improvement of coexistence and the prevention of conflicts to the special school, which up to that moment had only been implemented in mainstream schools. The rest of the topics revolved around the impact that the implementation of the DMPRC was having in the school on violence prevention, on the inclusion of students' voices in the creation of more egalitarian relationships and quality friendships, on the increase in complaints about violence and on the empowerment of students themselves, on the creation of support networks that protect them, and on the effect that this has had on their well-being and happiness. This interview also included the debates and contributions that arose in the two previous internal meetings between the school's teaching staff. These interviews were conducted in person, audio recorded ensuring the Covid-19 safety measures, and subsequently transcribed.

## Evidence Record Table

An evidence record table was facilitated to the school in the academic year 2018–2019 with the aim of gathering evidence of the impact that the implementation of the DMPRC was having on students, including narratives, statements, or examples of situations. Therefore, the data collected were qualitative. The evidence record table was used by the teachers who implemented the DMPRC, who made a written record relevant information that evidenced how the DMPRC was contributing to prevent and overcome violence. The excerpts included in the results section are identified as "evidence record table."

## RESULTS

The analysis of the evidence collected shows four main results. The first one is the possibility of successfully transferring the DMPRC in a special school. The second one is the impact of the application of DMPRC on improving the school climate and coexistence, emphasizing the strength of this approach as a preventive measure against violence. The third result is the increase in complaints thanks to the empowerment of students who feel listened to and supported, and the fourth result is the increase in the creation of support and friendship networks that can act as a protective shield against any attack and improve their well-being.

### Transferability of the Dialogic Model of Conflict Prevention and Resolution to a Special School

Before starting to promote the DMPRC, this special school began to introduce the Successful Educational Actions in a phased manner. They first launched Literary Dialogic Gatherings and later they applied the DMPRC, which is being carried out from the 2016–2017 school year. The first proposal emerged from the management team and started to be implemented in some classrooms. Progressively, more teachers joined in, motivating each other until it became a line of action in the overall school that is present in the day to day. The teachers we interviewed highlight two steps that were key to its implementation. The first one is the internal training among the teachers themselves. Those with more years of experience explained to those who have just arrived or wish to incorporate the DMPRC how they have done it and the results obtained. The second step is the creation of a commission to promote and accompany implementation at each educational stage.

> It may be that there are people who do not know how to do this and when they see that it works and gives good results they get hooked. Creating this commission, so that it flows … I came together to explain how I did it … in this commission last year they created a kind of script summary of these actions of how to carry them out in each educational stage (Primary education teacher, interview).

The implementation in primary education, secondary education, and in the transition to adult life program varies due to the age of the students, but the changes are not substantial to the DMPRC itself, instead, they have to do with the presentation of the stories, the vocabulary, or the more visual aids. They refer to strategies teachers have introduced to make it easier for students with disabilities to understand the rules or internalize them. As follows we describe the differences in the implementation of the DMPRC in each educational stage and the actions that are carried out in the same way.

In primary education, each school year begins with the reading of the story "Zero Violence Brave Club." A teacher explained that if children cannot read, it is the teacher who reads the story, and all the children comment on it afterwards. Afterwards, in the assemblies held first thing in the morning, the behaviors considered to be correct or incorrect for the group are agreed upon. Later on, the class decides whether to have a Zero Violence Brave Club and a special space is created within the classroom for this purpose, in which each child chooses a superhero and puts his or her face on it. In another assembly in the morning, the rules for the prevention of violence were discussed. As the teacher explained, at the beginning, rules were not so much linked to the prevention of violence, but they had more to do with classroom rules. Little by little they realized that it was very important that they were exclusively related to the prevention of violence. The norms are agreed upon by all and are changed every year according to what they consider important, although they recognize that there are some rules that are maintained every year. They explained that it is important to formulate them in a positive way so that they are more effective for children and thus reduce the chances of them skipping. The rules are discussed in order to facilitate their deep understanding and to collectively construct their meaning.

> (…) if the rule is to treat us well, what is it, to say nice words to us, to help and take care of our friends? Another rule may be to respect the body and, depending on the characteristics of the students of that year, we may or may not add more. The rules become more specific. For example, if I go to the toilet, I close the door because it is my body, it is my privacy, when I want to give a hug, I will ask … he will give me a hug, if I say no, you must respect it (Primary education teacher, interview).

Some of the rules that are usually maintained year after year are: treat well each other, respect each other's body and tell the truth. These rules are applied everywhere in the school, not just the classroom. Before going out into the playground, the rules are reminded every day, so that they are kept in mind and not forgotten. Teachers remind them of what they can do to ensure that the playground is a safe space by encouraging them to take an active stance against violence. They do this by using phrases that they repeat every day.

> (…) when we go out into the playground we say: eyes wide open, watch out for a cowardly attitude, make a magic curtain, or protect someone (Primary education teacher, interview).

When they speak of a cowardly attitude, they mean behavior that includes violence. This concept helps to make such violent behavior unattractive by making it easier for courageous behavior that excludes violence to become attractive. The magic curtain means not paying attention to those who do not behave courageously, but instead giving attention to those who are victims or who act courageously by denouncing or protecting. People who do not use violence are valued socially, giving them a lot of appeal.

Another important moment for the DMPRC is the classroom assemblies. These are held three times a day, in the morning, after the playground, and in the afternoon. In the first one, the agreed-upon rules are remembered every day, people who are in the club of the brave are named and they sing the song that reminds them what to do if they are getting nervous. They are also reminded of a message that helps them to be group conscious and reinforces group cohesion: "we do group together" (Primary education teacher, interview). In the second assembly, they are asked what they have played, with whom, if they have been brave and if they have seen a cowardly attitude encouraging them to share what they need. In the third assembly, the same questions are asked again, encouraging dialogue. The success of these spaces for dialogue is due to the strength of the group, which rejects violent behavior and decides together when someone leaves the Zero Violence Brave Club with arguments of validity.

> When someone is having cowardly behavior, we all decide together when we are going to talk about it again, that is to say, we decide how long he will have to show us that he treats us well. If for example, it has been during the recess time, we try not talk about it again before another recess time has passed. It is agreed between all of us and they know that you have to show until that moment that you are brave enough to go back in (Primary education teacher, interview).

At this age, they place great importance on repetition and rehearsal of situations that "train" them so that when faced with a situation they know how to recognize violence and how to respond to it by keeping themselves safe. This helps students who have more difficulties in reasoning or reflect consciously.

> (…) for some of the students reflection is more complicated, but if you rehearse it many times … that when they touch you, you say "stop" … when they are in the playground and they are touched, they will say "I don't like it." Modeling gives them the ability. Repetition helps to assimilate even if they haven't done as much thinking (Primary education teacher, interview).

In secondary education and the transition to adult life program, the implementation of the DMPRC started directly with the consensus of the rules in the classrooms, putting them in positive to avoid challenging behaviors in the face of the rules in negative. In the dialogues on the norms to prevent violence, much thought is given to whether they will really serve this purpose or not. At this educational stage, the Zero Violence Brave Club is also made but no superheroes are chosen. Instead, in the classroom space dedicated to the club, their names used following the same dynamic as in primary education. Through the dialogues, they seek a consensus about what it is to be brave and about what attitudes they are not going to allow. In the language used, courageous behavior and active positioning are made attractive.

In the first moments, they did the Zero Violence Brave Club with some supports such as a point system for the students who presented many challenging, negative and aggressive behaviors.

> (…) I have reduced this visual aid over time because they are now able to know who has had a cowardly attitude, they remember … this year in the classroom I have had to make an adaptation, because we have needed the panel, I have made a passport of the brave: what we intend to fulfill and when we do not fulfill it we do not get the stamps (Secondary education teacher, interview).

These adaptations are superficial and most of the time temporary and do not affect the basis of the DMPRC or that of the Zero Violence Brave Club, which are: egalitarian dialogue in the process of consensus on norms, attitudes of active positioning in the face of violence, the desire for non-violence, and the creation of support networks. In this sense, one teacher explained that something she considers fundamental for the good functioning of the assemblies is the previous work they had done on the seven principles of dialogic learning because it has allowed them to train egalitarian dialogue, which is what makes it possible for them to move away from power relationships. They stress the importance of remembering every year what egalitarian dialogue is, because it is very important for these students to go deeper into this concept little by little.

> (…) working on the seven principles[1] has been fundamental, that they understand what they mean, because in the end we base our action on egalitarian dialogue and it is no use for us to hold an assembly if it is not present (Secondary education teacher, interview).

All the instructions that are agreed upon, the rules that are discussed and reflected upon, constantly remind them of who they want to be as a group and as individuals, and being able to do so in a group with honesty helps them to walk towards that transformation. In addition, teachers also experience this transformation by being part of this collective dream.

> It is a transformation that has taken place over the years, and I have experienced it in this way. We have gone from a very different education on these issues to starting with the MDCP and transforming ourselves with them. I think we have transformed with them and they also realize that we have changed too, and they demand that others change too and join the club (Secondary education teacher, interview).

The dialogic contexts that are created in the school, where the strength of the group is the motor of change, is an opportunity to gain confidence and to progressively be able

[1]She refers to the seven principles of the dialogic learning: egalitarian dialogue, cultural intelligence, transformation, instrumental dimension, creation of meaning, solidarity, and equality of differences (Flecha, 2000).

to transfer it to other contexts. It has not been possible to confirm the effectiveness of the transfer outside the school because the contexts are different and are not always conducive to quality interactions that value the courage of good treatment and action in the face of violence. An example of the difficulty that some students have in transferring the Zero Violence Brave Club outside the school is shown in this narrative by a teacher in the interview.

> It depends on the group he is in because sometimes we have had experiences … like that of a former student who told us: "they threw a stone at me and I said I'm not going to allow it anymore" and she was told "that's children's stuff" and the girl said: "well, I'm not going to school anymore." This happened in a basic qualification programme. We told her to try … and she said: "in my school before, they listened to me and what I said was important" (Secondary education teacher, interview).

## Impact on Violence Prevention and Improvement of School Climate

Having a model of coexistence that is based on prevention is crucial, because violent behavior can appear and increase rapidly towards an escalation of violence, according to the teachers in the interview. Detecting such behaviors even before they appear and teaching the group to detect them by having clear rules that help to stop them or even that they do not start, is crucial to improve the climate of the classroom and the school and to promote safer environments where learning is not altered by violence. Working in advance with special needs students is very important and not always easy. The Zero Violence Brave Club helps them to anticipate negative and violent behavior, but not only from adults, but also from peers. Enabling students to take an active stand against violence allows them to train this approach.

In the interviews with students, they told us that when they saw that a classmate was becoming nervous and could trigger violent behavior, they initiated a dialogic interaction to anticipate violent behavior and redirect that reaction towards non-violent behavior. Thanks to the DMPRC, they have learned strategies that they use with their colleagues with the aim, as they say, that no one leaves the club, that is, that no one engages in violent behavior. They help each other to self-regulate their behavior through dialogic interaction, achieving the effect of anticipation and prevention.

> If someone is brave and is getting a little nervous, what do we say to help them? (Primary education teacher, interview).

> Think, talk, what's wrong, can I help you? 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, I know how to relax (Primary education student 1, CFG).

To make this possible, the teachers report that in class assemblies they continually dialogue and remember words and gestures that they can use as strategies when they see someone getting nervous (the prelude to aggressive behavior). The difference with the previous model of coexistence, more horizontal and less social, in which only the teacher acted, lies in the fact that now the whole group (teachers and students) intervene, and prevention in strengthened. This is what we have called in the previous section the "strength of the group."

> (…) for example, when someone comes up to me with a cowardly attitude, we see that they're not going to respect my body or treat me well, then the "stop" or "I don't like it" before he pulls my hair … if we see them coming I say "stop, I don't like it," that's one of the strategies. Another one that we use a lot is "think, talk, what's wrong with you." For example, someone has fallen to the ground and we see that they are nervous and start with a little kick … accompanied by the gesture we tell them: "think, talk, what's wrong with you, can we help you?" And they repeat this a lot. And we sing a little song about relaxing too (Primary education teacher, interview).

The collective verbalizing of these phrases in a repeated way helps the students who have more problems with internalization to achieve this over time. The type of phrases are: "no is no," "think, talk, what's wrong with you" or "we are making a curtain." When someone has broken the rule and has acted violently, this phrase is used: "we are not going to allow you to do this, you are going to leave alone, you are not going to be our friend." With this type of agreed rules, they are continually reminded that the group rejects violence and that to be part of it, they have to treat everyone well.

At the beginning, these actions were very much directed by the teachers until students have internalized them and, at this time, they are spontaneous and are generalized to other spaces such as the playground and the school canteen.

> When we are in class and there is a student who gets nervous and it is very likely that the behavior will appear, the students redirect the situation in anticipation of violent behavior appearing (Evidence record table).

So that prevention can go beyond the classroom, a panel has been placed in the playground where all the students who have the Zero Violence Brave Club in class are displayed. If someone has left the club because of violent behavior they have had in the classroom, they also leave the panel in the playground so that the strength of the community is greater. In this way, all students can consciously choose whether or not to play with someone who has behaved violently. On the one hand, it encourages freedom of choice when looking for playmates, and on the other hand, the rejection of violence by the whole school gains strength. It is no longer just in the classroom, but when a playmate is not treated well, the rejection is collective.

> (…) so that a larger support network is created, one that is not only of the class … and that the teachers themselves can be more successful when they encourage others to go and play with those who are alone … (Primary education teacher, interview).

Some improvements observed by the teaching staff stand out. Some of these are: a much calmer classroom environment, dialogue on how students' relationships are or how they treat each other, the avoidance of escalation of violence with a reduction in the levels of violence, an increase in the level of trust and the support, protection and accompaniment of students, and a reduction in the number of disciplinary measures.

> (…) the brutal impact is to reduce violent attitudes, aggressions (Secondary education teacher, interview).

> (…) in the classroom there is a much calmer atmosphere, things are talked about, we say "we are your friends, we want to help you" before everything starts to blow up, before there is a lot of shouting … it is a more trusting space (…) the coexistence committee checks the behavior reports and there are less (Primary education teacher, interview).

The students at the transition to adult life program say that this year they are safer because there is a better climate in the school, i.e., they notice that the atmosphere has improved. They associate it with the creation of more respectful relationships between everyone and with the improvement in the behavior of the students. When the feeling of safety increases, it is an indicator of improved coexistence and a decrease in violence.

> Yes, because of the Zero Violence Brave Club, I am happier this year, more so than in other years because of the Zero Violence Brave Club. I have seen that it is better, I see it better than other years, because people who did not behave well, this year they respect the rules more and behave better, I feel safer with the people, because of the people who are around me … I feel safer, above all there is more respect (Transition to adult life program student 3, CFG).

An example of how the DMPRC has reduced the seriousness of violent behavior is shown in the story of a primary school teacher who reported the case of a student who was in the center. He was a student who displayed very violent behavior such as hitting, pinching, kicking, or biting. For him, a rule was prioritized in the club of the brave that was "treat well." From then on, they decided to start with one of the violent behaviors he presented to make it disappear, the one chosen was pinching. Every time he pinched, he left the club. When the behavior is not very internalized, a very specific consequence is added, which can be, for example, that they are left without 5 min of recess time or they do not listen to their favorite song, because at first these students finds it difficult to feel part of the group and until the social aspect has an impact, it is accompanied by this type of measures. It is a strategy that can last for some time until this consequence disappears, leaving only the social consequence, which is what really has the strength. Little by little the rules they have to meet are becoming more demanding.

Finally, in this section, we would like to highlight two impacts on the prevention of violence which have been extracted from the evidence record table. The first refers to how, through the DMPRC, some elements that have been identified as barriers to violence prevention have been overcome, and the second has to do with the transformative elements that have appeared. **Figure 1** shows on the left the elements identified as barriers that have been successfully overcome and, on the right, the transformative elements that have been achieved (see **Figure 1**).

## Impact of the Inclusion of the Students' Voices: Students' Empowerment and Increase in the Number of Complaints

The creation of interactive dialogic spaces where the voices of students with disabilities are heard and valued is one of the key aspects for the impact of the DMPRC. Within the classrooms, we have already reported the impact of the assemblies which are held three times a day, but, in addition, at the school level, there are also assemblies where the delegates of each class represent their classmates and their dialogues revolve around the desire for good treatment and the rejection of violence.

The voices of students with disabilities tend to be unheard and silenced, resulting in greater vulnerability to violence and reduced self-esteem and security. But the DMPRC makes their voices be raised and heard, turning these students into protagonists of their lives and relationships and providing them with the necessary empowerment to identify violence, denounce it, and reject it. According to the teachers, the students have gained a lot of confidence and one of the impacts is that they now have high expectations about the type of relationships they build, they are no longer satisfied with just any type of interaction.

> The students are able to talk because they feel that they are being listened to, they demand high expectations on them. Many past issues of bullying in mainstream schools come out … situations of mistreatment in their home have come out, relationships issues … (Secondary education teacher, interview).

A primary education student said that he is now more attentive in the playground to see if someone is not treating others well, and if someone is treating someone violently, he identifies him more quickly and tells a teacher. One of the rules that has helped them to make this happen is "telling the truth" because it values the sincerity and courage of those who denounce an injustice or an aggression.

> Do you remember any rules? (Primary education teacher, CFG)

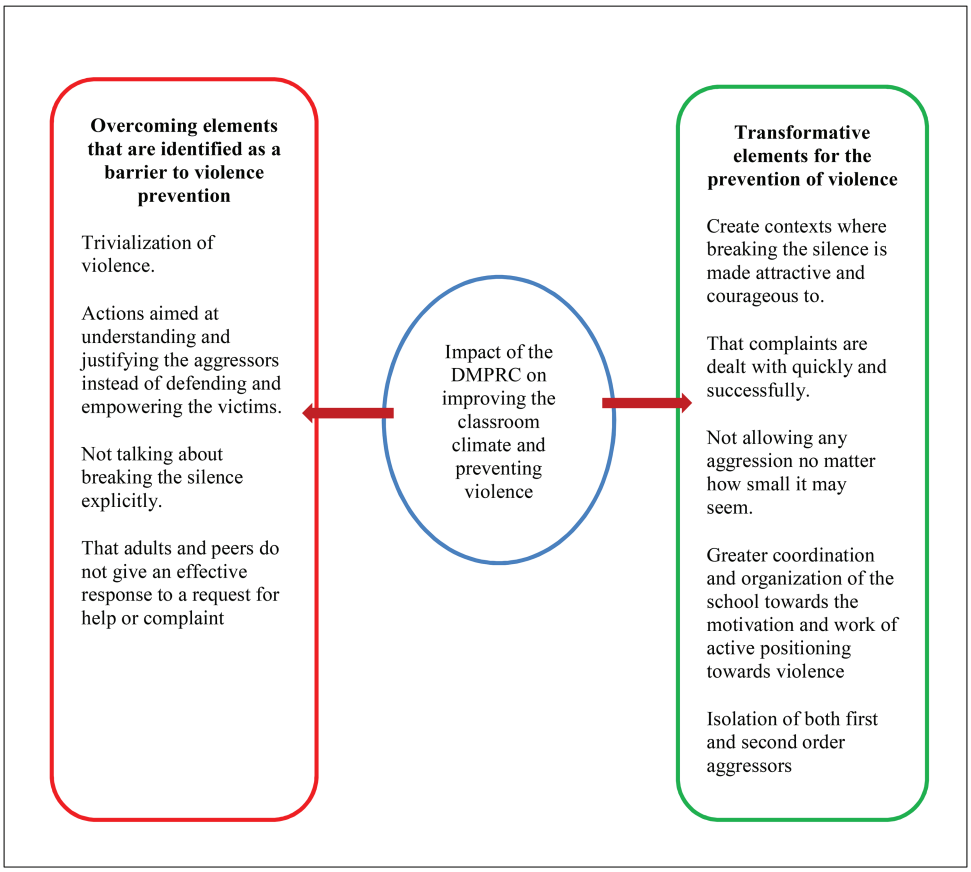


**FIGURE 1 |** Impact of the dialogic model of prevention and resolution of conflicts (DMPRC) on prevention and improvement of coexistence: barriers that it overcomes and transformations that it achieves.

> Tell the truth. Eyes wide open in the playground in case we see a cowardly attitude (Primary education student 3, CFG)
>
> And what do we do? (Primary education teacher, CFG)
>
> I'm going to tell it to the teacher (Primary education student 3, CFG)

The impact of the DMPRC goes beyond the school, because when something has happened to them, the rules remind them that they have to tell it at home too.

> Who are you going to tell if this happens? (Primary education teacher, CFG)
>
> To the teacher (Primary education student 3, CFG)
>
> And at home? (Primary education teacher, CFG)
>
> To Mum and Dad (Primary education student 3, CFG)
>
> And to the brothers and sisters (Primary education student 1, CFG)

Respect for the body is worked on continuously; it is another of their rules and the students are clear that if someone touches their body it is not a joke, nor a game and they have to report it, which contribute to prevent abuses.

> And if someone touches our body, is it a joke, a game, or a secret? (Primary education teacher, CFG)
>
> No (Primary education student 1, CFG)

A large number of students who attend secondary education have been previously enrolled in regular schools. Some of them tell their stories of suffering from bullying and not being listened to, and even say that if the DMPRC had been applied in the regular school, they might still be there.

> Those who have been here since preschool have already started to work on this from a young age, but those who come from a mainstream school … most of them come with a story of bullying situations and say "why didn't they do this in the other school?" We constantly experience this "if they did this in all the schools, I wouldn't be here." They also say "I don't want to leave

> here because they listen to me, they value me, I can learn" (Secondary education teacher, interview).

The students at the transition to adult life program recognize that since they have had this dialogic model of coexistence at school, they are better and happier because they feel listened to, supported and safer. They also show happiness when they see themselves capable of sharing and giving away courage and true friendship to make other people safe and happy too.

> If I feel better, yes, I feel that my colleagues are listening to me. It is an example, if someone ever messes with anyone, I stand in front of him and say, ssshh quiet, stop, leave him alone, because I will not allow any harm to come to him, as the good friend and delegate that I am (Transition to adult life program student 4, CFG).

A primary education teacher explained that with other more disciplinary models of coexistence the voices of these children are very much silenced. According to the teacher, this model in which their voices take on a central role transform the environment and allows them to feel empowered to dream of better relationships, to seek them out and ultimately to be happier.

> Now they claim and demand respectful treatment, one primary education student started crying when I raised my voice to her. It was a way of telling me that she didn't want to be treated like that (Primary education teacher, interview).

One student insists that he likes the Zero Violence Brave Club because it helps to ensure that everyone is treated equally, not only among the students but also from the teachers to the students. This breaks with the power relations that favor the law of silence and promotes dialogic and egalitarian environments that, on the contrary, encourage students to be able to denounce violence regardless of who is doing it.

> That people treat you well, that people treat you well not only students, but also teachers or anyone else in this school, that there is respect, that we respect each other equally, for example, the physiotherapists who work with the children, the educators … everyone in general (Transition to adult life program student 3, CFG).

The suggestion box has helped them to be able to denounce situations in which they have not been treated well, whether they occur by a peer or an adult. Reporting that a teacher is not treating another teacher or student well is an act of courage that can only be done when the environment is safe and trustworthy, when reporting the situation is socially valued and when there are support networks to protect you from attacks.

> In the suggestion box, they write things that need to be improved, for example, if they see a cowardly attitude from an adult towards a student … in class they feel that it is a safe environment, but if they are not able to verbalize it because they are a little afraid … they use the box. There is no such thing as a snitch, the message is "you are brave because you say things and take a stand." They report "I saw a teacher who spoke badly to a classmate." They put it in the suggestion box and we discuss it (Secondary education teacher, interview).

The confidence they have gained leads them to request assemblies to speak out and denounce the violent events that have taken place. This is a protective factor since one of the elements that has been identified as important in preventing and overcoming violence is the creation of safe spaces to break the silence, and with the DMPRC this is possible. Empowerment among peers as agents of change is detected, which has led them to report not only situations that happen in the school but also those that occur at home, in the park, or with neighbors.

In general, the teachers value very positively the increase in the number of complaints and the students' self-confidence. They told us about the impact of the students' participation in various conferences in which they have been able to listen to researchers talk about these issues and share their own success stories at roundtables, moving from being victims to being role models.

> (…) the importance of increasing self-esteem, they feel capable of doing more, of speaking and having their voice heard, I have seen this when we have taken students to conferences, congresses where they have participated as listeners or speakers, and the personal satisfaction on their faces … Going to a conference and saying: "teacher, you're not crazy, they say the same thing here as we do in class" and they tell it, "I've transformed myself," "I used to attack when I didn't like something and now I'm able to stand up and talk to my mother" … it has changed their lives completely (Secondary education teacher, interview).

## Impact on the Quality of Students' Relationships and the Creation of Support and Friendship Networks

Traditionally, the coexistence in special schools tends to be approached in a more disciplinary way and from a more individual, behavioral and not so much social or dialogic perspective. The fact of dialoguing and reflecting together on what their relationships are like allows them to dream and seek quality relationships where violence has no place. The importance of group strength has already been reported, and it is clear the importance of support networks and friendships in preventing violence and encouraging reporting.

With the DMPRC, opportunities are created to show solidarity with victims, to protect them when they are exposed to an aggression and to denounce them if necessary. In the evidence record table, teachers explained how a student acted in the face of an aggression to protect the victim from a new aggression by giving her support.

> A 9-year-old student was attacked by another student. A classmate who was in the playground observing the situation, approached the student who had been attacked, and asked him "what's wrong, come and play with me," shook his hand and took him out of the conflict situation, leaving the aggressor alone and going to play with other classmates (Evidence record table).

The shield is a strategy they use to protect other children and they accompany it with a gesture. The students are clear that they must make a shield for the weakest, the victim, and they do this by saying phrases such as "stop" or "I do not like it." These support networks are crucial to reducing violence and its negative impact.

> Does the Zero Violence Brave Club help you to protect yourselves more or to make a shield? (Researcher, CFG)
>
> Yes, we do it to the brave, to those who are not treated well (Primary education student 1, CFG)
>
> When they don't treat well, what do we do? (Primary education teacher, CFG)
>
> "No, stop, I don't like it" (Primary education student 3, CFG)
>
> And we make him a shield together (Primary education teacher, CFG)

The message that "friends are the ones who treat you well" is very much emphasized and this helps them to choose their friendships with a criterion of good treatment. It also helps them to build higher-quality relationships with the friends they already have and to transform them from high expectations.

> In primary education we work a lot on friendship, we have done the friendship workshop, little theatres … we have talked about what I agree or not with a friend … the radical change we saw was that two children who were close friends were able to say that one had been a coward. When it is a friend of theirs and they have to denounce a friend of theirs … it is what has been most difficult but we have seen it. Rejecting these behaviors also in people I love (Primary education teacher, interview).

The DMPRC has helped them to learn to be better friends; they identify friendship with people they treat well, and also with those they protect. They learn that friends are those who also tell you that you are not doing well. Another indicator of friendship that the students themselves relate is that a friend is the one you can dream about or the one who helps you to become a better person.

> I feel good because I help by giving advice to the victim, we make a real friendship team and we all support each other between the two classes to improve and transform ourselves and, we help each other to try to say good things and make constructive criticism that makes the other feel good and helps to be a better person (Transition to adult life program student 2, CFG).
>
> I help my friends in class, I am happy, we help together, we are happy, we have dreams, we are equal (Transition to adult life program student 1, CFG).

A secondary education teacher and the student who told that they were now dreaming together explained how he had become a better person thanks to the DMPRC. They said together that he used to be more nervous, did not use words and did not always treat people well, and that now he wants to be a brave person and help others to be brave too. The Zero Violence Brave Club has given them the opportunity to imagine themselves differently, being brave people who treat each other well and help others to achieve that same dream. Without the feeling of friendship in the background, this would not be possible.

One of the messages that the teachers now convey is that true friends are those who do not leave you alone in the face of aggression, they are those who make a shield for the person being attacked.

> Every day we say that if something happens to them, they have to be brave and tell the truth, friends have to be attentive and we too, no one can be left alone (Teacher).

The teachers also recognize that they now give more importance to their role in creating support networks for victims, which violence is no longer minimized or normalized, that it is given importance, that it is rejected, and that those who receive it are supported. The search for coherence with what they say has led them to position themselves also on the side of the victims.

> Now when there is a conflict, I have learned to pay attention to the victim who is the one who really needs my attention and support, ignoring at first the aggressor (Primary education teacher. Evidence record table).

This new environment in which they feel that, if they are attacked, they will be supported, even when they relate aggressions that have happened in other contexts, has allowed them to create bonds of trust and friendship that did not exist before. In dialogic spaces such as literary gatherings, they tell stories of violence they have experienced and which they take with them, but now the social support of the group comforts them by giving them the necessary strength to come out successfully despite having lived through difficult situations.

> (…) the others support them, equal dialogue and solidarity … are present. In the gatherings, they often return to themes that always come up, to the wounds

they have and the rest support and accompany them. The network of support from the rest is very important, and it creates very nice links between the students (Primary education teacher, interview).

The Zero Violence Brave Club helps them to establish relationships of more solidarity and care. The primary education students explained that now, if someone falls, they go and show concern by asking and accompanying, or if they see someone alone in the playground, they come and invite them to play with them. This type of relationship creates bonds of greater quality and trust. For this to happen, the rule of "laughing with everyone" has helped them to keep the feeling of friendship in mind.

If a child falls down … "are you OK? Can I help you?" (Primary education student 2, CFG)

playing with brave friends (Primary education student 1, CFG)

What happens if we go out in the playground and a friend is alone and brave? (Primary education teacher, CFG)

"Do you want to play with me?" (Primary education student 1, CFG)

It can be concluded that the DMPRC or the Zero Violence Brave Club as they call it, helps to create relationships of friendship that make them feel happier and safer. Protection and good treatment have become values that are taken into account when making choices about friendships. An example of this is the story of friendship that a student has managed to build up thanks to the Zero Violence Brave Club. Their teacher explained that it was unthinkable that this relationship could become a friendship because they were not capable of treating each other well. However, their story shows that when the best feelings are valued, the quality of relationships can improve.

I help Lucia (Transition to adult life program student 1, CFG)

Last year … (Secondary education teacher, CFG)

I treated her badly (Transition to adult life program student 1, CFG)

Do you remember that last year she didn't want to be your friend because you didn't treat her well? (Secondary education teacher, CFG)

And now good (Transition to adult life program student 1, CFG)

Now they are very good friends (Secondary education teacher, CFG)

We dance, we sing, we play music … (Transition to adult life program student 1, CFG)

It was unthinkable, that this relationship could be saved (Secondary education teacher, CFG)

The following figure shows the different results and impacts reported in this study related to the evidence-based strategies used in the school (see **Figure 2**).

## DISCUSSION

The results obtained from this study show that it is possible to transfer the DMPRC, which so far had only been implemented in mainstream schools, to a special school. The implementation of the DMPRC in a special education context overcomes barriers to participation, to the creation of support networks, and to the inclusion of the voices of students with disabilities, which left them more exposed to violence. As a result, the school climate and coexistence has been improved thanks to the preventive power of the dialogic model, and there has been an increase in the number of complaints, the empowerment of students and the creation of support and friendship networks. This has led to the creation of a safer context in which students have the confidence to report violence because teachers will listen to them, believe them, and accompany them (Banyard et al., 2010). The success of this action lies precisely in the possibility of the dialogic participation of students with special educational needs, which allows their voices not to be excluded from the creation of classroom and school rules, but rather to be present in the process from the beginning, being precisely the ones that give meaning to each of the rules.

Traditionally, there has been a tendency to approach the issues of coexistence in special schools or classrooms in a more disciplinary way and from a more behavioral perspective and not so much from a social or dialogic point of view (Beam and Mueller, 2017). The transference of the DMPRC has made it possible to create, for the first time, more dialogic and safe environments, where the voices of students with special educational needs are the protagonists, allowing these students to achieve a real participation in the creation of a policy of zero tolerance to violence in schools (UNICEF, 2015).

Some research has shown the benefits of interactive and dialogic environments for students' learning and emotional development (García-Carrión et al., 2018). With this model of coexistence where dialogue and interactions are crucial, it becomes possible to agree on clear rules to combat violence (Eliot et al., 2010) helping to promote attitudes of active positioning against violence, even when it is not perpetrated by a peer. Students and teachers have identified that the agreed rules help them to successfully face violence, on the one hand, because these norms are known by everyone and are always reminded in different spaces and, on the other hand, because those who denounce and act against violence are socially valued by the group and have a support network that does not leave them alone.

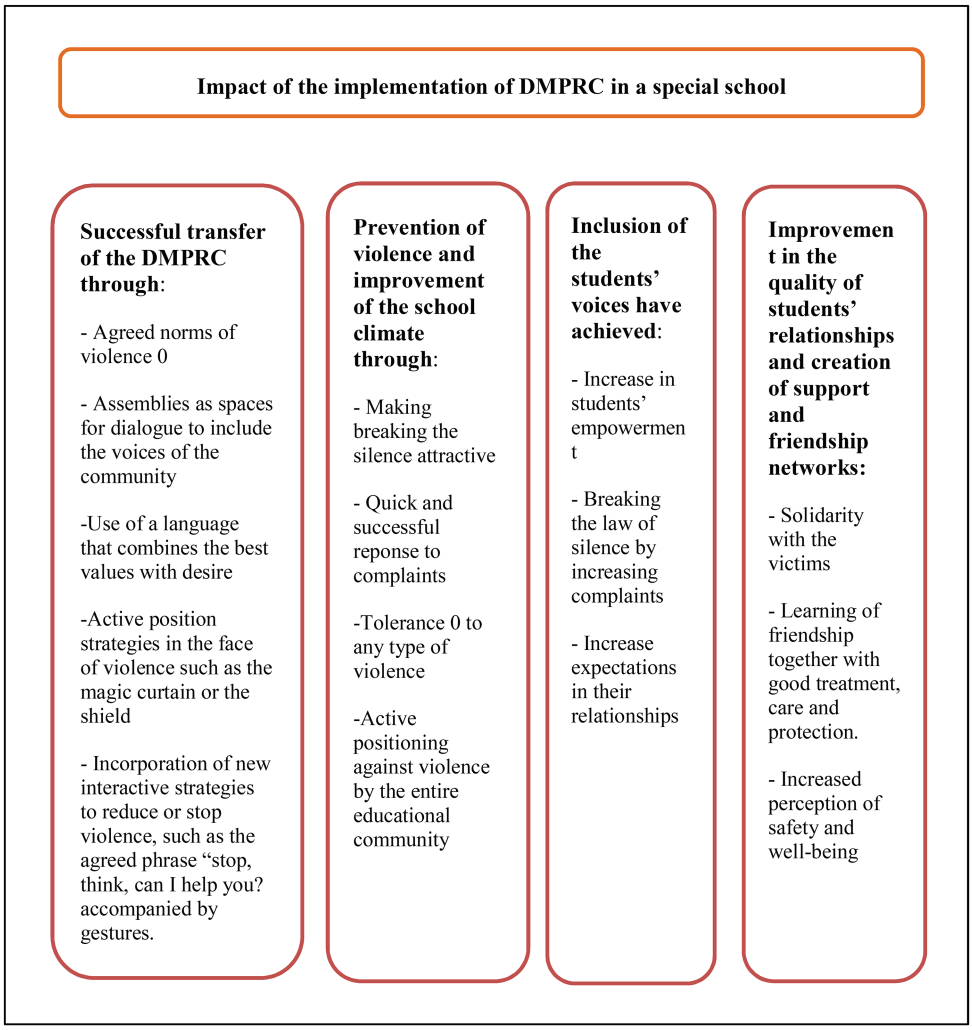


**FIGURE 2 |** Results and impacts obtained in this study after the application of the DMPRC.

Students with special educational needs are a vulnerable group to suffer violence (Devries et al., 2014; Malecki et al., 2020) due to the lack of social support network they have, the difficulty to relate with others, the fact that their voices tend to be unheard and the lack of active community positioning in favor of the victims (Bourke and Burgman, 2010; Rose et al., 2015; Hamby et al., 2016; Cook et al., 2017; Iotti et al., 2019; Clark et al., 2020). This model of coexistence succeeds in reducing the risk of suffering violence because it sets up support networks mobilizing the whole community in favor of the victims, works on building quality relationships and creating true friendships that protect them and make them feel safer. We know that friendships are a key protection factor in the face of bullying (Navarro et al., 2018) and that students with disabilities often have few friends (Devries et al., 2014), often becoming more isolated, which leaves them more defenseless and makes it difficult for them to report. In this sense, a key contribution of this model of coexistence is to be able to forge this network of friendship that is so valuable for students with disabilities.

Another of the barriers detected in scientific literature is the attraction to violence, which is learned from an early age, which leads to a social appreciation of those who practice it (Gómez, 2015; Navarro et al., 2018; López de Aguileta et al., 2020). With the Zero Violence Brave Club, we can see that students have begun to desire and seek relationships that exclude violence, overcoming the dominant socialization that associates desire with violence (Puigvert et al., 2019). It has been shown that the safe context and the attraction given to those who take an active stance against violence facilitates the desire to protect those who need it and favors the denounce of violence. This is because they no longer feel alone and are socially valued when they do so, gaining social status and not losing it as happens in contexts where those who tell the truth and denounce violence are labeled snitches (Mayes et al., 2003). The feeling of belonging to a classroom and school has increased, and this union enables

them to be more courageous and gives them the strength to reject those who behave violently. The collective dream that everyone should be brave, that is, treat each other well, show solidarity and make each other feel happier, is present in the voices of the students and teachers. The DMPRC has made it possible to create this collective dream in the imagination of the community and to take steps to make it a reality.

Some authors define a positive school climate when students feel safe, have loving and caring relationships with their peers and with adults, have a sense of belonging to the school, participate meaningfully in school policies, disapprove risky behavior among their peers, and feel that their peers care about them (Cohen et al., 2009; Osher et al., 2012). The results show that students and teachers perceive that the school climate has improved and acknowledge that they feel better and happier. They associate it with the possibility of their voices counting as for example when they are delegates in school assemblies and represent their classrooms or with the empowerment they experience and allows them to publicly disapprove of aggressive behavior from their peers. We have already seen that they have also improved their relationships with their peers and with teachers thanks to the more dialogic and egalitarian interactions they are experiencing.

This is the first time that the DMPRC has been transferred to a special school and it has been possible to carry it out in the same way as in mainstream schools. As in regular schools, they have incorporated strategies that have helped them to put into practice active positioning or protective nets, such as "curtain or shield making." But in this school, and due to the characteristics of the students, most of whom have communication and self-control problems due to their disability, new strategies have been integrated which have helped them to stop cowardly attitudes (not treating well, violence, lack of respect) and to anticipate violent behavior by stopping it before it appears, or if it does occur, preventing it from escalating. This finding can be very useful for teachers in other special schools or teachers who deal with special education students with behavioral problems, as evidence shows that a large part of teachers do not have strategies to successfully deal with this type of behavior (Stevenson et al., 2020). Some of the strategies that have been effective for them are songs or the phrase "think, talk, can I help you?" together with gestures that have been agreed upon. This strategy has made it easier for the child who is about to be violent to transform the aggressive behavior into a more prosocial one thanks to the interaction with his peers (Villardón-Gallego et al., 2018). This new contribution could enrich this successful performance in other educational settings. It has been shown that when there is a positive climate, students are less likely to bully, among other reasons because children are more likely to report violence if they witness it and more likely to seek help if they are victims (Howe et al., 2013). The results show that the MPDC is succeeding in improving the climate and increasing the number of reports. These findings show the effectiveness of this model of coexistence in preventing violence, stopping it before it appears or in its early stages.

Although this communitarian and dialogic model has given students greater self-confidence, leading them for the first time to ask to be heard when they have seen or suffered an aggression, they recognize that in other spaces their voices are still not as heard or valued. The impact outside the school has been on the closest circles, such as siblings, mothers, and fathers, thanks to the possibility of participating in community meetings or in dialogic spaces such as literary gatherings. The participation of the family in the dialogic spaces has been detected as a key issue to facilitate the transference of the results to other contexts out of school. The challenge would be to achieve a greater participation of diverse people so that other spaces in which these students participate would be transformed into safer spaces where active positioning against violence would be valued as it is in the school.

The language of possibility that is present in the DMPRC makes it possible to overcome the language of difficulty that these students normally face. The possibility of being listened to, of demanding to be treated well, of talking about the violent situations they experience and of asking for support appears clearly in their lives for the first time. The possibility also arises of having quality friendship relationships which, for students with disabilities, are very important due to the benefits they have for health and happiness according to the largest longitudinal study on the topic (Harvard Study of Adult Development). A whole world of possibilities, freedom, and happiness is opened up to them, of which they had been set apart by the fact of having a disability. These students have moved from being potential victims to being leaders of change, and this empowers them to be able, little by little, to transform other contexts. By becoming leaders of social change, they can imagine themselves as children who take a stand against violence, reject it, and be an example to others. Finally, feeling more satisfied, happier and with a certain sense of deciding more freely and rationally about their relationships and their lives could have a long-term impact on improving how they perceive themselves and their health in adulthood (Shah et al., 2014). Given that many people with disabilities are associated with health problems, a potential area of research opens up on the impact of the DMPRC on improving the health of children with disabilities.

Finally, we see two challenges. The first one would be to analyze in greater depth how, through the work with families and the inclusion of their voices, the DMPRC could have a greater impact outside the school context, since the interviews carried out have shown some barriers to the transferability of the DMPRC to other contexts where this type of students interact. The second challenge would be to study more in-depth how a profound transformation in the desire for non-violence is being generated, as it is a challenge to obtain lasting evidence on this topic with children with disabilities.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## AUTHOR CONTRIBUTIONS

ED and ER-C conceived the idea of the study. ER-C conducted the fieldwork. SC, ED, and LB contributed to the literature review.

SC wrote a first draft of the paper with the support of ER-C. LB and ED conducted a review of the draft and provided feedback. SC included the feedback and wrote the final version of the manuscript. All authors have read and agreed to the submitted version of the manuscript.

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# Beyond the School Walls: Keeping Interactive Learning Environments Alive in Confinement for Students in Special Education

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The COVID-19 pandemic and the accompanying safety measures, including confinement, has meant an unprecedented challenge for the world population today. However, it has entailed additional difficulties for specific populations, including children and people with disabilities. Being out of school for months has reduced the learning opportunities for many children, such as those with less academic resources at home or with poorer technological connectivity. For students with disabilities, it has entailed losing the quality of the special attention they often need, in addition to a more limited understanding of the situation. In this context, a case study was conducted in a special education classroom of a secondary education school. This class started implementing Dialogic Literary Gatherings with their special education students before the COVID-19 confinement and continued online during the confinement. Qualitative data was collected after a period of implementation of the gatherings showing positive impacts on the participants. The case study shows that interactive learning environments such as the Dialogic Literary Gatherings can provide quality distance learning for students with disabilities, contributing to overcome some of the barriers that the pandemic context creates for the education of these students.

**Keywords: special education needs, dialogic gatherings, interactive learning environments, successful educational actions, distance learning**

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## INTRODUCTION

The pandemic caused by COVID-19 has led most countries to take measures in order to stop the disease from spreading. One of the most effective measures is social distancing, and thus, school closure has been a measure implemented in many countries to prevent new infections (Enserink and Kupferschmidt, 2020). Closing schools has affected more than 1,300,000,000 learners worldwide (Unesco, 2020). However, members from vulnerable groups (individuals with poor financial resources, poor health literacy, or with self-reported disabilities) have faced a greater adversity in relation to mental health, especially anxiety and depression (Reading Turchioe et al., 2021), and access to education (Long et al., 2020). This is the case of individuals with intellectual disabilities, who have suffered greater consequences during the pandemic (Courtenay, 2020). Although people with intellectual disabilities are conceived as a heterogeneous collective, research

has found that having a cognitive impairment entails additional challenges facing the COVID-19 situation. On the one hand, taking into account that some online content (such as websites or mobile content) is inaccessible for people with cognitive disabilities, some essential information posted by health authorities about the COVID-19 has remained out of reach (Dror et al., 2020). On the other hand, most measures taken for the continuity of education have been aimed at mainstream education, whereas many individuals with disabilities have not had access to special education during the pandemic (Mutluer et al., 2020).

## COVID-19 Impact on Individuals With Intellectual Disabilities

Although the pandemic caused by COVID-19 has had a negative impact on the global population, people with disabilities have faced many additional challenges. In terms of health, they did not receive enough attention regarding their access to healthcare during the pandemic, due to the new barriers telemedicine has supposed for people with disabilities (Annaswamy et al., 2020). Even research (Wilson, 2020) has shown that the human rights of people with mental and cognitive impairments have been neglected, as some governments' emergency plans have not included their special needs. As an addition to the already existing vulnerability, in relation to the dependence of certain services and other people, the pandemic has brought new challenges to individuals with intellectual disabilities, such as the limited access to information on the disease or its understandability, the risk of losing home support, increasing distress, and behavioral problems (Courtenay, 2020).

In addition, the mental health of persons with intellectual disabilities can deteriorate, as the sudden changes of their routines and the possible obsession with information about COVID-19 may trigger anxiety and paranoia (Courtenay and Perera, 2020). Moreover, social isolation can cause a higher difficulty to access social and emotional support to deal with the grief and stress the pandemic has caused (Lund et al., 2020). Besides, research has emphasized the need of psychological support due to the mental health problems the pandemic may have triggered (Mukhtar, 2021).

Among the many challenges people with intellectual disabilities have faced during the pandemic, those related to the support structures have been pointed out (Courtenay, 2020; Embregts et al., 2020). For young children and children with disabilities and other special needs, the new reality created by the measures to stop COVID-19 from spreading (such as social distancing) may cause anxiety, frustration, and negative behaviors, as for many of these children, expressing their emotions may be difficult (Kong and Thompson, 2020). Thus, scientific literature has stressed out the importance of these children staying connected with their social support system, such as family members, caregivers, teachers, therapists, and friends. In addition, the situation has affected not only children with intellectual disabilities but also their families who suffered high levels of stress, associated with isolation, illness, and finance (Manning et al., 2020).

## Impact of School Closure on Students With Special Educational Needs

School closure has aroused serious challenges for students, teachers, and families, as the shift toward an online education has not been easy to adapt for any of them (Cen et al., 2020; Kim and Asbury, 2020). However, those students with special educational needs (SEN) and their families are facing even greater problems. Difficulties to balance working from home while taking care of their children with disabilities have been pointed out (Hole and Stainton, 2020), as well as the loss of essential resources such as educators or structured learning environments (Masonbrink and Hurley, 2020). In addition, research done before the pandemic had shown the benefits interactive learning environments have on students with special needs, which improve the quality of the education these students are usually given (García-Carrión et al., 2018; Fernandez-Villardon et al., 2020). However, school closure and social distance may put in jeopardy these interactive environments that have been considered so important in special education.

In order to support people with intellectual disabilities during the pandemic, it has been emphasized that the measures taken should focus not only on the prevention of contracting the disease but should also aim to mitigate the effects some of those measures have on these individuals (Constantino et al., 2020). Regarding children, it should be taken into consideration that special education usually involves visual and physical contact, close attention, and interpersonal encouragement. In this vein, evidence has indicated that, while parents have reported to have received guidance from their children's schools, dissatisfaction has been expressed regarding the appropriateness of the resources given, as some of them perceived those resources did not meet their children's educational and psychological needs (Greenway and Eaton-Thomas, 2020). Therefore, many parents have expressed to feel unprepared to provide their children with the appropriate education during school closure, and school closure has led to higher levels of stress on caregivers, for instance, in the case of students with autism spectrum disorder (Manning et al., 2020). Furthermore, many educational interventions provided by governments have not taken into account the rights and voices of persons with disabilities in relation to the digital divide that affects their access to education (Toquero, 2020).

Maintaining contact with the school during the pandemic has been an advice given by researchers in the field (Narzisi, 2020), suggesting that, at least, weekly contact with one of the class companions should be made, as well as with teachers. Parent–teacher collaboration and communication during remote teaching has proven to be very important (Frederick et al., 2020; Schuck and Lambert, 2020), and, as well as students, parents should receive continuous support by teachers (Stenhoff et al., 2020). In case of students with SEN, research made before the pandemic had already emphasized the importance of parent involvement in the education of their children (Staples and Diliberto, 2010).

In order to ensure educational rights for students with disabilities, strategies must include understanding the student's and family's needs, guaranteeing partnership between schools,

families, and communities. Furthermore, it is essential making decisions based on data, promoting ethical evaluation in online environments, and ensuring research-based strategies (Jameson et al., 2020). In addition, the need for teachers to use research-based strategies to ensure family and student engagement has been highlighted (Stenhoff et al., 2020).

Besides the academic drawbacks, school closure and lockdown have led to an increase of child abuse and gender violence (Evans et al., 2020; Lee et al., 2021; Masilamani et al., 2021). Unfortunately, individuals with intellectual disability are especially vulnerable in this vein (Courtenay and Perera, 2020), and girls and women with disabilities are at a higher risk of suffering from gender violence (Samaila et al., 2020). In this context, open doors actions (Roca et al., 2020), consisting of actions based on supportive relationships and a safe environment to avoid child abuse during confinement, have been implemented in many schools, including special education schools. Dialogic Gatherings (Ruiz-Eugenio et al., 2020) are one of these actions, which could prevent abuse and at the same time enhance academic learning.

## Dialogic Literary Gatherings and Students With SEN

Dialogic Literary Gatherings (DLG) are one of the Successful Educational Actions (SEAs) identified in the INCLUD-ED research project (Flecha, 2015) as actions that improve students' educational outcomes in diverse contexts and for diverse student populations. In the DLGs, participants read and discuss those universally considered literature masterpieces by authors such as Kafka, Sappho, Shakespeare, and many others (Flecha, 2000). Now being implemented in more than 6,000 schools from Europe and South America, DLGs have shown to foster profound transformations and critical reflections through sharing the ideas on the texts (López de Aguileta et al., 2020). In addition, egalitarian dialogue is one of the bases of the DLG. Thus, the moderator ensures that all opinions are taken into account and fosters the participation of all regardless of their individual characteristics (Llopis et al., 2016).

Research has shown that educational interventions based on interaction and dialogue between children can have a positive impact on the social skills of students with SEN (Fernandez-Villardon et al., 2020). Besides, even if special schools' students have often received an education based on poor interaction and low expectations, the possibility of creating interactive learning environments in these schools has been evidenced (García-Carrión et al., 2018), contributing to new learning opportunities. Families' role in such environments has also been emphasized as key, as it may help improve the learning of students, especially those with more difficulties (Puigdellívol et al., 2017), and enables an educational support with opportunities of inclusion.

When implemented in regular schools, students with SEN participate in the DLGs in an equal way, minimizing the differences between them and the rest of the students (Molina Roldán, 2015). Research (García-Carrión et al., 2020) has indicated that, through the DLGs, the low expectations and prejudices some students with disabilities have to face can be transformed. In this regard, DLGs have shown not only to contribute to the integration of students with SEN to their class but also to foster their instrumental learning (Molina Roldán, 2015).

Despite the school closure, many schools have continued implementing DLGs online. Research in this vein has revealed that DLGs have fostered profound reflections on students during the lockdown, such as the importance of supportive relationships and friendship (Elboj-Saso et al., 2021). In fact, many schools have transferred the DLG to online spaces. A study by Ruiz-Eugenio et al. (2020) has pointed out that doing DLGs during school closure has promoted children well-being in terms of emotional, educational, and social wellness and reduction of anxiety. In addition, one of the schools from that study was a special school, and results showed that students with special needs have not only improved their linguistic production but have also had feelings of safety thanks to the DLGs.

Moreover, collaboration with social workers via videoconference has proven to be essential for ensuring the well-being of some individuals with disabilities during the pandemic (Redondo-Sama et al., 2020b).

In this case, a double objective is being pursued. The objective of the study is, firstly, to understand how DLGs can be transferred to online learning with students with SEN and, secondly, to analyze the impact online DLGs have had on these students during the lockdown and school closures.

# CASE STUDY

A case study has been developed in a special needs classroom of a high school in the Basque Country, Spain. This class is formed by five students (two girls and three boys) aged between 13 and 21 years old with diverse profiles including educational needs due to a moderate or severe intellectual disability and/or a pervasive developmental disorder. The oral language and literacy abilities of participants are affected, but they all are able to communicate verbally.

In the framework of the research project *INTER-ACT. Interactive Learning Environments for the Inclusion of students with and without disabilities: improving learning, development and relationships* (García-Carrión, 2018-2021), this classroom started to implement DLG with the special education students, taking the compromise of carrying the action out according to the orientation that scientific research has stated for its good functioning. Since the project started, the DLGs were done once a week for 6 months and the adapted version of *Don Quixote* by Cervantes was read and discussed. At this moment, COVID-19 confinement started in Spain, and due to school closure, on the third month of having done the DLGs, they were transferred online. The transference to the online modality was an initiative of the classroom teachers in order to not lose the learning context that had been created, and DLGs were done virtually the 2 months that were left of the school year.

# MATERIALS AND METHODS

The data collection techniques used in this study were semi-structured interviews, communicative observations, and communicative focus groups.

Observations were conducted of three DLG online sessions in order to analyze the functioning, the way the DLGs were adapted to the virtual context, the interactions created, and the strategies used to ensure the inclusion of everyone. Five students and two teachers were present in the DLG sessions. The three sessions were recorded to facilitate the subsequent analysis.

A communicative focus group was held with four students who had participated in the online DLG and the two teachers. The aim of the focus group was to understand the perceptions and feelings of students regarding the online DLGs and how they felt this experience had helped them. The aspects they liked and disliked, how they perceived the relationships created in the DLGs, and the improvements they perceived were searched.

Finally, a joint semi-structured interview with a communicative orientation was made to the two teachers of the class together. This interview was aimed at getting an insight on the teachers' perceptions about strategies used for the DLGs, interactions, relationships between students, and changes in learning outcomes due to the DLGs.

Both the focus group and the interview were done after the three DLG observation sessions in order to discuss and get a better understanding of what was observed, therefore including the communicative dimension to the data collection and analysis.

In this regard, the case study was conducted following the communicative methodology, which entails researchers and participants engage in an egalitarian dialogue where the researcher provides academic knowledge about the topic of the research while participants contribute their daily life vision (Garcia Yeste et al., 2018). This methodology has been identified as being especially appropriate to conduct research with vulnerable groups (Flecha, 2014) and to create knowledge that fosters social transformation (Gómez et al., 2019; Redondo-Sama et al., 2020a) because of the social and political impact that this methodology allows (Gómez et al., 2011).

The communicative focus group and the interview were video and audio recorded and then fully transcribed. The three DLG sessions were video and audio recorded and the most significant excerpts for the purpose of the study were transcribed and coded.

## Data Analysis

For the data analysis, a coding scheme was built. Two main categories were created: characteristics of the implementation of the DLGs with students in special education during confinement and improvements associated with this implementation of the DLG. For each category, other sub-categories were established.

Regarding the characteristics of the implementation of DLGs, sub-categories were strategies and interactions. Strategies included resources, materials, or adaptations (or a lack of them) that were used with students with SEN. Interactions referred to the interactivity of students, their peers, and volunteers or teachers.

Regarding the second category, related to the improvement associated with the DLGs, it was divided into three sub-categories: students' development, curricular learning, and socialization. Development focused on expressive language, attention, and reasoning improvements. Curricular learning is linked to improvement in instrumental areas (such as literacy). Finally, socialization sub-category was defined as the improvement of social relations within the group.

**TABLE 1 |** Coding scheme.

| | Characteristics of the implementation of the DLG | | Improvements associated with the implementation of the DLG | | |
|---|---|---|---|---|---|
| | Strategies | Interactions | Development | Curricular learning | Socialization |
| Transformative dimension | 1 | 3 | 5 | 7 | 9 |
| Exclusionary dimension | 2 | 4 | 6 | 8 | 10 |

*DLG, Dialogic Literary Gatherings.*

Following the principles of the communicative methodology (Gómez et al., 2011, 2019), all five sub-categories were divided into the exclusionary and transformative dimensions. Exclusionary elements are those barriers faced by some individuals or groups that prevent them from enjoying or participating from certain areas, whereas the transformative dimension includes the elements that help overcome those barriers (see **Table 1**).

The research followed the principles of the Declaration of Helsinki and was approved by the Ethics Committee of the Community of Research on Excellence for All (CREA). Participant teachers and students' parents or legal guardians were provided with the information of the study and signed an informed consent. They were informed of the anonymity, possibility of withdrawal of the study whenever desired, and that the data would only be used for research purposes. In order to preserve participants' anonymity, the two teachers were coded as T1 and T2 and students as S1, S2, S3, S4, and S5.

# RESULTS

The case study has enabled us to elucidate how DLGs can be implemented online with students with special needs and the impact of the online DLGs during confinement in these students. In this section, we present the results of the study showing, in the first place, the characteristics of these DLGs, that is, the strategies used to facilitate students' participation and the interactions that took place between students, families, and teachers. Then, the improvements observed in the students' development, curricular learning, and socialization will be shown. Both the transformative elements as well as the difficulties are presented.

## Strategies That Facilitated Students With Special Needs to Participate in Online DLG

In face-to-face DLGs, some strategies such as audiobook and providing pictures about the story were used. These were strategies to adapt the regular operation of DLG to the characteristics and needs of the students, while keeping the essence of the DLG focused on dialogic learning based on the

texts. During confinement, the strategies observed are also related to adaptations based on the necessities of the students, also considering the context of distance learning. First, when the lockdown started, all students could receive not only the written book but also the audiobook that until that moment was given only for particular students but, in the end, was useful for all of them to access the story. Second, during the observations of the DLG sessions, another recurrent strategy was using the camera to show the pictures and drawings of what was happening in the story, so that all students could see it. This strategy was also used when introducing new vocabulary or to show some actions of the sequence of the story. T1 also employed significant gestures to depict what was happening in the story, such as pointing the finger to her head to represent that *Don Quixote* was not in his right mind.

Thus, it was seen that these strategies and adaptations were related to taking advantage of the available technology, in a way that could help overcome the difficulties the lockdown situation presented, mainly by enhancing the possibilities of students' learning, participation, and interaction.

Greater difficulties were perceived for the students' understanding of the books as compared to face-to-face gatherings. Therefore, the strategies used were aimed at overcoming such difficulties. Besides, teachers gave great importance to maintaining interaction as a source of learning during the confinement; thus, they took advantage of the available resources to facilitate everyone's participation.

As a teacher explained, having the audio adaptation of the book helped all students to participate in the DLG, as not all of them had a high level of literacy.

> "We achieved the audio adaptation of the book for that particular student, but it has been useful for all students (...) because well, with the reading level they had… (...) Thanks to the reading and the audio it was how we could work." [Teacher 1 (T1) interview]

When students with special needs have not enough reading abilities to read the text on their own, it can be read by others such as the class teacher or other visual supports to help students' understanding of the text can be used, but lockdown entailed a barrier for this to occur and school closure supposed the strategies that were used during face-to-face classes had to be reconsidered. In fact, finding the appropriate strategies was seen by the teacher as more important in the times of school closure.

Teachers included the audiobook to overcome that barrier and ensure that every student could participate in the DLGs, that is, not only to have access to the content of the story and understand it but also to be able to actively participate in the debate as a result of it.

> "The audiobook has helped students that maybe, if we were in class, wouldn't have had that problem, because, you know, in the beginning we adapt it even with pictograms and things about the author, the book, the period (...) but having them confined at home, with a difficult text for them (...) the audio has been for many of them even more important that the reading." (T1 interview)

The use of the camera and other visual supports during the DLG, such as making drawings related to the story, had also the objective of both facilitating the understanding of the story and facilitating students' expression. When some of the students chose an element of the text that they had considered interesting, teachers asked them to show it to the camera, so everyone could see where the excerpt chosen was located in the text and read it out loud.

> "Visual adaptations of the book, a little bit of adventure searching about it on the Internet and making pictures about it as we have done, has made it richer." (T1 interview)

## Supporting the Transference of Learning Interactions to the Online DLG: The Key Role of Families

DLGs have allowed the creation of an interaction space during the lockdown. During the time DLGs had been done face-to-face, teachers observed good results in their students, and now they had the challenge to transfer this interactive situation in an online environment. The observed interactions were related, on the one hand, with offering opportunities of learning for every student. On the other hand, a diversity and richness of interactions was seen, where students, teachers, and family members took part. In this context, families played a key role in fostering participation and interaction of the students.

Teachers consider that the essence of the interactions in DLG was transferred online and that DLGs online were an alternative to maintain classroom interactions oriented toward improving learning in the virtual space. The fact of having been implementing face-to-face DLG previously created a context that made teachers see the opportunity to create an interactive context online, which otherwise may have been substituted by individual activity, losing the potential of interaction for learning:

> "It has been, well, great, great. Because if we hadn't had this excuse or project to do together, we would probably have had individual classes instead of group classes." (T1 interview)

The quality of the interactions between students has also been maintained. T1 pointed out that during online DLG, interactions were based on respect, listening to each other and learning new ideas from their peers. These reflect the typical interactions from the DLG based on egalitarian dialogue where all voices are heard and valued, which were transferred to the virtual space.

> "[It is like] Sometimes I don't agree with the opinion of my classmate, however, there is always respect, and sometimes they provide an idea that can be useful for me." (T1 focus group)

In addition, interactions with families were acknowledged as a key component that enabled doing DLGs online. According to the teachers, parents of the students not only helped them connect to the video conference but also showed a high level of compromise regarding the DLGs. For instance, in the case of S3, it was her mother who helped her follow the videoconference. She usually spoke to her daughter in a soft voice whenever she

got distracted or did not understand anything or helped her find the paragraph she had chosen and to read:

T1: What have you liked the most about this chapter?
Student 3 (S3): I have liked… (silence)
Mother: Here. Read it.
[S3 reads the whole sentence with the help of her mother. The mother whispers the words whenever S3 gets stuck, and S3 says it out loud]
T1: Very well, S3! You have chosen the same paragraph as S1! Very well. (Observation session 1).

The fact that families were already involved with the project (before the lockdown, they helped students to read at home and underline paragraphs to prepare the face-to-face DLGs) facilitated that they knew the dynamics, the benefits of this action for students, and that they took the compromise of helping to do the DLGs online. Families were perceived as crucial so that students could connect and participate to the DLG sessions online, becoming a "bridge" between the school and students.

"In fact, I believe it has meant a greater compromise for parents too. The fact of having a project and saying: 'hey, we are compromised,' there is a compromise, and it meant that parents were taking into account the time, the day, the moment, and that they did it." (T1, interview).

Students agree with this perception. Two of them stated that it was their parents who helped them prepare the reading for the DLG, and it was something they appreciated and made them feel comfortable with the DLGs online.

Interviewer (In): Who has helped you to prepare for the DLGs? Fathers, mothers, grandparents, teachers…
S3: My mother.
(...)
S2: My mother.
In: And have you liked that she has helped you?
S2: Yes.
(...)
Interviewer: And why do you prefer to do it [the DLGs] with the computer? Because you are at home, with your mum…
S3: Because I am at home with my mum. (Focus group)

In this vein, teachers explained that parents have also considered the DLGs to be a positive experience. At the beginning, teachers mentioned that some of the parents were reluctant because they thought the book was too difficult for their children. However, this perception changed through time, and teachers stressed the positive feedback that parents have given them on this action and the great help they provided to prepare for the DLGs. This shows not only that parents have been a valuable resource to develop online DLGs but also that having the opportunity to participate together with their children and the teachers in this activity helps them to get to know better the functioning of the school, value the work done there, as well as increase the expectations that parents have on their children.

T2: They have taken part, I think that with the fact that when we sent the chapter, they read it.
T1: And underlining the phrase, I mean, making a comment on the text, for me it has been…
T2: They haven't gone against it.
T1: No, no, not at all. I think the assessment of the families has been positive. (Interview)

## Improvements in Students' Development of Cognitive Abilities and Learning Attitudes

Teachers reported an improvement in behavior, attention, and the ability of working together after the implementation of the DLGs online. As explained by T1, it was difficult to give the other regular lessons apart from the DLGs online, and one main difficulty was problems in turn taking.

"We wouldn't have done it [group lessons], because I saw difficulty when I proposed working together for example in Sciences class (...) they would get lost. They would intervene, one and another one, interventions would overlap." (T1 interview)

However, this did not happen while in the DLGs. The interactive environment created in the DLGs on-site facilitated its transfer to the online space. Following the principles of the DLG, i.e., take turns, listen to others' interventions, and respect others' opinions, made students' attitudes different, in relation to improvements in interaction patterns. Being able to share one's thoughts in an egalitarian way enabled students to share and listen to their peers' thoughts. In this regard, T1 saw a great improvement in areas such as attention, concentration, listening to each other, and turn taking. In fact, T1 stressed she observed a personal growth and maturity improvement in her students in the DLGs.

"Simply in attention, I have found it very important. I believe interaction has been super important, the attention, concentration toward the book, the listening and respect they had when waiting for the other ones to finish their intervention and start speaking. Some of them even raised their hands (...) And I think giving the turn and waiting to be given the turn has been really adult-like, really mature. They don't do that when we are in class. As I have told you, a problem I see in the workshops was the overlapping of ideas and, however, here [in the DLGs] it has been like…" (T1 interview)

The other teacher (T2) also appreciated the level of attention of the students toward the book. According to her, it was noticeable that students had read the book and had focused on the things that were the most interesting for them when doing it in order to bring the ideas to the gathering.

"But they have read it, the other day S5 constantly with "Dulcinea, Dulcinea", with his focus, you see each one has focused on their interest. (...) You would explain the chapter to them, and what a level of attention they had, I have found it wonderful." (T2 interview).

Also, the reading content has been a key aspect to trigger students' cognitive progress. Teachers report that the DLGs have

fostered cognitive development by discussing many topics that arose in the debates and that would have not happened without this activity. After participating in the DLGs, teachers had a clear opinion that having an intellectual disability does not impede participating in DLGs; on the contrary, although difficulties may arise, students with disabilities can benefit from this practice at different levels, even when it is implemented in the distance.

T1: I believe it can condition them, but it depends on what you want to achieve from your students (...) in our way, I think it has been useful for them to grow, mature and interiorize.
T2: Yes, yes, yes. Concepts, group relationships, we have talked about many topics that may have not aroused if we weren't doing this.
T1: I think it helps them grow, obviously. (Interview)

## Fostering Curricular Learning Despite School Closure

Participants of the study also reported curricular learning as one of the main outcomes of the DLGs online. Learning new vocabulary, improvement in comprehension, and doing so while reading such an important book—a classical book—were mentioned. Thus, it can be seen that DLGs in confinement did not impede developments in the curricular level, but even fostered new learning. As an example, T1 regarded the DLGs not just as an activity but as a subject itself, due to the wide range of contents the students learnt:

"It has been almost like a subject, we would say. In the end, it has been a subject in language. Yes, because we have worked on all the aspects of language, the comprehension, synonyms, vocabulary… (T1 interview)"

Participant students also agreed on this aspect. For instance, in the focus group, a teacher explained that students enjoyed learning new words and a different language while reading, which was confirmed by a student:

T1: I think it has been useful, we have learnt a lot of vocabulary, right? Old vocabulary, that way of speaking of chivalrous novels (...) What do you think about it?
S2: Good.
T1: S2 has enjoyed seeing another kind of language that he usually likes, he has enjoyed learning synonyms, new words, am I wrong?
S2: No. (Focus group)

This enjoyment of learning was accompanied by an improvement in the literacy level of the students, according to the teachers' perception. Although they have not been able to quantify it because the lockdown lasted the entire school year, T1 perceives such improvement as a reality:

"We can't evaluate it because it hasn't been face-to-face, and it has been the third trimester. (...) Obviously, most likely it has been positive in terms of reading, looking for the vocabulary, having a theme in common to be able to present it in class (...) The assessment is positive." (T1 interview)

The observations of the three online DLG sessions show that students have understood the text. Students have shown to remember what they read in previous chapters and the main argument of the story. An example of this is in the third observed session, where they remember together what Quixote has done for his beloved Dulcinea.

T1: What things has Don Quixote done for Dulcinea? Who has he fought against?
S2: Against giants.
(...)
T1: And with the sheep, what did he think the sheep were? Warriors?
S4: Warriors. (at the same time)
T1: And what were they really?
S3: Sheep. (Observation session 3)

Finally, one of the aspects that teachers valued most was the fact of reading universally highly valued literature. Reading *Don Quixote* was mentioned in the interviews as a great achievement:

"And we have read *Don Quixote*, that is an important nuance." (T2 interview)

In this vein, the reading of such a book was not only an element that helped them learn more language but also was regarded as an element that could help these students with special educational needs integrate in the society by having access to culturally relevant knowledge. Therefore, DLGs can not only facilitate students to improve their functional learning, for instance regarding language, but also enhance their cultural knowledge that can be shared in conversations with others:

"No, and they live in another reality as what happened with the stuff about Egypt, right? That sometimes those realities are in your own neighborhood, or news from the newspapers, and that these kids need functional learning and this kind of thing, something that can help them integrate. And in a certain moment, [saying] 'I have read Don Quixote,' well, yes. It is important." (T2 interview)

## Enhancement in Socialization: Maintenance of Relationships and Reinforcement of the Group

In relation to the improvement of the relationships inside the group, both teachers and students emphasized the maintenance of relationships and a reinforcement of friendship even during a lockdown period due to the DLGs.

Teachers expressed that they perceived a shift from individualist attitudes to a greater union of the group. It is noteworthy that this change happened precisely when physical distancing was compulsory. However, they also acknowledge that the fact of not seeing students face-to-face makes it difficult for them to know the extent of this change.

T1: I tell you the same, which I would have liked to see it here, for example, in class. But I think it has enabled them to be much more in harmony, I think the relationships have improved a little bit. Sharing a space, a time, and a common

topic, I think so. (...) There hasn't been so much individualism, at least in that moment, but whether it has made a greater union? I think everything has its positive part.
T2: I have seen that union has been made in the group. (interview)

In this regard, the data also points out that the students were looking forward to the moment of the DLG. This was something that was said to happen when DLGs were done in face-to-face class, but it was maintained even when the DLGs were carried out online. It was seen that the thrill the students had for the gathering was not diminished because of school closure and that they kept being motivated.

T1: But, in addition, notice that on Mondays they were already saying: 'we have the gathering tomorrow.' That for them is like, I think it is something very valuable, right?
T2: Because [researcher] came.
T1: No, but I mean in the online sessions, eh. It has been like: 'oh, look at them, how motivated.' (Interview)

In the words of the teachers, the fact that their students have not refused to do the DLGs is an indicator of liking them, as they tend to avoid the activities they do not like.

"They have not refused to do the activity, which means they have liked it. The thing they don't like, they say it clearly: 'no, no, we don't want to do that'" (T2 interview).

From the point of view of students, the feelings they said to have before starting each DLG are in line with what teachers said, that they were excited about doing the activity. When asked about the feelings they had before entering the videoconference of the DMG, three students answered:

S3: Excited!
S1: Nervous.
S2: Happy. (Focus group)

The students added that one of the main things that the DLGs have provided them with has been friendship, due to the time spent together in the videoconference. For some participants, friendship has been the main learning from the DLG online sessions, above other instrumental learning such as learning new words, and it has been very important for them.

Researcher: What have you learnt the most? T1 has said vocabulary, can you think of anything else? S1? S2?
S2: Friendship.
Researcher: How important, I think when we connected together there was more friendship, is that what you think?
S2: Yes.
(...)
Researcher: What do you think has made friendship grow? Being together, talking about the same topic, sharing opinions. . .
S2: The time. (Focus group)

Maintaining the relationship during the lockdown through the DLGs has also translated into making plans together for when the confinement situation would be over. It is significant, therefore, that the group united during the lockdown, which teachers attributed to the DLGs. For example, the whole group decided to go to have lunch together when the situation was over. This can be interpreted as an indicator of the good relationships, enjoyment, and the desire for being together.

"It has maintained us together and it has served, you know, to say that after the work we have done we deserve a lunch. Because I think that idea has aroused thanks to all this work we have done, because it has unified us much more. I think so. The relationship between us has improved. Working together has augmented cohesion." (T1 focus group)

## DISCUSSION AND CONCLUSIONS

The pandemic caused by COVID-19 and the measures taken to tackle its spread, such as the lockdown and school closure, have created new challenges to which teachers, families, and students have had to adapt to, especially in non-university education, which is designed to be done face-to-face and not virtually, making it difficult to carry out during the confinement (Cabrera et al., 2020). Nevertheless, vulnerable populations such as students with special needs and their families have suffered more severe consequences (Hole and Stainton, 2020).

In this context, the case study conducted shows the impact of an evidence-based strategy such as DLGs to overcome those difficulties by contributing to a quality distant learning for students with disabilities. The positive impact interactive learning environments have on students with special needs, in relation to both better academic outcomes and social inclusion, has already been studied (García-Carrión et al., 2018), and it has been shown that interactive environments can also be recreated in special schools. This study adds to that topic by presenting evidence that shows interactive learning contexts can be carried out in an online environment with students with SEN. Simultaneously, these students benefit from an interactive learning environment where interactions between families, students, and teachers have enabled curricular learning, an improvement in areas of development and behavioral aspects such as attention and turn-taking, and improvement in the relationships between the members of the class.

In order to transfer the DLGs to an online space, some key strategies were useful to leave no student behind. These strategies included audio adaptation, using pictures, explanations, and gestures that facilitated the understanding of the text and the participation of all students. Previous research had already shown that some material adaptations can support the transference of interactive learning environments to the special education context (García-Carrión et al., 2018). Our study adds new evidence showing this possibility also in distance education. This occurs when a transformative view of the situation is used, which focuses less on the difficulties (in this case related to students' special needs and to the physical separation) and more on students' capacities and the way the available resources (such as technology) can be used to maximize them.

Families have played a key role for ensuring that these students could participate in interactive spaces. Families' involvement in their children's education has been pointed out in scientific literature as a very important factor to improve both academic outcomes (Harris and Goodall, 2008) and relationships (de Botton et al., 2014; Girbés-Peco et al., 2020). Besides, in an online space, families' collaboration has also been said to guarantee the effectiveness of online teaching with students with SEN (Parmigiani et al., 2020). Our study also supports this evidence.

The case study shows that online DLGs have fostered curricular learning in confinement, especially learning of new vocabulary and improvement of comprehension, challenging the low expectations students with SEN often face in relation with their academic outcomes (Molina Roldán, 2015). Other studies on the DLGs online have also shown improvements in language and sentence construction (Ruiz-Eugenio et al., 2020), and our study points in the same direction when students with special needs are the participants. In addition, the reading of a universally valued novel such as *Don Quixote* with students with special needs was regarded by the teachers as an element of social inclusion. Thus, the online DLGs created a learning environment where the special needs of students did not impede them to enjoy this masterpiece.

An improvement in social relations within the class was also reported as a result of the implementation of online DLGs. This is consistent with other studies that have revealed interactive learning environments to improve both academic improvement (Valero et al., 2018) and friendship relationships among students (León-Jiménez et al., 2020). It is significant in our study that the relationships between students and teachers were not only maintained but also became stronger while doing online DLGs.

Overall, online DLGs have been crucial to promote interactions during the lockdown and as an alternative to individualized classes. Additionally, it is worth highlighting that the benefits reported have been observed after only 6 months implementing DLGs (either face-to-face or online). Taking into account the benefits interactive learning has proven to have on students with special needs (Molina Roldán, 2015; García-Carrión et al., 2018; Fernandez-Villardon et al., 2020), having the possibility to transfer DLGs to the online modality as a way to maintain these interactions even in lockdown is important, on the one hand because school closure due to COVID-19 continues today in some contexts and, on the other hand, because new confinements could be applied in other contexts while the sanitary emergency continues. Our results open new opportunities for other schools teaching students with special needs to keep this environment of interaction, learning, and group cohesion.

Some limitations must be noted. First, the size of the benefits of the online DLGs has not been measured, as the remaining school year was done fully telematically. Therefore, the improvements reported are based on perceptions of the teachers, students, and observations, but other records of academic improvement could not be analyzed. Second, our data were collected after a period of 6 months implementing the DLGs; therefore, it is unknown if the benefits would sustain after a longer implementation period. Thus, future research could address the stability and maintenance of the effects of online DLGs, as well as the measure of the size of those improvements.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee of the Community of Research on Excellence for All (CREA). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

SR-P contributed to the conception and design of the study. AL and GÁ-G organized the database. AL and SR-P wrote the first draft of the manuscript. GÁ-G, LF-M, and SR-P revised and edited the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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# Enhancing Literacy and Communicative Skills of Students With Disabilities in Special Schools Through Dialogic Literary Gatherings

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Enhancing the quality of learning opportunities for students with disabilities and the learning level attained is a pending challenge. This challenge is especially relevant in the context of special schools, where the learning possibilities derived from interactions with others is limited. However, providing these students with a sufficient level of instrumental learning, such as literacy, and communicative and reasoning abilities is crucial for their subsequent educational and social opportunities. In this case study we analyse a special school that has implemented Dialogic Literary Gatherings with their students as a means to increase learning interactions within the group around the reading and debate of classical books. Semi-structured interviews were conducted with the school principal and with a teacher of the transition to adult life course, and two focus groups were conducted with teachers–one with primary education teachers and one with secondary education teachers–and two focus groups with students–one with primary education students and one secondary education and transition to adult life students–. On the one hand, results show the characteristics of the Dialogic Literary Gatherings that allowed these students to participate and learn. On the other hand, several improvements have been observed. First, regarding instrumental learning, students increased their motivation for reading, and improved their communicative and reasoning abilities and in their reading proficiency. Second, regarding students' behavior, conflict has reduced, solidarity attitudes have increased, and they have acquired dialogic and argumentative habits. Finally, at the emotional level, they gained self-esteem and confidence and feel more empowered to make their voice heard.

**Keywords: dialogic literary gatherings, dialogic reading, students with disabilities, special schools, literacy, communicative skills**

## INTRODUCTION

Literacy is an imperative educational need since it is basic for appropriate personal and social development. It is a condition for educational equality and enhances individuals' opportunities in life in current society (Katims, 2000; Lonsdale and McCurry, 2004). For this reason, educational actions that guarantee effective learning of literacy for all students and reduce the achievement gap between groups of learners are required. Specifically, people with disabilities have special difficulties in mastering basic skills of literacy assumed in society (Morgan et al., 2011). Besides, children with disabilities usually have overall less learning opportunities and tend to learn at a slower rate (Downing and Eichinger, 2003), which also compromises their learning of literacy. Therefore, fostering quality educational opportunities for these children focused on developing literacy skills is a pending challenge that would enhance the effectiveness and equity of educational systems.

Disability is understood to arise from the interaction between a person's health condition or impairment and the multitude of influencing factors in their environment (World Health Organization, 2020). According to this understanding of disability, limitations have to be brought into the social context (Grum, 2012), this is, there is a need of tackling the barriers of the context in order to achieve a greater social participation of individuals with disabilities and the subsequent reduction of their disabilities (Szmukler et al., 2014). In the field of education, it has implications for the overall development and learning of these children, and particularly for the learning of literacy. Since literacy is shaped through experiences and literacy practices in communities of practice (Barton and Hamilton, 2005), it is necessary to explore and identify practices and communities involved in literacy that maximize the participation and achievement of all learners, including those with disabilities.

Interactions are a crucial component of the social context that mediates learning and can create or overcome barriers to participation and learning. The work of Vygotsky (1979) revealed that learning and development occur first in the interactions between people and then it is interiorized at the individual level. Students learn when guided by an adult or when working with other more capable peers, by discussion, joint participation, encouragement, etc. Therefore, meaningful and positive interactions are needed to foster children's learning and development. This evidence is especially relevant in children with disabilities because of their intrinsic limitations for learning. Indeed, Vygotsky (1993) emphasized that educational approaches have to focus on children's strength instead of focusing on their disability. This is, on how the learning context and interactions can build on children's strengths. Students with learning disabilities who learn in inclusive environments in which interaction is enhanced, observing their peers' habits and behaviors as a model for their own (Lamport et al., 2012) achieve greater learning (Rea et al., 2002; Cosier et al., 2013; Kirby, 2017). Specifically, children with intellectual disabilities educated in inclusive settings tend to make more progress in literacy skills than those placed in special education settings (Dessemontet et al., 2012). According to research (Chitiyo et al., 2011) positive interactions and support, such as the ones that can be found in inclusive learning contexts, may explain increases in academic achievement of these children.

In this regard, research has shown that infants' social environment and interactions affect brain organization and functioning (Meltzoff and Kuhl, 2016; Dawson and Guare, 2018). The environment in which a person lives, as well as the actions of that person within that environment, play a role in plasticity, this is, in the ability of the brain to reorganize itself by forming new connections between neurons. Plasticity occurs, for example, in case of injury to compensate lost functions and, in general, whenever something new is learned and memorized (Grum, 2012). Plasticity is especially high in early and middle childhood, when children are more sensitive to developmental as well as environmentally driven changes (Buttelmann and Karbach, 2017). Thus, this ability of the brain for developing compensatory strategies is crucial for children with disabilities in their everyday life functioning. Regarding literacy, there is evidence that an environment rich in reading related events help developing some areas of brain (Kuhl, 2011; Hutton et al., 2015, 2020), thus contributing to brain plasticity that can help compensating difficulties that face people with disabilities.

In special schools, the learning possibilities derived from interactions with other children without disabilities are reduced, so these children cannot act as behavior models. Moreover, limitations inherent to the children and their classmates, who use to have cognition, communication and social skills affected (Szumski et al., 2017), reduce learning repertoire skills and strategies that can be exposed and shared in the class. Apart from that, these schools tend to implement more individualized work between the adult and the children, and this minimizes the opportunities for diverse learning interactions and peer learning. According to research, many behavioral traits are consequence of social interaction, which in the context of special schools can reinforce children's difficulties (Cantor and Kihlstrom, 2017). On the contrary, being surrounded by positive social incentives and inclusive educational settings helps develop a positive reorganization of higher mental functions (Grum, 2012). Therefore, it is especially important to identify venues to increase as much as possible learning interactions within special schools. This would approach these students' learning opportunities to those that their peers without special needs find in mainstream inclusive schools.

Literacy has also a crucial role in communication and language development. Literacy and communicative and reasoning abilities are all part of the instrumental learning contents that are considered necessary to enhance children's future educational and social opportunities (Light et al., 2008). Fostering communicative skills among children with disabilities is imperative to cope with everyday challenges throughout lifespan development, and appropriate dialogue and interaction opportunities in school foster these abilities by enhancing critical thinking and reasoning. Research has demonstrated that a dialogic-based interactional environment improves both communicative skills and language acquisition (Howes

et al., 2008; Purcell-Gates et al., 2011). Therefore, it is important to promote dialogue and communication in literacy learning to improve children's literacy, communicative and argumentative abilities.

Research has already identified evidence-based educational actions that rely on quality interactions around learning to offer all students an optimal education. Successful Educational Actions (SEAs) were identified by the European research INCLUD-ED (Flecha, 2015), and have led to improvements in schools and communities across cultural and national boundaries (Garcóa-Carrión et al., 2017). Specifically, these actions have been transferred into special education settings achieving broader learning opportunities (Duque et al., 2020). Within these actions, Dialogic Literary Gatherings (DLGs) are an interactive dialogic-based learning environment where participants share and discuss the reading of classic works of universal literature, based on the principles of dialogic learning, which promotes freedom, respect toward diversity, and overcoming inequalities (Flecha, 2000). In DLGs interactions are based on egalitarian dialogue and oriented to the construction of collective knowledge (Soler, 2015) regarding the content of the reading and the topics that emerge from the discussion, which enables the development of critical consciousness. Therefore, DLGs focus on the development of literacy skills while reasoning and communicative abilities are practiced.

The scientific community has studied the efficacy of DLGs in various contexts and with diverse populations, showing positive results in different domains. Initially, the DLGs were identified as a tool to achieve optimal academic and social results in the literacy process in adult education (Flecha, 2000). Subsequently, the impact of the dialogic interactions facilitated by the DLGs has been replicated in other contexts including schools at different educational levels, from early childhood to secondary education (Flecha, 2015). Positive impacts have been observed in reading and language skills development (López de Aguileta, 2019), vocabulary acquisition (Hargreaves and García-Carrión, 2016) and prosocial behavior (Villardón-Gallego et al., 2018), all of them necessary abilities for appropriate academic and social development. Research has also shown that DLGs are a unique opportunity for students with disabilities to enhance their literacy achievement, motivation, and support to engage in a shared activity of dialogical discussion with non-disabled peers, increasing their opportunities to benefit from learning interactions, which tend to be scarcer for these students (Molina, 2015). This evidence suggests the possibility to transfer this intervention to other students with disabilities who are educated in mainstream or in special schools. There is already evidence that the implementation of interactive learning environments in special schools improves students' learning and behavior in this type of schools (Duque et al., 2020). Still, there is not yet research focused on the impact of DLG in special schools. This paper aims to fill this gap and analyse specifically the interactive learning environment created when DLGs are implemented in special schools, and how the learning interactions created around the reading and debate of classical books contribute to enhancing students' literacy and other potential benefits.

## METHODS

An exploratory case study was conducted in a public special school which was one of the first experiences in implementing DLGs in a special school. Despite being a segregated learning context, even because of being placed distant from the urban centre, this school has been committed to offering quality and inclusive learning opportunities for these students. With this aim, professionals in the school implement Dialogic Literary Gatherings and other SEAs. At the data collection moment, they had been implementing DLGs between 2 and 3 years, which allowed evidence of DLGs impact be registered.

This case study was conducted in the framework of the broader research project *INTER-ACT. Interactive Learning Environments for the Inclusion of students with and without disabilities: improving learning, development and relationships* (Ministerio de Ciencia, Innovación y Universidades, 2017), which has the objective to assess the impact of interactive learning environments (DLGs and Interactive Groups) in learning, development and relationships of students with disabilities and to examine the conditions that may increase this impact. Specifically, this exploratory case study was aimed at addressing the following research questions: (1) Which are the characteristics of the interactive learning environment that is created when DLGs are implemented in special schools? and (2) Which are the benefits in terms of learning and development, if any, for students with disabilities participating in this interactive learning environment?

This instrumental case study (Stake, 1995) was conducted in order to achieve a deep and detailed understanding of how the DLGs are implemented in the special school, focusing on its characteristics and the different strategies carried out, and which are the improvements observed among students in terms of literacy development and other related improvements. In consequence, this study would enable to identify the relevant aspects in implementing DLGs in the special school context in order to recreate this interactive learning environment in other schools and achieve similar improvements.

Dialogic Literary Gatherings (DLGs) are a Successful Educational Action (SEA) in which participants, following principles of dialogic learning, share their ideas about classic works of universal literature (Flecha, 2000). They differ from normal reading training since they allow everyone's participation in an interactive environment, where all the interventions are equally valued. Moreover, incorporating works from universal literature maintains high expectations and provide culturally relevant resources and vocabulary.

The school implemented DLGs in primary and secondary education and in the transition to adult life course. With the aim of analyzing how were DLGs implemented across educational stages in the school, data collection was focused on the following groups:

1) The primary education group was composed of 20 students from 6 to 12 years old, all of them jointly participating in DLGs. In this stage students were affected by disabilities such as moderate intellectual disability, cerebral palsy, and

autism spectrum disorder. Generally, the communicative and cognitive level of this group was much lower, so they need more scaffolding in order to participate. Some of them, in addition, presented behavioral or attention disorders.

2) The secondary education group contained 10 students aged between 12 and 16 with conditions including intellectual disability, autism spectrum disorder or behavior disorders. This group has also some communicative impairments. They have been 3 years implementing DLG once a week, with some families who attended to some of these sessions.
3) The transition to adult life course was composed of seven students aged between 16 and 21 with an intellectual disability. Their curricular level was equivalent to the 1st to 4th year of primary education (6–9 years old). They participate in DLG together with another transition to adult life course class, so they were finally about 15 participants in these sessions. Within this group there is more variability in terms of cognitive and communicative levels. They have been 2 years implementing DLGs once a week.

Qualitative data collection techniques were used with a communicative orientation (Puigvert et al., 2012). The data collection techniques used were in depth interviews and focus groups. These interviews and focus groups encompass different issues such as: strategies that facilitate implementing DLGs with children with disabilities, the characteristics of the implementation, results that emerged, etc. and were structured previously. Data was gathered from teachers of three different educational levels comprised in the school: primary education, secondary education and the transition to adult life course. This strategy allows to analyse teachers' different perspectives since they have different experiences and professional careers and encompass the overall educational intervention and impacts achieved. Specifically, two semi-structured interviews were conducted (to the school principal and a teacher of the transition to adult life course) and four focus groups, one with two secondary education teachers, one with three primary education teachers, one with two secondary education and a transition to adult life course students, and one with four primary education students. In the case of the focus groups with students, the conversation was always facilitated by a teacher familiar with the students to facilitate their expression and overall communication with them. **Table 1** summarizes the information on the data collection techniques implemented.

To ensure the research process's ethical integrity full details of the study objectives and procedures were explained to the participants, teachers and families prior to the start of the study. They were informed about the anonymous and voluntary participation and the confidentiality of the data collected of all participants. Informed consents were signed by all the participants or legal guardians after being properly informed. Ethical requirements were addressed following the Ethics Review Procedure established by the European Commission (2013) for EU research. The study was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA).

After data collection, interviews and focus groups were transcribed verbatim and subsequently analyzed. Drawing from the research questions, two main categories of analysis were stablished, which referred respectively to the strategies that were used in DLGs implementation and the improvements shown among participants. Within these two main categories, subcategories were created inductively based on the specific themes that emerged from the data. All names have been changed to pseudonyms to ensure the anonymity of the participants.

# RESULTS

As follows, results are divided in two sections, firstly the characteristics of the implementation of DLGs in the special school are explained and, secondly, the improvements observed in several domains are addressed. In order to respond to the research questions, and for the sake of clarity, results are structured into such sections, however it is important to note that both aspects are connected, as the characteristics identified show strategies used in the transference of DLGs into the special school and are these strategies which enabled the improvements achieved.

## Characteristics of the DLGs When They Are Implemented in the Context of Special School

Our results show several strategies professionals used to adapt DLGs to the characteristics and needs of students in the special school. Some of these strategies are especially relevant in specific age groups, while others were used across all levels within the school.

### Material and Procedural Adaptations That Enable Every Student to Participate

Due to the participating students' characteristics, in some occasions, adaptations are needed for DLGs to be inclusive for everyone. These adaptations aim to tackle the barriers that students may encounter because of their disabilities. This way, all the students can participate and share their knowledge. Depending on the characteristics of each student, different adaptations are needed. To this end, it is necessary that teachers know the characteristics of each student and identify which adaptation is required in each case for this student to participate. Overall, adaptations are focused in a way that, in the face of difficulties, it is not considered that a student cannot participate, but way is sought to enable him/her to equally participate.

In some cases, they used material adaptations. For instance, pictograms were an effective way in the school to facilitate students' expression, as they could express their questions and answers with this visual support. These adaptations were especially useful in the transition to adult life course. Some students with a lower literacy level used tablets and the story adapted into pictograms to facilitate their communication.

> *-Some students do not have literacy skills. We translate or adapt the chapter with pictograms. They work with a summary based on pictograms. Then, they can follow the activity with this adaptation. . . —Transition to adulthood course teacher*

**TABLE 1 |** Data collection techniques.

| Technique | Profile | Group | DLG implementation |
|---|---|---|---|
| Interview | School principal (female) | - | - |
| Interview | One Teacher (female) | Transition to adulthood course | 2 years once a week |
| Focus group | Three Teacher (females) | Primary education | 2 years once a week |
| Focus group | Four Students (three females, one male) | | |
| Focus group | Two Teachers (females) | Secondary education | 3 years once a week |
| Focus group | Two Students (males) | Secondary education | 3 years once a week |
| | One Student (male) | Transition to adulthood course | 2 years once a week |

In the DLGs, students have read books such as *Romeo and Juliet*, *The Odyssey*, *Platero and I*, *Arabian nights*, *The metamorphosis*, etc. in secondary education, and *The Jungle Book*, *Peter Pan*, *Pinocchio*, for example, in primary education. Classic books of literature have accessible to buy adapted versions to different ages, which are faithful to the original book and incorporate rich vocabulary. Teachers in the school select the adaptation version that fits better to the characteristics of their students. In secondary education teachers stated not making any extra adaptation, to preserve the published version and not to alter its quality. In contrast, in primary education, they started using additional adaptations in the books, and they progressively were reading less adapted books.

*-We do buy the classics that are already adapted, which perhaps from the outside may seem to be of a lower level by age that our children have, but no, we do not make any extra adaptation, neither on the vocabulary, nor include additional illustrations… —Secondary education teacher*

*-We have been improving, because we chose books that were like that (adapted into pictograms), then with capitalized words, and now a quite standardized book that we could find.—Primary education teacher*

Both the school principal and the primary education teachers reported other material adaptations that were instrumental in facilitating everyone's participation. For example, these consisted of laminating the book sheets and tying some children's book to avoid throwing or breaking it. Instead of letting these students out of the activity, teachers found a way to avoid this disruptive behavior and include them with their peers.

*-For example, we had to laminate the books. Because they were thrown, sucked and broken in the gatherings—School principal*

*-For example, we put a string to the book and tie it to the leg of the chair and at least, if they threw it, they wouldn't throw it to anyone—Primary education teacher*

In other cases, the strategies used consisted of adapting the procedure of the DLG, in order to help in the development of the gatherings or in the internalizing of knowledge emerged in the gatherings. These adaptations are carried out following dialogic principles and with the aim of enhancing interaction and dialogic learning taking into account students' characteristics. A useful strategy consisted of preparing individually the specific interventions they are going to share in the gathering. This preparation of the gathering is carried out in all learning levels, facilitates the conversation, and having a more fluent dialogue and less guided by an adult. For example, a primary teacher states:

*-On Tuesday, we choose of topic and, as Marta said, we go deeper into that topic. There are several topics. If children want to ask, we decide to structure that question to bring it to that discussion session.*
*-But we don't do it in group. We do it so that on Thursday it is the discussion in the gathering, because otherwise we reveal everything that's going to be in the gathering, if we do it in group. We help them to reflect and go deeper into it, without the others knowing, and then, for instance, you say: "and who would you like to ask about that?" and we prepare the question: "S., do you like…?" We prepare the question, and we talk among us about what they are going to ask, and they prepare a conversation, a dialogue, which is what is most difficult for us (…) but what has been most difficult for us is the conversation between them, which is not so directed by the adult. This is the work we prepare on Tuesdays—Primary teachers*

Other strategies are used differently depending on the characteristics of the group. For instance, procedural adaptations in the transition to adult life course included using more direct questions to facilitate students' participation in the gathering:

*-In the lower level group, you need to make more direct or guided questions to focus the dialogue. Because sometimes they choose a phrase or a word, and maybe they don't remember why they chose it or so. So, you have to ask him why he has chosen it, if it is because of this, or if it is because of that- Transition to adulthood course teacher*

In primary education, one strategy they used is doing a gathering rehearsal to get used to be seated and listening to their peers. Moreover, they used a reinforcement programme with specific children that needed because of their attentional difficulties. These children were incentivized with a positive reward when he/she behaved well. It is important to highlight the fact that these strategies have been used to introduce children in the dynamics of the DLG and have been removed as long as students were familiarized with the dynamic.

*-We thought that, of course, they didn't have the experience of sitting in a circle, talking and listening, they couldn't conceive that, so we did it for a couple of weeks, on Mondays when we arrived*

*at class we did like a but what we did was sharing the weekend, but being in a circle, and that consists of talking and listening, participating, asking, answering. (…)—Primary teacher*

Additional individual supports have been also used in some cases. For some primary education students these additional supports included the families' help, that could read the book with the children, and made less necessary the material adaptation.

*-And we came to the decision that we were going to take the book, that it was adapted, so that it could be used in the 5-year-old class or in first grade because we thought that we were giving them the possibility that those who could read in lowercase letters would have the possibility of reading it for themselves, but the others, to have also the possibility (…) that their parents read it to them and not to make that adaptation to pictograms—Primary education teacher*

In the case of students with more serious limitations, such as severe behavioral problems, the school found an effective strategy incorporating a person who functions as a reference figure (behavioral model) near these children to help them regulate their behavior, as the school principal explained.

*-As far as the disability is concerned, it is true that we have students who are seriously affected, right? But we have tried that at least if they could come to the gathering for a while or at least that they remain seated with the group.—School principal*

Importantly, teachers create these adaptations having always in mind the principles of the dialogic learning on which the DLGs are based. Teachers explicitly work on the internalization and practice of these principles. To achieve this, they use strategies such as having them visually accessible both in pictograms or in the blackboard, reviewing them before the gatherings start or working them each by one. For instance, secondary education students commented on this issue:

*-What we do in the gatherings is to remind the most important ideas. Like "equality," "creation of meaning," "transformation" (…) When we are going to start, we say all the dialogic principles. And we also repeat the rules, like raising our hand and all that. (…) We sit in a circle, and there is a moderator, who takes notes and remind us rules such as that we have to be silent, we have to respect people, or when one speaks, we don't have to laugh at one who is speaking.—Secondary education students*

In primary education, the dialogic learning principles have been adapted into norms that have been made visually accessible for all and, while maintains the principles' original meaning. In this way, they are easier to remember during the gathering.

*-And it also served to understand what the rules are, to have them super clear, they were all in pictograms. So, instead of saying "shut up" so as not to interrupt the discussion, we showed the pictogram to the child that was difficult for him to be in silence, to teach him so that he regulates himself.—Primary teachers*

After the gatherings, teachers and students also use some strategies to strengthen the learning emerged in these sessions. In secondary education, teachers explained that the class looked for the vocabulary that emerged in the gatherings and they did not know in the dictionary, and then, they created a panel with these words for each chapter. In primary education, they jointly think about each one's behavior after carrying out the gatherings to reinforce positive behaviors:

*-Then, when we are finishing, we go through them one by one and say, for example, Claudia has had a good behavior? And everyone says yes. They are the ones who value the behavior of the gathering of all the classmates.—Primary education teacher*

All of these strategies are carried out to conduct the Dialogic Literary Gatherings in a way that makes them inclusive for everyone. At the same time the basic principles of the DLGs are maintained, and any adaptation is aimed at facilitating participation and reinforce learning.

## Coordination Among Different Educational Agents Inside and Outside School

Part of the strategy implemented to develop DLGs in the special school consisted of the coordination among diverse educational agents, which was identified as necessary and effective for the proper implementation of the DLGs, due to the students' characteristics and needs. Usually, the DLGs entail that students read the chapter alone and prepare an idea to share, but for students in this school it was difficult to do it by themselves. On the one hand, coordination among school professionals and families was a useful strategy to enhance students' preparation and participation in the gathering.

Families supported the students to prepare the reading. After this preparation, they had the opportunity to make the most of the DLGs sessions and to dialogue about the idea or ideas they had previously thought (with or without help) to contribute to the gathering. Involving families was crucial not only because they have a relevant role for strengthening children's routines and learning habits, but also because students need to think and practice what they want to share. Despite the help that comes with the implication of families, in some cases it has been complicated to engage relatives. In these particular cases, teachers are the ones who could do this preparation work with these children previously to the session.

Students in all the school educational levels could benefit from this support to prepare their participation in the gathering. In primary education, children read the chapter during the weekends with their families, which help them to argue their ideas:

*-On Friday they take the text home to do that shared reading with the families, and in their notebook, with their families, they take note of the chapter, the page, the line or a word and the idea of why, by arguing why they have chosen that word. All this is the work with the family—Primary education teacher*

Families have also participated in the gatherings with their children in the school. According to the primary education teachers, parents' participation allowed to create a particular

atmosphere of collaboration, gave them a different perspective, developed high expectations and promoted a more normalized behavior among the students.

*-The participation of the families, how they feel, how they see them, how they see the gathering when their families come. It becomes very special; a very special atmosphere is created. Last year we saw when the family is available and we opened them up to participate and that atmosphere was very beautiful, because you could see how their son or daughter was doing and the rest. (…). The intention is to continue inviting families to see this type of activity and participate because it also benefits self-esteem and feeling special.—Primary education teacher*

In secondary education and in the transition to adult life courses families' collaboration is also present. In secondary school, students counted with their family support with the reading, and in the transition to adult life course, coordination between families and teachers has been crucial to help teachers to understand children's ideas and helping to express them:

*-Teacher: Who helps you read? Who helps you read at home.*
*-Student: My mother.—Secondary education student*
*-Parents also help us a lot, because sometimes they write in the diaries: "My son has chosen this word for this, for this and for this." To see if it then matches the version he gives. Because at first, maybe with his mother or father will say that he has chosen that word because… for some special reason. And then in class, maybe he'll say another one or he doesn't remember.—Transition to adult life course teacher*

Besides families, teamwork and adequate coordination among the school teachers were necessary for the successful implementation of the DLGs in the school, leading to better achievement of the educational goals. Teacher coordination was impregnated with the same egalitarian dialogue typical of the dialogic learning and the DLGs, thus educational objectives were established based on an egalitarian dialogue with every stakeholder, and shared purposes were agreed. In this sense, teachers of all educational levels mentioned that they always work together and jointly prepare the materials and discuss methodological adaptations. In this regard, they highlight as especially important their joint participation in evidence-based and dialogic teacher training in the form of pedagogical gatherings. As teachers explained, this allowed them consolidating the theoretical and empirical basis of their practice and being updated on successful educational methodologies that have proven to be effective.

*-I believe that the first factor, the most important one is training (…) I think that coordination between teachers is very important. Training, coordination, preparation and high expectations. -School principal*

### Taking Advantage of Diversity as a Strategy in DLGs

Being immersed in an environment characterized by diversity has also been used as a relevant strategy in achieving improvements regarding the learning and development of children with disabilities in the special school. Although fewer evidence was found regarding this topic, it is relevant to highlight the school teachers' perception of the transformative potential of diversity. This diversity in the context of special schools included both taking advantage of the existing diversity and incorporating more diverse interactions in the DLGs dynamic. The more variety of characteristics, experiences and behaviors they interact and become familiar with, the more they can learn. In this vein, it was highlighted as important the opportunities students have to be in touch, interact and dialogue with other students and with adults, like students' families. They can bring different knowledge and experiences to learn from, in an interactive learning environment such as the DLGs. They can also act as role models who can induce more appropriate behavior among children.

*-Being able to interact with other children and to be in contact with other children who use other expressions, or adults who participate in the gatherings, who use other expressions in the gatherings which children assume little by little.—Secondary teachers*
*-Obviously we had to put more people of reference, models of appropriate behavior, and then the same in terms of groups, we try to start incorporating students from other classrooms that we know are complicated and difficult into a class that we see that works.…—School principal*

## Benefits of Student Participation in DLG in the Special School Context

The improvements observed in students due to their involvement in Dialogic Literary Gatherings in the special school are diverse. These improvements include instrumental learning, and particularly literacy abilities and communicative skills, which are the learning contents more directly addressed with the DLG. However, other improvements related to students' behavior, empowerment, and selfesteem have been found, which show the comprehensive approach of the DLGs.

### Benefits in Terms of Literacy and Communicative Abilities

One of the first impacts of participating in DLGs is the increase in the motivation for reading. Teachers and students across educational levels agree that this motivation observed emerge from the opportunity of shared reading provided by the DLGs. The contents of the debates and the participative and egalitarian basis of the gatherings foster children's motivation and joy for reading. This opposes with the previous experience of the teachers of the secondary education classes. They mentioned that before implementing DLGs it was usual for students to refuse reading and, after starting to participate in DLGs, they live reading differently, they enjoy it. This transformation in their motivation resulted in a more joyful attitude and transformed their predisposition to improving their reading abilities. In this regard, students who started participating with little reading abilities, became motivated to learn to read alone the chapter for the gathering and participate in it.

*-Now they do not reject reading in the same way. They already experience it in another way, they can enjoy more than a reading.—Secondary education teacher*

The motivation for reading is also shown by children's desire to join in the gatherings. Both teachers and students were aware of this increase in motivation. As primary teachers observed:

*-And they're even thinking about what they're going to share. "I wanted to say that," which for the students is very positive, it's a moment they're looking forward to, to being the two classes together, which normally they're not (. . . ). Super positive—Primary education teacher*

One of the participating students, explained it in this way:

*-Well, there was a classmate who was not interested in the gatherings. But then, after a few days we started to read together, all in a group, that person started to like the gatherings. But people used to say that the gatherings were silly, that they were worthless. Anyway, they said these things. But then, after a few days, people liked them more. And, for instance, there are people who help me, and I help the others too. We help each other, for instance some of us read better than others. People are doing quite well with the gatherings—Secondary education student*

Significantly, this increased motivation for reading is related with the increase in reading proficiency facilitated with Dialogic Literary Gatherings. As the school principal stated:

*-As for the improvement of the reading I see it clearly—School principal*

As motivation for reading is enhanced in interactive learning situations, the opportunities to learn from these interactions also increase and, indeed, entailed an improvement in reading skills. Improving reading competence through reading motivation is crucial for internalizing such learning and extending it over time and other contexts. This improvement is constantly mentioned along the interviews and focus groups at the different educational levels.

In this sense, secondary and primary education teachers reported some specific cases of students who did have a significant improvement, especially in reading, as a result of participating in the DLGs:

*-In the case of a student who had serious behavior problems, who had left all the academic work aside because of the behavioral problems, when we took the group and this student joined it, we resumed academic work. At first, he did not remember anything, not even writing. He was a child who did write, but it was illegible. And in two courses, it's true, his progress has been, was extraordinary. Because he took the chapter with him, he read it, and understood as the others—Secondary teacher*

*-Yes, let's see Julio, until this year he was reading in capital letters, he had been working on the transition to lowercase letters and it was very difficult for him and that is something that he is working on and he reads much better in lowercase. (. . . ) And in the case of Pedro, he has advanced a lot in reading, until last year when he began with capital letters, this year you can notice the progression in his reading, in lowercase as well.—Primary education teachers*

DLG have also been observed to help children enhance their communicative abilities. They could elaborate longer phrases, acquire new vocabulary from the book and elaborate more structured discourse, as primary teachers stated:

*-I think there has been an improvement in the coherence of the dialogue, in which a topic is being talked about, I think that everyone understands the topic that is being talked about in a certain way, they are talking about that topic, in that sense the attention has improved, that would be positive. The structuring of sentences, everyone is very clear that they will spontaneously say just a word, but then they try to structure, and it is all because of the habit that we are working on of sentence structuring. These small changes are the ones that are observed in each session—Primary education teacher*

Even in the cases when there was a low level of expressive language development, clear improvements were observed in the ability to structure an idea, as the school principal showed with the example of one of the students:

*Before he only said "blue" now he is able to say "my favorite color is blue because I see it in the sky" —School principal*

In other cases, when language proficiency was not only mediated by a disability but also because children came from another country with a different language, teachers also described improvements in language acquisition as a result of participating in DLGs:

-Kevin recently arrived, he is French, therefore it has been impressive in Kevin the benefit that the gatherings have brought him in terms of oral expression because, of course, he spoke in French, well he speaks in French and you can see that he makes more appropriate structures, but of course, because he has the imitation, the students learn by imitation and he has the imitation of the others. —Primary education teacher

-This child who arrived here and didn't speak any Spanish, he speaks French and suddenly, well in the first gatherings we made very direct questions, but in the fourth one, I remember that I wrote it down because I was the moderator that day and we were talking and he contributed something, it was a word, but it was what we were talking about and it was in a language that 2 months ago was unknown to him. —Primary education teacher

These language improvements can be related to a combination of factors, according to the characteristics of the DLGs and the evidence collected. First, the high quality of books they read, which are humanity's great literary creations and provide a rich language input. Second, participants have to think and elaborate an intervention to share with the group, which entails an additional cognitive effort. Third, the opportunity to listen to peers and teachers' interventions, who act like behavior models, facilitate them to learn new speech abilities and argumentative skills. Finally, as they have not only to understand the reading but also to link its content, which often reflects socially

relevant issues, with their lives, it entails making connections, comparisons, elaborate arguments, and explain them. These improvements were observed both in primary and secondary education students:

*-It has also helped… well I don't know if it's only me, but I suppose for many people gatherings have also been helped to reflect on many things in his life. For example, many of the gatherings have helped me to think. Because I used to think in a different way. – Secondary education student*
*-I also see them sharing certain things, certain topics of daily life in our lives and in their lives, which many times are very similar. And the sharing of everyday issues is reflected in everyone. For example, we were talking about a little dog, and one said: "Ah well I also have a dog" and the other one already wants to know the name of his friend's dog and when he is going to walk it. So, yes, in sharing everyday topics—Primary education teacher*

## Increase of Students' Prosocial Behavior

Apart from the improvements in terms of reading and language abilities, other improvements referred to students' behavior and their relationship with others. Results show that by implementing DLGs students learn to respect opinions and argue their posture and have dialogues around it. This has an impact on the coexistence and the prosocial behavior of these children.

Teachers observed the development of prosocial behavior in terms of greater solidarity, empathy and tolerance among students. For example, in secondary education, DLGs facilitated an increased acceptance of diversity in different forms, including religion and life beliefs:

*-We have seen differences between cultures, there are Muslim and Roma girls, and this interaction and acceptation with the diversity, even of religion, life beliefs, we see it.—School principal*

Another example of the improvement in empathy is highlighted by primary teachers, that comment the following:

*-In the gatherings, new proposals emerge, this is, we are talking and Emilio, who is in a wheelchair, tells us that he wants to go down the slide, and a question comes out: Emilio, do you want to play soccer tomorrow? (…) if we have talked that Emilio has not been able to play, the next day it comes out: Let's go for Emilio! They all go to play soccer with him.—Primary education teacher*

In addition, children became more able to express whether they agree or not with someone else and explain why, with arguments, in a dialogic and respectful environment. In this regard, students have developed a greater introspection ability to identify and admit in their own inappropriate behaviors. This ability is developed in the gatherings because of the respectful and dialogical environment that is created, which provides a context in which no one judges or evaluates the others, and participants' empathy and acceptation emerged. This was specially observed in secondary education; both teachers and students reflected on it:

*-They had not had a space where they could express themselves freely, and where they would be heard and not judged for what they were saying. And they have learned that too. A… "we can have different opinions, it's okay, you can argue, I can argue, and we can have a dialogue." So, I think the gathering has created that. That space that they didn't have until now.—Secondary education teacher*
*-Well, I've seen that I've seen myself alone many times because of that. I've also had to think, I've had to say: "Well, I'm doing this wrong," I'm doing… you know, right? As a result of the gatherings, I thought about what I was doing wrong. And finally I could know what it was, that it was very unfair, and many other things. Secondary education student*

Apart from internalizing these habits, students were able to generalize these prosocial habits and attitudes to other contexts, such as family or community. This transferability is a relevant outcome since communicating and providing arguments is key to getting along in society. Both primary and secondary education teachers observed this improvement.

*-This is giving them the possibility, when they go out on the street, when they are in the parks, to be able to ask, to make some contribution.—Primary education teacher*

## Empowerment and Enhanced Self-Esteem

Finally, an impact at the emotional level was observed, which is something extremely important to students with special educational needs and disabilities. In the interviews, issues such as gaining selfesteem and empowerment emerged. Teachers from all educational levels greatly appreciated the improvement they have perceived in students' self-image and self-esteem. Being engaged in respectful and meaningful interactions, children with a low confidence level have built a stronger identity. This occurs with many students who arrived at the school having given up, because of the treatment received in other schools. However, by participating in the DLGs, they have recovered high expectations on their capabilities. To achieve this self-confidence, a climate of trust and knowing that no one would laugh at them is of capital importance, and they found it in the DLGs. Teachers in primary and secondary education and in the transition to adult life course described how they observed this improvement among their students:

*-We value very positively the self-concept that children have created for themselves. (…) We have seen that they have more confidence in themselves, that they value themselves more, that they think they can have friends, and they have friends all of a sudden, right? Well, they are 16-year-old and it is the first time they go out on the weekend their schoolmates, that had never happened before.—Secondary education teacher*
*-That self-esteem, to feel more secure, for example in Nestor, I have not seen him, but they have told me that many times he was paralyzed, closed… And now I see him participating, with self-esteem, feeling secure… —Primary teachers*
*-In this group there is a student who before this year had problems of adaptation, problems of being misunderstood, that nobody understood him… his family even considered leaving the school. This year he started with a new group, new classmates, with the dynamics of the gatherings, the interactive groups, the brave club and so on. He saw a space where he had the floor. A space in which he could express what was going on in his head. The problem he*

*had was a very low self-esteem. Very low, very low. So, to have the opportunity to express himself, to feel supported by classmates… He knows that no one will laugh at what he says. That has given him security. A climate of trust has been created in the classroom. (…) Little by little, oral expression began to flow. He began to tell and relate the chapter to some experience. He began to participate in all the gatherings. Not only at the school but also at home they noticed improvement. Because now he told them more things. He was more open. He increased his self-esteem.—Transition to adult life course teacher*

This enhancement of self-esteem not only contributed to students' wellbeing but being more confident helped students learn to make their voice heard in gatherings itself and in other contexts where they want to give their opinion. DLGs create a respectful space where every intervention is valued. This environment enhances confidence to ask or give their opinion, an ability required in other fields of life.

*-Thanks to the gatherings they have been given a voice in other spaces, (…) in the assembly of student representatives, in the lunch time assembly which I have attended, where they have wanted to ask for improvements and where they did it. (…) And in playground, that is, "hey I need to talk to you," "I respect my turn if I'm talking to someone else." We were very used to deciding about them. So, when that breaks down and the dialogue is egalitarian, they get very empowered—School principal*

## CONCLUSIONS

After analyzing students' and teachers' voices, characteristics, strategies, and improvements were identified related to the implementation of Dialogic Literary Gatherings with students in the special school context. This evidence opens a new field of study regarding the possibilities of implementation of DLG. The results also show that in a context where interactions with typically developing peers is limited, it is crucial to significantly enhance social interactions in special school to improve the education of students with disabilities. This is in line with Vygotsky (1979) ideas about the relevant role of dialogue and interactions in children's development with and without disabilities and the evidence that promoting social interactions impacts cognitive (Howes et al., 2008) and language (Purcell-Gates et al., 2011) development, fundamental in literacy learning.

With regard to strategies and characteristics related to DLGs identified by the teachers and students involved, some common issues emerged. First, turning children's limitations into possibilities introducing adaptations in different ways is essential to enable everyone's participation.

Transforming the barriers that can appear when working with children with disabilities is a crucial aspect in order to achieve a positive impact on these students' education. This transformative approach was observed in the adaptations carried out in order to enable everyone to participate. Adaptations for particular students are not usually made not to altering whole-group strategy, being lack of training and school support possible causes for no adapting, according to research (Scott et al., 1998). This case study shows how enabling, by different ways of adaptations, students with disabilities to participate, all of them have enough resources to join in the activity, while the whole group activity is maintained.

Second, the relevant role of the families' support and teachers' coordination based high expectations of students, and on the implementation of the dialogic principles to professional teamwork. Family is a decisive factor in children's education, and in the context of special education families take an important role in students' development. Involving families in dialogic reading and learning, improves students' literacy skills (Huebner and Payne, 2010) and also improve literacy communication behaviors of all family members (Brannon and Dauksas, 2012). Regarding teachers and expectations, previous research has demonstrated that teachers holding high expectations of students' level of achieving positively affects student motivation and engagement (McKown and Weinstein, 2008; National Research Council, 2004 cited by Rubie-Davies et al., 2006; Murray and Pianta, 2007). Our study shows that high expectations can be built in the context of special education, overcoming deficit-based perspectives, and this occurs when educational interventions are based on promoting learning interactions with teachers, classmates and families.

The implementation of DLG following these strategies has led to some improvements, which are in line with the results of previous research that has showed how Dialogic Literary Gatherings enhance academic (Flecha, 2000), social (Alvarez et al., 2018; García-Carrión et al., 2020), and emotional (Racionero-Plaza, 2015) outcomes in different contexts and cultures (Aubert, 2015). On the one hand, benefits in terms of students' literacy were identified. Specifically, motivation for reading and reading proficiency was enhanced, as well as communicative and argumentative skills. Previous studies showed that DLGs bring improvements in reading skills, for example, by improving vocabulary acquisition (López de Aguileta, 2019). DLGs also increase students' motivation (Aubert, 2015; Hargreaves and García-Carrión, 2016) which also has a potential impact on reading skills, since motivation for reading influences daily reading which results in increased reading achievement (Sonnenschein and Munsterman, 2002; Brannon and Dauksas, 2012). Specific cases of students with disabilities showing an improvement in motivation for participating in the gatherings and learning to read have been reported (Molina, 2015). The case study reported here shows that improvement in motivation and learning in DLG occur also in the context of a special school, where enhancing literacy skills is an important challenge. By improving reading skills, which is essential to succeed academically (Goldman, 2012), DLGs contribute to a quality education that enhances their academic learning and, consequently, improve their life opportunities (Smith et al., 2017; Gil-Lacruz et al., 2020).

In terms of communicative and argumentative habits, the study results highlight the increase in argumentative skills. Scientific literature highlights that students talking about what they have read and receive feedback in a dialogical way regarding their ideas is a mechanism for promoting language learning (Valdez-Menchaca and Whitehurst, 1992). Our results also show students' ability to link interpretations of literary books they

read in the DLG with their lives. This impact of DLG was also identified in other studies, which showed outcomes related to argumentative and literacy skills (López de Aguileta, 2019). This is a relevant issue, since improvements in oral expression help reduce the impact of disability (Molina, 2015). In addition, it is known that children, specifically those with disabilities, need to be involved in learning experiences that make sense for them when literacy is being worked (Basil and Reyes, 2003), because they should perceive it as legitimate (Mertens, 2012). This is in line with the principle of creation of meaning in dialogic learning, in which DLGs are based (Garcia et al., 2018) and that is manifested when they see reflected contents of the readings in their own experiences.

On the other hand, an increase in students' prosocial behavior was observed, involving solidarity and tolerance attitudes and dialogic habits. This fact is also in line with other studies, which have demonstrated DLGs to improve relationships and kindness interactions (García-Carrión et al., 2020).

This particular way of learning, based on interaction and dialogue, also has shown to promote children's prosocial behavior (Villardón-Gallego et al., 2018). In particular, solidarity and tolerance feelings have emerged through DLGs in these students. Participants also internalized dialogic habits which improved coexistence, such as respecting and arguing different opinions. This is, they learned how to provide arguments on their posture, and how to do it based on respect. Since their interpretations have to be based on claims instead of on power positions (Oliver and Gatt, 2010), no student's interpretation was more valid than anyone else's and this enhanced a respectful group climate. These results show that the communicative and argumentative habits that were learnt served at the same time to enhance the learning in the language and literacy domain and to improve the classroom climate and peer relationships, showing the comprehensiveness of this dialogic interactive environment.

Finally, children gained self-esteem and empowerment. DLGs have demonstrated gains in selfesteem and empowerment among participants in diverse contexts (Aubert, 2015; García et al., 2017).

Self-esteem is viewed as an evaluative judgment reflecting the individual's sense of self-worth (Cosden et al., 1999), so it has a strong connection with empowerment. In this case, this improvement is especially relevant since children with special educational needs usually have negative self-perception (Kloomok and Cosden, 1994; Alesi et al., 2012). Nevertheless, peer relationships are associated with higher self-esteem in children with disabilities (Renick and Harter, 1989; Kloomok and Cosden, 1994). Thus, maintaining quality interactions between students ends in an increment of self-esteem. DLGs achieve this gain in security and empowerment by generating good interactions between children and creating meaning (Aubert, 2015).

However, this case study presents some limitations. One of the limitations is inherent in being a single case study, such as having data from only one school or not having a control group to compare its impact. This research is an exploratory study that analyzes a specific educational practice among children with disabilities, so sample chosen was by convenience and no representative. Nonetheless, it demonstrates that it is possible to implement DLGs, based on dialogue and argumentation about classic works of literature, in a challenging context as is a special school. Based on this evidence more special schools can start implementing this practice, and new research could extend the analysis on the potential improvements achieved in these schools. In this regard, this research allowed identifying areas of improvement, which could be further analyzed. Finally, outcomes presented could have been biased because of the nature of the qualitative data collection techniques. In this sense, carrying out only qualitative techniques could led to social desirability bias, as well as less concrete results. Nevertheless, the aim of this research is not to compare it with others but to provide qualitative elements of practice for others to replicate. Further research using quantitative data and standardized quantitative instruments could provide more accurate evidence on the magnitude of these improvements. We argue that more research is necessary to analyse the impact of DLGs on students with disabilities both in the special education context and in inclusive environments, and enhance their transferability to new schools, to improve the educational experience and achievement as these students deserve.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Board of the Community of Researchers on Excellence for All (CREA). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

RV-C conceptualized the research. AF-V did the literature review and drafted the article. RV-C, PM, and IT reviewed and edited the manuscript. All authors have read and agreed to the submitted version of the manuscript.

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# How Inclusive Interactive Learning Environments Benefit Students Without Special Needs

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Growing evidence in recent years has led to an agreement on the importance and benefits that inclusive education has for students with special educational needs (SEN). However, the extension and universalization of an inclusive approach will also be enhanced with more evidence on the benefits that inclusion has for all students, including those without SEN. Based on the existing knowledge that learning interactions among diverse students are a key component of educational inclusion, the aim of this study is to identify the impact on students without SEN of being educated with students with SEN in shared, inclusive, interactive learning environments. Data were collected in three schools using a qualitative approach with a communicative orientation. Semistructured interviews were held with teachers as well as community volunteers participating in the schools. Further, focus groups were conducted with students and teachers. The results show that students without SEN benefit from participating in interactive learning activities with peers with SEN in different ways: (1) they learn to respect others, accept differences, and acknowledge different abilities, thereby creating opportunities for new friendships to develop; (2) they learn about abilities related to helping others participate and learn, to be patient and to gain the satisfaction in helping others learn and behave better; and (3) they benefit from the cognitive effort required to explain themselves and from the contributions of peers with SEN from which they can learn.

**Keywords: interaction, learning, inclusive education, students without special needs, learning environments, interactive groups, dialogic literary gatherings**

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## INTRODUCTION

The extension and universalization of an inclusive approach is a goal and a challenge for educational systems around the globe, as reflected in the United Nations' Sustainable Development Goals. Inclusive education means that all children learn together in schools that recognize and respond to the diverse needs of students, ensure quality education for all through appropriate curricula, organization, teaching strategies and resource use (UNESCO, 1994), and overcome the barriers to the presence, participation, and achievement of all students in general education classes (UNESCO, 2017). However, the original idea of inclusive education focuses on the education of a particular group of students—those with special educational needs (SEN)—to overcome practices of special education that have traditionally segregated students based on a medical model of disability

(Kurth et al., 2018). In this regard, inclusive education is generally acknowledged as the venue to enhance both the learning and social development of students with disabilities and other SEN, and therefore the way to fulfill their right to shared quality education in mainstream settings (United Nations, 2007). Consequently, discourse, arguments and research about inclusive education have often centered on the collective of students with SEN, and growing evidence has led to an agreement on the benefits that inclusive education has for these students, as found in reviews of recent research. For instance, the meta-analysis conducted by Oh-Young and Filler (2015) compared the outcomes of students with disabilities between placement settings and found that students in more integrated settings outperformed those in more segregated settings, both in the academic and social domains. The recent review of research by Kefallinou et al. (2020) concluded that there is plenty of research that justifies inclusion both from the educational and the social angles, due to the proven positive effects of educational inclusion on the academic outcomes of students with disabilities, and its positive impact on the subsequent social inclusion of people with disabilities in terms of further academic opportunities and qualifications, access to employment and developing personal relationships within the community.

Because inclusive education is about quality education for all, it is important to look at the potential benefits of inclusion for all students. In this regard, the fact that most of the research on inclusive education concerns categories of learners, particularly those with disabilities and other SENs, may cause us to overlook the impacts on other collectives of learners and may not be consistent with a definition of inclusive education geared toward all learners (Messiou, 2017). The objective of extending and universalizing an inclusive approach would benefit from evidence showing that it is positive—or at least not negative—for all students, including those without SEN.

For this reason, some studies have considered the impact of inclusion on students without special needs. Some of these studies have examined the development of students' attitudes, empathy and understanding of others. For instance, Smith and Williams (2001) showed that children without disabilities can be sensitive to the consequences of different types of impairments and generally have a positive perception of the capabilities of children with different kinds of impairments, which has positive implications for inclusion. Tafa and Manolitsis (2003) found that typically developing children educated in inclusive programs with children with SEN have increased respect, awareness, and acceptance of their peers' needs, develop less prejudices, and learn to be more helpful and supportive toward people with disabilities, according to parents' perspectives. This is consistent with other studies that concluded that inclusive education can play a role in challenging disabling attitudes by transforming non-disabled children's attitudes toward people with disabilities, therefore contributing to building a more inclusive society (Beckett, 2009). Grütter et al. (2017) analyzed the role of friendship between students with and without SEN and found that opportunities to forge close friendships between students with and without SEN enhance the positive attitudes of students without SEN toward students with SEN; this suggests that inclusive education may benefit from educational practices that actively promote friendship among students with and without SEN. Research has also studied the impact of inclusion on the development of cognitive abilities such as theory of mind (ToM), finding that children without SEN educated in inclusive classes with children with SEN develop a better ToM than their peers educated in traditional classes (Smogorzewska et al., 2020). According to Smogorzewska et al. (2020), a greater understanding of diversity, tolerance, acceptance of others and the use of prosocial behaviors in inclusive classrooms seem to promote ToM development.

Other studies have explored the impact on academic learning. Although some studies find that the presence of SEN students in regular classes is related to slightly lower performance of their peers without SEN (e.g., Hienonen et al., 2018), the conclusions of different reviews of research suggest the contrary. Ruijs and Peetsma (2009) revealed that inclusive education has neutral to positive effects for both students with and without SEN compared to non-inclusive education, especially regarding academic achievement. Focusing on the impacts of students without SEN, Kalambouka et al. (2007) showed no evidence of adverse effects of the inclusion of children with SEN, indicating that most findings involved positive or neutral effects on children without SEN. Similarly, Szumski, Smogorzewska and Karwowski's meta-analysis (2017) underscored a significant and positive—although weak—effect of the presence of students with SEN on the academic achievement of students without SEN. In none of the examined conditions were significant negative impacts found; in contrast, they were at worst neutral and positive in many cases. More recently, Kefallinou et al. (2020) signaled in their review that the inclusion of students with disabilities did not negatively affect the learning outcomes or the social development of their peers without disabilities, and there was a small—but positive—impact on the academic achievement of students without SEN. In addition, the benefits of inclusive education were connected to effective classroom practices characterized by learning interactions, such as cooperative and dialogic learning, peer tutoring, or collaborative problem-solving, which are beneficial for all learners in the classroom (Kefallinou et al., 2020). As argued in these studies, the results support the idea that inclusive education is not against the right of the majority of students to receive quality education, as not only students with SEN, but also those without SEN, may benefit from being educated together.

One of the key characteristics of inclusive educational environments is the opportunity to have rich and diverse learning interactions among heterogeneous students. The role of social interactions in children's learning and development has long been investigated by psychologists of education since the onset of the sociocultural theory of learning (Vygotsky, 1978; Bruner, 1996). Bruner's concept of communities of mutual learners helps us to understand the benefits of learning interactions between peers in contexts of diversity. According to Bruner (1996), group work in schools in the form of communities of mutual learners allows for an equilibrium between individuality and group effectiveness, ensuring that everyone progresses according to their ability and giving all children the opportunity "to enter the culture with awareness of what it is about and what one does to cope with it as

a participant" (p. 82). Interactive learning spaces, especially when they are mediated by dialogue, permit collective thinking and learning, enhance academic achievement, social skills, and social cohesion, and are especially beneficial for vulnerable groups of students (Fernández-Villardón et al., 2020; García-Carrión et al., 2020). Hence, the objectives of inclusive education would be better attained when such interactive and dialogic learning environments are promoted.

Interactive groups (IGs) and dialogic literary gatherings (DLGs) are specific interactive learning environments that take into account the value of diversity, interaction, and dialogue for learning. Both IGs and DLGs have been identified as successful educational actions (SEAs) that foster successful educational outcomes in diverse student populations (Flecha, 2015). In IGs, classrooms are arranged into small groups of heterogeneous students (e.g., 4–5 students each) who work on instrumental learning activities (especially literacy and math) proposed by the teacher using interaction and dialogue to help each other solve the activity, while a volunteer from the community (e.g., a family member, a former student, or a neighbor) supports each group, dynamizing students' interactions and mutual help. IGs boost students' academic learning and—due to the solidary bases of the IG, where students are prompted to help each other—improve the school climate; new friendships are also encouraged, as well as multicultural coexistence (García-Carrión and Díez-Palomar, 2015; Valero et al., 2018; Zubiri-Esnaola et al., 2020).

Dialogic literary gatherings consist of debating books from classical literature that students have previously read. After agreeing to the chapters that will be discussed at the next gathering, students read the text individually or with help from their family members, a teacher, or a peer, and select a piece of text they found relevant to share at the gatherings. There, they discuss and reflect on the text based on the principles of dialogic learning (Flecha, 2000). DLGs contribute not only to a better understanding of the text, but also enhance students' reading, reasoning, and argumentative abilities, and deepen understanding of others' perspectives and emotional well-being (García-Carrión, 2015; Garcia et al., 2018; Foncillas et al., 2020).

Both DLGs and IGs have been implemented with students with SEN included in mainstream classrooms, and shared with students without SEN. The interactive learning environments created through IGs and DLGs improve the learning and relationships of students with SEN; therefore IGs and DLGs encompass inclusive learning environments (Duque et al., 2020). Less is known about the impact of IGs and DLGs on students without SEN when they are shared with students with SEN. The aim of this study is to identify impacts for students without SEN of being educated with students with SEN in shared, inclusive, interactive learning environments such as IGs and DLGs.

# MATERIALS AND METHODS

This research is a qualitative study of schools that implement interactive learning environments—specifically interactive groups (IGs) and dialogic literary gatherings (DLGs)—with students with and without special needs. The study was conducted within the framework of a broader competitive research project titled "Interactive learning environments for the inclusion of students with and without disabilities: Improving learning, development and relationships" (INTER-ACT). More specifically, this study is part of the project's second objective: "To analyze in depth successful cases of schools implementing IGs and DLGs with students with disabilities to identify the best conditions to increase the impact on the improvement of learning, development, and relationships."

The specific objectives of this study were: (1) to determine whether participating in IGs and DLGs with students with SEN has an impact in terms of learning and/or development for children without SEN; (2) to identify types of impacts on students without SEN as a result of participating in IGs and DLGs with students with SEN; and (3) to understand how these impacts are related to being educated with students with SEN in shared, inclusive, interactive learning environments such as IGs and DLGs.

## Sample

Data from the three mainstream educational centers that participated in the second objective of the INTER-ACT project were considered. These centers were one primary school, one primary and secondary school, and one secondary school that educate students with and without special needs in shared learning environments, and which have already implemented interactive learning environments (IGs and DLGs) in the framework of an inclusive project. The schools were selected for their participation in the INTER-ACT project according to the following criteria: (a) schools that had been organizing classrooms in IGs and/or DLGs for at least two academic years; (b) these schools serve a higher percentage of students with disabilities than the average in the region; (c) these schools implement IGs and DLGs inclusively, involving students with SEN with their peers who do not have SEN; and (d) these schools had observed improvements in their students, recorded through quantitative or qualitative evidence, since they have implemented IGs and/or DLGs.

## Data Collection

Qualitative data were collected in each school with the aim of understanding, from the participants' experiences, how the interactive learning environments that were being facilitated with students with and without SEN contributed to students' cognitive and social development. The data collection techniques used were semistructured interviews with teachers and community volunteers participating in the schools, and focus groups with students and teachers (see **Table 1**). For the purpose of data collection, students with SEN were considered those with an official report that entailed learning difficulties in the school context. Conversely, students without SEN were those without an official report and who did not present particular learning difficulties in the school context. Purposeful sampling was employed to select participants who could be especially knowledgeable about the object of study. In all cases, the participants selection was agreed with the school principals to select those participants that could be more representative.

All data collection techniques were carried out on the school premises for the participant convenience. Interviews with teachers lasted between 60 and 75 min. The duration of the focus groups was approximately 40 min for teachers and between 30 and 45 min for students. In the case of volunteers, interviews lasted approximately 20 min.

Participant teachers in the interviews and in the focus groups were selected based on their experience of implementing IGs and/or DLGs with students with and without SEN. All of them had been implementing IGs and/or DLGs and all of them had—at the moment of the data collection or in the past—students with SEN participating in IGs and/or DLGs together with students without SEN.

Two interviews with teachers were conducted, one in school 1 and one in school 3. They were female teachers in both cases. The teacher interviewed at school 1 was the school principal and a language teacher who implemented DLGs with the two sixth-grade classes, which contained five students with SEN. She had more than 10 years of experience facilitating IGs and DLGs. The teacher interviewed in school 3 taught the third grade of compulsory secondary education. In that class, eight students had SEN.

Two focus groups were held with teachers, one in school 1 and one in school 2. In school 1, four female teachers participated. One of them was a teacher in the first and second grades of primary education, another was a teacher in the third and fourth grades, and two more were teachers in the fifth and sixth grades. They had between 4 and 12 years of experience in the school implementing IGs and/or DLGs. In school 2, three female teachers participated. One of them was a teacher of first and second grade, another was a special education teacher, and the third was a teacher of second grade of compulsory secondary education and educational advisor. They had between 1 and 10 years of experience in the school implementing IGs and/or DLGs.

Three focus groups were held with students, two in school 1 and one in school 3. In school 1, one focus group was conducted with each of the two sixth-grade classes. They have been implementing IGs since second grade and DLGs since third grade. In these classes, cases of special needs included hearing impairment and intellectual disability (one boy), intellectual disability (one boy), dyslexia (two boys and one girl) and ADHD (one boy). Five students participated in the first focus group (three boys and two girls), and seven participated in the second focus group (five girls and two boys). In the first group, there was one girl and one boy with SEN, and in the second group, there was one boy with SEN. In school 3, one focus group was conducted with two girls: one in second grade of compulsory secondary education, and one in third grade of compulsory secondary education. Both participated in IGs and DLGs. One of them had special needs (a syndrome entailing visual and hearing impairment, as well as an intellectual disability) and participated in IGs and DLGs with her classmates without special needs, while the other student did not have SEN and had a classmate with autism who participated in IGs and DLGs along with the rest of the class.

Finally, two interviews were conducted in school 2 with two male volunteers who participated in IGs in classes containing students with and without SEN. One of them had taken part in IGs in preprimary and primary education classes for 2 years, while the other had participated in IGs for 3 years in fifth and sixth grades of primary education and in third grade of compulsory secondary education.

Both the interviews and the focus groups included questions regarding, on the one hand, the characteristics of the implementation of the interactive learning environments and, on the other, the impacts on the participating students. The data collection was conducted using a communicative orientation that involves creating the conditions for egalitarian dialogue between researchers and the end-users of research to reach a shared interpretation of the reality being studied (Gómez et al., 2019). Sample questions for teachers and volunteers included: "How would you describe the interactions between students with SEN and their peers without SEN when they participate in IGs and/or DLGs?" "Have these interactions between students changed over time?" "Have you observed an impact on students that could be related to such interactions?" Sample questions for students were: "How do you work in IGs and DLGs with your classmates?," "When you or some of your classmates have some difficulties when participating in IGs or DLGs, what do you do?," "Have you improved on something since you have taken part in IGs and DLGs?," "And your classmates?," "Can you give an example?"

Before data collection, school boards and individual participants were informed about the aims of the research.

**TABLE 1 |** Data collection techniques implemented in each school.

| | School 1 | School 2 | School 3 | Total |
|---|---|---|---|---|
| Interviews with teachers | 1 Interview (woman) | – | 1 Interview (woman) | 2 Interviews |
| Focus groups with teachers | 1 FG (4 women) | 1 FG (3 women) | – | 2 FG |
| Focus groups with students | 2 FG with sixth grade students: Group 1 = 3 boys + 2 girls (1 girl and 1 boy with SEN). Group 2 = 5 girls + 2 boys (1 boy with SEN). | – | 1 FG with 2 girls: 1 student of second grade of secondary education with a classmate with SEN. 1 student of third grade of secondary education with SEN. | 3 FG |
| Interviews with community volunteers | – | 2 Interviews (men) | – | 2 Interviews |

All participants were informed that their participation was voluntary and that the data would be recorded anonymously. Informed consent was obtained from the participant teachers and community volunteers and from the parents or guardians of the minors. To ensure ethical integrity of the study, the research responded to the Universal Declaration of Human Rights adopted by UNESCO, the UN Convention on the Rights of the Child, and the Charter of Fundamental Rights of the EU (2000/C 364/01) regarding scientific and ethical procedures, the European Code of Conduct for Research Integrity (ALLEA, 2017), the Ethics Review Procedure established by the European Commission (2013) for EU research, and the Data Protection Directive 95/46/EC. The study was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA).

## Data Analysis

Interviews and focus groups were audio recorded and transcribed verbatim. Transcriptions were subsequently revised to identify the excerpts that referred to interactions between students with and without SEN that could indicate an impact on students without SEN. A second reading was conducted to identify recurrent themes that emerged from the excerpts, and three main themes were identified that led to the inductive creation of the three categories of analysis: (1) impact on students' attitudes, (2) impact on students' social skills, and (3) impact on students' academic learning and cognitive development (see **Table 2**). One researcher coded the excerpts according to the categories created; some excerpts were assigned to more than one category. Subsequently, a second researcher revised the coded excerpts, taking into account the definition of the categories. The second researcher agreed on the coding and proposed the assignment of some of the citations to additional categories. The final coding was agreed upon by both researchers.

# RESULTS

The results of our analysis allowed us to identify a series of impacts for students without SEN of sharing interactive learning environments with students with SEN. According to the categories of analysis, our findings show that participating together in learning activities, mediated by interaction and dialogue, allows students without SEN to: (1) build understanding and respectful attitudes toward diversity; (2) learn about social abilities related to facilitating others' learning; and (3) enhance opportunities for academic learning and cognitive development as a result of engaging in learning together, exchanging questions and knowledge. As seen in **Table 2**, the category with a higher number of quotes is (1) impact on students' attitudes, with more than half of the quotes referring to such an impact, followed by (2) impact on students' social skills, and finally by (3) impact on students' academic learning and cognitive development.

## Building Positive Attitudes Toward Diversity in Interactive Learning Environments Shared With Peers With Special Needs

Category 1 included evidence regarding the attitudes of students without SEN toward students with SEN when they learned together in IGs and/or DLGs. Participants in the three schools, including teachers, students and volunteers, provided evidence in this regard.

When students without SEN share interactive learning environments with students with SEN, they have unique opportunities to learn firsthand about diversity. They share their learning time and space with peers of the same age, who often need special attention because of their individual characteristics, which differ to a greater or lesser extent and in different ways from those of most students. This is a necessary first step to develop positive attitudes on diversity and educational and social inclusion, which cannot be completely achieved when education on respect for diversity, valuing its potential, and educational and social inclusion is not based on the daily experiences of sharing these learning opportunities with individuals with SEN, who have a face and a name. However, interactive learning environments allow students to share not only learning space and time, but also interactions and dialogue around shared learning activities (such as solving a math problem or sharing a personal reflection on an excerpt from a book), which create opportunities to learn about diversity and its value based on the personal experiences of those individuals with whom the activity is shared. In this way, students can learn about diversity with those children who have not only a name and a face but also a personality, preferences, and struggles.

Ana, a secondary education student without SEN who has a classmate with autism spectrum disorder, Jose, explained that getting to know him in the school allowed her to learn about diversity in a way that she could not have done before:

> Until I first entered this school last year, I had no idea what the communication and language classroom was, I had no idea that there were people with ASD who could be in schools like this, I was not aware at all of this. However, when I arrived in this school, they put me in the class with Jose, and when I saw him, I said "wow" and I don't know, from that moment on, he transmitted something to me that made me feel that he was special and that I was going to help him in some way. In addition, as time went by, Jose turned my life around. (Student, school 3)

The interactive learning environment fostered in the classroom, where students learn in dialogue with others, is, according to teachers, what generates the opportunity to acknowledge diversity, while students learn that it is part of human diversity and normalize it:

> I believe that it favors inclusion, for sure, because they talk constantly, leaving the classic model of children sitting alone, individually. So yes, they are all integrated. As she said, they always look the same to each other; they do know

that one has more difficulties in one thing or another, but they all treat each other equally. (Teachers' focus group, school 1)

Teachers in the different schools reported a change in attitudes in their students without SEN, who in the interactive learning environments learned about difference, learned to accept it, and

**TABLE 2 |** Categories of analysis.

| Category | Definition | Example | Number of quotes | School | | | Participants | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | T | S | V |
| 1. Impact on students' attitudes | Evidence regarding the attitudes of students without SEN toward students with SEN, when they learn together in IGs and/or DLGs. | We have built trust with that person for him to understand us and for us to be able to help him even more, so that he overcomes it and he can do it the same as the others do, because no one is better than another one, (. . .) and that he understands that we support him and we can help him for whatever it is necessary. (Student, school 1) | 35 (55%) | 17 | 7 | 11 | 26 | 8 | 1 |
| 2. Impact on students' social skills | Evidence regarding an impact on the social abilities of students without SEN as a result of learning together with students with SEN in IGs and/or DLGs. | For instance, the other day something very good happened in class, they were writing (. . .) and one girl already knew that the classmate in front of her was not going to do it well, and said to him—she called him by his name and said—"Remember, ok? Don't forget that" (. . .) And it made me smile, because she is a very individualistic girl, but in that moment, she said that spontaneously to take care of him, and I said, ok, good, we have improved. (Teacher, school 1) | 27 (42%) | 13 | 11 | 3 | 14 | 9 | 4 |
| 3. Impact on students' academic learning and cognitive development | Evidence regarding the opportunities for the academic learning and cognitive development of students without SEN when they learn together with students with SEN in IGs and/or DLGs. | And J. explained the meaning of that expression. In addition, it was quite a shock for everyone, and for me, because J., with the difficulties he has in speech, reading, comprehension, everything, was the one who gave the correct explanation; it was quite a shock. (Teacher, school 1) | 12 (19%) | 11 | 1 | 0 | 9 | 2 | 1 |
| TOTAL | | | 64 | 41 | 17 | 14 | 43 | 16 | 5 |

*T, teachers; S, students; V, volunteers.*

to be more respectful about it. Teachers referred, on the one hand, to children's acknowledgement of individual differences in their peers' learning process, which became evident as learning activities were shared among the class, either in small interactive groups or in dialogic literary gatherings with the entire class. Students understood that children could learn at different paces and that they can need different kinds of support or adapted materials, but this does not mean that they cannot share the experience of learning; as one teacher explained: "a dynamic of respect and understanding that not everyone does the same has been created" (Teacher, school 1). Importantly, being aware of these differences does not turn into a stigmatization of students with SEN; in contrast, knowing them allows their peers to learn more about their weaknesses, and to better understand their performance in class. The example of shared reading activities illustrates this impact on students' attitudes:

> And the other students, for me this is important, they respect their reading rhythm, they respect it, they know that, depending on which children, they go slowly because they have difficulties, but nobody says so, because we all know that they have difficulties and that they go at their own pace and, if they read it slowly, they understand it well. (Teacher, school 1)

Special needs can be related to areas of curricular learning, but can also be expressed in other ways. Teachers' experience shows that in interactive learning environments, children learn to be more understanding about other types of difficulties, such as behavioral problems that their classmates may exhibit. Although it may sometimes be annoying, they develop the understanding that these children do not have, at that moment, the ability to behave better and learn to accept it, while teachers work to improve children's ability to control their behavior. This is the case of what this teacher explained:

> There are days when these children—I'm thinking of another one who hasn't taken the medication—then, he comes in very nervous, he doesn't stop making noises, he doesn't shut up. Obviously, holding the gatherings in these conditions is very hard, but they are there, and the group already understand that this child acts this way because he has no other way to do it. Therefore, I think that they have all learned to accept the difference. (Teacher, school 1)

Overall, these episodes show the opportunities created for children without SEN to better understand children with SEN, to be more sensitive to others' needs, and to be more empathetic. From the perspective of teachers, interactive learning environments such as DLGs entail the learning of values that facilitate the transformation of attitudes. These values emerge from the reading of classic works of literature, which is characteristic of a DLG, where topics such as love, friendship, truth, loyalty, and courage become part of the debate:

> In the gatherings many values arise, students work a lot on values and then have a more complete experience, and they share, and they make. They feel empathy for each other. (.) in the classroom it is very difficult for them to put themselves in the other's place (.) but in the gatherings it isn't, empathy does come out. (Teacher, school 1)

This learning of values and empathy is also related to the fact that in DLGs, children often link the episodes of reading to episodes about their own lives or other realities they know of. This is how children expressed this idea in their own way:

> Because when we give our opinion in the gatherings, sometimes he explains something of his life, and so when he says it, we know slightly more about him, and he says more and more things about his life, and so we get to know each other better and become [better] friends, because in this way we get to know each other much more easily. (Student, school 1)

In this process of knowing their classmates with SEN better as a result of sharing interactive learning environments, children also learn that each individual has different abilities, that all of them may need help at some point, and can help others as well, and that the best learning outcomes are obtained when they share these abilities and help each other. IGs facilitate this process, as in IGs all group members are expected to ensure that all other members understand the activity and complete it; therefore, everyone shares the knowledge and abilities they have and that can contribute to the group work. Teachers in one of the schools reflected on this idea, which also contributed to the change of perceptions and attitudes mentioned, as typically developing students realize that students with SEN have challenges but also have abilities: "In those moments they have truly helped each other. Then, they have realized that it is not always the same people who have to help, but they, who have a challenge, are good at it." (Teachers' focus group, school 1)

This acknowledgement of diversity (including difficulties, but also possibilities and diverse abilities), which is due to sharing interactive learning environments, facilitates overcoming prejudices. Students with SEN start to be seen not only as those with poor learning, that always struggle and usually need help, but also as students who are capable of learning and making progress, as one teacher noted:

> Academically brilliant boys and girls, who perhaps in third grade looked at these classmates and even knowing them since they were in preschool [3 or 4 years old] thought, "Well, this is clear, they don't know anything," have made a positive change because they see these children as classmates with the possibility of learning. (Teacher, school 1)

As shown in this quote from a teacher's interview, it was not the fact of being educated in the same classroom with SEN students that shaped a realistic perception of their difficulties and capabilities (since both SEN and typically developing students had been educated together for years). Rather the opportunity to learn in interactions with SEN students allowed students without SEN to transform their perceptions and attitudes. Along the same lines, in view of Ana, sharing learning opportunities with her

classmate Jose entailed learning that everyone has both difficulties and abilities, and that these can be overcome:

> Jose has taught me that many times people have barriers, because we all have barriers, whether it is at the time of learning, at the time of adults finding a job. Whatever, anything, but there is always a way to overcome them, always, and Jose has taught me many things. In fact, I think he has taught me more than I have taught him. (Student, school 3)

This involved shifting the focus from difficulties to possibilities and transforming learning expectations toward them. Importantly, the peer group learned that students with SEN were not only able to learn, but also contributed to the learning of others, which reinforces this change in expectations and the overcoming of prejudices. This might help typically developing students learn to value people not only based on their more evident characteristics—as may be the case with SEN in the school context—but also to pay attention to other traits (which are sometimes hidden) that can give a broader picture of a person and allow for identifying other enriching features. According to teachers, interactive learning environments such as IGs and DLGs permit this to happen:

> And from that moment on, I think, that's when we all realized that children like Javi can participate by making very good contributions, and that girls like Laura don't know everything. I think that this was a very important moment. (Teacher, school 1)

Further, this greater knowledge of peers with SEN and the development of respect for diversity has led in some cases to the blossoming of new friendships. Ana talked about her special relationship with Jose as something that makes going to school more meaningful for her: "And one of the reasons why I love coming to school is to have Jose's smile there every morning (.) and it's something I wouldn't change for anything in the world" (Student, school 3). Blanca, a girl with SEN in the same secondary school, explained something similar in terms of when she thinks of her classmate and friend Jaume:

> Like Ana said, she is very happy with Jose. I am exactly the same with Jaume (.) I am very happy with him and I am happy to have him as a friend, and he is special and very important to me. (Student, school 3)

The building of these friendships not only has had an impact within the school, but has also transferred and expanded the benefits of interactions between students with and without disabilities to new contexts outside school premises and across time, as a teacher in that school explained:

> [His] friendship within the school [was] prolonged on weekends (.) He has come to meet [his] friends of the classroom to go out to dinner 1 day, to see a movie and that is very interesting (.) I think the fact of having worked in groups has facilitated doing things, not only in his group of six, because these groups have been changing more or less. (Teacher, school 3)

## Learning Social Skills Related to Helping Others Participate and Learn

Category 2 included evidence regarding an impact on the social abilities of students without SEN as a result of learning together with students with SEN in IGs and/or DLGs. Participants in the three schools, including teachers, students and volunteers, offered evidence in this regard.

In addition to the transformation of thoughts, attitudes and the acknowledgment of others' abilities and difficulties, engaging in learning interactions with peers with SEN helps to develop a series of social skills. Children acquire these skills because they are necessary to interact with their classmates in IGs and DLGs, specially with those with SEN. These interactive learning environments pose this demand, and these skills become part of the repertoire of abilities that children can use in multiple contexts and with diverse people. First, in interactive learning environments such as IGs and DLGs, children are expected to help each other; thus, children progressively get used to and develop this ability to support their peers, as well as receiving help when necessary. Both teachers and volunteers reflected on the way children learned about this ability through time: "Last year I did notice a change, yes (.) in the end they learn to collaborate, above all, to help each other, and that it goes well, and the work comes out, which is what we are looking for." (Volunteer, school 2)

With the practice of helping each other in interactive and diverse learning environments, children come to see that collaboration among all helps everyone's learning, as it allows for one to take advantage of the diverse abilities in the group; therefore, they become progressively more motivated and more proficient in this activity:

> Everyone has some skills; some have some skills for one thing and others have some skills and some abilities for another. After all, if there is a collaboration between all, it is where you have to reach an end, and they help each other to reach this end. (Teacher, school 2)

Once they acquire this ability, they use it to help anyone who needs it, including children with more learning difficulties; they normalize helping others and realize they can make a difference in the learning opportunities of the students with the most difficulties. Therefore, and as a volunteer explained, all students in her class were willing to help those who were more in need: "Yes, let's say, the whole group was dedicated to helping them" (Volunteer, school 2). Consequently, when they share learning activities with students who especially struggle with learning, they find the opportunity to strengthen this ability to help. Blanca explained something similar when not just one, but three classmates went to help her with the activity:

> For example, in History, we also do [interactive] groups. We were doing a mapping exercise and (.) I got lost a little bit, then I asked my classmate sitting next to me to help me and so on, then she came to help me, then two more came to help me, and I was happy because I did not make myself clear, I got nervous, I did not know how to do it, then (.) they came to help me

(.), and that is the best thing about being in a group. (Student, school 3)

Second, in this attempt to help their peers with SEN and facilitate their participation in interactive learning environments, they learn to adjust their interactions to the particular needs of each child. For instance, they learn to be patient and to give the necessary time when their peers have a slower learning pace, which is an evidence of the empathy developed:

> In the gatherings they have also learned to give time. For example, a girl I have in class has a hard time explaining herself, but in the end, she gets it out. Therefore, they have learned to be patient with her and not to stand up and let her talk. Then, in the end, they realize that she does, that she gets out, that she explains well. (Teacher, school 1)

In this regard, they learn to provide adjusted support, building on the abilities they acknowledge in these peers, and try to find alternative ways so that these children can participate in the activity. This entails a metacognitive effort when they try to understand what these children know and how they can help them participate in the activity and progress in their learning.

> The atmosphere in the classroom, when there is a group with a child with SEN, the others, as they live it in their daily life, apart from understanding the difficulty he has and stay on their level, they also look for ways in which he can participate and get involved in some way in the activity. (Teacher, school 1)

This effort to facilitate the learning and participation of children with SEN becomes part of the class routine. so as the teachers explained, it unites the group around this shared purpose and the group members become more sensitive to the needs of their peers. This is also achieved thanks to the guidance that teachers and volunteers provide in order to help typically developing students adjust the support they offer to their SEN peers, and also to encourage typically developing students to help their SEN peers while avoiding overprotection:

> In other words, their classmates, or at least what I experience from my class, they are very supportive and, as Maria said, they are very sensitive on this subject. In this case, I have two students [with SEN], and they take care of them, not too much, because they must be reminded to let them think, too. However, they do take them very much into account in regard to working in [interactive] groups. They try to make sure they can participate like everyone else. Of course, within their possibilities. (Teacher, school 1)

As a result, the situations created not only turn into a higher ability to help others, but also in the satisfaction of seeing others learn better due to their help, which reinforces this behavior. Teachers noted this impact on children: "They help each other and it is going very well; and they love it, it is something they like very much" (Teacher, school 2), as well as students themselves: "And, when you help him and you see that he understood it, you feel satisfied" (Student, school 2). "When I help Joan or even when Joan helps me more, I feel more fulfilled with myself, happier" (Student, school 3). Such rewarding experiences motivates them to continue participating in these activities and to help others, which benefits everyone's learning.

## Enhancing the Opportunities for Academic Learning and Cognitive Development

Category 3 included evidence regarding opportunities for the academic learning and cognitive development of students without SEN when they learned together with students with SEN in IGs and/or DLGs. Participants in school 1 and school 2, including teachers, students and volunteers, mentioned this type of impact.

Sharing learning activities with students with SEN in interactive learning environments triggers an additional cognitive effort for typically developing children when they try to explain themselves to their peers with SEN. It entails, on the one hand, putting oneself in the other's shoes, trying to understand his/her difficulties and thinking of how to help him/her overcome these difficulties, thus gaining from the cognitive effort made and reinforcing their learning. On the other hand, it also entails discovering one's own difficulties when trying to make oneself be understood and to do one's best to achieve it. In this regard, such situations allow students who do not usually have learning challenges to experience them, and underscore the need to make an effort to achieve their objective, which contributes to being more empathetic and understanding of their peers with SEN and, sometimes, humbler regarding their own abilities, as one volunteer explained:

> They do this effort of trying to make them be understood by the other, and this is very interesting, as the know-it-all can see his/her own limitations with respect to the others. Therefore, it demands a much greater effort from oneself than usual. (Volunteer, school 2)

In addition, in interactive learning environments, students without SEN can learn from the explanations and contributions of children with SEN. IGs and DLGs are characterized by promoting a framework of open and egalitarian dialogue where all contributions are valued based on validity claims (i.e., the value of the contribution's content, regardless of who made the contribution, and in this case, regardless of whether it is a student with or without SEN). Learning from students with SEN can occur both in IGs and in DLGs when these students have a good understanding of the concepts they are working on. As noted by one teacher, these episodes are opportunities for the entire group to learn:

> Children with many special difficulties, have been the ones who have given the clarification, the definition, the explanation for the rest of the group to understand, and this has created a situation, which is not seen, but it is noticed, of improvement for all. (Teacher, school 1)

In DLGs, it also occurs when children with SEN share the paragraph or idea they selected to bring to the gathering, or when they raise doubts about the meaning of particular words that other students had not paid attention to—although they might not understand it either—and this opens up a debate on the

meaning of that word or on the ideas of that paragraph that may have not existed without the participation of these children. In the following quote from a teacher, we find first a reference to those situations when a child with SEN does not understand something and their peers explain it to him/her, provoking the additional cognitive effort of trying to make something be understood. Next, we find the reference to these other situations when children with SEN contribute to the group bringing their questions, doubts, and interventions to the gathering, opening a learning opportunity for all:

> If they do not understand it, their classmates explain the meaning to them. Then, when we do this rereading of the chapter or the pages, other vocabulary words often appear that, perhaps nobody had chosen or they do not know the meaning of, and then another debate starts about knowing what it means. Or someone raises their hand and says, "I had not chosen this because when I read it perhaps it did not catch my attention, but now when I reread the chapter, I want to comment on it," and right after it is commented on. This is done both by children with SEN and by the rest of the class, regardless of their level of ability and everything else. A climate is created that is similar to magic. (Teacher, school 1)

According to the participants' experiences, interactive learning environments shared between students with and without SEN create the opportunity for all to acknowledge that everyone has abilities and difficulties. Children with SEN can surprise others with their questions, responses, and contributions, generating new opportunities for learning, and everyone can learn that children without SEN do not always know everything. As one teacher explained based on her experience over the years, the fact that children with SEN share interactive learning environments with their peers without SEN has not only benefitted these SEN children, but also the dynamics of the classroom, as it is enriched with diversity, and therefore becomes a benefit for all:

> The fact that these children are in the group—and I can talk about it already for the past 4 years—has improved the dynamics of the gatherings. I think it has been beneficial for everyone, and I am sure it has, because they make interventions that even they themselves are often surprised to have made, and their peers have seen this. (Teacher, school 1)

## DISCUSSION

Interactive groups and DLGs are interactive learning environments that have already been demonstrated to be inclusive and lead to positive academic and social impacts for students with SEN (Duque et al., 2020). The study presented here is the first to analyze the potential impacts of IGs and DLGs on students without SEN when they share these interactive learning environments with students with SEN. The results of our study show that students without SEN can benefit from participating in interactive learning environments (such as IGs and DLGs) with peers with SEN in at least three different ways: (1) building positive attitudes as they learn to respect others, accept differences, and acknowledge different abilities, creating opportunities for new friendships; (2) enhancing their social skills, as they learn about abilities related to helping others participate and learn, to be patient, and gain satisfaction from helping others learn; and (3) producing opportunities to enhance academic learning and foster cognitive development, as they gain from the cognitive effort needed to explain themselves and from the contributions of peers with SEN from which they can learn. Importantly, we did not find negative impacts for students without SEN or for those with SEN as a result of sharing these interactive learning environments. In contrast, all impacts identified—either at the attitudinal, social, or cognitive level—were positive for both groups of students.

In the cases studied, children without SEN developed positive attitudes toward diversity in IGs and DLGs. This is in the line of previous research which found that inclusive educational environments are related to more positive attitudes toward diversity, and especially more positive attitudes among typically developing peers toward children with disabilities or other SEN (Smith and Williams, 2001; Beckett, 2009). It is also consistent with research that found that solidarity can be learned in the school context and that it contributes to creating genuine attitudes of inclusion beyond the norms that benefit everyone (Hernández Arteaga et al., 2020).

Additionally, we found that students without SEN had the opportunity to develop social skills when they learned together with students with SEN in IGs and DLGs. Identifying particular types of classroom arrangements and learning dynamics (such as IGs and DLGs) that help one to cultivate such attitudes and skills is important not only for students with SEN—who are more respected, accepted, and integrated in their group of peers—but also beneficial for students without SEN. Attitudes of understanding diverse identities; the values of justice, equality, dignity and respect; cognitive skills (including the ability to adopt a multiperspective approach); social skills (such as empathy and conflict resolution), communication skills and aptitudes for interacting with diverse people, and the capacity to act collaboratively and responsibly have been highlighted as key competences necessary in the 21st century (UNESCO, 2014).

Moreover, we found a positive impact of the interactive learning environments created with IGs and DLGs on opportunities for the learning and cognitive development of children without SEN. This is in line with previous research comparing the learning outcomes of students without SEN, who are educated with students with SEN, and those who are not, which overall revealed no negative impacts on these students but, on the contrary, positive impacts or neutral in the worst cases (Kalambouka et al., 2007; Ruijs and Peetsma, 2009; Szumski et al., 2017; Kefallinou et al., 2020).

These findings should be taken cautiously. On the one hand, because the study is based on a reduced sample, the conclusions cannot be generalized. On the other hand, because data were collected in schools that were already implementing IGs and DLGs, a pre-post intervention comparison cannot be made to

ascertain the changes that occurred in students without SEN due to sharing IGs and DLGs with students with SEN. Finally, the qualitative nature of the data facilitates an understanding of the reality studied but does not allow for a precise assessment of the impacts on students without SEN. Subsequent research could expand the analysis to a broader sample and include an examination of quantitative data, especially of students' academic progress, since the third category of analysis (impact on students' academic learning and cognitive development) is the one for which we obtained the least evidence.

However, as the first study on this topic, this research enables an initial approximation based on the participants' experiences, which is consistent with previous knowledge and can be the basis for further investigation. First, it is in line with the results of previous research on DLGs and IGs which shows their impact on improving students' academic learning, a better understanding of others and positive coexistence (García-Carrión, 2015; García-Carrión and Díez-Palomar, 2015; Garcia et al., 2018; Valero et al., 2018; Foncillas et al., 2020; Zubiri-Esnaola et al., 2020). Our study suggests that sharing IGs and DLGs with students with SEN creates new conditions in which these improvements can be promoted. Second, it is aligned with past research on inclusion, which has associated the benefits of inclusive education with classroom practices characterized by interaction, dialogue, and collaboration (Kefallinou et al., 2020), all of which are characteristics of IGs and DLGs and could thus explain the benefits observed. Third, it is in line with theoretical contributions that refer to the relevant role of peer help and other forms of sharing learning interactions. When children try to explain learning content to their peers with SEN or try to help them solve a problem, they expand what Vygotsky called the zone of proximal development (1978) or what Bruner called scaffolding (1996). Both authors emphasized (stemming from the sociocultural theory of learning) the importance of interactions for children's learning and argued that these interactions could emerge not only from adults but also from more capable peers. Interactions allow for the creation of shared learning (Mercer and Littleton, 2007), and our data indicate that more capable peers can also benefit from these interactions and find opportunities to advance their learning and cognitive development. Indeed, research has suggested thinking of the zone of proximal development not in terms of knowledge transmission, but as an encounter of consciousness that mutually benefits the participants in the interaction (Roth and Radford, 2010).

Although further research is necessary to have a more precise description of the impact of IGs and DLGs for students without SEN when they share these learning environments with students with SEN, the evidence presented can contribute to the understanding that inclusive education not only benefits the most vulnerable students (such as students with disabilities and other SENs), but can also benefit all students when interactions and dialogue are promoted in contexts of diversity. Therefore, it is the right of everyone—with or without SEN—to be educated in inclusive, interactive learning environments, as they produce unique conditions for the academic and human development of all students.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

RF conceptualized the research. SM conducted the literature review, a preliminary analysis of the data, and a first draft of the manuscript. JM revised the data analysis. RF, AA, and JM revised the manuscript and provided feedback and corrections. SM revised the final version of the manuscript. All authors contributed to the article and approved the submitted version.

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SYSTEMATIC REVIEW
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# Impact of Interactive Learning Environments on Learning and Cognitive Development of Children With Special Educational Needs: A Literature Review

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Children with special educational needs (SEN) achieve lower educational levels than their peers without special needs, leading to a higher risk of social exclusion in the future. Inclusive education aims to promote learning and to benefit the cognitive development of these students, and numerous research studies have indicated that interactive environments benefit inclusion. However, it is necessary to know how these inclusive environments can positively impact the academic improvement and development of these students' cognitive skills. This article provides a review of the scientific literature from Web of Science, SCOPUS, ERIC, and PsychINFO to understand the impact of interactive environments on the academic learning and cognitive skill development of children with SEN. A total of 17 studies were selected. Those studies showed the effectiveness of interactive learning environments in promoting instrumental learning, increasing academic involvement, and improving the cognitive development of children with disabilities. Based on these results, it can be concluded that interaction-based interventions with an inclusive approach nurture the learning and cognitive development of students with SEN.

**Keywords: interaction, learning, development, learning environments, special educational needs**

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## INTRODUCTION

People with disabilities are among the most vulnerable groups in society. According to the World Health Organization (2011), students with special educational needs (SEN) achieve lower educational levels than non-disabled students, with lower retention rates and promotion within the educational systems. These low educational levels influence subsequent opportunities, as students with SEN are more likely to suffer high unemployment rates, poverty, and wage discrimination (O'Keefe, 2007; Fuchs, 2014). This scenario worsens in adverse situations such as the current COVID-19 pandemic, in which, as reported by the Report of Progress Toward the Sustainable Development Goals (United Nations, 2020), people with disabilities are affected disproportionately.

This reality must be understood in the context of the individual conditions of students with disabilities or other special needs and the educational provisions they receive. For this reason, the United Nations 2030 agenda aims to ensure inclusive and equitable education and promote lifelong learning opportunities for all. The concept of inclusive education has changed from being understood throughout history as a concept that emphasizes the importance of educating students with SEN in conventional classes to transforming schools to facilitate the acquisition of relevant learning by diverse students and to promote belonging to the group (Ainscow, 2005; Meijer, 2010; Porter, 2011; Hansen et al., 2020). Thus, inclusion is an initiative that leads to the improvement of educational systems and the promotion of more equitable societies (Arnesen et al., 2007; Graham and Slee, 2008; Vlachou et al., 2016).

However, inclusive education is one of the most important challenges facing schools today, especially for SEN students. The latest data available for Europe (European Agency for Special Needs Inclusive Education, 2020) show that the percentage of students in primary and lower secondary education with an official SEN decision who follow education in mainstream classes alongside their mainstream peers at least 80% of the school time is 64.97% (data from 29 countries). Although the percentage of students with SEN enrolled in mainstream schools is quite high and the European Agency reports a slight increase in students with SEN placed in mainstream schools, the same agency warns that this does not mean that these students are integrated into the mainstream classroom with the rest of the students. The European Agency also refers to the trend in all the countries studied of still placing the students with the most severe SEN in special education schools (European Agency for Special Needs Inclusive Education, 2018). The use of special education or support classrooms has traditionally been linked to the concept that the particular needs of students with SEN are best met in specially designed environments adapted to their abilities (Etscheidt, 2006). However, studies in education have shown that the segregation of groups of students, including students with SEN, decreases their opportunities for learning and interaction with society (Fitch, 2002; Bossaert et al., 2015). Separated education also causes negative consequences such as low expectations regarding one's own abilities and decreased self-confidence, academic performance, and self-esteem (Fisher et al., 2002; Fitch, 2002; Stepaniuk, 2019).

Conversely, several investigations have shown that the integration of students with SEN in conventional classes and schools is associated with positive effects on social and cognitive development (Peetsma and Van der Veen, 2015). Regarding academic learning, Dessemontet et al. (2012) conducted a comparative study of children with intellectual disabilities who attended a general education classroom or special schools and found better literacy skills in the first group. The same type of comparison was made by Laws et al. (2000) with children who had Down Syndrome, and in this case, those who participated in the mainstream setting achieved better learning results, including higher scores for vocabulary, grammar, and digit span measures.

The opportunities for interaction and dialogue with typically developing peers may play a role in obtaining positive achievements regarding learning promotion in mainstream contexts, which contribute to reducing inequalities and enhancing inclusion. The importance of dialogue and interaction in the development and learning of children with and without SEN were already stressed by Vygotsky (1978). Similarly, social and dialogical interactions are identified as an important contributing factor for language acquisition (Purcell-Gates et al., 2011), scientific reasoning (Howe, 2009), and mathematical understanding (Stein et al., 2015). For this reason, to promote an improvement in learning, it is important to consider the creation of dialogical learning environments in which classroom interactions and dialogues include all students (Berry and Englert, 2005; Ni Bhroin, 2013). Research such as that carried out by Berry and Englert (2005) and Rajala et al. (2012) shows the improvements produced in students' development and learning as a result of the increase in opportunities for students with and without SEN to participate more actively in classroom dynamics. Within the efforts to advance toward more inclusive education where learning interactions and dialogues are promoted among diverse students, schools as learning communities implement successful educational actions (SEAs) (Flecha, 2015) with students grouped according to heterogeneity criteria, avoiding any type of segregation and enhancing the richness of interactions (Díez-Palomar et al., 2020). Several studies have reiterated the effectiveness of SEAs in the creation of inclusive learning contexts, which benefit students with SEN (García-Carrión et al., 2018). In these investigations, quality interactions among diverse students have been found to be a relevant factor for achieving positive impacts.

Based on this existing knowledge, there is a need to further explore the potential of interactive learning environments to create enhanced opportunities for students with SEN concerning their academic learning and cognitive skills development. With the aim of delving deeper into the aspects that can help optimize the learning processes of pupils with SEN, this study aims to identify and systematize the existing contributions published in recent scientific literature on the impact of educational interventions based on dialogue and/or interaction on the academic improvement and development of children with SEN.

## MATERIALS AND METHODS

To conduct the systematic review presented in this study, the PRISMA (Moher et al., 2009) recommendations were taken into account. In this way, the systematic research of the literature was conducted based on the main databases in the fields of Psychology and Education: Web of Science (WoS), SCOPUS, ERIC, and PsychINFO. Search terms were selected based on four categories: effects, target, intervention, and population/context. Taking into account the research goal and the most common terms used in education in these fields, the following keywords per category were selected: (a) effects: "inclusion," "cognitive development," and "skills"; (b) target: "disabilities," "special needs," "special educational needs," and "teachers"; (c) intervention: "interaction," "interactive learning environment," "interactive learning," "dialogue," "dialogic

interaction," and "dialogic teaching and learning"; and (d) population/context : "children," "student," "classroom," "school," and "pupil." The literature published between 2005 and 2020 was searched, ensuring a broad and updated review of the published evidence on the subject.

The final search equation was defined using the Boolean connector "AND," and combinations of the keywords were made by securing a keyword for each of the four search categories. The search was filtered by scientific documents and by the area of knowledge of social science in WoS. A total of 544 searches were carried out, and 3,697 articles were identified.

## Inclusion Criteria and Exclusion Criteria

The selection of the articles was carried out using the following inclusion criteria: (i) educational intervention for students with SEN in school settings, (ii) educational intervention based on interaction/dialogue with students with SEN in school settings, and (iii) evidence of improvement in learning and development (reading, attention, language, oral expression, reasoning, curricular content) and cognitive development. The criteria for exclusion were as follows: (i) 18 years of age and older, (ii) duplicate citations, (iii) out-of-school interventions, and (iv) interventions not related to disabilities/special educational needs.

Articles that met all the inclusion criteria in their abstracts were preselected for further in-depth reading of the entire article. Articles that met at least one of the exclusion criteria were not selected. A total of 310 papers were preselected based on the abstract, of which 112 articles were selected for downloading and in-depth reading (**Figure 1**).

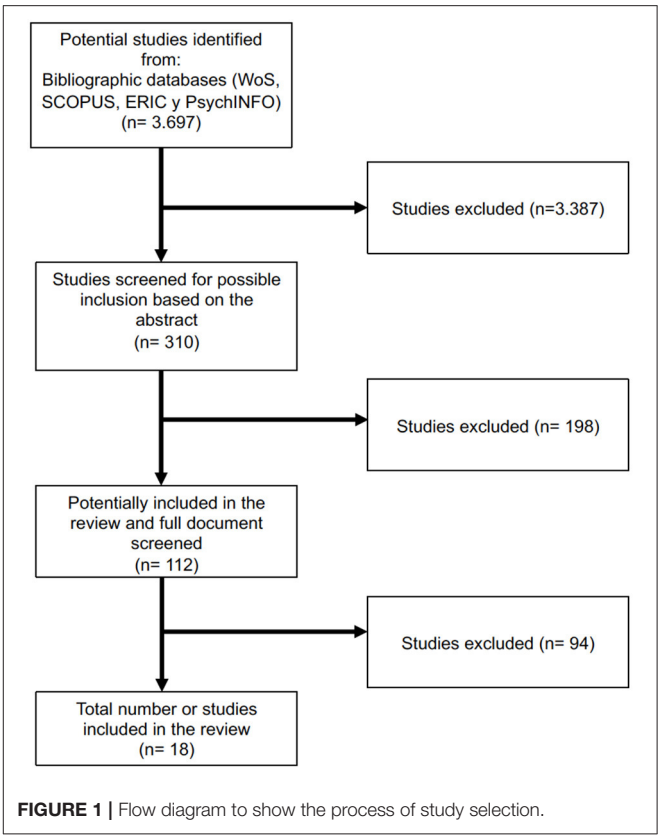


**FIGURE 1 |** Flow diagram to show the process of study selection.

# RESULTS

The final selection included 17 scientific articles that provided evidence regarding the academic and developmental impact of interactive learning environments on students with SEN. **Table 1** shows a summary of the information on each of the articles organized by the impact generated on the child and indicating the country where the study was conducted, the sample of participating students, the design of the research, the educational program studied, and the main findings of the study.

The studies reviewed show that interactive learning environments improve cognitive skills and the development of instrumental learning in pupils with SEN. Overall, the development of language and literacy competencies and mathematical and science knowledge is highlighted. These studies show that interactions with other students, as well as among students and teachers, in the educational context have a key role in achieving such improvements. In this regard, drawing on the analysis of the 17 studies, the main results concerning the impact generated by interactive learning environments on students with SEN have been organized into three main topics: (1) impact on literacy learning, language development and communication skills, (2) impact on science learning and mathematical thinking, and (3) impact on enhancing academic engagement.

## Impact on Literacy Learning, Language Development, and Communication Skills

The impact of interactive environments on improving language, literacy and communication skills in children with SEN is the most prominent in the studies reviewed. Of the 17 articles selected, a total of nine articles have shown evidence in this regard. In terms of language learning, studies such as that conducted by Chen et al. (2020) in preschool classrooms highlight the significant impact of language resources provided by peers, especially for students with disabilities. When these language resources are shared, there is a considerable language growth effect on students in this sample. The work developed by Ferguson et al. (2020), which focused on preschool students diagnosed with autism, points in the same direction. According to the results of their study, these students received greater verbal input, produced greater verbal output and had access to similar levels of teacher talk when they were integrated in inclusive classrooms compared with those who were in classes with only autist peers or in classes with peers with diverse disabilities. Indeed, being in inclusive classrooms broadens the opportunities for students with SEN to get exposure to natural language in a social context.

One of the key elements in improving children's literacy learning with disabilities is that the interactions promoted are of high quality, mediated by appropriate training and guidance on specific strategies for a specific purpose. Tobin (2007), who studied positive interactions within inclusion experiences, noted

**TABLE 1 |** Summary of articles from the literature review.

| References | Country | Sample (Age) | Research design | Educational program | Key findings |
|---|---|---|---|---|---|
| **Impact on literacy learning, language development and communication skills** | | | | | |
| Chen et al. (2020) | USA | 448 children, 178 had identified disabilities | Quantitative | Peers' Language Resources | Peer language resources were influential in promoting students' language skills. |
| Ferguson et al. (2020) | USA | 53 children with ASD (3–5 years) | Quantitative | Characteristic of Early Intervention Program | Inclusive early intervention placements encourage to talk more and receive more verbal information from their peers. |
| García-Carrión et al. (2016) | Spain | 9 units of early childhood and primary education | Qualitative | Interactive Groups and Dialogic Literary Gatherings | Increase in written expression, self-confidence in the reading and writing process, progress in reading. |
| Nahmias et al. (2014) | USA | 98 preschools children with ASD | Quantitative | Early Intervention Program | Increased cognitive development of children with SEN. |
| Parker and Kamps (2011) | USA | 2 students with AD | Quantitative | Summer School Program | Increase in vocabulary, interest in literacy activities, skills, and confidence. |
| Raver et al. (2014) | USA | 4 children with hearing loss | Quantitative | Oral Preschool and Inclusive Preschools | Increase in verbal comments and play turns in interventions. Improvement in behaviors with both interventions. |
| Stanton-Chapman et al. (2008) | USA | 120 preschool children at high risk for language and social problems | Quantitative | Head Start | Increased vocabulary and increased frequency of verbal behavior. |
| Tobin (2007) | USA | 4 students with mild intellectual disabilities and 1 student with a learning disability | Qualitative | Positive Interactions and "Good New Visits" | Enhanced literacy learning and made text more accessible. |
| Whalon and Hart (2011) | – | Children with ASD will - school and post-school opportunities. | Qualitative | Reading Comprehension | Encourages the occurrence of new, spontaneous initiations, and responses during reading. |
| **Impact on science learning and mathematical thinking** | | | | | |
| Lei et al. (2020) | USA | 1 Learner and 1 native english with disabilities | Quantitative and qualitative | PGBM-COMPS Math | Increases the dually classified students' capacity to think and answer multiplicative problems. |
| Lambert et al. (2020) | USA | A fifth-grade student with autism disorder | Qualitative | Mathematic | Increases verbal and non-verbal participation and mathematical thinking in multiple contexts. |
| McLure (2020) | Australia | 3 students with SEN | Quantitative and qualitative | Thinking Frames Approach | Growth in self-efficacy perception, performance in the evaluation's tasks, engagement and science conceptual understanding. |
| Wu et al. (2020) | Taiwan | 3 students with disabilities (8–9 years) | Quantitative | Peer Mediated Instruction with Augmentative and Alternative Communication and Speech Generating Devices | Improved participants' science knowledge. |
| **Impact on enhancing academic engagement** | | | | | |
| Andzik et al. (2016) | USA | 23 students (6–11 years) | Quantitative | Augmentative and Alternative Communication systems | Increasing the expectations for communication participation and purposefully creating high-quality and diverse interaction opportunities. |
| Bock (2007) | USA | 1 student with AS in a Middle School | Quantitative | Social–behavioral Learning Strategy Intervention | Increasing the percentage of time spent learning and the participant presented long-term memory. |
| Carter et al. (2015) | USA | 21 High Schools | Qualitative | A practical and promising approach for supporting students | Promoting academic learning |
| Carter et al. (2017) | USA | 4 students with ASD of four High School | Quantitative | General Education Classrooms | Improved attitudes, personal growth and a stronger commitment to inclusion. |

that high-quality discussions improved literacy learning and made the text more accessible to children with intellectual and learning disabilities. In this regard, research shows that the interactions established between students with SEN and the rest of the educational community are essential to enhance their learning. The study by García-Carrión et al. (2016) analyzed the impact of interactions between the students themselves and with teachers and adult volunteers (family members, community members, and university students) in the Dialogic Literary Gatherings (DLG) and the Interactive Groups (IG). These are based on an inclusive educational approach where the needs of diverse learners are addressed in a common framework and learning content and activities are shared with the rest of the group. The results revealed that these educational actions contributed to supporting learning, helped students with SEN understand concrete activities, created new learning opportunities, and helped develop new academic skills. Pupils with severe difficulties in written expression increased their self-confidence in completing the writing of a text with coherence.

In the same vein, Parker and Kamps (2011) analyzed written tasks with self-monitoring to teach functional skills and verbal interactions to two students with autism in social settings with peers. The researchers found positive effects on developing learning skills in children with SEN and observed that pupils had improved basic skills (language, mathematics, environmental awareness, autonomy, and social skills). These results are consistent with those obtained by Stanton-Chapman et al. (2008) in their study on the effects of a multicomponent intervention strategy to increase peer-directed social communication in eight children at risk of poor language and social skills development. The results of this study indicated that the children had increased vocabulary, frequency of verbal behavior, and social competence, especially in establishing friendships.

Research especially highlights the impact of learning interactions on language and communication for students with autism spectrum disorder (ASD). Nahmias et al. (2014) examined the association between cognitive outcomes and the receipt of early intervention for students with ASD in three settings: with other students with autism, with students with various disabilities, and in inclusive settings. The main finding was that children in inclusive settings experienced greater average gains in cognitive scores, especially in language and social communication, than did some children who attended classrooms without typically developing peers. These results were most visible in children with more severe social disabilities, with lower adaptive behavior skills, and in those with at least some form of expressive or receptive communication. Children with more severe social disorders in inclusive settings benefited from the more sophisticated social, emotional, and adaptive strategies displayed by their peers. Thus, Nahmias et al. (2014) noted that inclusive schooling for children with ASD increased opportunities to interact with and learn from typically developing peers, which may be significant for their cognitive development. The authors noted that mixed disability placement could be inadequate for children with autism spectrum disorders because it provides the fewest opportunities to either interact with typically developing peers or receive an autism-specific intervention.

Additionally, focusing on students with autism, Whalon and Hart (2011) analyzed the possibilities for adapting an evidence-based program to develop their reading skills. The selected intervention consisted of question-and-answer relationships (QARs), a generative questioning strategy used to promote reading comprehension in typically developing students. The study identified a way to adapt this strategy to include instructional supports that (a) provide a way for students with ASD to attend to important elements of the text immediately; (b) successfully engage in reciprocal interactions about the text; and (c) encourage new initiations and spontaneous responses during reading. By creating opportunities for students with ASD to interact with their peers through an activity based on direct and explicit reading comprehension, students with ASD are encouraged to learn a strategy that not only helps them access the general education reading curriculum but also provides them with the tools to engage in meaningful academic discussions with their peers, thus furthering their social and educational communication goals.

Similarly, Raver et al. (2014), in their study of children with profound hearing loss, found that the majority of these children benefited from structured opportunities of interaction with typically hearing children to learn verbal skills, and both groups improved behavior in prelinguistic interventions.

## Impact on Science Learning and Mathematical Thinking

As shown in the previously mentioned studies, a relevant aspect to improve the quality of learning for students with SEN in inclusive settings is to identify what specific supports can help them participate and interact effectively in learning activities. This is relevant for language-related learning and mathematics and science learning. Lei et al. (2020) studied the case of a fifth-grade student dually classified as English Learner (English would be her second language) and Learning Disabilities to analyze the types of educational scaffolds that mathematics teachers can use to support multiplicative reasoning effectively. Four types of teacher scaffolding (visual, linguistic, interactive and kinesthetic) were studied during seven sessions of mathematical instruction. In turn, three different interaction contexts were considered for the interactive scaffolding: (1) teacher-student interaction, (2) student-student interaction, and (3) small group interaction. Small-group interaction was the most effective interaction context, as the student showed an increased ability to think and respond to multiplicative problems in small group contexts. Moreover, kinesthetic and linguistic scaffolds were found to be the most beneficial in helping the student cultivate mathematical thinking, with both concrete and abstract units. These types of scaffolds also contributed to generating more elaborate language use of mathematical content.

Another study that demonstrates the impact of interactive educational contexts in improving the learning of children with ASD is that carried out by Lambert et al. (2020) with a fifth-grade student with autism. The authors demonstrated

how, thanks to an intervention in the classroom in which the participation rules were made more explicit and additional scaffolds (such as greater responsibility of the peers and more collaborative actions) were incorporated, the child became able to explain his mathematical thinking in multiple contexts. Similar improvements were observed by Wu et al. (2020) when analyzing the impact of a peer-mediated intervention (PMI) on the learning of science by students with cognitive disabilities. Nine non-disabled peers taught scientific concepts to their disabled peers through questions about the content and modeling and encouraged their peers to use the iPad-SGD. The results showed that peer participation, aided by augmentative and alternative communication (AAC) and using speech-generating devices (SGDs), managed to improve the communication of the target participants with their peers during the scientific experiments and improved the specific scientific knowledge of the participants.

Finally, the case study published by McLure (2020) presents the experience of a student with severe special educational needs in accessing science learning with the thinking frames approach (TFA), in which students are organized into heterogeneous groups to predict the outcome of carefully designed problems. To do so, they discuss with their peers their conceptions and contrast them with those of the others, generating a social construction of knowledge. The results of the study revealed improvements in various aspects for all students, which were possible due to the interactions established for the collaborative elaboration of productions. Especially for students with SEN, because of peer interactions and support, students experienced improvements in participation in small and whole groups, perception of self-efficacy and classroom assessment activities.

### Impact on Enhancing Academic Engagement

The studies analyzed also report results of peer support and other focused interventions in terms of engagement in academic learning and interactive learning situations. In this regard, the researchers noted that social interactions in learning contexts could create additional communication opportunities for promoting inclusion and learning for students with disabilities, nurturing other social behaviors, and raising engagement in educational activities (Carter et al., 2015, 2017; Andzik et al., 2016).

One of these studies (Bock, 2007) examined the effect of a social-behavioral learning strategy intervention (Stop-Observe-Deliberate-Deliver-Act; SODA) on the interaction skills for engaging in cooperative learning activities, playing board games, and visiting peers during lunch of a high school student with Asperger syndrome (AS). The child participated in cooperative learning activities with peers in a cooperative learning group. The study found that the participant had a higher percentage of time spent learning cooperatively, playing board games, and visiting during lunch when he began SODA training. Additionally, the effects were maintained after the intervention.

Another study (Carter et al., 2017) examined the impact and social validity of peer support-based student arrangements with four high school students with autism spectrum disorder (ASD), looking at social interactions with peers and academic engagement. The researchers used momentary time sampling to measure academic engagement to document whether the student was consistently engaged, inconsistently engaged, or disengaged. The overall results indicated that all four students increased social interactions with their peers, while academic engagement increased or was maintained for three of the students. According to the authors, these results suggest that a greater emphasis on the design and delivery of academic support is needed to further improve learning outcomes. In light of the results, peer support strategies should be considered for this purpose.

## DISCUSSION

The literature review carried out finds that interactive learning environments have a positive impact on improving academic learning and cognitive skills development in children with SEN. Although further research is needed on this aspect, the 17 selected studies shed light on the importance of implementing interaction-based learning environments. Their benefits have been evidenced for developing language, literacy, and communication skills for SEN pupils (Whalon and Hart, 2011, among others; Chen et al., 2020; Ferguson et al., 2020), for the acquisition of mathematical competence and science learning (Lambert et al., 2020; Lei et al., 2020; Wu et al., 2020) and for enhancing engagement in learning (Bock, 2007; Carter et al., 2017).

One of the aspects in the reviewed studies is the key relevance of the interaction between peers when it allows students to support each other and creates opportunities for learning from each other collaboratively. This is relevant because, as Gee et al. (2020) emphasize, learners with SEN tend to reduce the extent of their interactions when they are in segregated settings. However, the opposite occurs in inclusive environments, where interactions increase. In this regard, research shows that it is necessary not only to allow students with and without special needs to interact but also to provide peers who accompany students with functional diversity with tools so that they can manage interactive situations and provide the necessary support (Carter et al., 2017). This would empower students with disabilities to communicate effectively with peers and provide peers with tools to help their classmates, which are both vital factors for the cognitive and learning development of students with SEN. This is consistent with other studies that reinforce the idea that when teachers promote educational actions that increase student interactions oriented to learning, they can increase levels of instrumental learning (Ni Bhroin, 2013), including language learning (Purcell-Gates et al., 2011) or mathematical skills (Stein et al., 2015). Importantly, our review of research also found that benefits often do not appear separately, but improvements in communication, literacy, scientific or mathematical learning and engagement in learning situations can occur simultaneously as a result of participating in interactive learning environments. In addition, the benefits reported are not limited to specific disabilities or special needs; on the contrary,

the studies reviewed covered a wide range of learning difficulties (related to autism, hearing loss, intellectual disabilities, learning disabilities, and other special needs) and, more importantly, we found that the impact of the interactive learning situations helped students' progress in the areas that were precisely more affected due to their disability (such as communication in the case of students with autism and hearing loss or literacy in the case of students with a learning disability). This indicates that interactive learning environments can contribute to reducing the impact of students' disabilities on their learning and development.

Furthermore, research shows that classroom interactions are positive not only when they occur between people directly involved in the school, such as teachers and pupils, but also when they involve other people from the community, as shown in the study by García-Carrión et al. (2016) on the impact of the Dialogic Literary Gatherings and the Interactive Groups to enhancing the learning and expectations of students with SEN. In this regard, it is also important to note that interactive learning environments that are effective with students with SEN, such as DLG, are also effective for the rest of the students, contributing to the emergence of school-relevant language and literacy for all students (Lopez de Aguileta, 2019). Boyle et al. (2019) also pointed out the benefits of shared reading, not only with teachers but also with parents, in improving literacy skills in children with ASD. These results are congruent with the indications gathered in The Information and Communication Technology for inclusion report (European Agency for Special Needs Inclusive Education, 2013), in which it is indicated that schools need to involve a greater diversity of agents, creating formal and informal networks that support their practice and working as communities of practice. Within these communities, all those individuals or organizations that share a common interest participate, including families, which can be involved in the development of proposals for students. In these communities, ideas and ways of working can be exchanged, which help identify problems and solutions. Families must be part of these communities and be involved in the development of proposals for students. In this way, the report is committed to creating working models that involve students, teachers, parents, and other professionals working together to educate all students.

According to the European Agency for Special Needs Inclusive Education (2011), students' active participation is one key element to achieve the objective of implementing inclusive education for all. The conclusions of this research review contribute to this aim by showing how contexts of interactive learning can increase these students' participation in shared learning settings while enhancing their learning and cognitive development.

However, we cannot ignore the limitations of this study. As can be seen in **Table 1**, the vast majority of the collected research has been developed in the United States. Future research should focus its efforts on broadening this topic's study contexts, analyzing the effects of interactive learning context on students with SEN in other countries. In this regard, it should also be taken into account that the majority of articles in the platforms on which the searches have been carried out are written in English, which raises the question of whether there may be studies conducted in other countries and published in other languages and journals that are not included in the databases used in this study. Finally, it should be taken into account that the concept of interaction is broad so that the articles collected gather evidence referring to different types of interaction and with different types of special needs. It would be interesting if future research could continue to investigate the ideal characteristics that the different contexts and agents involved in these interactions should meet to obtain the best learning outcomes for students with SEN and if the research samples could represent the greatest possible diversity of these students.

## DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

## AUTHOR CONTRIBUTIONS

LP: conceptualization. MS-G, LU, and BV-C: methodology, formal analysis, and writing—review and editing. MS-G: data curation. BV-C: writing—original draft preparation. All authors have read and agreed to the published version of the manuscript.

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# Dialogic Feminist Gathering and the Prevention of Gender Violence in Girls With Intellectual Disabilities

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Adolescent gender-based violence prevention and sexuality education is a topic of current concern given the increasing numbers of violence directed at girls. International organizations indicate that one in three girls aged 15 to 19 have experienced gender-based violence in their sexual relationships that this risk may be as much as 3–4 times higher for girls with disabilities. Following the good results obtained in the research project "Free_Teen_Desire" led by the University of Cambridge and funded by the Marie Curie Actions Program in the prevention of gender violence in adolescents through Dialogic Feminist Gatherings (DFG), the aim of study is to analyze Its transfer and impact on adolescent girls with intellectual disabilities. The DFGs are here understood as generators of a more dialogic environment for girls in general and we wonder if and how It is extended to the context of girls with disabilities. Thus, the research takes the form of a case study with a communicative approach on a DFGs. The intervention is carried out in a special school located in Valencia during the 2018–2019 and 2019–2020 academic years with a group of 19 non-mixed female students, female teachers, and the mother of one of the students. The study analyzes which are the transfer criteria to incorporate the DFGs in a special education context and what is their impact on the prevention of gender violence in girls with disabilities. The data collection techniques consist of two in-depth interviews, analysis of the field diary of 24 intervention sessions and a focus group with seven teachers. It is demonstrated that DFGs are successfully transferred to the special education context of the case study. The results show how contexts of safety, solidarity and friendship are generated which protect adolescent girls with disabilities from relationships with gender violence.

**Keywords: dialogic feminist gatherings, youth, adolescents, intellectual disability, gender-based violence, dialogic environment, prevention**

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## INTRODUCTION

Gender-based violence is a growing problem in the 21st century, affecting young girls of all cultures and countries at increasingly younger ages. It is a problem that concerns even more women with disabilities who are more exposed to dependency, prejudice and marginalization and are at high risk of being abused by caregivers, family members, friends and others (Iudici et al., 2019). According

to the latest World Bank (2019) report, "Violence against women and girls with disabilities," it is estimated that globally, one in three women and girls with disabilities will experience gender-based violence in their lifetime. The results of a study funded by the WHO Department of Violence and Injury Prevention and Disability, considered children with disabilities as a high-risk group. Up to a quarter of children with disabilities (5% of children, about 93 million children) will experience violence in their lifetime, being three to four times more likely to be victims of violence than their non-disabled peers (Jones et al., 2012). It is known that almost one in three girls aged 15–19 years has experienced gender-based violence in their sexual relationships (World Health Organization, 2018). According to a World Bank (2019) report this risk could reach 3–4 times higher for girls with disabilities. A study of 2245 high school students in Sweden found that force at sexual debut (intercourse) is more common among adolescents with a disability (4.0%) than those not reporting any disability (1.6%), and is most common among those reporting multiple disabilities (10.4%) (Brunnberg et al., 2012). In the case of the World Bank (2019) report, the data show that the situation has not improved for girls and young women with disabilities, who today face 10 times more gender-based violence than women and girls without disabilities.

In this regard, evidence is growing on the importance of gender-based violence prevention education for people with developmental disabilities to increase opportunities for healthy sexual relationships and intimacy, promote positive sexual identities, and decrease the risk of sexual victimization (Murray, 2019). The school can be an ideal space to provide prevention and protection from gender-based violence and sexual abuse for children. To achieve this, there is consensus that interventions involving families, teachers, health agents, and community leaders are needed (Walsh et al., 2018; Elboj-Saso et al., 2020).

*Nothing About Us Without Us,* is the call of UN Women and the Committee on the Elimination of Discrimination against Women and the Committee on the Rights of Persons with Disabilities, which urges social, educational and health care entities to raise awareness that equality and sexual freedom for women and girls with disabilities depend on including their voices in feminist leadership to end the sexual violence they persistently experience. In this regard, studies identify the need to develop interventions to help women with disabilities recognize abuse and remove themselves from potentially abusive relationships and situations (Nosek et al., 2001; Skarbek et al., 2009). More recently, studies such as Iudici et al. (2019) highlight the importance of girls with disabilities having spaces for dialogue about these issues and the causes that provoke them. Thus, generating interactive spaces with a dialogic perspective is fundamental for the challenge of learning, in the topic we are considering here, of learning that allows them to identify, confront and prevent gender-based violence.

The consequences of experiencing gender-based violence in adolescent girls require further evidence. Research suggests that abuse and violence against women with developmental disabilities may exacerbate existing health problems or cause additional injuries. Psychological effects that have been identified include depression, anxiety, increased feelings of stress, and suicidal ideation. Negative physical effects of abuse also include physical harm and overall decreased physical functioning (intestinal, skin, and nutritional problems, as well as sexually transmitted diseases) (Hassouneh-Phillips, 2005; Plummer and Findley, 2012). According to international scientific evidence, one of the main barriers for people with disabilities is social exclusion and discrimination, which is an impediment to benefiting from the right to sexual education that prevents them from gender-based violence (Rohleder et al., 2019). This is a reality that is internalized as exclusionary in that socially it has been considered that people with disabilities do not decide for themselves on these issues.

Within the theoretical framework of preventive socialization of gender violence (Valls et al., 2008; Puigvert, 2014; Gómez, 2015; Puigvert, 2015/2016; Ruiz-Eugenio et al., 2020), dialogic feminism (Beck-Gernsheim et al., 2001; De Botton et al., 2005) and Dialogic Learning (Flecha, 2000) the Dialogic Feminist Gatherings (DFG) have been defined (Puigvert, 2016; Racionero-Plaza et al., 2018, 2020). The DFGs (Puigvert, 2016; Racionero-Plaza et al., 2018, 2020) are an educational action based on the preventive socialization of gender-based violence (Valls et al., 2008; Puigvert, 2014; Gómez, 2015; Ruiz-Eugenio et al., 2020). At its base is the understanding that one of the causes of the increase in gender violence at increasingly younger ages is a type of socialization that associates attraction to violence through a coercive discourse that is imposed among adolescents. One of the key aspects of the DFGs is the scientific content in violence prevention by giving the opportunity to contrast scientific evidence with the life experiences and reflections of the participants, allowing the participants, through dialogue, to build a collective knowledge that promotes relationships based on solidarity and favors the growth of healthy relationships that bring them well-being (Ruiz-Eugenio et al., 2020).

The DFG have demonstrated its effectiveness in the prevention of gender-based violence in adolescent girls without disabilities in diverse social contexts (Puigvert, 2016; Salceda et al., 2020). The DFGs create dialogic spaces for interaction where scientific evidence on the prevention of gender violence is analyzed, and where the voices of adolescent girls are empowered. The results of previous research show their incidence in establishing affective-sexual mental models in which attraction is linked to good treatment, friendship, equality and freedom. These spaces open opportunities to review these models and prevent from violent intimate affective-sexual relationships (Racionero-Plaza et al., 2018). In brief, DFGs generates interactive learning environments to foster learning, development, and relationships for adolescent girls with no special needs and that we analyze here whether it can be transferred to contexts of interaction between girls with special needs.

Thus, this research presents a case study developed in a Special School for the promotion of sexual health and egalitarian relationships in young girls with disabilities. The research analyzes whether interventions based on DFGs are effective to generate a dialogic interpersonal context with and for adolescent girls with intellectual disabilities and thus enhance learning to prevent gender violence, through a multidisciplinary professional intervention. To this end, the study focuses on two axes of analysis. First, to analyze whether the DFGs are transferable to special education contexts with adolescent girls with mild

and moderate intellectual disabilities, as a context of dialogic interaction. Second, to know what successful results do teachers and educators perceive in the learning and relationships that make possible the prevention of gender violence in girls with intellectual disabilities.

# MATERIALS AND METHODS

## Assessment Progress of the Case Study

The case we are analyzing is a unique case study, as it attempts to analyze in depth the improvements that DFG has carried out in a special school located in Valencia during the 2018–2019 and 2019–2020 academic years, with a group of 24 non-mixed female students with intellectual functional diversity between 15 and 24 years of age, students of a special school, seven female teachers and one mother. In the study, of the 24 girls, we had the informed consent of the guardians of 19 of them. All the teachers agreed to participate in the study, including the DFG coordinator; the school principal also agreed to participate in the study. The special school which is the context of study serves students from 3 to 24 years of age from the metropolitan area of Valencia. Its student body is diverse, including families of students belonging to low socioeconomic status and ethnic minorities. The school implements successful educational actions (SEAs), recognized by the international scientific community as interventions that ensure the best results despite the context in which they are implemented (Flecha, 2015).

Since the beginning of the implementation of SEAs in the special school, the teaching team participates in dialogic teacher training spaces that are contributing to the transfer of SEAs to the educational context (Roca et al., 2015). Participating in these evidence-based training spaces was the motivation to work in greater depth on violence prevention through the implementation of actions with impact. At the same time, the increased sensitivity to these issues promoted the educational team to detect more effectively the needs of their students, to face stories of abuse and to be aware of the need to bring scientific evidence closer to the students as their own prevention mechanism against violent affective-sexual relationships.

In the DFGs carried out in this special school, the participants are only girls, that is, they are not mixed, one of the options in which the DFGs are being carried out. This was chosen with the aim of favoring the creation of a context that could reinforce trust and support and, therefore, relations of solidarity among the participants. At the same time, the aim was to create a space that would include their voices, so that they could be heard on current feminist issues that affect their lives, following the dialogic feminist approach (De Botton et al., 2005) in which the DFGs are framed (Salceda et al., 2020).

In the case study, we have analyzed the DFGs carried out in the special school from February 2018 to June 2019. The periodicity with which they have been implemented has varied between weekly or biweekly. Due to the health pandemic crisis because of COVID-19 their operation has been adapted to the preventive measures dictated by official bodies, allowing them to continue to be performed to this day.

Dialogic feminist gatherings in this case are conducted outside of the regular class schedule, that is, during learning extension time (Flecha, 2015). The participants are of various ages, participate on a voluntary basis and are all women. The total number of participating girls with intellectual disabilities has been 19. Other educational agents, seven female teachers and one female family member of the center, have also participated.

The DFGs work like any dialogic gathering, considered as one of the successful educational actions identified by INCLUD-ED Consortium (2009). In the DFGs analyzed in the case study, each participant presents her interpretation of what is being worked on, motivating the collective creation of new knowledge from the interactions generated with the other participants. Its operation is based on the seven principles of dialogic learning (Flecha, 2000) in order to favor an egalitarian participation in which the maximum number of voices is heard. They are developed on the basis of scientific knowledge in the prevention of gender violence. Among the materials used we find several publications in Diario Feminista, a journal that disseminates a wide range of articles based on scientific evidence. Some examples we highlight are one that addresses female solidarity (Febre, 2018), another on new alternative masculinities (Uriarte, 2019) and on sexual education and full relationships (Garvín, 2019).

## Research Design and Data Collection Instruments

The case study has followed the principles of the communicative methodology that "emphasizes that egalitarian dialogues between researchers and the life world of the subjects under investigation are necessary to achieve higher levels of Social Justice" (Gómez-González et al., 2010). In the dialog with the research participants, the researchers present data and arguments about the issues based on the scientific production on the subject. In turn, the participants present their reflections and arguments based on their experiences in the life world. The interpretations of the reported situations and what the research indicates are being constituted and agreed upon by both parties (Gómez, 2019).

The communicative techniques used for the collection of empirical materials and the communicative analysis for this research were: two in-depth interviews, one with the director of the special school and another with the DFG coordinator; a focus group only with the female teachers participating in the DFG, and a field diary in which the coordinator of the DFGs recorded the interventions of the girls with intellectual disabilities participating in the meetings, the topics and the selected scientific content. The focus group in a communicative approach (Gómez-González et al., 2010) is organized from the natural group of people who already know each other; in the case studied, they were teachers who regularly participated in the DFGs and who freely agreed to participate in the research. As for the field diary notes, when necessary, the researchers asked the DFG coordinator for clarifications about the procedures, meetings, materials, and transcription of the speeches of the girls with special needs participating in the meetings.

Once the school agreed to participate in the research, all the adults who participated, voluntarily and freely, were informed

of the research through an informed consent form. Anonymity and confidentiality were assured in the data collected and subsequently analyzed. The families of the girls with disabilities were informed through informed consent in order to agree to analyze their participation in the DFGs. The study was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA). Only the data referring to the participants who signed the informed consent form were used; the other data were discarded.

The results of the case study offer insights based on two central ideas: (1) the transferability of DFGs as a space for dialogic interactions to the context of special education and (2) evidence of the impact that DFGs are having on the lives of adolescent girls with intellectual disabilities, specifically, how they are promoting preventive interactions that can contribute to protecting these girls from gender-based violence relationships. Seeking to offer contact with the voices of the people involved in the DFG, in the results, literal statements made by them are brought in. It is important to do this both to triangulate the qualitative data collected, thus enhancing the validity of the qualitative study, and also with the need to make visible through the voice of the agents themselves the possibilities generated in the DFG.

## Data Analysis

The analysis of the information gathered from the transcripts of the two interviews, the focus group and the accounts recorded in the field diary, has been based on the two components of the communicative methodology: (1) the exclusionary dimension, which identifies the barriers that prevent transformation, since in the absence of these barriers, practices or social benefits would be available to excluded individuals or groups (Gómez-González et al., 2010) and (2) the transformative dimension, which includes the elements that overcome such barriers. Importantly, research on sexual violence prevention done with the communicative methodology shows that it is distinguished by its contributions to advancing the identification, prevention, and overcoming of gender-based violence (Puigvert, 2014), which can help health care providers and others caring for young women identify whether they have been victims of gender-based violence (Ruiz-Eugenio et al., 2020).

How to develop a dialogic space for girls with intellectual disabilities, in such a way that they feel supported and at ease to dialogue and to strengthen themselves regarding healthy affective-sexual and friendship relationships? In this question, about the transferability of the DFG to special education, the excluding dimension aggregates elements that hinder the participation and the establishment of trust in the group, and the transforming dimension aggregates the elements that had guaranteed the participation, trust, and learning of the participants in the dialogues.

What evidence of success demonstrates that girls with intellectual disabilities benefit from the interactive environment established in the DFG by learning to identify, protect themselves, and seek help when faced with abusive relationships? In this question, the exclusionary dimension aggregates elements that would prevent participants from appropriating tools to protect themselves and report sexual abuse, ensuring their freedom to be treated with respect, and the transformative dimension aggregates elements that ensure the appropriation of such tools, improving their own lives and the lives of others.

# RESULTS

## Are Dialogic Feminist Gatherings, as Generators of Dialogic Context, Transferable to Special Education Contexts With Adolescent Girls?

In the case study, it can be verified that dialogical feminist gatherings are transferable to special education contexts. Director, DFG coordinator and female professors highlighted important elements for DFG to be successful in special education contexts with adolescent girls.

### DFG Periodicity and Time

In the interview with the coordinator (INT1), she highlighted that the weekly meetings made it difficult for the girls to participate in DFG (the exclusionary dimension), since it is important to prepare oneself at home for the meeting by reading or watching the material combined for the dialogue. The change of the *meetings to the biweekly period* (transformative dimension) favored the preparation and, consequently, the participation of the students. In the same direction, the director (INT2) pointed out that she noticed the transference of the dialogue that is established in DFG to the family space, because the family is invited to help their girl to read – or to assist – the material that will be commented in the meeting (transformative dimension); according to her, such situation was more favored in the context of the confinement by the necessary isolation to face the COVID-19 pandemic, as it is observed in the passage below:

> *"Yes, they take it home, the families have told us about it. In addition, during the confinement was a good moment to share DFG with families, mothers, grandmothers., they had the opportunity to participate, since at school this participation is more complicated." (INT2).*

The positive effect of support and dialog with family members in preparation for participation in the meetings can be confirmed by comparing both attendance and participation in DFG in the 2018–2019 course and in 2019–2020, when the periodicity was changed to biweekly: The participation of girls in the dialogue has grown significantly (from 56 to 128 interventions). It can be interpreted that the change in the interval between meetings favored the time for the girls to receive support from someone in the house, to read the texts, highlight the excerpts they would like to comment on with the group, and dialogue with someone from outside the DFG. The interaction during the preparation, by guiding the attention (Rogoff, 1990) on the material and the subject and the dialogue generated coincide with what the theory on dialogic reading indicates: it is important for the increase of intersubjectivity, generating a better understanding of what is read and amplifying the reading of the world (Freire and Macedo, 1987). For girls with intellectual disabilities, this exercise becomes even more necessary.

About the time of the DFG, through the individual interviews, the principal and the DFG coordinator (INT2 and INT1) coincide in emphasizing that the DFG offers an extended study time, without mandatory participation as a factor favoring its transfer to special education (transformative dimension). The coordinator comments on how they reached this decision:

> *"So, starting from this variety of groups to which they belong, we saw that it was the way in which more girls could participate and share this same space. We thought that outside school hours, so that they could participate freely in the school, and it was offered as a leisure and lunch time activity, and the truth is that we have had quite a good response."(INT1).*

### Group Composition

The director, during her interview (INT2), pointed out that the fact of being *only among girls* (transformative dimension) favored both the assistance and the participation in the DFG, because they felt comfortable to speak among women, being able to express their thoughts and expose intimate situations in the group. As for the teachers in the focus group (FG1) highlighted another aspect of the group composition that favored the transferability of the DFG to the group of adolescents with intellectual disabilities: the dialogue among diverse women (transformative dimension), that is, with different ages; students, professionals, and family members; women with and without disabilities.

> *"And I think that it also changes the way they see us, because it was like, oh, and you also participate in the DFGs, well, that's good, and they dared to tell you more things, because they think that we are people they trust to tell certain things, but after participating with them, yes" (FG1).*

As for the DFG as a space that contemplated the genericity of being a woman, but also the specificities of women with intellectual disability, the coordinator states:

> *"I think it is important for them to talk about all their concerns, they are the same age but they also have interests, concerns, fears, but many times being young people with functional diversity they are not taken into account, they are infantilized, it is thought, society or the family, or even professionals, think that they do not think about these things, about the couple or motherhood and it is the other way around, when you start talking to them in an equal way you realize that they have the same concerns that you as a woman or that you also had at their age, or that you can continue to have. And I think it is important that they can also give their point of view and that we all know that they also have their thoughts, ideas and that they can contribute many things to society, if we give them a voice of course. If we don't give them a voice, we can't listen to their ideas, their points of view and how they see it" (INT1).*

The principle of equality of differences, of dialogical learning (Flecha, 2000), is clear here as a factor that acted in the transformative dimension of the transfer of the DFG to the context of special education with girls with intellectual disabilities. Being among different women constituted the dialogical environment where the specificities of each one (age, with and without disabilities, type of bond with the school) and their equality (being a woman) enriched the points of view and dialogues, making everyone learn from each other. The egalitarian dialogue (Flecha, 2000) between different and equal (Flecha, 2000) made it possible for a climate of trust to be established and for exclusionary factors such as prejudices and infantilization of girls with intellectual disabilities to be faced as barriers and overcome by all.

### Climate of Trust and Female Solidarity

In the results, two elements stood out from the data as they coincided in the perception of the director (INT2), the coordinator (INT1), and the teachers (FG) (transformative dimension): (1) the establishment of a climate of trust and female solidarity as fundamental for the DFG; (2) the DFG as a space for the girls with disabilities to talk about their specificities, as girls with disabilities, and as a time for their genericity as women, being able to form and empower themselves for a more healthy and free sexual life of violence.

About the climate of trust among all in the activity, the coordinator explains how it was guaranteed by confidentiality and further strengthened the group (transformative dimension):

> *"We have noticed in the second course that the group is more solid, in which we made it clear from the beginning that confidentiality was important, and in the first course there was a problem about talking outside the group and that was stopped, and this course we have noticed that it is more cohesive, even though the participants have varied."(INT1).*

One of the teachers participating in the Focus Group details the climate of trust as a climate of female solidarity:

> *"I think that creating this group of trust, of feminine solidarity, what we wanted was for them to know what feminine solidarity is and that we had to support each other, that's what we are for, I think that having this safe space has been good for all of them." (FG1).*

### Type of Material to be Worked on in DFG

The scientific quality of the texts was also pointed out by the coordinator as transforming elements of the possibility of participation and support for girls. This element appears aggregated to the fact that the group received training on successful educational performance, gaining clarity on the fundamentals of giving access to students and families, including students with disabilities, to scientific knowledge (Rodriguez et al., 2020). This is also in preventing the quality of people's health. In times of pandemic, when fake news and anti-scientific thinking demonstrate how they can threaten people's health and lives (Buslón et al., 2020), DFG, which has as one of its characteristics basing dialogues on scientific knowledge (Puigvert, 2016), become even more necessary science-based professional training as well.

In the dialogic focus group with the teachers who participated in the DFG, they emphasized that the dialogue around the films and advertisements that the girls watch (transformative dimension) favored the participation and transformation of the girls' perception about violent relationships and healthy relationships. One of the teachers said:

> *"I think that precisely with this topic, with these students we have to put more emphasis because I think that they do not talk about what a relationship is, what you would like to have in a relationship, and*

*then what they are left with is what they see in the movies, which may not be beneficial, for a relationship" (FG1).*

### Issues in Dialogue

The topics chosen for the dialogue were drawn from those that are addressed in DFG with girls and women without disabilities, as they are issues that have affected all women around the world. Among the topics discussed were, for example, 'friendships and romantic love as those who treat me well.' These issues (transformative dimension) were pointed as fundamental to the transformation of the expectations and desires of women.

*"If, in relation to what you said, you arrived last year and saw how they reflected on it, that they don't stay with what they see in the movies and so on. I think that there is a previous work, from the previous year when we started them, to see who you choose, how that person has to be, how that person has to treat you well, has to be your friend, there has to be communication, a dialogue between the two of you, to reach an agreement when you disagree, a person who shares your dreams. I believe that a lot of work was done in many discussions on the subject of choice, and on making attractive the one who treats you well, with a series of qualities, who listens to you, supports you in your decisions, and emptying of attractiveness what is sold to us in the movies, the typical chauvinist, sexist, violent, leader of the school. So we had to demystify this and see that it was really true" (FG1).*

### Professional Team Training

The principal and the coordinator also indicated the professional team training (transformative dimension) as something that made possible the transfer of the DFG as an interactive and dialogic environment to the special school. About the previous training of the teacher in the subject, scientifically based, the director explains that she and other professionals of the school already had received it, because of their participation in the training in successful educational actions. The director affirms:

*"We started with successful educational actions, and when we saw that they were doing interactive groups, literary dialogic gatherings, we saw it as possible. Also thanks to participating in spaces such as Sherezade (women's group that meets every month) or the seminar, a very important training space to think of ideas, projects or actions that can help students. So the DFGs came from my colleague who mentioned it at the school. We both participated in the seminar, and we thought it could be a good action to implement with the students at the school. And so, we thought of taking advantage of the time in the dining room to spend more time learning with the DFGs." (INT2).*

Finally, both the coordinator (INT1) and the teachers recognize that the professionals learn from the DFGs and from the girls (transformative dimension). And that is an important factor for the success of the transferability of the DFGs to adolescent girls with intellectual disabilities.

## What Evidence of Success Do Teachers and Educators Perceive in the Prevention of Gender-Based Violence in Girls With Disabilities?

The interviews with the director and the coordinator, and the focus group with the teachers showed that the transformative dimension (36 mentions) of the DFG with girls with intellectual disability far exceeded the exclusionary dimension (7 mentions). But it was from the annotation in the field diary of the voices of the girls themselves that it was possible to clearly see the beneficial results of DFG for the prevention of gender violence by girls.

### Dialogic Access to Information and/or Identification of Gender-Based Violence

According to the coordinator and teachers, the dialogic access to information allowed the girls participating in the DFG to identify gender violence in a general and specific way. The girls expanded their capacity to identify violence and prevent themselves against it, by viewing films and advertisements that naturalize violence and by dialoguing about it in DFG meetings. Thus, it is evident that the DFG constituted interactive learning environments, fostering learning, development, and relationships for girls with special needs.

The director explains the focus of the intended transformation with the offer of information and the realization of the dialogue around the themes:

*"What we pursue is that they have a voice, it is one of the issues we always talk about, that they have a voice within feminism, that women with disabilities have a voice, that they also transform themselves as women, that they are free women, that they have free relationships, that they know how to position themselves in the face of violence, that they know how to distinguish it when they suffer it, or that they position themselves when another partner may suffer it. We want all these aspects to be transformed in this direction. And, above all, their voice. This is an aspect that has always accompanied us in the transformation process. To listen to them, to know what disabled women have to say about all these problems." (INT2).*

In the Focus Group, one of the teachers pointed out the change perceived in the participant girls from the DFG, based on dialogued information:

*"And then many dared to identify situations, because when we saw a TV ad and analyzed it, or texts that we have seen or real situations that have happened in current times, because they all watch TV they are on (Facebook and so on) and they know of cases that they know how to identify as cases of harassment or violence. So I think that to a certain extent, they have become aware of that situation, and they have dared to tell things. So I do think that this has been positive for them. And for me as a teacher, being part of a circle like this, and being able to share it with them. I think it has been very positive in general" (FG1).*

In the voice of the adolescents participating in the DFG, 19 mentions are found in the first school year that make the identification of gender violence and ways to prevent it a reality, and three times as many in the second school year. The following

are some examples of the participants' statements, which show their appropriation of the topic, concepts, and position taking.

- *"An unhealthy relationship can be a toxic relationship. A toxic relationship is arguing all the time, being bossed around." (D1-P11)*
- *"I think it's very good that silence did not happen to her to denounce, she is strong and brave."(D1-P20)*
- *"Each one can choose her partner but carefully in case he hurts you."(D2-P1).*
- *"To be brave means to step firmly with your feet on the ground and to put your mind at ease, to say: 'this is as far as I go, you are a bad guy." (D2-P25).*
- *"Silence is not consent either: if it doesn't tell me anything, it's not yes either." (D2-24)*
- *"I agree with girl 1 and girl 6, I find it disrespectful that they force a girl. That is not right." (D2-18)*

### Creation of a Dialogic Space Where Voice Is Given, and Silence Is Broken

The DFG has shown itself to be a space for dialogue, to give a voice to adolescents with intellectual disability, even breaking the silence about the violence suffered by them and by people they know. In this aspect, the director, coordinator, teachers, and family members recognize it, coinciding in their analyses. As for the participating girls, 19 manifestations in the first school year and 57 in the second school year reveal the power of DFG as a space for dialogue, to raise their voices, to denounce abuses.

In the teachers' focus group, for example, they highlighted the DFG as a space to recognize and denaturalize violence, to dialogue, to listen to the voice of the girls, and to give them the opportunity to break the silence.

> *"I would just like to emphasize the last thing that teacher A. said, I have seen that it has helped them not only as a space for trust and so on, but also to identify situations that they had somehow normalized in their daily life and took for granted, well it is not so much, and that it was really something serious and that they could suffer some danger because of what could happen to them, and they have identified it and have somehow taken it to their life, this is what I think is very important, because I have seen this. I think it is very important that they have a space of trust where they have been able to tell us about situations, but it has also helped them to identify situations that have occurred here. For example, the issue of advertisements. They have been able to identify "this should not be like this, this should not be allowed," I think it is very important to emphasize it." (FG1).*

As for the notes in the field diary, about creating a dialogic space, raising the voice and breaking the silence, several are the examples to be shown.

- *In the other school they didn't treat me well. (D1-P15)*
- *To be safe is to be safe with whoever you are with: mother, father, partner, myself. They take care of me and hold me when I am afraid. I feel cared for at home and at school. (D1-P14)*
- *My E. used to touch me. (D1-P13)*
- *We learn in these gatherings and if we are doing well or badly. (D2-P2)*
- *Watching a TikTok program a boy picks up a girl to help her. (D2-P26)*
- *The woman appears lying down as if she were dead, as if she were a mannequin. (D2-P13)*
- *Women choose when they want to be touched. (D2-P6)*
- *If I come home and my boyfriend tells me to clean up I will tell him no. (D2-P24)*
- *It is disrespectful to force a woman. She has to be free. (D2-P18)*
- *I chose this phrase because of what it conveys, the girl has to give permission to do things if she wants to do them with the guy. (D2-P25)*

### Trust, Solidarity, and Friendship

The establishment of a climate of trust, solidarity, and friendship at the DFG was not only a condition for the transfer of this action to a work context with adolescents with intellectual disabilities, but was also the result of the DFG, transforming relationships. In the date, we noted a mention made to this element in the exclusionary dimension, which refers to when there were, in the first school year, comments outside the DFG itself about what one of the girls said, generating distrust in the group. After agreeing on the need for confidentiality, the climate of trust was strengthened and also fostered solidarity and friendship among the girls.

The coordinator explains how the professionals of the school thought of the DFG as a space for dialogue, solidarity and development of friendship among the girls:

> *"We think it can help them to have this climate of trust, a place where they can talk about issues that interest them. As well as we can discuss with them issues related to feminism and strategies that they may have. And then, we thought that they, for example, are in small groups during school hours, for example, they can be groups of 8–10 students. So we saw that this space could encourage them to get to know each other better and create this network of protection and friendship among them, since they don't have groups as large as in high schools or universities. That is why we thought of a place where they could get to know each other and weave a friendship network that would help them to create new relationships among themselves and with the rest of their classmates" (INT1).*

The director exemplifies the result of trust as solidarity and friendship between girls and professionals as well:

> *"For example, during the confinement, a student called me to share with me some messages she was receiving from a boy, a friend, who was telling her things she didn't like on her cell phone. She had the confidence to tell me. I think that bonds of trust are created because we have discussed these issues. If this student had not talked about these issues, she would never have said to me, surely, "M., this is happening to me. This student is bothering me. On the other hand, if we discuss these issues with them and they know that they can talk about this with us. Then, if it happens to them they are able to share it." (INT2).*

In the focus group, the teachers indicated the effective impact of the DFG as generators of solidarity and friendship networks among the girls, but also with the participating professionals,

generating and consolidating an interactive and dialogic learning environment:

> *"As she said, I have seen this network of female solidarity and friendship, even among them, supporting and advising each other, when someone told of a problem, how they offered to support her and to give her a solution. What we have all learned is a series of keys on how to act in case of possible harassment, if you are alone somewhere, what to do if you see something suspicious or who to ask for help. In other words, they have learned some tips and how to advise each other to support and protect them. So, even in the playgrounds, because they were from different classrooms, but then in the playgrounds they were also together and you could see this friendship. I didn't even have any relationship with them because they are not my students, except for the delegates, who are not in charge of the subject and some of them are, but it is nice to see that they help each other, and if something happens in the playground, they come to me and tell me this has happened, that they have changed the way they look at us. We were part of this group because we were on an equal footing, and they knew it, on a level of trust, in which we can all contribute and help. And I remember that they came to me in the playground, and they didn't go to look for another teacher, they came to me, and this is because it gives them security and confidence, because of the group that we have formed here, regardless of the position we have in the center" (FG1).*

And in the notes of the field diary, one can see how solidarity and friendship were being exposed by the girls:

- *The sisterhood (of women) reminded me of the club of the brave: they support each other, they defend each other, they stick together. (D1-P15)*
- *We talked about solidarity: helping women. (D1-P21)*
- *"Solidarity" as a key word in the discussion: that people help each other. (D1-P5)*
- *We have to go out as a group to feel protected. (D2-P25)*
- *I have had friends that I have given them advice: if he loves you he doesn't have to hit you, he pampers you. (D2-P26)*
- *Solidarity, because at school we have learned to be supportive. (D2-P12)*
- *I have chosen the equality of all people. We are all equal in rights, but we are also different in character, attitude,. (D2-P18)*
- *Network of women united for education: I think it is good that women have opportunities to work and study because women are capable. (D2-P5).*

## Coercive Discourse

The recognition of the existence of coercive discourse about girls, and on them, was another aspect that emerged as evidence of transformation in the coordinator's interview and in the notes of the field diary, coinciding with previous research on DFG with girls without disabilities (Racionero-Plaza et al., 2018, 2020). As an excluding dimension, the coordinator pointed out how girls sometimes give in to the coercive discourse that naturalizes gender or sexual violence as normal in relationships and, as a transforming dimension, she highlights when girls identify that they are pressured to naturalize such violence:

> *"Yes, I think that the DFGs do help, with the dialogues that take place, to identify it. It is true that they are able to say it, but it is also true that although it is noticeable, at a certain moment the coercive discourse weighs a lot, that is why I think we have to continue working more. I don't know, it is like during the 2 years we have been talking, yes, we are talking, but I think that I hope it will be with them for a long time, because I am sure they will have experiences in which they will have to make decisions. This happens to us, for example, with the attraction to violence, sometimes you see in yourself that you can have it clear, but then it happens to you and you say to yourself "it has already escaped me." Well, I see the same thing happening to them. In affective-sexual relationships, even in friendships, they are very much into being a pimp, they are always waiting to see what they are told., it's like they are very clear about the theory but then it's hard for them on a day-to-day basis." (INT2)*

In the field diary, notes refer to the girls' recognition of situations in which the discourse is coercive and they are opposed to it, showing the impact of the DFG. It is worth mentioning that all the manifestations appear in the second school year, that is, after the practice of at least one school year. One of those is highlight here:

- *They can't force you to get married either, what do you think? (D2-P3)*

## Transference to Everyday Life

The transference of the learning done in the DFG to daily life was another aspect that was revealed in the analysis of the data. In the focus group of teachers and family members, the lack of support networks among friends and with the family as an obstacle to the transference of learning emerged as an exclusionary dimension.

> *"As for the link to extrapolate what they learn here, I think it depends a lot on the context they have outside. If they have a secure network of friends, of true friendships, they dare to do these things, to continue with what we do here. Then there are cases in which, if they don't have that safety net, both family and friendships in their closest environment, they recognize it themselves" (FG1).*

In the notes of the field diary, 58 participations were identified that demonstrate that the girls transfer what they learn in the DFG to other spaces of their daily life. Some examples are:

- *"We have to be careful about what we upload to Facebook: like videos of violence. (D1-P3)*
- *We don't post anything on Facebook about our intimacies. (D1-P14)*
- *I went to a talk about gender violence. It is not only physical but also psychological. (D2-P1)*
- *When we go shopping alone, we keep an eye out for any guy. The four of us together can make a shield, but we go with fear. (D2-P25)*
- *I wish there were more resources in my neighborhood community to prevent sexual harassment. (D2-P13)*

## Increased Participation in Other School Spaces

It was an aspect that emerged in the data, but little was mentioned. In the focus group and in the field diary, they coincide in recognizing how some girls have shown a change after participating in the DFGs with respect to an improvement in their safety, which in turn has been seen in an increase in their participation in other school spaces, in some of the girls, although

this aspect is one of the least mentioned. For example, in the focus group the teachers explain how they observed this with two students:

*- "P7 now participates more in the rest of the gatherings, perhaps the DFGs have given her the support and security she needed to intervene in other educational actions." (FG1)*

*- "as a result of participating in this I saw that she proposed more and it caught my attention, because I thought look at this little girl, she does reason, and maybe this has helped her to find her space." (FG1)*

In the field diary, regarding this category, two of the girls coincide in pointing out that by strengthening the network of support and solidarity, DFGs make them more involved in other school settings:

*- "About freedom-defend: In the playground we can help people who are crying, solve the problem and talk to them." D2-P2*

*- "There is a brave club, I am brave because I help my classmates." D2-P14*

## Romantic Love and Friendship Related to Those Who Treat Me Well

It is another of the most recorded themes in which almost all are annotations analyzed as transforming. This topic also comes up in the focus group with the teachers who participate in the DFG, highlighting how this space provides girls with the opportunity for transformation:

*"I said, what relationship I want in my life, if it brings something to me, if it doesn't bring anything to me, and so I chose to distance myself from certain people. And the truth is, it was the first one and I said to myself, there are still people older than me, who do not have that clear in life, and here they said it with such simplicity, with such naturalness, that I was overwhelmed. And that's why I said, we have to keep doing it, and in fact I started to take some high school students, in fact later they started to participate, and jeez it's very nice, to see how they start this path and then continue working, because then they analyzed ads, and saw the non-egalitarian attitudes. and how they perceived it, and how they denounced it, which is true as S. says, in a safe environment, but jeez, it's very hopeful." (FG1)*

And another teacher adds:

*"no, that romantic love from the movies that still have it. So I really enjoyed taking the leap into DFGs to see that change, no. But I can see that those reflections, at least, are on the way, toward changing that, and toward having much healthier and more affectively satisfying relationships. Because they always focus more on protecting them, on instructing them, and so on accompanying them, on creating those affective bonds. And I see it from the outside, not knowing them, and suddenly seeing such authentic approaches, saying, how nice that they are getting to think like that and transforming them as well." (FG1)*

This is highlighted mainly in the field diary, where there are records from the girls that reflect transforming messages that are part of the dialogues on ideal love and well-mannered relationships, which are internalized by the girls and become a guide for the relationships they are building and long for in their lives. In the diary there are 43 transforming entries, compared to three excluding ones.

In the girls' interventions, love is identified as a feeling that is awakened only with good treatment and respect, separating it from deceit or mistreatment. In addition, it is not only identified in intimate relationships, but also awakens in those close to them, such as family or friends:

*- Love is to love: family, friends, and partner. (D1-P13)*

*- To love a person is that he/she is not just for you that person. (D1-13)*

*- Love is friendship, generosity, sharing with those who love you,. (D2-P18)*

*- It's not a true friendship if he/she cheats on you. (D2-25)*

*- It is also the day of friendship, freedom and love (St. Valentine's Day)/D2-P21)*

*- Men and women have to agree to treat each other well. (D2-P25)*

*- If you cheat on me or insult me it is not love. (D2-P14)*

*- It reminds me of what happened to me on a field trip, a classmate who said that if I slept with him, I said no because I didn't trust him, that I wouldn't allow him to do that. I left crying and went with a friend. (D2-P2)*

## Change in the Professionals' Recognition That Girls Can Do More

This is another aspect of the case study analysis that shows how the DFGs have allowed, by being set up as an interactive learning context, a change in the way girls are viewed, as they have seen that girls are more capable than they expected.

*"And then I told my boyfriend about it, oops a super cool thing happened to me, because sometimes it seems like we don't know to what extent they understand us, right? But they do understand us because then they are able to act in the right way, and to identify it, as A. and A. were saying. For that part, they are useful to them." (FG1)*

It is also seen that participating in the DFGs has led to a change in the way teachers look at girls, who see them in a different light.

*- "And I was very surprised because I remember that I, especially, in a gathering that we had on Valentine's Day, I was very surprised because I realized that, in fact when I left here I talked about it with a friend of mine, I told her, I wish you could have come and witnessed what I experienced, because I say it and I get excited, because for me it was very emotional and very hopeful." (FG1)*

*- "It happens to me like A, being from Physical Education, to me it has changed the way I look at them, because without wanting to, in Physical Education you do not have time to deal with certain issues, not to talk with them about certain things, and when participating in the DFG they left me hallucinated in terms of the reflections they made." (FG1).*

This change of outlook has involved the teachers learning from the girls.

*- "And I said: if we teachers are supposed to guide a little bit, and I am almost learning more from them than they are learning from me. I also liked this aspect, because in the end the DFGs are productive for everyone, not only for the students, but also for the*

*teachers, because we also understand how to see the reality of the adolescents."(FG1).*

One teacher explains that the DFGs have allowed them to learn together, to learn from each other.

*- "I was going to say along the same lines, and that really I, for example, the students who are in the transition to adult life course, I had them in high school, and the SEAs started in their group, and there we began to change the world, we also learned together, to see other visions, other cultures, and I learned a lot from the Roma ethnic group, and the step, it depends on the culture in which you are, because I sincerely believe that I can advise from the culture in which I have been raised." (FG1).*

Finally, we highlight the remarkable growth of participation of girls, exposing their ideas, from one period to the next in the DFG. This demonstrates how the DFG has effectively constituted a context of dialogical learning for them. Analyzing the frequency of participation with speech in the two school years, it was possible to verify that of the 19 participants who attended the DFG in the two school years, 12 showed increased interventions in the group, making their voices heard. This means that 63% of the participants increased their participation in this space of dialogue among women.

## DISCUSSION

According to international scientific evidence, one of the main barriers for people with disabilities is social exclusion and discrimination, which is an impediment to benefiting from the right to sexual education that prevents them from gender-based violence (Rohleder et al., 2019). This is a reality that is internalized as exclusionary in that socially it has been considered that people with disabilities do not decide for themselves on these issues. However, the case study shows that when this dimension is transformed, creating a space for context of dialogic relationships (Flecha, 2000), these adolescent girls with intellectual disabilities benefit from mechanisms that are effective in preventing violence.

Therefore, our data invite further research on how DFGs can be an educational intervention aimed at responding to the existing gap in this field, given the lack of programs in sex education and violence prevention with adolescents and young people with disabilities (Murray, 2019). These are encouraging data since evidence shows that adolescents and young people with disabilities are exposed to a high risk of being victims of sexual violence in their different developmental environments (Jones et al., 2012; Iudici et al., 2019), especially young women with intellectual disabilities. The results we present aim to contribute to reduce the risk to which adolescents and young women with intellectual disabilities are exposed to suffer violence in their affective-sexual relationships, while at the same time helping them to build healthy relationships that bring them well-being.

In addition, previous studies show that, despite the high risk of suffering violence, there are a low percentage of complaints due to the fact that victims with disabilities encounter numerous barriers in their environments to report (Iudici et al., 2019). UN Women, the Committee on the Elimination of Discrimination against Women and the Committee on the Rights of Persons with Disabilities point out, from international recommendations, the importance of including the voices of adolescent girls and young women with disabilities in order to seek their involvement in all parts of the process of ending the sexual violence they suffer. In this way, the empowerment of those who suffer violence is pursued with the training of skills that prevent them from violent relationships. Creating learning environments and interactions for girls in special education is one way and the DFGs are a space for affective-sexual education.

The data obtained in the case study shed light on two aspects. On the one hand, it identifies which elements have been favorable in the transferability of the DFGs to a special education context with adolescent girls and young women, as well as the conditions that have provided the successful results that have been obtained. And on the other hand, the improvement perceived by teachers and educators in the prevention of gender violence in girls with disabilities through the implementation of the DFGs.

We start from previous studies that have already shown how interactive environments based on dialogic learning create a framework that enhances learning by improving the results, while protecting them from any kind of violence (Flecha, 2000, 2015). In special education settings the results have been also corroborated, showing that creating interactive learning environments in special education is beneficial, not only in students with disabilities, by improving the quality of learning received, but also in the professional progress of teachers (García-Carrión et al., 2018).

The benefits achieved are obtained by transforming the interaction patterns (Aguilera-Jiménez and Prados Gallardo, 2020) of a traditional classroom into ones that create conditions that favor the creation of learning environments based on solidarity and mutual support. These benefits can be reflected both in the increase of supportive interactions either in the group itself or beyond the school, in the improvement of communication skills and instrumental learning, the improvement of relationships among students (García-Carrión et al., 2018). The data from our research show that DFG generates a dialogic environment in the school and manages to connect girls with intellectual disabilities with their environments, whether immediate, such as the family or the school, or other non-immediate environments in which they develop (social networks, their community of neighbors, their neighborhood or city where they live).

As already mentioned, the successful program of the DFG (Puigvert, 2016; Racionero-Plaza et al., 2018, 2020) is built on the theoretical framework of preventive socialization of gender violence (Valls et al., 2008; Puigvert, 2014; Gómez, 2015; Puigvert, 2015/2016; Ruiz-Eugenio et al., 2020), dialogic feminism (Beck-Gernsheim et al., 2001; De Botton et al., 2005) and Dialogic Learning (Flecha, 2000). This is an educational action that is giving positive results with adolescents without disabilities in the prevention of gender violence (Salceda et al., 2020). This is a priority objective given the evidence showing the impact of the first love learning on the rest of future relationships (James et al., 2000).

Something else that is apparent in the data we have analyzed in the case study is with respect to coercive discourse. Recent analyses show that one of the key components of gender violence victimization among adolescents is the influence on the preferences of adolescent girls to start having an affective-sexual relationship. These preferences are strongly influenced by a coercive discourse that reproduces in the peer group interactions that pressure and push them to have relationships with violent boys (Racionero-Plaza et al., 2021). In this regard, the way of talking to friends and peers can influence preferences, including the different models of masculinity, which is important since each model of masculinity plays a different role in perpetuating or eliminating gender violence (Flecha et al., 2013). Therefore, to prevent gender violence among adolescents, it is crucial to promote communicative interactions that contribute to changing the preferences of girls toward a model of masculinity away from gender violence, and that eliminating the pressure exerted by the coercive discourse in the peer group. In addition to generating interactive learning environments, it is necessary to ensure that these environments are concerned with promoting the identification of coercive discourses and decision making for sexual relationships free of violence. In our analyses, we have observed that thanks to the participation of girls in the DFGs, it has been possible to promote communicative interactions that promote a discourse in the peer group that not only enables them to recognize coercive discourse when it appears, but also to express their opposition to it.

## SOME CONSIDERATIONS TO CONTINUE

From our results we can conclude that, in the experience developed, described, analyzed and discussed, the DFGs proved to be transferable to the context of special education, generating dialogic interactions that improve the learning and relationships of girls with intellectual disabilities in terms of sexual education. The overall form of the DFGs was maintained; although there were changes resulting from the dialogue with the girls themselves (use-enders) regarding the frequency of the meetings and their duration, the content discussed was the same as that developed in DFG with girls without disabilities, i.e., central themes for affective-sexual choices, based on scientific texts and sources.

Finally, due to being a single case study, we consider important to replicate it in other contexts in order to gather further evidence on the effective transferability of the DFGs to promote a dialogic learning environment in diverse types of educational settings and as a promotion of a dialogic learning environment.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Board of the Community of Researchers on Excellence for All (CREA). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

RM, MS-G, FB, and LN-S conceived and designed the study. LN-S conducted a preliminary analysis of the data. RM and LN-S completed the data analysis, checked, cleaned, and tabulated the results. RM and LN-S drafted the first version of the manuscript. RM, MS-G, FB, and LN-S have contributed to revising the manuscript and have approved the final version of the manuscript. All authors contributed to the article and approved the submitted version.

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# Adults With Special Educational Needs Participating in Interactive Learning Environments in Adult Education: Educational, Social, and Personal Improvements. A Case Study

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Previous scientific contributions show that interactive learning environments have contributed to promoting learners' learning and development, as interaction and dialogue are key components of learning. When it comes to students with special needs, increasing evidence has demonstrated learning improvements through interaction and dialogue. However, most research focuses on children's education, and there is less evidence of how these learning environments can promote inclusion in adult learners with SEN. This article is addressed to analyse a case study of an interactive learning environment shared by adults with and without special needs. This case shows several improvements identified by adult learners with special needs participating in this study. Based on a documental analysis and a qualitative study, this study analyses a context of participatory and dialogic adult education. From the analysis undertaken, the main results highlight some improvements identified in the lives of these adult women and men with SEN, covering educational improvements, increased feeling of social inclusion, and enhanced well-being.

**Keywords: adult education, interactive learning environments, dialogic learning, inclusion, well-being**

## INTRODUCTION

The World Health Organisation estimates that more than one billion people live with some form of disability (WHO, 2020), corresponding to ∼15% of the world's population. It states that 3.8% of people aged 15 years and older have significant functioning difficulties and require assistance from various services. Furthermore, according to UNESCO, people with disabilities are more likely to be out of school or drop out of school before completing primary or secondary education (UNESCO UIL | UNESCO Institute for Lifelong Learning UIS, 2017).

According to UNESCO (2019), adults with disabilities are considered one of the most vulnerable groups in society. The limited possibilities to attend or complete school as children led to low literacy capacity as adults and overall educational achievement, which negatively influences their participation in further education following the Mathew Effect, which states that those with more education get more. Those with less education get little or nothing. Adults living with disabilities are increasingly being a target group for adult learning and teaching in different countries. However, they are still poorly visible and continue facing barriers in accessing adult learning and education.

To achieve the fourth goal of the Sustainable Development Goals (UN, 2015) (ensuring inclusive, equitable and quality education and promoting lifelong learning opportunities), it is necessary to investigate which educational actions serve this purpose, in which contexts they occur, and the role that adult education can have in it.

In this article, "adult education" is used in a sense given to it by the international scientific community at CONFINTEA V (UNESCO, 1997), as it can be read in the *Hamburg Declaration*. The impact of the fifth *Conférence Internationale sur l'Education des Adultes (CONFINTEA V)* held in this German city in 1997 in the definition of EU policies on adult education and lifelong learning is relevant to mention. In the Hamburg event (1997) many debates were held about the role of adult education in a changing environment, being adult learning understood as an integral part of lifelong learning. Learners were conceptualised as subjects (not objects) of their learning processes and adult education was connected to community learning and to dialogue between cultures. Adult education was related to social and economic development struggles, to justice and equality, being a potential way for individual empowerment and social transformation (Oliver, 2010). CONFINTEA VI (2009) continued being a relevant platform to further dialogue about formal and non-formal adult learning policies at the international level, establishing ambitious goals and urging to real actions towards advancing to favour that adults enjoy their human right of lifelong learning. In the next future, CONFINTEA VII (2022) will continue this line contributing to the analysis of efficient learning and adult education policies from the lifelong learning perspectives, taking into account the Sustainable Development Goals from the United Nations (UNESCO). Thus, this understanding of adult education is also related to the idea of democracy, social justice and solidarity that some communities are promoting to enhance the learning opportunities for all students (Vanegas et al., 2019).

In that sense, adult education encompasses formal, non-formal and the whole range of informal and occasional learning in multicultural societies. This concept includes diverse learning spaces, among others: home, school, community and workplace.

Key historical and political milestones influence the development of the adult education in Europe.

The *White Paper in Education* (European Commission, 1995) represented a relevant moment in the understanding of the advancement of Adult Education policies in the European Union. It signified the promotion of education and training in Europe in a context of technological and economic change, proposing objectives to guarantee a high-quality education for all. Specific EC action programs, such as the Socrates programme with a section of adult education, were an important milestone in this context, followed by the Grundtvig action, focused on adult education and other educational pathways to promote lifelong learning with a European dimension.

In 2001, the European Ministers of Education defined the main goals to be achieved, including improving the quality and effectiveness of educational and training systems. At that moment, it was already recognised that people with more difficulties to be engaged in lifelong learning processes had a greater risk of suffering social exclusion (Council of the European Union, 2001). This implied efforts to promote social inclusion in AE, to overcome barriers and favour more significant access to different educational and training systems for all. The case analysed in this article is also addressed to show how several of these barriers can be overcome through a concrete interactive learning environment in the case of the adult learners participating in the study.

Similarly, in line to favour lifelong learning strategies across Europe, the Memorandum on Lifelong Learning (Commission of the European Communities, 2000) launched a consultation process across Europe to identify strategies and ways to foster lifelong learning opportunities for all. Lifelong learning was considered an umbrella for a wide diversity of learning processes, from pre-school to post-retirement, including informal and non-formal learning. From this process of consultation, the establishment of a European area of Lifelong Learning was proposed. It was thought to create a common frame in Europe to facilitate mobility and more coherent use of the existing resources towards lifelong learning, promoting the centrality of the learner within the learning process, equal opportunities and the quality and relevance of learning opportunities (Commission of the European Communities, 2001). Relevant stress for analysing learning needs more precisely and to respond to the needs of diverse social groups was identified. In 2006, for example, the EC Communication *It is never too late to learn* (Commission of the European Communities, 2006) encouraged the Member States to increase and consolidate lifelong learning opportunities for adults and make them accessible. This article responds to the need to provide scientific evidence on the improvements of a concrete interactive learning environment in specific learning and personal trajectories of adults with special needs. Since the Council Resolution on a renewed European agenda for adult learning (Council of the European Union, 2011), relevant emphasis was given to promote the acquisition of work skills, active citizenship and personal development and fulfilment, favouring flexible learning environments and mechanisms to assist adult learners.

Consequently, today Adult Education is intrinsically linked to lifelong learning, affects the actors involved and envisages the extension of multiple educational networks encompassing all possible institutions. Adult education understood as a common good is achieved in a society when there are accessibility, availability, affordability and social commitment to its functioning (Boyadjieva and Ilieva-Trichkova, 2018).

According to previous research (Desjardins, 2019; Hamdan et al., 2019) adult education has positive effects on a wide range of aspects, such as adult empowerment, social inclusion, social networking, motivation for learning, work-related aspects, including improved job and career prospects, performance and earnings, job satisfaction and commitment to work and innovative skills, as well as other parts of everyday life (Moni et al., 2011; Ryan and Griffiths, 2015; Magro, 2019).

Adult education can also have an impact on adults with special educational needs. By "adults with special educational needs" we mean people who have long-term physical, mental, intellectual, or sensory impairments which, in interaction with various barriers, may prevent their full and effective participation in society on an equal basis with others (UN, 2006). Recent research in education suggests that learning environments based on inclusive interactions help promote learning and development of students with Special Educational Needs (SEN).

In the case of children with special educational needs, previous research suggests that their participation in educational activities developed in inclusive, interactive environments has clear benefits on learning (Duque et al., 2020). However, this result has not yet been discussed in the case of adults.

According to the findings of Moni et al. (2011) with adults with SEN in community-based adult education contexts, community organisations contribute to the literacy processes of participants with SEN in these programmes. This study points out that, for many years, functional skills training (such as cooking and manual jobs) has dominated community-based programmes for people with SEN and there has been limited recognition of the role that literacy can play in improving the quality of life of learners with SEN through lifelong learning (p. 474). There is currently no research investigating the degree of literacy needed by adults with SEN in a variety of contexts in adulthood. Depending on the adults' needs, literacy needs can vary widely from employment, family, daily living challenges, leisure and recreation, even to the degree of literacy needed in specific areas such as computers/internet and the broad area of health issues. In any case, it is a basic instrumental knowledge necessary in diverse contexts; therefore it is relevant to identify venues to enhance its learning.

The development of social competences is an integral part of education of this collective. According to de Morais and Rapsová (2019), several specific criteria have to be considered when working with people with special educational needs. Some of them are: (1) To perceive the education of older people as a lifelong process, (2) to take into account the possibilities of education in the system, (3) to recognise the needs and interests of individuals, (4) to enable education without discrimination, (5) to improve the quality of life through education and occupations, and (6) to make use of their life experience for themselves and society as an asset (de Morais and Rapsová, 2019).

In this sense, training focused on social aspects can be beneficial because competences to manage a wide range of social situations provide specific protection in cases of stress, tensions and conflicts. A reasonable level of social competences significantly determines the ability to cope with everyday stress, create excellent and non-conflictual interpersonal relationships, and find more efficient ways of resolving conflicts and misunderstandings. Socially competent people play an active role in their lives, can express their needs and achieve their personal goals (Wilkinson and Canter, 2005; Praško et al., 2007).

Some studies focus on analysing the participation of adults with SEN in training and lifelong learning activities from a labour economic perspective (Myklebust and Båtevik, 2014; Båtevik, 2019) and highlight the value of receiving formal education for the acquisition of future employment opportunities. However, these studies do not delve into the educational characteristics of such learning opportunities for this specific group.

Other research highlights the importance of collaborative work between caregivers of people with learning difficulties and educators in charge of training programmes as this raises awareness of the value of education for these adults and facilitates the establishment of learning opportunities in the everyday lives of people with learning difficulties (Wilson and Hunter, 2010; Brown, 2020).

It is known that interaction and dialogue are critical components of learning (Flecha, 2000; Aubert et al., 2009; Racionero, 2017). Following the sociocultural theory of learning initiated by Vygotsky, learning and cognitive development are explained as cultural processes that occur in interaction with others (Vygotsky, 1978; Rogoff, 1993). Specifically, Vygotsky develops how the human learning is understood as presupposing a specific social nature and a process by which children grow into an intellectual life of those around them (Vygotsky, 1978: 78). Similarly, Bruner (1996) also highlights that learning is an interactive process in which people learn from each other and Wells (1999) argues about the way human beings built their knowledge about the world through a common action and about the way this knowledge is later used in their collective action.

Subsequently, a dialogic turn in educational psychology (Racionero and Padrós, 2010) explained that interactive and dialogical learning environments improve students' learning opportunities and outcomes. The project *INCLUD-ED: Strategies for Inclusion and Social Cohesion in Europe from Education* identified a set of Successful Educational Actions (SEAs) (Flecha, 2015) that have been shown to contribute to improved learning outcomes and social cohesion (Soler-Gallart and Rodrigues de Mello, 2020). These SEAs have been shown to increase learning efficiency, i.e., instrumental tools needed to live included in today's society (basic and transversal skills), and generate equity. Subsequent research has reinforced this evidence, showing that organising teaching based on interaction and dialogue simultaneously improves performance and coexistence among the student group (García-Carrión et al., 2016). Interactive Groups and Dialogical Gatherings are two of the SEAs that allow this type of teaching organisation to be carried out so that high levels of learning are achieved in safe and supportive spaces that promote friendly relationships and better coexistence. Interactive groups -IGs- (Valls and Kyriakides, 2013) are a way to organise the classroom in which the students are split in groups, with a volunteer facilitating that all participants in the group interact with each other when solving the task. IGs draw on to the principles set up by the "Dialogic Learning" theory (Flecha, 2000), that is: participants engage in an egalitarian

dialogue in which they exchange statements (arguments, reasons, facts, etc.) drawing on validity claims, rather than on their "power" position within the group. Dialogical Gatherings work on the basis of dialogic reading: participants read universal readings, and then they share their reading in a gathering, where everyone can contribute reading aloud the fragment they want to share. Then all participants in the gathering can comment or discuss on the fragment, reaching a distributed (Hutchins, 2000) understanding of it throughout the dialogue (Bakhtin, 2010, Flecha, 2000). Dialogic Gatherings include different types, such as Dialogic Literary Gatherings (participants use universal readings), Dialogic Music Gatherings (participants use universal plays), Dialogic Mathematics Readings (participants read mathematics masterpieces), Dialogic Arts Gatherings (participants share their comments on universal paintings or sculpture), etc.

These contributions also apply to students with disabilities, as they benefit from interactive learning contexts to progress to higher levels of learning and higher stages of development. Duque et al. (2020) state that interaction and dialogue positively impact students with SEN. According to the results they present, participating in activities such as interactive groups or dialogical discussions with the rest of the students, makes students with SEN improve their learning and social integration skills with the rest of the group. Interacting with peers with higher academic competence levels under the same curriculum allows students with special needs to make more significant learning progress in mainstream schools. Each person, regardless of their condition, can contribute from their cultural intelligence to the learning process. Previous research suggests that placing students with SEN in the mainstream classroom, together with the rest of their peers, and promoting interactions based on egalitarian dialogue (Flecha, 2000), has benefits both on the learning of students with SEN and the rest of the students (Fernandez-Villardon et al., 2020). Inclusion fosters the acquisition of academic skills (Dessemontet et al., 2012), improves educational outcomes (Nahmias et al., 2014) and intellectual engagement (Mortier et al., 2009) of students with SEN. It also has positive impacts on social development, as interacting with the rest of the student body leads these students with SEN to improve their social skills and the acceptance they receive from other students (Meadan and Monda-Amaya, 2008; Draper et al., 2019; García-Carrión et al., 2019).

Research also includes the analysis of how interactive learning environments are developed in special schools to create better learning opportunities for children with SEN. The results put forward by the authors suggest that rethinking the learning context by introducing interaction-based instructional models' benefits children with disabilities and provides high-quality learning and safe and supportive relationships for these students, thus promoting their educational and social inclusion (García-Carrión et al., 2019). However, such research is usually focused on children, so there is a gap in education for adults with SEN. This paper discusses the improvements of the case study's dialogical education context on the adult with SEN who have participated in this study. The aim is to identify these concrete adult learners' improvements in this interactive environment in terms of instrumental learning, social integration and personal development.

# MATERIALS AND METHODS

This study is based on the communicative methodology (Gómez et al., 2011), which has been used in previous research that has achieved social impact with vulnerable populations (Puigvert et al., 2012), including adults and people with special educational needs (Duque et al., 2020). In the communicative methodology, an inter-subjective dialogue is established between the people who participate in the research and the researchers, from the design of the study to the interpretation of the results (Gómez, 2019). In this dialogue, international scientific evidence is contrasted with the participants' everyday experiences, which allows for the construction of new scientific knowledge that is useful for transforming the analysed realities (Flecha, 2014; Flecha and Soler, 2014). This methodology contributes to providing solutions to the problems faced by citizens in different social areas, including education and social inclusion (Soler and Gómez, 2020; Torras-Gómez et al., 2019).

## Description of the Case

Following the postulates of the communicative methodology, this research has been developed as a case study (Flyvbjerg, 2006; Yin, 2011). This case study aims to analyse how this type of learning environment promotes inclusion, educational improvements and enhance well-being in adult learners with SEN participating in this study. In social sciences, case studies are one of the principal means in which research is carried out. For this research, the case study allowed an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular *real life* educative context (Simons, 2009). The case study is about La Verneda Sant-Marti school, a school for adults located in Barcelona, Spain (Sánchez Aroca, 1999). This school is a Learning Community (Soler-Gallart and Rodrigues de Mello, 2020), the first of its kind, and implements Successful Educational Actions (Flecha, 2015). The school was created in 1978 in response to the demands of neighbourhood residents. Since then, it has continuously taught people to read and write, helping adults obtain academic qualifications that facilitate their insertion into the labour market or promoted their access to university, and their fully participation in civil society. The school is an international reference for its trajectory and contributions to the democratic movement in education (Sánchez Aroca, 1999; Aubert et al., 2016) and is, precisely, for that reasons that was selected as case study in this research. This antecedent allowed the research team to explore this case, paying particular attention to the dynamics and characteristics of the school that are linked to the educational and dialogic participation of adults with special educational needs. The school is the result of the empowerment of the neighbourhood; it was founded by citizens encouraged to learn and access education, and thanks to volunteering, they manage to organise what today is the Learning Community of the La Verneda Adult School- Sant Martí.

The didactical and methodological organisation approach followed by the school is called "dialogic learning" (Flecha,

2000). As Flecha (2000) explains in his book, "Dialogic learning" is based on seven principles: egalitarian dialogue, cultural intelligence, transformation, instrumental learning, meaning creation, solidarity and equality of differences. Adult learners engage in egalitarian dialogue, exchanging their understanding (based on their previous personal, professional, cultural experience) around the topics discussed/learned within the lesson. Teachers empower adults to engage in this particular way to interact with each other, encouraging adult learners who find more difficult (or challenging) to participate, share their points of view, and thus generate more opportunities for interaction through the exchange of dialogue. All participants in the lesson can contribute to the learning process since all of them (all of us) have "cultural intelligence." This "cultural intelligence" is mediated by personal experiences, as well as knowledge acquired within the workplace, for belonging to a particular cultural group, … Learning becomes a solidarity process in which adults share their own sources of understanding, creating avenues for enriching their collective understanding of the topics discussed/learnt within the lesson. Dialogue becomes the way to share all these "meanings."

This school counts with seven fulltime workers and 120 volunteers who are in charge of facilitating the school's courses and training activities (Aubert et al., 2016). The school is organised by two associations that are an integral part of the school's educational project: Ágora and Heura (the latter is specifically for women) (op. cit.). In this way, the school can be classified as a non-governmental organisation. The number of students with SEN are about 30. They include both people with physical disabilities as well as people with cognitive NEE. One of the latter is also a member of the school board, and he participates fully in the decision-making process regarding school issues. **Table 1** summarises the population of adults with NEE participating in this school.

## Data Collection Techniques and Participants

The information collection techniques used to conduct this qualitative case study consisted of documentary review (Stake, 2013) of files referring to the school's organisation that were requested from the administration and others obtained from the information, that the same school publishes on its website. Likewise, scientific articles published about this educational centre were explored to understand the educational context of the school, the forms of democratic organisation under which it is managed and the pedagogical principles that govern its educational activities linked to the participation of people with special education needs.

Another data collection technique used was semi-structured interviews to establish an open and in-depth dialogue between researchers and research participants. From the communicative approach (Flecha, 2014; Flecha and Soler, 2014), the semi-structured interview aims to establish a dialogue between the person doing the research and the person participating in the study, to reflect on and interpret the phenomenon or object of study. These interviews were carried out from an orientation scrip. According to Denzin and Lincoln (2011), in a case study each case has "value" in their own. It is not expected to generalise, but to provide an analysis of the research topic based on selecting participants that are "significant" because of their experiences, expertise or personal knowledge about the research topic. The people participating in the field work were selected responding to the following profiles, and according to their availability and acceptance to participate in the study: adult people with SEN, school workers (volunteer teachers), social workers (specialised personnel to work with people with SEN), occupational therapists from a mental health centre that collaborates with the adult school. The diversity of profiles allows a triangulation of data to enhance the validity of the results. The profiles of the interviewees are detailed in the **Table 2**.

The semi-structured interviews were conducted through telephone, and the audio was recorded. The first contact with the participants with SEN was made by a teacher at the adult school, who has a close relationship with them. This methodological decision was made to ensure an environment of trust allowing the interviewees to feel safe participating in this study. One member of the research team, who already knew some of the adults participating in the study, conducted the interviews. One of the participants with SEN refused to be interviewed by other that the teacher with whom he had confidence. Thus, we asked the teacher to conduct the semi-structured interview. We explained the objective of the study to this teacher, as well as the script to carry out the semi-structured interview. All participants were informed before the interview about the aims of the study and gave their oral consent to participate. All personal details have been securely stored, and no real names are used, for confidentiality reasons, in

**TABLE 1 |** Distribution of the adults with NEE participating in the adult school, by course.

| Course | Number of participants |
|---|---|
| Beginners (neo-literacy and numeracy courses; people who is learning who to read, write, and perform basic arithmetic calculations) | 7 |
| Secondary education | 4 |
| Access to the university (training to apply to the exam that the Spanish universities facilitate for people older than 25 years old without previous academic degree) | 2 |
| Catalan as a second language and Spanish as a second language (for migrants) | 6 |
| Dialogic Literary Gatherings | 9 |
| Sing language course | 1 |
| Other courses | 1 |

**TABLE 2 |** Participants.

| Pseudonym | Profile | Duration |
|---|---|---|
| Manolo | Student with schizophrenia | 26 min 20 s |
| Carolina | Student with mild intellectual disability | 22 min 11 s |
| Andrea | Teacher | 35 min 44 s |
| Isabel | Social worker | 15 min 49 s |
| Cintia | Teacher | 27 min 27 s |

order to protect the identity of the participants. All names used in this article are pseudonyms. The study was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA).

## Data Analysis

The communicative methodology (Gómez, 2019) has two dimensions, the exclusionary and the transformative, which reflects, respectively, the components that prevent or help social transformation. In our case, the analysis of the data from these two dimensions allows us to identify, on the one hand, the transformative elements that explain or intervene in the impact that interactive learning environments have on adults with SEN and the features that hinder this impact (Pulido et al., 2014). For the analysis of the data, categories of analysis were established based on the study objectives: (1) instrumental learning, which covers educational improvements and contributes to progress in their academic training, (2) social integration, which allows the learners to participate actively and promotes the development of communicative and practical skills, (3) personal development, which is linked to attitudes of empowerment, confidence and improvement of individual skills. These three categories were analysed in terms of the two dimensions of analysis mentioned above: exclusionary and transformative.

# RESULTS

## An Educational Centre Open to the Participation of Adults With SEN Through Successful Educational Actions

The Verneda Sant Martí Adult School is a democratic and plural project where decisions are made by all the people involved in the community through participation, dialogue and consensus. In this school, to participate is to intervene, take part, contribute, listen, be heard and act in all areas and spaces of the school: in the classroom, in committees, in preparing the agendas for meetings, etc. Participation is understood as an attitude that includes all people, all spaces and all processes from the beginning to the end. Dialogue and consensus are the basis for the organisation through deliberative democracy (Habermas, 1992). This dialogue and consensus include social and cultural plurality to build agreements that ensure that decisions and actions can be valid beyond a closest environment.

As mentioned, this school operates according to the dialogic learning principles (Flecha, 2000) and is characterised by the following aspects (Aubert et al., 2016):

1. Non-academic adults participate in all decision-making processes; therefore, all activities reflect their interests and needs, increasing their educational level and skills.
2. The school is open to the community and has engaged many diverse people as volunteers who contribute to a broad and high-quality education.
3. The democratic organisation of libertarian origins influences the School walls: a neighbourhood movement to improve the quality of life and the transformation of schools into Learning Communities.

According to previous studies (Serrano, 2015; Aubert et al., 2016; León-Jiménez, 2020), the key to its success is an effective democratic organisation and functioning, developing a wide variety of activities and an accessible timetable. Adult participants, together with teachers and volunteers, decide and organise the activities to be carried out in the school according to their needs and interests.

This school has always had participants with disabilities and other special needs who have participated in the school's activities on a regular basis. Due to the school's interactive, democratic, and participatory nature, students with SEN are not segregated, neither inside nor outside the group, and teaching is based on a high expectations' basis. Previous research (Molina, 2015) highlighted that Learning Communities promote the inclusion of people with SEN through their inclusive and equal participation in activities shared with the rest of the students, in heterogeneous groups. Interactive groups and Dialogic Gatherings are examples of those kinds of groups.

The interviews carried out show that the school opens its doors to the participation of diverse students, receiving adult students with special educational needs from other entities, health organisations specialised in working with people facing some kind of disability and neighbours from the same neighbourhood who are interested in participating in the school.

> Cintia: In fact, we have cases because they come to us from organisations, for example, people like Carolina, or Mohammed, and others who participate in secondary education graduate courses (…) and others who are in initial levels, several in the afternoon neo-literacy courses (…) we get people with mental health problems, but also with a degree of disability. They start by participating in a discussion group, and from there the moderator suggests to them to study something or participate as a volunteer in the school.

As a Learning Community, the school promotes interactive learning environments by implementing Successful Educational Actions in workshops, courses and learning spaces. The didactic and methodological organisation in interactive learning means that all participants have the same opportunities to contribute to and participate in the learning experience. They engage in an "egalitarian dialogue," in the sense that everyone can share their own statements drawing on "validity claims," rather than other sources of argumentation (such as "power claims," in *habermasian* terms). Participants in a Learning Community are very diverse (heterogenic), meaning that they engage in the interactive learning experience drawing on different types of "understanding;" since all of them are endorsed by "validity claims," participants have the opportunity to enrich their learning experience incorporating different ways to achieve this "understanding" about the topic discussed in the lesson. In this way, people with SEN participate equally in the construction of learning.

The school carries out SEAs such as Dialogic Gatherings or Interactive Groups. In the Interactive Groups, students with special educational needs interact on an equal basis with other people and based on mutual help and solidarity, learning is

generated. Solidarity is understood as a relevant component of adult education that has a transformative aim. Actually, it is one of the seven principles defining the "dialogic learning" approach (Flecha, 2000). In the following quotes, one of the volunteers explains these interactions and highlights the fact that the integration of adults with SEN with the rest of the group, without exclusion or segregation, is based on the fact that the highest expectations are placed on the learning of all people:

> Cintia: Actually, it's like that of any other person in the class. Because we organise ourselves in Interactive Groups, so when I teach maths, we try to make the groups diverse, heterogeneous, and I think of Mohammed, who is quite good at maths. Like anyone else, he does the activities and helps other people. And the other way round too. Everyone helps with what they find more straightforward and with what they find more difficult, they help them.

> Cintia: Also, the fact of organising the class in Interactive Groups, in this way encourages them to help each other, and maybe one person with special educational needs can explain the meaning of a word in Spanish, and another person can help them with something else. They are like anyone else in the group, and they learn just like the others. And so, everybody is getting to the same level of learning (…) And the fact that they are the same as everybody else. If there may be a need to have a space to extend the learning time, but not separated from the group, but with the maximum expectations.

Adults with NEE also participate in Dialogic Gatherings, such as the Dialogic Mathematics Gatherings (Díez-Palomar, 2020). They share and enjoy their readings on masterpieces about singular mathematicians with their peer in the group. Carolina, for instance, highlights her participation in different types of dialogic gatherings, of which she is proud to be part:

> Interviewer: In what type of activities do you participate?

> Carolina: Dialogic Mathematics Gatherings. In summer: photonics (Dialogic Science Gatherings). Dialogic Women Gatherings. Cultural Gatherings. I also participated in a seminar on Astronomy. We came to "La Pau" [this is a neighbourhood next to the La Verneda – Adult School]. In class, we also participated in this about women, the Cultural Gathering.

The inclusive configuration of the SEAs also favours that people with SEN, who sometimes face more significant communicative challenges when establishing relationships with diverse people, find an opportunity to develop their social skills. This effect also applies to volunteers who, by interacting with people with different abilities, have the chance to learn from them and overcome prejudices or stereotypes about disabilities:

> Andrea: I see that the IGs were relating to other people who were different. Because those people only left the residence to go to school, and you take them out of their comfort zone, and you force them to change the kind of relationship they are used to. Maybe they are people who in their day-to-day life would not relate to this type of people, but the IG forces you to connect to them, and it also helps you to break with prejudices you had before. For example, the infantilisation, that this person does not believe that s/he is able to do that, but in the end he/she does it, and by different ways, they can reach the same goal, and the prejudices are broken.

## Improving Learning and Advancing Academic Training

According to the people interviewed, both the participants with SEN and the volunteers who work at the school, the participation of these adults with SEN in the same activities as the rest of the people who go to school results in an improvement in their instrumental learning. These improvements are manifested as discipline-specific learning. In the following quote, one of the participants interviewed mentions the learning she has acquired from participating in various Dialogic Gatherings and courses in this school.

> Carolina: You learn a lot, for example, in mathematics, you learn about mathematics, which is curious; about women, the problem of gender violence, about photonics you learn about lasers, physics, chemistry, and many cultures … A lot of things. Things you've never heard of before. It's good for your memory. I love to participate.

The improvement of learning is also evident in the achievement of certifications or accreditations that allow them to continue with higher-level academic training or that enable them to enter the labour market.

> Cintia: And also, in terms of employment, because, for example, technology training is essential. Or like Manolo, who has passed the entrance exam and is now studying political science [at the university].

The centre's volunteers also provide examples of improved learning in terms of acquiring basic reading, writing and technology skills of students with disabilities who have participated in the school. In the quotes presented, the volunteers highlight the help and solidarity provided by their colleagues at the centre as an essential factor in the achievement of learning:

> Cintia: a man with deafness was participating in an online course, and despite being deaf, by the fact that he helped his colleagues, he was able to have the certificate of the course, which will allow him to have the necessary papers, etc.

> Isabel: For example, people who have come here, we have worked with them, they have taken entrance exams [to the university] for people over 25s years old, they have been able to pass their university entrance exams, and they have ended up as volunteer trainers in ICTs too.

> Andrea: What I saw most was with a person with a physical disability, who had low vision. I saw quite a big impact. At the time of adapting the material and also with his classmates, with his informed consent, they saw that he made great progress in terms of learning. And even above all the support of his classmates, as the central axis, that they read to him the things that he didn't

> understand, and when he finished the course, his level of Spanish went up a lot, and it came out that you could hold a conversation with him. He did very well.

On the other hand, the interaction with more people for more extended periods have allowed people with SEN participating in the centre to develop other cognitive, communicative and social skills. In the following quote, one of the volunteers at the centre highlights these improvements:

> Isabel: On a cognitive level, there is also an improvement or training of processing skills, tolerance, planning, and they also work on their commitment to themselves and the group. So, there are a series of integral improvements.

This acquisition of social competencies such as self-regulation and coexistence is also highlighted by one of the students interviewed.

> Manolo: When you have 20 or 30 older people, the demands are more challenging because you expose yourself directly to the public, and what you try to do is prevent the exposure to the public. That exposure went very well. I didn't have any problems beyond something that was inside me. I had to go outside, go to the bathroom, cold water, cold breaths, and I came back, and I was normal, and little by little, you overcome these things, you learn to control them.

## Social Inclusion Through Dialogue and Democratic Participation in Interactive Learning Environments

The participation of adults with SEN also extends to their involvement in the educational life of the centre. The following quote reveals how some of the people with SEN are participants in the academic spaces opened by the centre and become volunteers in another space, being them who contribute to other people's learning:

> Cintia: Manolo started with the mental health centre. They suggested he come to the school, he did the university entrance exam and began to collaborate in the course about how to use a smartphone, he volunteered. And we had another case of a boy who came to collaborate teaching sign language classes. And Paco, who has been in the school for many years in the neo-readers group, also in computer groups. Last year, he also collaborated teaching other people at the initial level of teaching computers. He is also on the school board.

Also, for the participants, the school represents a place that differs from other contexts in the sense that it allows participants to be involved in the creation of the educational content they receive and gives a sense of warmth:

> Manolo: a school like this contributes a lot. They do, but there are other adult schools, which I don't know if they belong to the *Generalitat* [Catalan Government] or what, and they have nothing to do with it. Adult schools that are not like this school, everything is very mechanised. The management is much colder. Not here, here it is the community itself that creates the content.

Equal treatment is also identified as an essential element in the life of the centre and is present in the interactions established in educational spaces:

> Andrea: When they are people with functional diversity, we always try to include a supporting person … then a very individualised support also takes place, treating them as equals and making them participate in the whole process because they can decide on everything, to continue, not to continue, whether to change the course or not … For example … to literacy, which is a course of initial level … if that person talking to her says: you are ready to move to neo-literacy … talking to her … and not deciding for her, that is also very important.

In one of the students' testimony, the equal treatment he has experienced when participating in the school with other adults is highlighted. This equal treatment does not deny the differences between the different learners, but neither does it reject them. The interactions that are established between students with SEN allow them to feel part of the group and to relate to each other on an equal basis based on their differences:

> Manolo: It was quite essential. If you behave in a regular way, people treat you in the usual way. It was something Albert knew. When I started teaching there, I would say it in class, and you could see how people's reaction was surprising, but not rejection, and with the time that becomes normal and they don't reject you, but they don't adore you either, you're just one of them.

The school's volunteers also recognise these egalitarian dynamics based on the inclusion of all the people participating in the school. In her testimony, one of the school's volunteers states that it is difficult to identify students with SEN because they are all participating in the same space and under the same educational conditions. Such an environment is conducive to overcoming stigmas and social stereotypes.

> Andrea: At the time, I didn't know exactly which ones I had, and they were starting to do the tests. And another one of functional and mental disability. He participates in the computer and computer classes, and as a volunteer, he will help us with the computer in class and when we need help with laptops.

> Isabel: on a social level, it allows them real contact with people without having the stigma component in between.

The democratic and egalitarian management of the school also stands out as a critical element for the inclusion of people with SEN. The analysis of the information collected allowed us to identify that the democratic processes under which the school is managed are a critical factor in the inclusion of adults with SEN. This type of participation generates motivation and interest, given that the educational offer provided responds to the needs of the people involved, and it is decided democratically. It also

favours the development of personal skills such as decision-making, organisation and collaborative work. Both volunteers and participants highlight these aspects:

> Cintia: Democratic management of the whole school, the same people involved, including people with disabilities, are the ones who make all the decisions (board, assembly, school council…) or when we do projects they are also there, and this ensures that the things they do take into account their needs. For example, Paco (who makes sure that things work).

Participating in organisational aspects at school enables people with SEN to develop skills and values useful for their functionality in every day and working life. In the following quote, one of the students with SEN interviewed explains how his participation in school helped him in acquiring new social competences in addition to the academic dimension:

> Manolo: Yes, because on the one hand it prepared me academically for what I wanted, which was to go to university, and on the other hand, as a collaborator, it favoured me in many personal aspects, it empowered me much more than just passing the grade, more profound things, in the day to day, being responsible for 20 people, who are interested in what you are telling them, and in such an altruistic way as in that school, is very enriching in all aspects.

Another important finding is that the school offers its programmes free of charge, as it operates through the voluntary and supportive participation of many people. This aspect is highlighted as relevant for the inclusion of adults with disabilities. In the following quotation, the interviewee alludes to this and states the importance of the fact that the school accepts any type of student regardless of their disability:

> Isabel: First of all, to participate based on the criteria of universal access to education. Then the variable of the cost, free of charge, allows them to carry out training. Then working horizontally, where only the person is considered and not his/her dysfunctionality … just like the other participants, the accompaniment provided from the beginning, from health and educational resources. These are variables that can contribute to this (…)

Interviews with students with SEN also highlight that the solidarity-based and cost-free organisation of the centre facilitates participation in these learning spaces:

> Manolo: In the entrance exam because I wanted to go to university.

> Isabel: [talking about Manolo] He had no income. They did it for free. (…) he was admitted to a psychiatric unit, and he was in the forum. In terms of work abilities, he saw that it would be positive for him to collaborate in something with them, for his benefit, such as exposure to the public, habits, responsibilities. That's why. All derived from occupational therapy at the forum.

## Improvements in Personal Development: Bonding and Empowerment

The data analysis also reveals that the participation of people with SEN in interactive environments promotes bonding with others and contributes to their emotional well-being. These relationships transcend the school space to become part of their everyday social life. In the following quote, one of the participants interviewed gives an account of the friendships she has been able to establish as a result of her involvement in the school and how these are maintained outside the school space and form part of her support and trust networks:

> Carolina: I have some of my classmates, with Nadia, with the teacher, with Irma, with my classmates, I talk about them by WhatsApp, and with you (maths discussions), through WhatsApp groups … now because there is covid-19, we congratulate each other at the end of the year by video call, I talk to my classmates (…) Or like Ruth, we did maths, and after that, we went to class. You can count on her; if you have a problem you can count on her, just like Ruth (from Dialogic Science Gatherings). Ruth has also helped me.

For their part, the volunteer participating in the research report about the improvements on the relationships of solidarity, in the terms of mutual support as is mentioned by the research participants, that are built through participation in these interactive learning environments:

> Cintia: Relationship between colleagues. There is always a lot of solidarity between them. I think of the GES [Secondary Education], which is the group where I have been most of the time. And many times groups are created afterwards to study together, for example. In the GES group, where Carolina was, a participant who had passed the exam, the following year, they created a Catalan conversation group, and she helped them to study Catalan. They help each other beyond the classroom.

Finally, another aspect in the category of personal development identified in the research findings is the empowerment generated in adults with SEN as a result of their participation in these interactive learning environments.

> Manolo: Yes. But it is something more general, and it is a concept that I call empowerment. It's not a specific thing that this lady taught me … it's a general thing. Why aren't you capable … when I came out of class, and you finished the lesson, you felt a sense of security, of power, because if you are capable of doing a class, what are you not going to be capable of? Another thing is if you want to be an astronaut … but for a normal life, that's useful. But then I also demand a lot of myself, etc. but that would be my internal things.

> Cintia: Then, also at the level of empowerment, Paco has gone from not knowing how to read or write, to learning and being a member of the board, and he feels responsible for the school. For example, he makes sure that in *Omnia* [the computer classroom] there is always a newsletter of the activities, or that everything is up to date, and he is still very attentive and calls to know what is going on in the school (if 1 day he cannot come). For example, we know that the library will leave 1 day, and he is unequivocal "we have to get the space."

These results provide evidence, based on the analysis of research participants' quotes, on the improvements in the learning processes, the feeling of social inclusion, and the well-being of the adults with SEN participating in this school. In the following section, these main findings are connected to previous scientific contributions to highlight elements from this school organised as an interactive learning environment relevant to improve adult with SEN well-being learning processes and their social environments.

## DISCUSSION

Indeed, the results of this research show that, as with children (García-Carrión et al., 2016; Duque et al., 2020), learning environments based on interaction and dialogue are shown to be effective in achieving learning and progress in the educational trajectory also in the case of adults with SEN.

The people with SEN interviewed, who had not achieved literacy acquisition before, achieve literacy and continue to participate in more school-promoted programmes. Through interactive learning environments, these literacy processes are in line with research highlighting the value of literacy in achieving independence and well-being for adults with learning difficulties through collaborative work between schools and people or organisations that support this population (Wilson and Hunter, 2010).

Previous studies (Samuel et al., 2008) suggest that adults with SEN exposed to intensive interaction settings experiment a positive effect regarding their social abilities. They improve their relationships with other people, being more open to talking to others, engage in social situations, … Our data suggest that "cognition" can also experiment "improvements" as a result of social interactions in which adults with SEN engage when attending the courses/activities in the adult school. The participation of adults with SEN in interactive learning environments favours their progress in learning, as learning is offered from a transformative perspective with high expectations for all learners' learning. Some of the adult learners with SEN attending this school passed to higher education institutions successfully. This is the case of Manolo, the man that Cintia declares that was able to overcome his cognitive disability and passed the entrance exam to study political science at the university. Manolo felt empowered by the relationship with his peers and the teachers/volunteers in the adult school. The positive interactions (based in not segregating him and recognising his abilities) led Manolo to believe in himself and think that he could take the university entrance exam to study political science. This positive endorsement made that studying at the university (something that was not among his expectations before) become a reality. This result is in line with previous scientific research highlighting the importance of empowering adults with disabilities or learning difficulties to continue learning throughout their lives (Moriña, 2017; Lawson and Parker, 2019; Buchanan and Warwick, 2020).

Interactions with peers and with various members of the community enable personal development in terms of establishing relationships and the implementation of communication and prosocial skills by people with SEN (Villardón-Gallego et al., 2018; Magro, 2019). For the people who have participated in this study, the development of this type of social competences has positively improved their ability to cope with daily stress, create good and non-conflictive interpersonal relationships, and find more efficient ways of resolving conflicts and misunderstandings. Socially competent people play an active role in their lives, can express their needs and achieve their personal goals (Praško et al., 2007, Wilkinson and Canter, 2005). On the other hand, in the case explored, the interactive learning environments promoted through SEAs make it possible that, from these interactions, other people attending the adult school overcome stereotypes or prejudices about people with SEN, as reported by Andrea in her interview. Andrea explains how adults with SEN participate in an egalitarian basis within the interactive groups and the dialogic gatherings. They are exposed to situations that take them out of their comfort zone, thus being "forced" to change the type of relationship they use to establish with people without SEN. Our data suggests that this procedure can create avenues for adults with SEN to improve their social skills.

The results obtained are also consistent with what other research claims about the improvements in the participation of people with SEN in learning environments such as the school where we conducted this study; Ryan and Griffiths (2015), for example, found that in social inclusion settings that promote people with SEN interacting with others who do not have SEN, those people with SEN also participate in decision-making and the educational management of the school. This has also occurred in the school where we have carried out this study. This improves self-advocacy and empowerment (Ryan and Griffiths, 2015) and allows adults with SEN to become aware of their capabilities and what they can achieve with support from their peers and the community.

Finally, our results show that solidarity is a characteristic of the interactive learning environment studied, connected to the improvements achieved. Previous research has highlighted solidarity as one main component of interactive learning environments such as dialogic literary gatherings and interactive groups (Pulido-Rodríguez et al., 2015; Khalfaoui et al., 2020), and adult education has been identified as a context of collective action, mobilisation and solidarity leading to greater equity and inclusion (Heidemann, 2020; Smythe et al., 2021). Drawing on solidarity can contribute to approaching the right to quality inclusive education for people with disabilities at all levels and lifelong learning, as recognised in the Convention on the Rights of Persons with Disabilities (UN, 2006).

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Board of the Community of Researchers

on Excellence for All (CREA). Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

## AUTHOR CONTRIBUTIONS

JD-P and EO conceptualised the research. JD-P conducted the fieldwork. MO analysed the data. JD-P and MO conducted the literature review. MO wrote a first draught of the manuscript. JD-P, EO, and AP revised and edited the manuscript. All authors contributed to the article and approved the submitted version.

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# Dialogic Learning Environments That Enhance Instrumental Learning and Inclusion of Students With Special Needs in Secondary Education

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Across Europe, the enrolment of students with special educational needs in regular classrooms is increasing, although it does not always mean access to high quality educational experience. In this context, inclusive education has been enhanced in most educational systems, but its successful implementation is still limited and has become a challenge in most countries, and specially in secondary education, when segregation due to learning achievement is more frequent. Educational practices that take into account the potential of promoting learning interactions within heterogeneous groups of students have already demonstrated contributing to educational inclusion of students with special needs. In this study we analyse the case of a secondary education school located in Valencian Community (Spain), which educates students with special needs along with their typically developing peers and is characterized by its inclusive ethos. The analysis focuses on three educational strategies implemented in the school and their impact on educational improvement and inclusion of the students with special needs: (1) co-teaching, (2) interactive groups, (3) dialogic literary gatherings. Qualitative data were obtained from communicative focus groups with teachers, communicative life stories with students and relatives, communicative observations of the three educational strategies and documentary analysis. The findings show significant increase in the students' instrumental learning, as well as an improvement in these students' overall inclusion in the school.

**Keywords: students with special needs, inclusive classrooms, special educational needs, secondary schools, inclusive education, instrumental learning, interaction, dialogue**

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## INTRODUCTION

Currently there is a strong interest in addressing the inclusion of people with disabilities from international institutions and organizations. A clear example is the *World Disability Report* produced jointly by the World Health Organization and the World Bank (World Health Organization, 2011). This report formulates policies to make the implementation of the content of the United Nations Convention on the Rights of Persons with Disabilities a reality.

In this regard, the report notes the high rate of difference in school attendance between students with and without disabilities, both in primary and secondary schools, with emphasis on

the latter. The report states the need to "adopt more learner-centered approaches with changes in curricula, teaching methods and materials, and assessment and examination systems" (World Health Organization, 2011, p. 15).

In line with the growing importance of the inclusion of people with disabilities, inclusive education is part of the fourth United Nations Sustainable Development Goal (SDG4), "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." Furthermore, the European Strategy for the Rights of Persons with Disabilities 2021–2030 (European Commission, 2021) clearly states that education centers must provide an inclusive approach to ensure the right of all persons with disabilities to participate in all educational levels and forms on an equal basis with others. The Strategy also acknowledges persisting gaps in educational outcomes between learners with and without disabilities, and a lack of research on the conditions necessary for learners with disabilities to succeed.

This clear normative engagement with the rights of persons with disabilities has contributed to the increasing number of students with special educational needs accessing primary and secondary mainstream schools (Eckes and Ochoa, 2005; Konur, 2006). However, the challenge of including students with special needs in mainstream schools remains. In Spain, where the study of this paper has been conducted, the report by the UN Committee on the Rights of Persons with Disabilities (United Nations, 2017) concluded that the initiatives and reforms toward inclusive education have not changed in deep the characteristics of the education system, which maintains violations of the right to inclusive and quality education mainly linked to the structural exclusion and segregation of persons with disabilities from the general education system on the basis of disability.

Moreover, the rates of students with special needs (SEN) in mainstream secondary schools are lower than in primary schools, despite the gap between the percentage of students with SEN in mainstream primary and secondary schools has reduced in recent years (Buchner et al., 2021). Mastropieri and Scruggs (2001) remarked, two decades ago, the complexities of inclusion in secondary education, ranging from academic complexity, pace of instruction and teacher attitudes. Worrell (2008) identified seven barriers that hinder the implementation of inclusive practices in secondary education: negative teacher perspectives; lack of specific knowledge; poor collaboration skills; lack of administration support; limited instructional repertoire; inappropriate assessment procedures; conflict between scheduling and time management. In the same vein, Verdugo and Rodríguez (2010) found specific difficulties for implementing inclusive education in Secondary Education, which are related to social interaction and the attitudes of classmates and professionals. Clark-Howard (2019) notes as specific barriers to implement inclusive education in secondary education the school culture, as well as standards pressure. The literature review by De Vroey et al. (2016) points out weak parental involvement and difficulties related to the curriculum and assessment, among others, as challenges to address, but also emphasize particular strengths of secondary education for the inclusion of students with disabilities (for instance, the active role of the students and peer relationships as a resource).

A comprehensive analysis of existing comparative studies from the 1990s on interventions for children with intellectual disability in mainstream or segregated settings already showed improved performance in academic achievement and social competence for those students learning in general education settings (Freeman and Alkin, 2000). However, research has also progressively shown that the participation of students in the mainstream classrooms does not in itself lead to the desired benefits (Comité Español de Representantes de Personas con Discapacidad, 2010; Florian and Black-Hawkins, 2011; Suriá, 2012; Lindsay and Edwards, 2013). In Spain, the Ombudsman for Children (Defensor del Menor en la Comunidad de Madrid, 2005) stated that a large number of secondary school students consider that their peers with disabilities are discriminated against in the classroom.

To revert the difficulties in the implementation of inclusive education and improve not only the percentage of students placed in mainstream education but also their actual academic and social attainments, research evidence points out the need of giving the opportunity for students with special needs to participate in activities together with their peers without special needs (Florian and Black-Hawkins, 2011). Teaching arrangements that improve the relationships that students with and without special needs have among them are important for improving the acceptance of students with special needs and their self-concept (Mpofu, 2003; Pijl and Frostad, 2010). Studies such as Carter et al. (2017) and Schmidt and Stichter (2012) in secondary education, show that peer support arrangements increase social interaction and academic engagement for adolescents with severe intellectual disability. In the same vein, Rillotta and Nettelbeck (2007) point out that for students without disabilities to interact with their peers, there must be a supportive environment that facilitates their interaction. In the last years, there have been advances in research exploring the strategies for implementing dialogic teaching and learning approaches in inclusive educational settings (Fernandez-Villardon et al., 2020).

This claim of expanding interactions in mainstream classrooms with students with special needs is aligned, in fact, with the growing recognition of the exceptional value of dialogue in any learning process (Mercer and Dawes, 2014; Resnick et al., 2015). Building on Vygotsky contributions (Vygotsky, 1978), current educational psychology places social interaction at the core of the learning processes (Mercer and Howe, 2012). Among the different theoretical approaches that delve into specific aspects of dialogue in the classroom, Flecha (2000) has developed the theory of dialogic learning based on seven principles (egalitarian dialogue, cultural intelligence, transformation, an instrumental dimension, the creation of meaning, solidarity, and equality of differences). Furthermore, the INCLUD-ED research project led by Flecha provided evidence on a set of successful educational actions that achieve both raising academic outcomes and social and personal development in very diverse contexts where they are applied. These actions are based on dialogue and participation of the community (Flecha, 2015).

One of these actions is Interactive Groups. It consists of organizing classroom in small and heterogeneous groups of students and place one adult in each group to facilitate the

helping relationships between the students in the group so that they work together on the assigned task (Zubiri-Esnaola et al., 2020). Adults may preferably be not only teachers but also people from the community such as relatives or neighbors of the school, and other volunteers, such as university students. The adults and the activity to be developed rotate through the different small groups, so that in a typical 1-h session, each student has interacted intensively with his or her small group and with 3 or 4 adults.

Another of the successful educational actions identified by the INCLUD-ED project are the Dialogic Literary Gatherings in which participants dialogue around a piece of literature that they have previously agreed on and read in their own (Lopez de Aguileta, 2019). Importantly, the books are one of the works of the best universal literature, such as Shakespeare's Rome and Juliet, Cervantes' Quixote, or Homero's Odissey. Each book takes a set of DLG sessions, and the dialogue is initiated on the basis of the fragments that the participants have chosen to share with their peers. The aim is not to evaluate or correct the interpretations made but to share and deepen the reading.

There is extensive evidence on the social impact of dialogic gatherings and interactive groups in the educational and emotional improvement of typically developing children (De Mello, 2012; Flecha, 2015). In the case of children with disabilities and other special needs, research is increasingly showing that in interactive groups or dialogic gatherings, the learning of children with special needs is increased, not only in the academic domain in subjects such as mathematics, reading, writing, among others (Díez-Palomar and Cabré, 2015; Molina Roldán, 2015) but also in prosocial behavior (García-Carrión et al., 2020b). However, the analysis has been focused on contexts of preschool and primary education and special education centers (Duque et al., 2020). In contrast, the study of the impact of these actions on children with special needs in secondary education mainstream schools is almost non-existent.

Co-teaching has been implemented by many schools as a mean to respond to the challenges of having students with and without special needs in the same classroom. Usually consists on one general teacher paired with one special teacher who, in many cases has a subordinate role as an assistant. The existing studies have demonstrated the benefits of the strategy, even though there is a lack of evidence on the comparative effectiveness across different models and strategies of doing it (Iacono et al., 2021). Among other difficulties, it has been observed that the pairing of teachers often does not lead to increased peer interactions between students in the classroom (Scruggs et al., 2007).

In this framework, this contribution analyzes the case of a secondary education center located in Valencian Community (Spain) that serves typically developing children along with students with special educational needs (including developmental disabilities and learning disabilities) and has implemented Interactive Groups, Dialogic Literary Gatherings and Co-Teaching progressively since 2014. Our study is framed within the research project INTER-ACT, "Interactive Learning Environments for the Inclusion of Students With and Without Disabilities" funded by the Spanish National Programme for Research (2018–2021), which analyses successful educational actions and their impact on participation, on the cognitive dimension (instrumental learning and cognitive development) and on the socio-emotional dimension (social cohesion and emotional and affective development) of students. The case that we present is one of the success stories selected in the first phase of the INTER-ACT project.

As a result of the case study, we describe the process of transformation of a secondary school from segregated to inclusive environments, provide evidence on the dynamics generated in the classroom, and identify improvements in the learning, development and relationships of children with special needs (focusing on those with developmental disabilities). These findings contribute to fill in a gap in the current research on what works in inclusive education, in particular, how to successfully implement dialogic learning environments in secondary schools.

## MATERIALS AND METHODS

There is agreement in the scientific literature that measuring the degree of inclusion in schools and its impact on children with special needs requires the analysis of success stories that are sustainable over time, as well as the integration of the diverse voices that participate in the community (Frederickson et al., 2007; Carpenter and McConkey, 2012; Carrington et al., 2017). Therefore, this study analyzes in depth the case of a secondary school that started a transformation process toward inclusive education more than 5 years ago. The study was developed following a communicative methodology, which allows us to analyze and understand in depth those relationships that are established in the school with respect to students with special needs. One of the essential principles of the communicative approach is the inclusion of the voices of all the affected by research, in particular those who have traditionally been excluded from the creation of scientific knowledge (Redondo-Sama et al., 2020). In recent years the inclusion of the voices of children with special needs in research has become very important with the aim of transforming the processes of discrimination and submission to which they have traditionally been exposed. The communicative methodology incorporates their voices in equal dialogue in all phases of the research. This dialogue has allowed researchers and end users to interpret social reality in a dialogical way, to generate knowledge aimed at further transforming inequalities and to understand the feelings and desires of their lives.

### The Case Study: Sorolla Secondary School

The Sorolla Secondary School (pseudonym), is a state school, located in Valencian Community, Spain. The school had an approach based on the segregation and individualized attention of children with special needs until 2014, when it began a whole school transformation process becoming a Learning Community, after being chosen by 99% of the families, 99% of the students and 70% of the teachers. Learning Communities is a whole school intervention aimed to improve learning and social cohesion, through the dialogic participation of all the community and the implementation of successful educational actions (Gatt et al., 2011). In the 2014–15 school year, the

**TABLE 1 |** Children with developmental disabilities participants in the research de 2018 a 2021.

| Developmental disabilities | |
|---|---|
| Hyperactivity disorder | 10 |
| Moebius syndrome | 1 |
| Motor disability | 1 |
| Visual disability | 1 |
| Intellectual disability | 7 |
| Autism spectrum disorder | 11 |
| Turner syndrome | 1 |

**TABLE 2 |** Data collection instruments.

| | |
|---|---|
| Communicative focus groups (CFGs) | 2 with management team and head of counseling department (total 3 participants each CFG)<br>1 with 3 teachers and 4 members of the counseling department (total 7 participants)<br>1 with students with (3) and without (4) special needs (total 7 participants) |
| Life stories (LSs) | 2 mothers of students with special needs<br>1 student with special needs<br>1 student without special needs |
| Communicative observations (CO) | Students with special needs |
| Documentary research (DR) | Reports of the school not available in the public domain |

Sorolla School initiated the inclusion of children with special needs through the implementation of Interactive Groups (IG), Dialogic Literary Gatherings (DLG), and Co-Teaching (CoT). Today all students with special needs are served in classrooms with their typically developing peers. This center has been valued by Valencian Government as a successful center in the creation of mixed environments of educational inclusion through the pilot study carried out in 2019 in preschool, primary and secondary education centers (Generalitat Valenciana, 2020).

At the moment of the study, Sorolla Secondary School had 1,053 students of 26 different nationalities. It provides compulsory secondary education (357 students) and high school (134 students), middle and higher vocational training (208 students) and basic qualification training programs (9 students). The school also has a Specific Unit of Special Education that attends to 8 students with autism. The teaching staff consists of 116 teachers, 2 counselors, 3 special education teachers, 1 speech therapist, and 2 educators. This research focuses on compulsory secondary education, where 15% of the total students are adolescents with special needs (developmental disabilities, learning disabilities, and other special needs such as mental disorders). Specifically, it has evaluated the impact that dialogic learning environments are having on children with developmental disabilities (i.e., autism, intellectual disability, hyperactivity, etc.), who make up 9.5% of the students. Other students with disabilities such as dyscalculia, dysgraphia, or dyslexia are not analyzed here. **Table 1** shows the students with special needs participants in the study and the associated educational needs.

Currently, the school is developing several actions that involve community participation and contribute to create an inclusive environment for all students, including the dialogic model of conflict prevention and resolution (Serradell et al., 2020), dialogic training for families and teachers, mixed committees, and a tutored library. This paper analyses the main actions that the school has introduced in the schedule to guarantee the inclusion of students with special needs, namely Interactive Groups (IG), Dialogic Literary Gatherings (DLG), and Co-Teaching (CoT).

## Data Collection and Analysis

Data collection took place during the 2019–20 and 2020–21 school years (see **Table 2**). Each of the instruments is described below.

### Communicative Focus Groups

We held four communicative focus groups with different participant profiles. On the one hand, two communicative focus groups were carried out with the management team and the director of the counseling department, who were able to provide an overview of the work with students with special needs in the center and specifically from the educational actions studied. Both groups were made up of the director, the vice-director and the educational advisor of the center. The first communicative focus group was carried out at the beginning of the investigation and information on the processes of progressive incorporation of the IGs, DLG, and CoT was jointly analyzed. The second communicative focus group was carried out at the end of the research to share and validate the results on the impact of these learning contexts on children with special needs.

On the other hand, one communicative focus group was held with teachers and members of the educational counseling department that serves students with special needs in their classrooms. In this meeting, they discussed the processes of transformation of teaching through contexts of dialogic interaction with children with special needs and typically developing children. Likewise, the teachers explained the impact observed in the cognitive and social development of the students with special needs. The communicative focus group was made up of a member of the management team, 2 special education teachers, the speech therapist and 3 teachers of various subjects.

Finally, one communicative focus group was carried out with students with special needs (3) and with typical development (4) who have participated in the IG, DLG, and CoT actions for at least 2 years. All of them are students of the second year of compulsory secondary education (13–14 years old). The adolescents discussed how GI, DLG, and CoT were developed, to what extent and why it facilitated the learning of children with special needs and what kind of relationships were established between the students through these actions.

### Comunicative Life Stories

We developed four communicative life stories. The first one with one student with special needs about his experience after 2 years of participating in dialogic interaction contexts. The second

was to one typically developing adolescent about the impact of his friendship on the development and learning of another adolescent with special needs. The third and fourth were held with two mothers of other students with special educational needs. The objective of conducting these life stories over a short period of time was to dialogically reconstruct the reality lived by the students with special needs, expanding the understanding of their experiences, thoughts and feelings. The narration from different people who share a daily life with these students allowed a multidimensional understanding of the impact of these learning contexts on the development of children with special needs.

### Communicative Observations

We made four communicative observations of IG (2), DLG (1), and CoT (1) involving children with special needs. In these observations, the type and quality of interactions that took place in the classrooms between students with and without special needs, the teacher and other adult participants were analyzed. The categories used in the analysis were: the participation of the student with special needs in the learning activities, helping relationship, friendship relationships (looks, laughs, comments…), the degree of adult intervention in the interactions, adaptive behavior.

### Documentary Research

We carried out a documentary research of internal reports and memoranda of the educational center. This documentary research made it possible to analyze two issues. On the one hand, to know in depth the process of transformation of teaching contexts in groups of segregation, to contexts of inclusion in dialogic interaction. This research process allowed the researchers and participants to reconstruct the processes of progressive incorporation of the IG, DLG, and CoT and to make it easier for other schools to reproduce them (Grant, 2020). On the other hand, we had access to documentation on the evaluation of the learning of the students with special needs corresponding to the school years 2018–19 and 2019–20. This allowed us to assess the impact of 4 years of progressive application of the IG, DLG, and CoT on the learning and curricular planning of students with special needs.

Our position as researchers was to understand the features, positive impacts and difficulties in the implementation of dialogic learning environments in secondary education, with the aim of providing evidence to be used in the improvement of inclusive education. The management team of the school was very interested in the research project in which the study is framed and was aware of its orientation toward social impact and. Besides, one two of the authors have had previous collaborations with the School. This positioning facilitated the access to the fieldwork and a smooth communication with the school during the whole process.

## Data Analysis

Following the postulates of the communicative methodology, the dimensions of analysis have been, on the one hand, the exclusionary dimension, that is, those difficulties that occur in these learning contexts based on communicative interaction; on the other hand, the transformative dimension, which identifies those elements that make it possible to overcome existing inequalities in the care of children with special needs. These two dimensions are transversal to the categories of analysis. The categories observed are, firstly, the process of incorporation and transformation of a secondary school from environments based on segregation to environments based on dialogic interaction and inclusion. Secondly, what are the main improvements identified so far from the different agents involved in these contexts. These categories have been created in a deductive way taking as a reference the analysis of the scientific literature. This has made it possible to identify as categories of analysis the main challenges that schools currently face in order to achieve a fully-fledged education for special needs' students in compulsory secondary education (see **Table 3**).

**TABLE 3 |** Description of analysis categories.

| | |
|---|---|
| Learning outcomes | What results do students with special needs achieve and what is their academic progression. |
| Quality of learning interactions | To what extent do students with special needs participate in learning activities and content with typically developing students. |
| Quality of social relations | If there is a relationship of help, friendship, solidarity with the students with special needs. |
| Attitudes and beliefs toward special needs' students | To what extent there is a transformation in the outlook and expectations toward students with special needs. |
| Adaptive behavior and self-regulation | Participation of students with special needs in classroom routines with typically developing students. |
| Impact on the teaching role | There is a change in teaching staff, organization, and beliefs toward the inclusion of students with special needs. |

Each interview was analyzed according to these categories and dimensions, and researchers reached intercode agreement through crosschecking their codings, for greater credibility. Besides, the diversity of techniques and informant profiles has facilitated the triangulation of information and, as part of the communicative approach of the study, researchers maintained an ongoing dialogue with participants in regards to the interpretations of the data meanings. This member checking was complemented with a final communicative discussion group with the management team and the counseling department, in which the findings were fully discussed. We did not undertake an external audit besides the evaluation of the project design prior to be funded under the national competitive call for research projects.

As a single case study, the transferability of the findings must be considered cautiously and take into account a wider body of research.

## Ethics

All participants (teachers, families, and students) have agreed to provide the members of the research team with relevant information to achieve the research objectives. The different

participants have been informed about the purpose of the research, the participation has been voluntary, as well as the confidential use of the collected data, which will be exclusively used for the purposes of the research. They were provided with written informed consent. Names appearing in the text are pseudonyms. The set of ethical procedures established by the European Commission, 2013 for EU research, the data protection directive 95/46/EC and the Charter of Fundamental Rights of the European Union (2000/C364/01) have been followed and complied with. The study *"Dialogic learning environments that enhance instrumental learning and inclusion of students with special needs in secondary education"* was fully approved by the Ethics Board of the Community of Researchers on Excellence for All (CREA)[1].

## FINDINGS

In what follows, we present the findings obtained through the case study of Sorrolla secondary school. First, we reconstruct the story of the progressive development of dialogic learning environments in the school. We have considered mainly the perspective of the management team and the guidance department. Later, and based on the voice of students, families, and teachers, we describe the features of interactions promoted in the analyzed dialogic learning environments and the impact of these environments on the learning outcomes, social development, and relationships of children with special needs.

### The Process of Change Toward Inclusive Dialogic Learning Environments

Prior to its transformation through dialogic interaction contexts, Sorolla Secondary School approached the educational intervention with children with special needs through segregation practices. Some of these practices, widespread in the Spanish educational context, were the PAE program (Programa de Acompañamiento Escolar—School Accompaniment Programme) or the specific attention to children with special needs outside their reference classroom, in homogeneous groups or individually.

During the academic year 2014–15, successful educational actions (Flecha, 2015) were introduced in the school, such as the Interactive Groups (IG) and the Dialogic Literary Gatherings (DLG). This was done on a voluntary basis by part of the teaching staff. One of the measures adopted was the inclusion of students with special needs in the classroom with other students when these actions were being implemented. The special education and speech therapy teachers started to devote some hours of their teaching within the classrooms in which students with special needs were now placed, instead of doing solely separated interventions. Later, during the 2015–16 school year, the application of IG and DLG was generalized in the instrumental areas (Spanish, Valencian, English, and Mathematics) of first and second secondary education grades. One year later, in the 2016–17 school year, the IG and DLG were extended to all secondary education courses. During the 2017–18 school year, two other actions were introduced on a pilot basis: co-teaching and heterogeneous splitting.

The heterogeneous splitting consisted in reducing the ratio of students dividing the groups while maintaining diversity in each group and one teacher per group. Co-teaching meant that two teachers (at least) intervened in the same classroom, maintaining the size, and diversity of the groups. The management team explains that they obtained better results in those classrooms that had been carried out the pilot in co-teaching, than in those that had been carried out heterogeneous split:

> Although during one academic year, 2017–18, the will of the teaching staff was respected and heterogeneous group splits were carried out, reducing the ratio of students by half, this measure in itself did not produce an improvement in results. Those groups in which two or more adults were introduced into the classroom, making the interactions more dynamic, increased their results, but not those in which the ratios were reduced. [CFG_ coordination team]

Following these results, the school decided in 2018–19 to establish co-teaching as a regular measure in the first and second grade of secondary education at the school, when it is not possible to provide IG. This way, the school achieved that students were attended within the classroom more than 60% of the schedule by two or more teachers and adults from the community. In that academic year, the school also achieved that children with special needs were included in their classroom during 95% of the school time. The IG sessions were doubled from biweekly to weekly, prioritizing this measure in the first and second grades. This was made possible by the participation of 122 volunteers from the community (mainly parents and other relatives of students). Children with special needs worked on the same content as their peers and an individualized plan was applied to them on the evaluation criteria.

Both the management team and all the teachers interviewed at the Sorolla school agree that this process of inclusion of children with special needs could not have worked without the environments of dialogic interaction. The teachers of the counseling department explained in more detail that the process of incorporating children with special needs has not been automatic but a progressive change at different levels. The speech therapist insists on the fact that the process entailed specific adjustments to each adolescent with special needs.

[1]The Ethics Board was composed of Dr. Marta Soler (president), who has expertise in the evaluation of projects from the European Framework Programme of Research of the European Union and of the European projects in the area of ethics; Dr. Teresa Sordé, who has expertise in the evaluation of projects from the European Framework Programme of Research and is a researcher in the area of Roma studies; Dr. Patricia Melgar, a founding member of the Catalan Platform Against Gender Violence and a researcher in the area of gender and gender violence; Dr. Sandra Racionero, a former secretary and member of the Ethics Board at Loyola University Andalusia (2016–2018) and a review panel member for COST action proposals in the area of health; Dr. Cristina Pulido, an expert in data protection policies and child protection in research and communication and a researcher in communication studies; and Dr. Esther Oliver, who has expertise in the evaluation of projects from the European Framework Programme of Research and is a researcher in the area of gender violence.

> Speech therapist: Yes, of course, adjusted to each student. It has nothing to do with these children when they arrived in first grade than now that they are already in 4th grade. At first, they were very nervous, restless, and it has been a very important process of self-control of their own behavior. It was a process of recognizing the physiological responses that these situations created for them (sweat, nervousness, mannerisms, etc.) and all of this was worked on through self-instruction and respecting their freedom and needs if they had to get up and leave. It has been a long and laborious process since they came very protected from primary education, from segregated environments. They came very well-worked on habits, but all that is autonomy, they did not have. [CFG_Speech therapist]

But the process has not entailed only adjustments for individual students with special educational needs. Another teacher emphasized the effort it has meant for all the involved.

> This has been a collective long-distance race. The teenagers, the teachers, the families… all together… this is not like magic, it is the joint and constant work of all these actions that make it possible… now we are telling what started in 2014 [CFG_member of head teacher team]

This same reflection, including families as an agent at the level of the pupils and teachers, reflects the cultural change and the change in human relations that has culminated in this process.While the process has been a progressive change both at the individual level for the students and at the school level, the teachers who have joined the school when the changes had already been made find a very different approach than in other schools they know. This is described by an English teacher in his first year:

> It is my first year at the center and I quickly detected the relationships of solidarity and inclusion, compared to other centers. It is the students themselves who take care of and help manage the children with special needs, so that they can properly follow the organization of the classroom. For me it has been a very positive experience, which scared me at first because there were other adults in the classroom… but now I am delighted… [CFG_English Teacher]

Again, one of the members of the management team identified himself with this feeling of fear in the presence of volunteers in the classroom, a fear that disappeared in the course of the implementation process.

> I understand you because at first, it's scary because you've never worked like this, with more people in the classroom…, and when you start and see the results, it's just the opposite, you see that it's logical, common sense to work like this, for children with special needs, but also for everyone. [CFG_ Teacher 1]

In fact, the full participation of children with special needs in mainstream classrooms led to a profound change in the role of special education teachers themselves. In the next excerpt from a Communicative Focus Group, two members of the counseling department illustrate this:

> Special education teacher 2: My experience as a special education teacher until I came here was like many in a secondary school. You have your classroom, where you take the children with special needs, separated into small groups… and of course, from that point on we are all stigmatized, the children and I, because I no longer relate to the rest of the teaching staff practically, except for specific moments and the children, because the same thing. All of a sudden you arrive here and you no longer have classrooms, all of them are your classrooms… I… sincerely believe that it is very important not to stigmatize the students, but also, as a resource, I am very optimized.
> Counselor: we really wouldn't know, we don't want to work in segregated contexts anymore.

## Multiplying and Diversifying Interactions of Children With Special Needs

In all the interviews and discussion groups conducted, students, families and teachers emphasized the importance and richness of interactions promoted in the three strategies analyzed. For instance, one of the students with special needs interviewed defined the school's way of doing as promoting interactions that help him to learn.

> The best way to learn is with the teachers, with the classmates and with other people… and this is what the institute does… and I don't know if it's the best answer, but it's what I think, what helps me learn [LS_student with special needs 1]

In the framework of a school that multiplies interactions, DLG and IG are the actions that stand out the most. As it has been already explained, IGs consist of small groups working together with the mediation of an adult in each group, who has the role on promoting interactions rather than providing individualized support within the small group. A student with special needs emphasized that the IGs allow him to follow the learning path of the class:

> I think that's how I learn because in the group we help each other when someone loses the thread of the class. This is good for me because if not, you don't learn anything, I say this with respect. When you are at IG you have someone to explain the exercises to you and you don't do it alone. [LS_student with special needs 1]

The interactions within the IG involve a repetition and diversification of messages and task instructions among the group, through which children with typical development do a communicative scaffolding with children with special needs. We introduce here a dialogue between five students where they explain these interactions:

> Student 1: The difference between IG and normal groups, well, we go together all at the same time, while as normal, we go separately, and it is better to go together, we talk, and we speed up.
> Student 2: Yes, this way time passes more quickly, and we concentrate more.
> Student 3: Well, because I think that, if the teacher explains something and we understand him, well, but, if we don't understand him, there is always someone in the group who can explain to the student what the teacher has just explained in other

ways, and maybe he understands it better.
Student with special needs 2: There was a day when I didn't know anything about math and my friend, who knows a lot about math, helped me and I understood, and I got to pass the exam.
Student 1: We help him to repeat it again, to see if it stays in his head.
Student 4: What we do is, if a kid doesn't understand it, try to explain it to him more slowly and in a way that the whole group can understand, and see if that way he gets it.
Researcher: And has it ever happened to you that you explain it to him and he doesn't understand you?
Several students: Yes.
Student 1: Then we repeat it to him, let's see if this way…
Student 5: And sometimes we try to repeat it to him, in other words, so that he can understand it better.
Student 4: I think that before, they were ashamed to say it [student with special needs], once we did the group thing, he asked for help and then there was no more shame.
Researcher: And do they also ask for help outside the interactive groups? Or do you only help each other in interactive groups
Several students: in everything!
Student 4: Yes, but thanks to the groups, I think.

One student told us about her autistic friend: "with these actions, Alberto has been able to communicate more and with more people, not only with me" [LS_student without special needs 1]. In the same line, a student explains from her personal experience, how interactive groups force interaction that in turn create more stable relationships:

> Excluding people is not right either. In IG we help each other, if they don't understand something, they can ask about it and if they are excluded maybe they can't understand so well when a teacher explains or someone else. And also, that they have to interact with others, because if they are excluded, they don't relate to the other children. Yes, there may be people who have a little more difficulty in relating and, in the Interactive Groups, as you have to do because it is part of the work, then it helps you interacting with people. Then you already create relationships [CFG_Student 3]

Nevertheless, some students with special needs find more difficulties when working in interaction with their peers and thus not all of them express the same satisfaction with the enriched environment of dialogic interaction. Interestingly, the mother of one of those students explained her own positive perception of the interactive groups:

> Mother: My daughter [a student with Asperger's syndrome] complains a lot that she memorizes a lot here and she likes it to be explained, to be reflected upon. She doesn't like to read. She has a hard time with school work because it doesn't pique her interest. Interactive Groups, for example, she tolerates them, but doesn't like, because there is too much interaction for her. [LS_Family_student with special needs 2]
> Researcher: And do you think that these spaces of controlled interaction are good for her, even if she doesn't like them?
> Mother: It's good, no, the following! Because I think it's important not to stop interacting with her and to always be attentive to that interaction that little by little manages to awaken interest, of course, respecting her space, whatever she needs, but without stopping trying. She has improved a lot in all subjects. If we were not continuously pushing Azucena…, I don't know if we would be talking now… because she was proposed for the specific center. Before she didn't interact with anyone, she didn't sit with anyone, she didn't talk to anyone, in the previous school she couldn't go out to the blackboard to say anything, to have someone helping her to put her jacket on was a trauma. I think that's the key, to continue interacting and not stop doing it… [LS_Family_student with special needs 2].

In the case of the DLGs, both students and teachers stress the topics that emerge from the classic literature works as a key factor for increasing their motivation and participation in dialogues.

> I like the gatherings a lot because of the topics they deal with. About love I am very interested, I like very much that when someone is in love with someone, how happy love is. I'm also interested in death, because that's how books talk about some families that have died, and it's sad, but I like to talk about it because, although it makes me sad, people have died in my family too, and of course, these are subjects that interest me to talk about [LS_student with special needs 1].
> Also, for example, dealing with important topics that in another segregated environment would not be dealt with, sharing experiences with others is very enriching. In the other type of teaching [segregated] this does not happen and there is a lack of motivation, in these actions the motivation increases. I talk with other students from other schools who don't work like this…, and that the adolescents with special needs only share the patios and some sessions, I think that the stereotypes, phobias, the language, the communicative capacity…, come on… I think it would be almost the same as how they arrived [CFG_Speech therapist].

Moreover, the methodology of DLGs favor the participation of children with special needs in a structured and prepared way.

> The gatherings have encouraged respect for these students, who are valued because they are amazed at their interventions, even when sometimes very affected students have made interventions that have nothing to do with the text [CFG_Head teacher team].
> I would even say that this respect is easily observed because when they speak it is more silent, because they are aware of the difficulty, they may have in expressing their ideas… and this solidarity is created… [CFG_education special teacher 1]

The teachers agree to express that the dialogic literary gatherings offer security to children with special needs to participate in learning. In the classroom observations, we were able to see that interventions from students without special needs served as modeling interventions. This has resulted in children with special needs now participating in the discussions with autonomy and interest. For example, one of the teachers explained the case of one of her students:

> My student with educational special needs is the best at preparing the discussion because she loves them, and they have allowed her to pick up a reading habit that her mother is excited about, she says, "is that she wants to read more and more books since she's in secondary school." In the gatherings, the student feels confident and very motivated to participate. [CFG_Teacher 2]

One of the teachers of the language area summarized the feeling she had about the dialogic environment context that has been created for students with special needs as a continuous stimulation, in which interactions have been multiplied and diversified:

> Without these actions these students would be much more isolated and at a communicative level, they would have much less capacity. If you wish, they are always in communicative interaction, they always have people around them who are communicating among themselves, with others, all those interactions that surround them already give them a lot [CFG_teacher 4]

In turn, the interviewees consider that this environment has promoted individual changes in terms of learning, but also on how children with special needs are valued by their peers.

> Reflecting all the impact of these actions on the students with autism that I attend, after 4 years I see that it has been very positive, at a curricular level, since they have seen their skills increase. At the level of relationships, because they have managed to integrate into a totally normalized context and at the same time, and something very important is that it has transformed the vision that the other students had of them (to be part of the class whatsapp, of their meetings, etc.) and even, that of the teachers, their vision has changed… [CFG_ Speech therapist]

In the following sub-sections, we focus on these impacts on both the socio-emotional dimension and the academic achievements.

## Impact of Dialogic Interaction Contexts on Students With Special Needs' Socio-Emotional Dimension

Our data suggest that the interactions promoted in the dialogic learning environments that we have analyzed have relevant impacts on children with special needs' emotional and affective development, participation and relationship with others. Interviewees highlight the feelings of self-esteem and self-concept, improving their motivation for learning activities. One of the center's special education teachers explained it this way:

> I think that emotionally they feel more balanced because they see that they are doing the same activities as their peers and are always trying to excel. They see that it is difficult for them, that they are not like the others, but they try, because they want to get where the others are going…, to do what they do and it is very fulfilling for them to feel this way, they are very motivated. [CFG_ special education teacher 1]

In the same vein, the Speech therapist has noticed changes even on their physical appearance, that hat are attributable to the fact that they are actively and regularly participating with their peers:

> They have changed even on a physical level. They arrived with very childish behaviors and not at all adolescent and of course, now they take care of their image, their self-esteem… they have learned to understand the double meaning of language… "locked up" in my classroom [specific communication and language classroom] they would have ended up isolated, since they arrived with enormous stereotypes, and all that has been decreasing, decreasing… since they are in the ordinary context, they realize that they want to look like others, share interests with others to be accepted and try to share with them, share their lives. I think many times, what would have become of these young people if they had not been lucky enough to find an institute that promoted these actions! [CFG_ Speech therapist].

Also a mother of a student with special needs highlights with enthusiasm the feeling of being "one more" (both for her son and herself) generated by participating in all the activities. This inclusion has allowed his son to regain the excitement and enthusiasm in his life and in his learning:

> Above all I want to talk about how important it is for my son to be in this center, how happy it makes him, how happy he is. He feels like one more, he participates in all the activities. He needs less and less help, his material is less and less adapted… my son was in a special education center, my son and I do know what we like or don't like, and we know how good it is to be in a school like this that is inclusive. In the other school, the door was closed all the time… My son wants to feel like a person, one more in this society, and here they are showing us that he can be, he feels like one more, I also feel like one more mother. [LS_Family_student with special needs 1].

Besides teachers and relatives, the IGs are explained by the students without special needs as the action that allows them to create those relationships of friendship and solidarity with children with special needs:

> Student 4: Well, when we work in a group, what you do is talk, and when you talk, you make more friends and get along better with them. We laugh together and, in the end, we make friends
> Student 1: I don't remember if last year or this year I saw some kids in the 3rd grade of ESO, who are now in the 4th grade, getting along very badly. And then, I looked out the window of the door, and I saw them cheerful in the interactive groups and talking and all that. I don't know if I explain myself… I think that's why we work like this…

A finding that was not initially sought has been the improvement in the core handicaps of each of the associated disabilities. Special education teachers have highlighted that, for example, in students with autism and a communication and language disorder, there is improvement in social relationships, communication, and continued interaction with their non-disabled peers; or, one of the students with intellectual disability, who also had dyslalia, improved in text comprehension and motivation toward language learning.

Despite this very positive appraisal of the social relationships, a member of the Head teacher team, and it was contrasted with the rest of the teaching staff, highlighted a barrier that the center had yet to overcome. The teachers commented that, although in the school the friendship and good relations between the children with special needs and the other students can be observed, this had not yet been transferred to other spaces outside the school.

The motivation and commitment of the teaching staff, as well as the students, is understood when we analyze the sense that has been growing as the voices of students with special needs have been part of the life of the center, its decisions and the relationships that emerge.

> At the beginning you arrive and say, "here they are not well" and now… I don't change this for anything… it is wonderful the relationships that are created and the sense that it gives you to see as adolescents that in other places would be marginalized, here we take them forward [CFG_special education teacher 2].
> This way of working is educating everyone, students and teachers, what is lived here changes us all. The fact that the kids [students with special needs] work in this way, all together, doesn't mean that they don't adapt to their needs. If Azucena needs to leave the classroom, if Ivan doesn't want to leave for anything in the world, he doesn't leave. They have a voice to decide also, because they are all very different. This way of working makes them feel very welcome [LS_Family_student with special needs 2].
> Indeed, these students now have more voice, but it is not only that we give them voice, it is that their peers are giving it to them and that is very important for them. For example, in the interactive group work, they are the ones who manage their voices, and they give themselves a voice and try to make them [students with special needs] have it [CFG_teacher 3].

### Impact of Dialogic Interaction Contexts on Students With Special Needs' Learning Outcomes

It is not possible to make an analysis of the learning improvements of this student body from external evaluation tests because they are generally not implemented to children with special needs. However, the center has relevant data that we have been able to analyze corresponding to the academic years 2018–19, 2019–20, 2020–21.

On the promotion rate of students with special needs in 2018–19 and 2019–20 the data indicates that 100% of students with special needs graduated from compulsory secondary education without exceptional measures. This is a total of four students. Three of these students are currently in middle school without curricular adaptation. During the 2018–19 and 2019–20 school years, the percentage of children with special needs who are promoted to the next grade is 83 and 73%, respectively. The absenteeism rate for these students is 0%.

The Speech therapist who mentors students with communication and language disorders and autism comments on the improvements observed in the student body as follows:

> I think this way of working helps them a lot, in the learning and also in the nuclear aspects of autism. Our students are learning more than before through these actions, and I have realized that the ordinary context is essential for them to learn more. You realize, for example, that it increases their vocabulary, the ability to better structure sentences, to use words more appropriate to each context, waiting times, tolerance to frustration, all these things I have seen that above all in the Interactive Groups and the Dialogic Literary Gatherings the impact has been very strong. And at the curricular level as well, since they came to the institute with their fourth or fifth grade book thinking that we would continue where they had left off in school, but no, here the expectation is different and we prepared the materials so that they work the same as the others… this has meant a spectacular jump in many of them in certain subjects, even matching the level of the others in some of them. And it is true that they still have their difficulties… but the changes are very big… [CFG_ Speech therapist]

In this sense, other relevant data observed is the reduction of significant curricular adaptation measures. In Spain, individual measures for curricular adaptation were widely introduced in the 1980s for children with special needs. When applying these measures, the teaching staff together with the guidance department establishes the learning objectives for the involved children based on their previous knowledge. This measure is applied to children with special needs who have a gap of 2 or more grades in the learning objectives with respect to their reference grade. In Sorolla school, according to the average of the last three academic years (2018–19, 2019–20, 2020–21), the index of children with special needs who present an extraordinary measure of significant curricular adaptation has been reduced from 72.22 to 50%. While in the 2018–19 school year, 13 students out of 18 had a significant measure of curricular adaptation, in the 2020–21 school year, 15 out of 30 children with special needs enrolled had one. The mother of one of the students explains the progress she has detected in her son in changing from curriculum adaptations to participating in these learning settings:

> Before he copied two sentences and got tired… now he writes whole pages well and takes an exam. He's looking forward to doing well. What is most difficult for him is the theory because he can easily lose focus [mother_student with special needs 1]

In fact, the decrease of curriculum adaptations occurred at the same time as an increase of the enrolment of students with special education needs. In the 2018–19 school year there were 18 students with special needs enrolled (13 of them with a significant measure of curricular adaptation) and in the 2020–21 school year, the number of students with special education is 30 (15 of them with an adaptation).

The increase of students with disabilities may reflect a "magnet effect" among families who are looking for an inclusive school, regardless of whether they are eligible for this school according to their area of residence.

## DISCUSSION

The findings that we have presented suggest that adolescents with special needs at Sorolla Secondary School benefit from dialogic learning environments with typically developing students, and are therefore consistent with learning theories that point out that interaction, dialogue, and small group work promote children's learning in general, and for students with special needs in particular.

Through IG, DLG, and CoT, students with special needs participate in the activities with their classmates and share the same learning contents. This way, the school reverses the frequent exclusion of students with special needs from culture, curriculum learning expectations, and decision-making in mainstream schools because of the deterministic beliefs in place (Florian and Black-Hawkins, 2011). The choice of the

best literary creations of humanity in the case of DLG and the intensity of group work in IG entail high expectations for learning for any group of learners (Flecha, 2015), and thus even more for students with special needs. The qualitative data that we have obtained confirm these high expectations are perceived as very positive by the students with special needs, who in some cases highlight their engagement with the deep themes of classical literature. Moreover, teachers and peers do also change their perceptions about the interests and capabilities of those students. The research has revealed, in contrast to what some professionals of the Sorolla school previously considered, that these children with special needs are interested in topics such as love, friendship, death, and human conflicts. These findings shed light on opportunities for overcoming the perception of academic complexity as a barrier to inclusive practices in secondary school.

Beyond the learning content, what defines IG, DLG, and CoT is the multiplication of interactions in the classroom. The scientific literature examining peer-mediated interventions (Carter et al., 2017) has already demonstrated their benefits for enhancing the social interactions of students with disabilities and special needs. The existing reviews on peer-mediated interventions, however, tend to focus on specific activities in which some non-disabled students are especially prepared for providing support to students with disabilities. In contrast, in the IG, DLG, and the CoT that we have analyzed the adults have a very important role in promoting the maximum number of interactions by the maximum number of people (Flecha, 2000). These are therefore learning spaces where the interaction between equals is adult-mediated and progressively normalized in the dynamics of the classroom that opens up other possibilities to peer-mediated interventions in the context of secondary education.

Furthermore, adults are not necessarily and not solely teachers and specialized professionals but also students' relatives and other adults from the community. Previous studies have analyzed the value of volunteers in Interactive Groups (Valls and Kyriakides, 2013). The experience of the Sorolla School is consistent with these previous results, showing that volunteers with no specialized training may make positive contributions to promoting peer interactions in the classrooms. This finding has implications for current research on the roles and preparation of paraprofessionals who work with students with disabilities (Brock and Anderson, 2020) and the implementation of effective collaborations within inclusive educational settings.

Many adolescents with special educational needs, as a consequence of their affectation, have more difficulties to provide meaning to some social interactions. For example, some people with autism have difficulties in social relations because of their poor ability to interpret gestures and other actions with social meaning (Kandel, 2018). In line with previous research (Wehmeyer et al., 2003) teachers have clearly identified the improvement of adaptive behaviors in the classroom and school.As a result of the participation of children with special needs in IG, DLG, and CoT some of their non-socially adjusted behaviors, such as stereotypes or mannerisms, have decreased and they have developed more adaptive behavior. In the case of DLG, they have reduced the disconnection that they usually suffer from the human world around them, such as their desires, intentions, and beliefs (Bruner, 1997).

Finally, in line with literature on the changing role of special education teachers within the inclusive school framework (Durán and Giné, 2011) our study shows that the change of role at the organizational level (from teaching based on individual learning to teaching based on dialogic learning) has been accompanied by a transformation in the teachers interviewed at the individual level on two relevant aspects. On the one hand, on the expectation of learning toward children with special needs; on the other hand, on the importance of incorporating their voices in the life of the educational community. The stories of the teachers show that after their experience through the IG, DLG, and the CoT, their understanding of children with special needs has changed and that it has grown a shared desire for a better education for them.

The case of Sorolla School questions the model that has prevailed in Spain for children with special needs since the 1980s, marked by segregation and specific individual measures based on the concept of "prior knowledge" rather than on interactions that promote progression to higher levels of learning (Lopez de Aguileta and Soler-Gallart, 2021). Our study shows the feasibility of promoting approaches based on Vygotsky (1978) or Bruner (1997) contributions, which have been poorly transferred to educational practice with children with special needs in many countries.

We can conclude that IGs, DLG, and CoT in Sorolla School are increasing the opportunities to create learning environments closer to a fully inclusive learning situation for children with special needs. Our findings contribute to a research interest on the social impact of dialogic teaching and learning (García-Carrión et al., 2020a). This has clear implications for the professionals of the secondary education and also for the design of public policies. Educational centers like Sorolla Secondary School, and many others that exist worldwide, may inspire new educational realities.

## LIMITATIONS AND FURTHER RESEARCH

This study has some limitations. Firstly, we do not have the perspective of relatives and other adults who are volunteering in the school, and we have not included classroom observations that would allow to describe in detail the interactions that take place, such as the type of questions and comments that students with special needs ask and the frequency of these. Second, we do not have external evaluations to compare academic achievements before and after the implementation of dialogic learning environments. Third, and important, the findings are related to a single, particular case study. Despite other schools are implementing Co-Teaching, Interactive Groups and Dialogic Literary Gatherings, we have not compared the features of the implementation in groups with students with and without special needs, neither the impacts of this implementation. Therefore, the findings are highly relevant for the understanding of inclusive strategies in secondary education, but cannot be generalized. Finally, as the school has a relatively short experience

in the implementation of dialogic learning environments, the sustainability, and the longer-term effects of the actions that we have analyzed here would require sustaining and updating data collection.

Further research should address these limitations and expand the analysis to other secondary schools. One of the issues that have a tremendous potential for the implementation of dialogic learning environments and requires more research is the role of relatives and other volunteers in the classroom and the modeling they can create to encourage peer interactions between students with and without special needs. A second topic of interest is to explore in more depth the effect the early incorporation of students with special needs into dialogic interaction environments has on the main difficulties associated with specific deficits. Finally, families and teachers consider a pending challenge to see to what extent the dialogues that arise in environments like DLG or IG can be extended to other spaces in the school, such as other classes, the playground, or activities outside school hours. Our research suggests that progress can be made in deep friendships growing between children with and without educational special needs in these environments, but it needs also further research efforts. In any of these future lines of research, the voices of students with special needs and their families, together with teachers and other actors involved, are of utmost importance. Ivan, Azuzena, and other students who shared their life stories with great communication effort and generosity did so because they want many other adolescents and families, whom they do not know, to grow up in hope that it is possible to expand their learning and development and surrounded by friendship and solidarity.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Board of the Community of Researchers on Excellence for All (CREA). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

MP and ER-C conceived the original idea with the support of DN-M and TG-D. DN-M and TG-D conducted the literature review. ER-C coordinated the data collection and transcribed and analyzed them. ER-C wrote a draft of the manuscript with the support of DN-M and TG-D. MP revised it and included corrections with the support of DN-M and TG-D. MP revised the final version of the manuscript.

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# Encouraging Emotional Conversations in Children With Complex Communication Needs: An Observational Case Study

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Children with complex communication needs (CCN) regularly have barriers to express and discuss emotions, and have fewer opportunities to participate in emotional conversations. The study explores and analyzes the changes after a training program focused on offering an interactive home learning environment that encouraged and modeled emotion-related conversations between a parent and a child with CCN within storybook-reading contexts. An observational design (nomothetic/follow-up/multidimensional) was used to explore and analyze the changes in the communicative interaction around emotions between mother-child. Augmentative and alternative communication (AAC) technologies were used to provide the child access to emotion-related vocabulary. The training program resulted in the mother providing more opportunities to engage her child in emotional conversations, suggesting that when opportunities and resources to talk about emotions were promoted, the child showed more engagement in emotion-related conversations using his AAC system. The mother–child communicative patterns and behavioral relationships observed during the phases are also presented. This case study illustrates the importance of a primary communication partners' role in facilitating emotional conversations, and the promising efficacy of a training program implemented in a storybook interactive learning environment to promote conversations about emotion-related events while encouraging children with CCN to learn, explore, express, and discuss emotions.

**Keywords: emotion, complex communication needs, augmentative and alternative communication, interactive learning environments, emotional education, family, parent–child interaction, home reading**

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## INTRODUCTION

Communication and language are essential to understand, express, and adaptively regulate and respond to emotions. Children with complex communication needs (CNN) may have impairments in language production and/or comprehension (Beukelman and Light, 2020), resulting from different etiologies such as cerebral palsy, Down syndrome, developmental disabilities, or speech-language impairment. Recent studies have revealed some evidence that people with CCN often face barriers in expressing and/or understanding emotions, and may have fewer opportunities to talk and learn about emotions (Na and Wilkinson, 2018; Rangel-Rodríguez et al., 2021; Wilkinson et al., 2021).

The literature has shown that learning to express and communicate emotions linguistically and appropriately (according to socio-cultural and family norms) is related to adaptive emotional-behavioral outcomes. As an illustration, individuals who are able to express their emotions linguistically (e.g., emotional vocabulary) are more likely to be aware of and recognize their own and others' emotions, exhibit less intense and sustained emotions, present more emotional management strategies, and display effective ways to self-advocate (Test et al., 2005; Cole et al., 2010; Roben et al., 2013; Doyle and Lindquist, 2018; Torre and Lieberman, 2018). Children with CCN often present some challenges in expressing emotions, not only via linguistic modes of communication (e.g., difficult to produce speech or to access vocabulary that enables them to understand and express emotions), but also in non-linguistic modalities (e.g., motor and/or sensory difficulties). Thus, their communication partners may face difficulties in identifying, interpreting, and discussing emotions (Wilkinson et al., 2021) with a child and may over or underestimate the child's emotional experience (Reed et al., 2020). As a result, emotional learning for children with CCN can be challenging, restricted, or even ignored.

There is a significant body of evidence on the benefits of augmentative and alternative communication (AAC) in supporting the language and communicative development of children with CCN (Light and McNaughton, 2012). To have effective communication through AAC, it is critical to offer interactive and dialogic learning environments that support those who rely on AAC and their communication partners (Dattilo and Camarata, 1991; Kent-Walsh and McNaughton, 2005; Ogletree et al., 2016; Beukelman and Light, 2020). Dialogic and interactive learning environments must be created to maximize children's learning opportunities and outcomes (García-Carrión et al., 2018). In addition, encouraging conversations between children and communication partners provides opportunities to interact, express, and share thoughts, opinions, emotions, knowledge, as well as create new learning (Vygotsky, 1962; Rogoff, 1990; Brinton and Fujiki, 2011). Interactive learning environments that promote conversations are also beneficial for supporting social, emotional, and communicative learning outcomes for children with special needs (Gottman et al., 1997; Jenkins et al., 2003; Schmidt and Stichter, 2012; Fleury and Schwartz, 2017). However, research on the possible benefits of AAC strategies to support children's emotional development remains scarce (Wilkinson et al., 2021) and "desperately needs direct attention" (Na et al., 2016, p. 447).

Emotion talk refers to having conversations about emotion-related events. Emotional conversations are a medium to foster emotional learning, which means that children must understand words that describe emotions and also have access to emotion-related vocabulary. Through dialogue, communication partners can discuss and teach the language of emotions, and they can suggest strategies for managing and understanding emotional experiences (Eisenberg et al., 1998; Eisenberg and Morris, 2003; Morris et al., 2007; Tenenbaum et al., 2008; Aznar and Tenenbaum, 2013; Harris et al., 2018). Hence, children can learn skills such as recognizing and labeling emotions, comprehending their causes and consequences, talking about them, and choosing appropriate ways to manage and respond to different emotions they and their partners experience (Saarni, 1999; Saarni et al., 2007; Beck et al., 2012). Suggestions have been proposed to design interventions that promote opportunities to have conversations about emotions with children who could benefit from AAC. Na et al. (2016) suggested that initially, communication about emotions should occur during an enjoyable and meaningful activity with the child (e.g., storybooks, videos, movies, games, role-playing, TV programs, morning conversations, etc.). Initiating emotional discussions amid a heightened emotional state (e.g., in the course of a temper-tantrum) is not ideal (Wilkinson et al., 2021). These assumptions are consistent with studies that indicate the importance of presenting a joyful and comfortable context in teaching practices and its positive relationship in facilitating students' learning (Schutz and Lanehart, 2002; Willis, 2007; Bueno and Forés, 2018).

Another key aspect for an effective interactive learning environment that supports the development of children with or without speech, language, or communication needs is the skills and performance of communication partners (Brinton and Fujiki, 2011; Romski et al., 2011; Kent-Walsh et al., 2015; Mermelshtine, 2017; Biggs et al., 2018; O'Neill et al., 2018). Partners must learn scaffolding strategies such as providing opportunities to talk and learn about emotions (making comments, asking questions, etc.), modeling the use of a child's communication system, and offering feedback (Na and Wilkinson, 2018; Wilkinson et al., 2021). Brinton and Fujiki (2011) illustrated the crucial role of communication partners' attitudes in children's development by pointing out that "emotion talk that is carefully constructed and timed to be most accessible to children can support the development of both emotional competence and social communication" (p. 271). The role of communication partners is essential to support children's socio-emotional and communicative learning.

Additionally, to promote conversations about emotions in children with CCN, it is essential to design AAC systems that provide significant emotional vocabulary and a diverse range of emotion-related communication tools that are culturally sensitive to the child and the family's linguistic and cultural context (Blackstone and Wilkins, 2009; Na et al., 2016; Wilkinson et al., 2021). For example, vocabulary that serves to explain why a person feels the way they feel (e.g., "I'm irritated because it's too noisy"), and some possible responses to those emotions (e.g., "I need a break and go somewhere else"). The AAC system must be functional for the child to communicate about emotions and useful for the child's partners to model emotional communication. Interviews can be critical to gather the information that guides intervention decisions that support communication about emotions. The Early Development of Emotional Competence (EDEC) is a semi-structured interview developed to meet this purpose (Na et al., 2018).

Evidence concerning the use of AAC systems in conversations about emotions provides some insight about the promising benefits of supporting children who have CCN. Na and Wilkinson (2018) developed the Strategies for Talking about Emotions as PartnerS (STEPS) program and examined it with three parents and their children with Down Syndrome, conducting a

single-subject multiple-baseline across participants design. They selected storybook time as the context to foster conversations about emotions. Interactive storybook reading has the advantage of involving the child in an active role and provides a rich and natural setting for emotional and language development (Bedrosian, 1999; Drummond et al., 2014; LaForge et al., 2018). The STEPS program focused on supporting communication partners to implement communicative strategies for encouraging conversations about emotions with children with CCN. The STEPS training (see Na, 2015; Na and Wilkinson, 2018; Wilkinson et al., 2021) consists of three steps: Step 1: provide and model emotional vocabulary (label the emotion); Step 2: validate and discuss emotions (talk about the reason for the emotion); Step 3: communicate about appropriate responses to emotions (talk about the possible responses/coping strategies to emotion). These steps, in combination with other communication partner strategies (e.g., ask, wait, provide feedback) and the design of emotional-communication boards resulted in parents providing more opportunities to discuss emotions using the AAC system, and the children increasing their utterances referring to emotions using different communication modes (including AAC). Even though further research is needed, the STEPS program appears to be a beneficial resource to initiate conversations about emotions with children who have CCN in natural settings.

Giving children with CCN access to key and meaningful emotion-related vocabulary, as well as encouraging its usage, is critical to support effective conversations between the children and their communication partners (Rangel-Rodríguez et al., 2021; Wilkinson et al., 2021). Nuclear family members are life partners and the primary communication partners in the child's social networks (Blackstone and Hunt-Berg, 2012); its engagement in children's healthy development, learning, and emotional well-being are fundamental (Mandak et al., 2017; Lehrl et al., 2020). Therefore, families are certainly "children's first and most important teachers, advocates, and nurturers" (U.S. Department of Health and Education and Human Services and U.S. Department of Education, 2016, p. 1). Supporting families in promoting learning environments is essential to aid children's learning (Lehrl et al., 2020) and thus reduce or prevent behavioral, social, or emotional conflicts in the future (Sanders, 2008; Dishion et al., 2014).

The current study describes and analyzes a program designed to increase and encourage conversations about emotions during a storybook reading activity with a child who has limited speech using a case study approach. The goal of the program is to facilitate interaction skills that encourage emotional talk. This study is part of a larger research project carried out by the first author.

# MATERIALS AND METHODS

## Design

This study highlights the importance of the sociocultural context, communication, language, and experiences generated from the intervention, as well as examining the efficacy of the program through the behaviors of its participants in natural settings. Therefore, a paradigm that allows an integrative and complementary study was needed. A pragmatic epistemological framework and mixed-method approach were used to allow for the coexistence, integration, and/or combination of quantitative and qualitative elements in the study and enable the use of analytical techniques in either sequential or parallel phases (Teddlie and Tashakkori, 2010; Anguera et al., 2020). For the present study, an observational methodology was employed.

This case study was carried out by an observational design, which was configured based on three dichotomous criteria (Anguera and Izquierdo, 2006):

- Unit of study: one unit or individual (*idiographic*) or a group of units/participants (*nomothetic*) studied.
- Temporality: one session (*point*) or several sessions (*follow-up*) observed over time.
- Number of dimensions: one (*unidimensional*) or several (*multidimensional*) behaviors considered to study.

Hence, this study employed a nomothetic/follow-up/multidimensional observational design (N/F/M) for the following reasons:

- Nomothetic: a parallel and independent analysis of the behavior of the child and the mother was conducted.
- Follow-up: intra and inter-sessional recordings analyses between the 4 phases of the program (13 complete storybook reading sessions) from the collected data were performed.
- Multidimensional: several dimensions of interactive responses from the child and the adult in each session were recorded.

The observation was direct through video recordings of storybook reading sessions that the mother shared with the researcher, allowing the researcher full auditory and visual accessibility of the interaction.

## Participants

A mother–child dyad participated in this study. They were recruited through convenience sampling. The inclusion criteria were (1) have a child who has functional hearing and vision per parent report and CCN, with previous or current exposure to aided AAC systems; (2) parents who have no speech, language, or hearing impairments; and (3) have an internet connection. The mother participated in the study and although the father could not participate, he was also interested in the study.

The mother was 44 years old, and the child was 7 years old. The child had a medical diagnosis of dyskinetic and dystonic cerebral palsy that affected the ability to control muscle movement, posture, and coordination; specifically, characterized by slow unintentional writhing movements (dyskinetic) and varying patterns of muscle tone (dystonia) (Center for Disease Control and Prevention (CDC), 2020). The child's speech intelligibility was severely impaired. The mother stated that her child "understands everything and can sound most of the words, but the sound level is very faint (lots of air in the sound)," so he also communicates via gestures (e.g., eyes up for yes, eyes down

or stick his tongue out for no), facial expressions, and through an AAC electronic device. The child has used a speech-generating device since he was 2 years old. Currently, he accesses his device through eye-gaze. The mother commented that he has functional hearing and vision level, uses glasses, and attends a 1st grade class in a mainstream school program.

Ethical approval was obtained from the Ethics Committee from the Autonomous University of Barcelona prior to starting the research.

## Materials

Storybooks were selected for the program, specific materials were used to illustrate the training session conducted with the mother, and communication boards were designed in conjunction with the mother to provide the child access to emotion-related vocabulary.

### Storybooks

The selected storybooks had to fulfill the following criteria: (a) being an illustrated book, (b) with text appropriate to the child's characteristics, interests, and cultural background, (c) showing at least two different emotional categories (e.g., sad–happy), and (d) a length of at least 20 pages. The selection criteria taken was proposed by Na and Wilkinson (2018), who adapted the guidelines from Kent-Walsh et al. (2010).

### Instruction Session Materials

#### *STEPS instruction page*

The STEPS instruction page contains a detailed description of each step proposed in the training to encourage communication about emotions during the storybook-reading activity (see **Supplementary Material 1**). The mother received a copy of the instruction page as support. This page was an adaptation of the handouts suggested by Na and Wilkinson (2018; Wilkinson et al., 2021), where suggestions to encourage mother–child communication were included.

#### *Communication board design page*

To create communication boards that were culturally and family appropriate, the researcher asked the mother to read the selected books and (a) choose the emotions with which she could feel comfortable talking with her son; (b) identify the causes for the emotion; and (c) propose possible responses or coping strategies to these emotions. The communication board design page contained a table to write the book page, the emotion selected to talk about, the trigger for that emotion, and the possible responses when that emotion appears.

#### *Communication board example*

According to the child's AAC communication, the clinician designed an example of pages to explain how the boards could be created in the child's current AAC system (see **Supplementary Material 2**).

#### *Video-demonstrations of storybook reading activity*

Five short videos, around 1 min each, were presented to the mother in the training session. Each video showed a role-playing situation between two individuals (one acting like a child and the other as a parent) in a storybook reading activity. Each video explained the different parts of the training.

### Communication Boards

Once the mother filled in the material "communication board design page" for each book, suggestions were made by the researcher and agreed upon by the mother. The researcher then created the communication board pages using the child's communication system (Snap-Core First App, a system that permits dynamic display pages), and shared it with the mother. Vocabulary was added to the emotion page in his AAC system, as needed. Also, new communication pages were created throughout the program: (a) one page per book to talk about the possible causes of the emotion, and (b) one section with vocabulary to talk about possible responses to emotions. As the mother suggested new words that enabled her and the child to discuss emotions, the child's access to emotion vocabulary grew. An example of the child's AAC emotion-related pages used is presented in **Figure 1**.

## Instruments

### Observation Instrument

To analyze the data collected in an interactive natural context between communication partners and children with CCN, an observation tool was constructed *ad hoc* to fully adapt to the interests of the research (Anguera et al., 2021), based on the data obtained from preliminary interactions

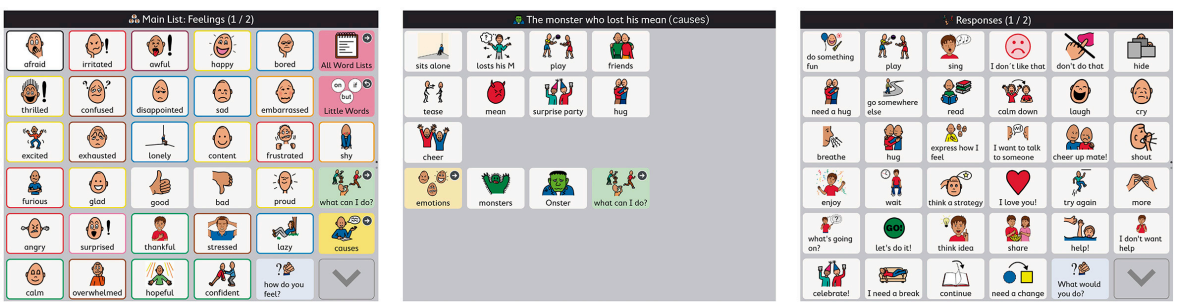



**FIGURE 1 |** Example of emotion communication dynamic display page [emotions, causes, and responses to emotions]. The Picture Communication Symbol© and Boardmaker by Tobii Dynavox® All Rights Reserved. Used with permission.

observed (15 mother–child with CCN dyads in a storybook-reading activity), and previous theoretical and empirical work (Girolametto et al., 2007; Kent-Walsh et al., 2010; Girolametto and Weitzman, 2011; Rowland, 2011; Parish-Morris et al., 2013; Poyatos, 2015; Na and Wilkinson, 2018). Therefore, the instrument combined a field format with category systems: "this combination is possible when some or all of the dimensions in the field format have a theoretical framework and the object of research is atemporal" (Anguera et al., 2018, p. 7).

The full-version observation instrument is presented as **Supplementary Material 3**. **Figure 2** only presents the dimensions and units analyzed for the purposes of the present study, which includes 6 dimensions (out of the 15 dimensions included in the full-version) that allowed for the capturing of mother-child emotional interaction in the storybook reading activity.

## Recording and Analysis Instruments

All the video-recording sessions were recorded and coded according to the full-version observation instrument using the software LINCE 1.4 (Gabin et al., 2012). The data obtained were time-based and concurrent, categorized as type IV; that is, "the observer notes the duration of events, but different events can overlap and occur together" (Bakeman, 1978, p. 65).

| Macro-dimension | Dimension | Subdimension/Units (codes)/Examples |
|---|---|---|
| Adult's Interactive Communication | Behaviors that encourage emotional conversations | Encourages participation openly* |
| | | closed-ended question (acEQ): Do you think he is sad? |
| | | open-ended question (aoEQ): Why is she angry? |
| | | two choices (aETC): Do you think the wizard is scared or surprised? |
| | | sentence completion (aESC): The mouse feels excited because… |
| | | multiple choices (aMC): does the horse need to take a break, ask for help, or explain how he/she feels? |
| | | repeat question (aREQ) |
| | | Turn-taking signal * |
| | | indirect turn (IT): waits for response |
| | | direct turn (DT): it's your turn |
| | | Responds/gives feedback* |
| | | multimodal feedback (aFB): you are right, the monster feels happy |
| | | non-verbal feedback (anvFB): looks at the child, smiles, nods |
| | | give answer (aEAns): they feel disappointed because… |
| | | Encourages participation without requiring it* |
| | | Emotional comment (aEPC): I think the child feels ashamed because he is naked. (includes comments that respond to child's questions) |
| | Behaviors that model emotional communication | AAC model (aAACE): model the AAC use (select words in the child's system) |
| | | Gestures/Signs |
| | | manual signs model (aEMS): "love" with manual signs. |
| | | emotional gesture model (aEG): surprised face |
| | Conversational emotion-related content* | Emotional content |
| | | label (AECn): how do you feel? / she is scared |
| | | reason (AECca): why he feels sad? / she feels sad because… |
| | | responses/coping strategies (AECrs): what can he do? / he needs a hug |
| | | unspecific label (AECun): he feels good/bad, I'm ok. |
| | | Related to |
| | | storybook character (aECS): the dragon feels lonely… |
| | | child (aECC): how would you [the child] feel? what would you do? |
| | | another person/situation (aECO): I [the mother] would do… I think your father will prefer to take a break. |
| Child's interactive communication | Methods of expression* | Augmentative and Alternative Communication (cAACE) |
| | | Auditory perceptible |
| | | vocal (cVB) |
| | | speech (cS) |
| | | word approximation (cWA) |
| | | Visually perceptible |
| | | body movement (cBM): move head, change posture, etc. |
| | | action (cACT): run, jump, take something. |
| | | manual signs (cMS): sign language |
| | | pointing (cP) |
| | | conventional gestures (cCG): gestures defined by the child's context with the intention to communicate (e.g., look up for yes, look down for no) |
| | | facial expressions (cFE): smiles. |
| | | emotional gestures (cEG): lips down for sad, crossing arms to express anger. |
| | Behaviors in social interactions (conversations about emotions) | Answers/gives information (cEAnsw): if questioned, the child responds, she is angry |
| | | Asks questions (cEQue): how do you feel? What would you do? |
| | | Comments (cEComm): she needs to breathe |
| | Conversational emotion-related content* | Emotional content |
| | | label (CECn): angry, sad, happy, excited |
| | | reason (CECca): the witch doesn't have friends; the girl receives a present |
| | | responses/coping strategies (CECrs): the little prince needs to express his feelings |
| | | unspecific label (CECun): good, bad, ok, well |
| | | Related to |
| | | storybook character (cECS): the penguin felt angry |
| | | child (cECC): I would feel happy; I don't like that book |
| | | another person/situation (cECO): my friend would feel ashamed |

*category systems

**FIGURE 2 |** Observation instrument.

For data analysis, different software were employed: GSEQ 5.1 (Bakeman and Quera, 2011) to conduct the intra-observer reliability and lag-sequential analysis, HOISAN 1.6.3.3.6 (Hernández-Mendo et al., 2012) for the polar coordinate analysis, and the R program to obtain the graphic representation on polar coordinate analysis (Rodríguez-Medina et al., 2019).

## Procedures

The study procedures consisted of an interview and exploratory observations of a video-recorded storybook reading activity at home, followed by a training session and post-observations of videorecords of the storybook interactive learning environment suggested during the program.

Once the mother and child were selected for participation, a semi-structured interview called EDEC, the Early Development of Emotional Competence tool (Na et al., 2018), was conducted between the researcher (the first author) and the mother. The purpose of the interview was to identify the current child's emotional state and communicative characteristics, as well as some caregivers' emotional and communicative socio-cultural aspects, in order to support the family better (Rangel-Rodríguez et al., 2021). In this meeting, the researcher explained the study and the importance of recording the storybook reading sessions throughout their participation. The mother provided informed consent and agreed to participate in the study.

As part of the interview, the mother was asked to share her son's favorite storybooks. As the sessions progressed, other storybooks were suggested based on the research's criteria, family values, and the child's interests and preferences.

The training program was an adaptation of Na and Wilkinson's (2018) protocol and consisted of four phases [(1) exploratory, (2) strategy implementation, (3) iteration, and (4) maintenance]. One additional training session was carried out after the exploratory phase. The book reading sessions in all phases took place in the participants' home and were video-recorded by the mother, who used her own videocamera device. The child was informed and agreed to be filmed too. Before the first recorded session, a filming tips handout was provided to ensure the whole interaction was captured. The filming tips were (a) use a room with good light and no noise; (b) leave the camera in a fixed place; (c) make sure to have enough memory on your card and enough battery; (d) in case of recording with a cellphone, turn off the mobile data to avoid calls or notifications while recording; and (e) verify the interaction scene is in focus. The mother shared the videos online with the researcher for later analysis and, depending on the program's phase, for providing feedback.

### Exploratory Phase

After the storybook selection, the mother was asked to record the storybook reading activity with her child in their home. The only instruction for this phase was: "read the storybook the way you always do with your child."

The mother sent a total of seven videos in this phase. The first four videos were used to minimize reactivity bias, give a period for camera sensitization, and optimize recordings' quality (e.g., camera angles, background noise, etc.). These first four videos also served to identify behaviors that might contribute new categories in the observation instrument. The last three sessions were taken for analysis.

### Online Training Session

One online training session was offered and lasted about 1 h 20 min. Throughout the session, the clinician encouraged the mother to share her ideas, doubts, or questions. This session consisted into four stages presented below.

#### *Conversation and commitment*

The session started with a conversation about the interaction and emotional communication obtained through the EDEC interview and exploratory phase observations. In this stage, the researcher promoted a discussion about the importance of emotional development and its relationship with language and communication, as well as the importance of fostering emotional learning by creating environments to talk about emotions, using the storybook reading activity as an opportunity to pursue this matter. The clinician also shared the purpose of the training session, which is to receive suggestions and strategies to implement in the storybook reading activity with her son to foster conversations about emotions that can continue supporting her child's emotional learning and development. The stage finished with asking the mother if she would like to commit to the training.

#### *STEPS description*

This stage aims to explain the Strategies for Talking about Emotions as Partners (STEPS) and their communicative components, including the design and use of AAC systems.

Graphic materials supported the training (see section "Materials and Methods") to explain the steps for fostering conversations about emotions (name-cause-response): (1) Discuss the name of the emotion, (2) Discuss the possible causes for that emotion, and (3) Discuss possible responses to the emotion. The communication strategies suggested that in each step (name-cause-response), the parent: (a) Asks an open-ended question (e.g., How does Louis feel?), (b) Waits for child's response (at least 5 seconds), and (c) Responds and provides feedback using the child's communication system (e.g., "you're right, Louis needs to ask for help," selecting at the same time the words in his AAC device).

The researcher gave other types of suggestions to promote and model communication with the child. For instance, if the child does not respond after an open-ended question, provide a double-choice question by pointing to the word-choices in the child's communication system (e.g., "Do you think Louis is angry because his friends *went away* or because he *doesn't like Kelly*?"). If the child still does not answer, give the correct answer while modeling the communication using the child's device (e.g., "Louis is *angry* because he *doesn't like Kelly*"). The researcher also encourages the mother to have the child's communication system available at all times during the session and make comments using the AAC device to model and encourage communication without requiring it.

Subsequently, an example of how to design an emotional communication board that includes the steps (label-cause-response) was presented (see section "Materials and Methods"). It was explained that the vocabulary added in the communication boards must coincide with the vocabulary used in the family and child's context. Therefore, it is emphasized that it is of the utmost importance that the mother gets involved in the AAC board design, that is, to scan in the storybook selected, choose the situations to talk about, and write down the vocabulary she would like to discuss with her child (using a template to write it down according to the STEPS). The mother had the freedom to choose whatever emotion she would like, and in which she felt comfortable, to discuss with her son.

***Strategy demonstration***

After the STEPS description, short video demonstrations (see section "Materials and Methods") were presented with the purpose of modeling and illustrating the strategies presented. Discussions on the strategies were encouraged, and the researcher gave in-depth explanations about the interaction and strategies performance.

***Verbal practice and feedback***

The mother was asked to describe the three steps suggested for discussing emotions she just learned, including the communication strategies to encourage emotional conversations in children with CCN (ask, wait, respond, comment, model AAC). This stage aimed to affirm and ensure the mother's learning in the training session and give feedback.

***Commitment to employing the strategy***

At the end of the training session, the mother was asked if she would like to continue with the program and try the strategies. She responded, "yes, absolutely, it's really fascinating and sounds so nice." Nevertheless, she expressed possible difficulties in having the time to make the activity and record it due to different family situations. The researcher commented that the program would adapt to their needs and family time (one of the benefits of using observational designs is its applicability in natural settings and everyday life). The mother agreed to fill in the communication board design page and sent it to the researcher. Moreover, once the pages were created, she could start implementing the strategies suggested.

### Strategy Implementation Phase

Once the AAC pages were designed, and the mother was satisfied with them, the mother video-recorded four sessions of the storybook reading activity with her child while implementing the training session's strategies suggested. The researcher watched the recordings and gave feedback and suggestions. In this phase, the mother was also encouraged to ask questions and express her ideas about the mother–child interaction; the clinician offered a space for listening and addressing her needs, concerns, and thoughts. For example, in the beginning, she commented that it was awkward to discuss while reading "because that breaks the rhythm of the book."

### Iteration Phase

Three different storybooks were used in this phase. Therefore, new vocabulary, if needed, was added to the AAC pages. Three sessions of the storybook reading activity were recorded in this phase, and the mother was encouraged to continue fostering opportunities to talk and learn about emotions. The researcher gave less support; nevertheless, the mother was still encouraged to express her ideas, doubts, or questions about the interaction with her son. For example, she asked how she can encourage more discussions about her child's emotions during the storybook.

### Maintenance Phase

The mother asked the child which storybook he would like to read, with the possibility of choosing all the storybooks used in the program. Three storybook-reading sessions were recorded. In the maintenance phase, the researcher did not give feedback about the participants' performance. The objective in this phase was to identify communicative changes generated by the program.

## Data Quality Control

Before data analysis was carried out, a data quality control was performed through intra-observer agreement using GSEQ 5.1 software (Bakeman and Quera, 2011). The first author recoded fifteen percent of the sessions, with at least 3 weeks of difference between the first and second codification. Cohen's Kappa (Cohen, 1960) resulted in a satisfactory agreement average of 0.87. The sessions used for data quality control were selected randomly and using different extracts from different sessions from each of the phases in the program.

## Data Analysis

A total of 13 storybook reading sessions held over a period of 11 months were analyzed. The average observation sessions lasted 18 min, 7 s. All videos were imported and coded through Lince software (Gabin et al., 2012). The first author observed and coded each of the behaviors included in the observation instrument. The coded data considered the frequency, order, and time of each behavior observed.

Two data analysis techniques were used: (1) lag-sequential analysis and (2) polar coordinate analysis. These techniques have proven efficacy in different research areas, including individuals with special needs, such as clinical psychology (Arias-Pujol and Anguera, 2020), education (Escolano-Pérez et al., 2019), communication (Rodríguez-Medina et al., 2018), and AAC (Todman et al., 1994; File and Todman, 2002). Data were also analyzed descriptively (frequencies of communicative turns and emotional content in each phase).

### Lag Sequential Analysis

This technique is used to identify how one or more behaviors work and presents, if any, a sequence of statistically significant actions (not due to chance) connected to specific given behaviors (i.e., the behavioral triggers that may initiate or promote a behavior pattern along time; Bakeman and Quera, 2011; Anguera et al., 2021). In other words, this analysis provides a measure of how likely is that one behavior (i.e., the "given" behavior)

is followed by another [i.e., the "target" behavior(s)], either immediately (i.e., lag 1) or after two (i.e., lag 2) or more (i.e., lag 3, lag 4, etc.) successive behavioral events.

The analysis, adequate for the identification of patterns of social interactions, consists in proposing the given behavior(s), the conditioned or target behavior(s) (i.e., the actions that could be significantly associated with the given behavior), and the lag (i.e., the distances or place of order within the conditioned behavior in relationship with the presence of the given behavior). Once these criteria are defined and based on the given behavior, the matched frequencies are calculated, which is a parameter that is comprised of the number of times that a certain conditioned behavior appears before (if the lag is negative), after (if the lag is positive) or concurrently (if lag = 0) with the specific given behavior. From the matched frequencies, the expected and conditional probabilities are calculated for each lag, and adjusted residuals are obtained (Allison and Liker, 1982), revealing the likelihood of occurrence/co-occurrence of each conditioned behavior in association with the given behavior. $Z$ scores are statistically significant ($p < 0.05$) for values $>1.96$ (i.e., the association between behaviors is activated) or $<-1.96$ (i.e., the relationship is inhibited). To decide when the behavioral pattern ends conventionally, the following interpretative guidelines were considered (Anguera et al., 2021): (a) when there is an absence of statistically significant behaviors in the lags; (b) when there are two successive empty lags; or (c) when in two consecutive lags, various statistically significant behaviors appeared, if so, the first of these lags is defined as the MAX LAG. Considering these guidelines are only recommendations (not compulsory criteria), when various statistically significant behaviors appear, but the significant lags after the MAX LAG were considered illustrative in understanding the mother–child communicative sequences, it was decided to incorporate the subsequent lags' significant behaviors.

The mother's communicative behaviors concerned with implementing the strategies suggested in the training session were selected as the given behaviors. Hence, the mother's behaviors related to asking open-ended questions, waiting, giving the answer, providing feedback, and making comments were considered to be of special interest. Both responses from the child and mother were chosen as the conditional behaviors to identify significant interactive patterns during the conversation about emotions. A particular interest in the analysis was the child's behaviors in discussing emotions: answering, making comments, and asking questions. The analysis only deemed the units from the observational instrument with a frequency $> 4$ at least in one of the phases. Values lower than 5 are considered not significant in observational methodology (Sackett, 1980).

The search for associations between the given and the conditional behaviors was made prospectively (lag 1 to lag 5) and retrospectively (lag –1 to lag –5). Concerning the retrospective analysis, only the given behaviors expected, in theory, to be the next part of a conversational sequence already begun (e.g., providing feedback, giving the answer) are presented in the results section. The child and mother's utterances and their simultaneity with the type of emotional content discussed and method of expression were also analyzed (in lag 0). The lag-sequential analysis was applied to each of the program phases to identify communicative patterns among them.

### Polar Coordinate Analysis

Polar coordinate analysis (Sackett, 1980) is performed to identify a representative map that explains the type of relationship between a focal behavior (i.e., the behavior of interest) and the selected conditioned behaviors (i.e., actions that could be associated with the focal behavior). This technique employs the adjusted residual values obtained in the lag sequential analysis. It integrates both prospective (e.g., lag 0 to +5) and retrospective (e.g., lag 0 to –5) perspectives, which are used to calculate the Zsum scores (prospective and retrospective), as well as the vectors (length and angle) for each conditioned behavior. For this analysis, the genuine retrospectivity proposed by Anguera (1997) was used. Each conditioned behavior can be represented graphically; depending on the quadrant in which the vector is located, the relationship between the focal and conditioned behavior is interpreted (activation vs. inhibition):

- Quadrant I: Both behaviors (focal and conditioned) are mutually activated (prospective and retrospectively).
- Quadrant II: The focal behavior inhibits the conditioned behavior, whereas the conditioned behavior activates the focal one (prospective inhibition/retrospective activation).
- Quadrant III: The focal and conditioned behaviors are mutually inhibited (prospective and retrospective inhibition).
- Quadrant IV: The focal behavior activates the conditioned behavior, whereas the conditioned inhibits the focal one (prospective activation/retrospective inhibition).

The behaviors that were suggested to be implemented in the training session to the mother, and that showed a frequency $> 4$ at least in one of the phases, were identified as the focal behavior: ask, make comments, respond, model AAC communication; while the child's communicative behaviors: answers, makes comments, asks questions, expressing with conventional gestures or AAC were selected as the conditioned ones.

## Social Validation

Mother and child satisfaction surveys were completed at the end of the maintenance phase to evaluate the program's social validity. The questionnaire included multiple-choice and open-ended questions about their ideas and opinions about the program's process and participation. The child answered with his AAC device.

# RESULTS

## Development of Emotion-Related Conversations

**Figures 3** and **4** illustrate the interactive communication progress (frequencies) per phase, between the mother and her child, regarding their participation and emotional content discussed (emotional label, causes, and responses to emotions) in the

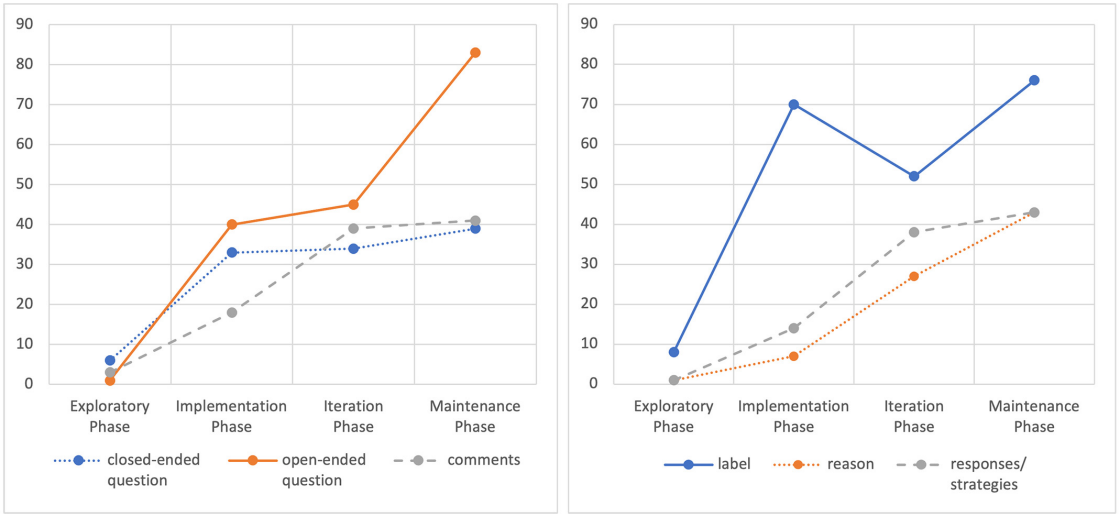



**FIGURE 3 |** Development of the mother's conversational utterances about emotions [closed-ended questions, open-ended question, comments] and type of emotional content discussed [label, reason, and responses to emotion].

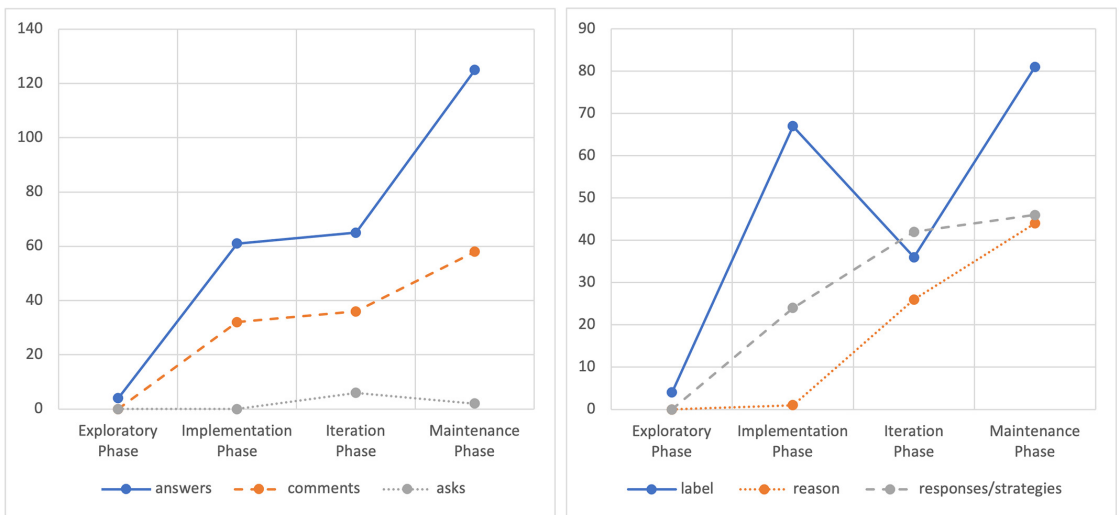



**FIGURE 4 |** Development of the child's conversational utterances about emotions [answers, asks questions, comments] and type of emotional content discussed [label, reason, and responses to emotion].

storybook-reading activity. It can be noticed that in the exploratory phase, there is little stimulation in both participants about having an emotional talk. The sessions that followed the training session showed maintained progress by both the child and mother, concerning their active participation in conversations about emotions.

To examine the participants' utterances in conversations about emotions, the type of emotional content (i.e., emotion label, cause, response), ways of expression (i.e., method of expression in the child and communication model in the adult), and to whom the emotional discussion was addressed (i.e., the child, storybook characters, or other people), a lag sequential analysis was performed in lag 0. Lag 0 indicates a simultaneous appearance of the selected behaviors. The results revealed highly significant concurrences ($>1.96$, $p < 0.01$) between these dimensions (**Figure 5**), demonstrating that discussions richer in emotion-related content and about different referents appeared as conversations developed over time. Additionally, it is noticeable that, after the training session, the mother showed AAC models while commenting about emotions, and the child participated in emotional discussions using his AAC and conventional gestures.

The exploratory phase was characterized by the child's gestural responses to the mother's questions about the emotional label from the storybook's characters and the child. After the training session, the mother and his child showed engagement

| Child's Interactive Communication (concurrences) | | Target | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Method of Expression | | Conversational Emotion-Related Content | | | Discussion related to | | |
| | Given | AAC | conv. gestures | label | reason | response/ strategies | book character | the child | other person |
| Exploratory Phase | answers | | 11.19 | 41.56 | | | 25.41 | 32.83 | |
| | asks | | | | | | | | |
| | comments | | | | | | | | |
| Implementation Phase | answers | 37.73 | 13.11 | 41.08 | 5.39 | 16.22 | 36.53 | 19.87 | |
| | asks | | | | | | | | |
| | comments | 44.18 | | 26.15 | | 35.43 | 29.18 | 30 | |
| Iteration Phase | answers | 32.77 | 15.74 | 28.85 | 23.96 | 17.96 | 32.55 | 24.84 | |
| | asks | 12.34 | | 9.01 | 2.16 | 6.74 | | 3.74 | 46.91 |
| | comments | 34.11 | 6.49 | 6.63 | 12.98 | 35.53 | 28.79 | 20.02 | |
| Maintenance Phase | answers | 53.80 | 13.08 | 35.95 | 32.07 | 30.12 | 42.65 | 37.01 | 2.07 |
| | asks | 5.01 | | 3.57 | | 4.38 | | | 35.36 |
| | comments | 27.30 | 13.81 | 18.58 | 17.13 | 14.79 | 29.67 | 19.83 | 8.07 |

| Mother's Interactive Communication (concurrences) | | Target | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Communication Model | | Conversational Emotion-Related Content | | | Discussion related to | | |
| | Given | AAC | gestures | label | reason | response/ strategies | book character | the child | other person |
| Exploratory Phase | closed-ended q. | | | 32.34 | | | 19.66 | 23.46 | |
| | open-ended q. | | | | | 41.56 | | 20.74 | |
| | comments | | | 15.13 | 25.41 | | 26.19 | | |
| Implementation Phase | closed-ended q. | 6.68 | | 25.65 | | | 22.17 | 6.75 | |
| | open-ended q. | | | 19.83 | | 21.93 | 23.68 | 15.04 | |
| | comments | 24.95 | | 10.44 | 16.87 | 15.78 | 21.13 | 6.79 | |
| Iteration Phase | closed-ended q. | 6.75 | | 7.67 | 8.75 | 6.14 | 6.75 | 15.25 | |
| | open-ended q. | | | 22.60 | 7.34 | 11.29 | 19.51 | 19.43 | |
| | comments | 34.50 | | 13.74 | 15.20 | 9.68 | 17.30 | 2.41 | 27.74 |
| Maintenance Phase | closed-ended q. | | | 11.15 | 2.57 | 9.99 | 9.62 | 13.59 | |
| | open-ended q. | | | 23.15 | 22.27 | 15.62 | 31.76 | 22.64 | |
| | comments | 34.30 | 2.35 | 17.98 | 10.23 | 11.97 | 16.05 | | 40.01 |

**FIGURE 5 |** Adjusted residuals showing significant concurrences (lag 0) between emotional conversations utterances from the mother and child, and their modes of expression, and type of emotional content discuss (content and related to).

in discussions related to more than just labeling emotions (they discuss the reason and responses to emotions) about the storybook and the child. In the iteration and maintenance phases, the child's interest in asking questions about emotions referring to himself (e.g., what can I do?) and his mother (e.g., how do you feel?) emerged.

## Behavioral Sequential Patterns of Mother–Child Interaction When Fostering Conversations About Emotions

**Figures 6–8** present the statistically significant sequential communicative patterns related to the dyad interaction during the storybook-reading activity in each phase. Only the patterns that showed activation (i.e., $Z > 1.96$, $p < 0.05$) between the given (the mother's behaviors that encourage emotional conversations) and conditioned behaviors (the child's behaviors in emotional conversations, as well as the mother's behaviors that encourage emotion-related conversations) are presented.

### Encouraging Child's Participation Openly

Even though the closed-ended questions were not part of the training sessions' suggestions, it was considered important to present them in the results section as closed-ended questions are part of the communication flow during any conversation. Yes-no questions about emotion-related events were followed

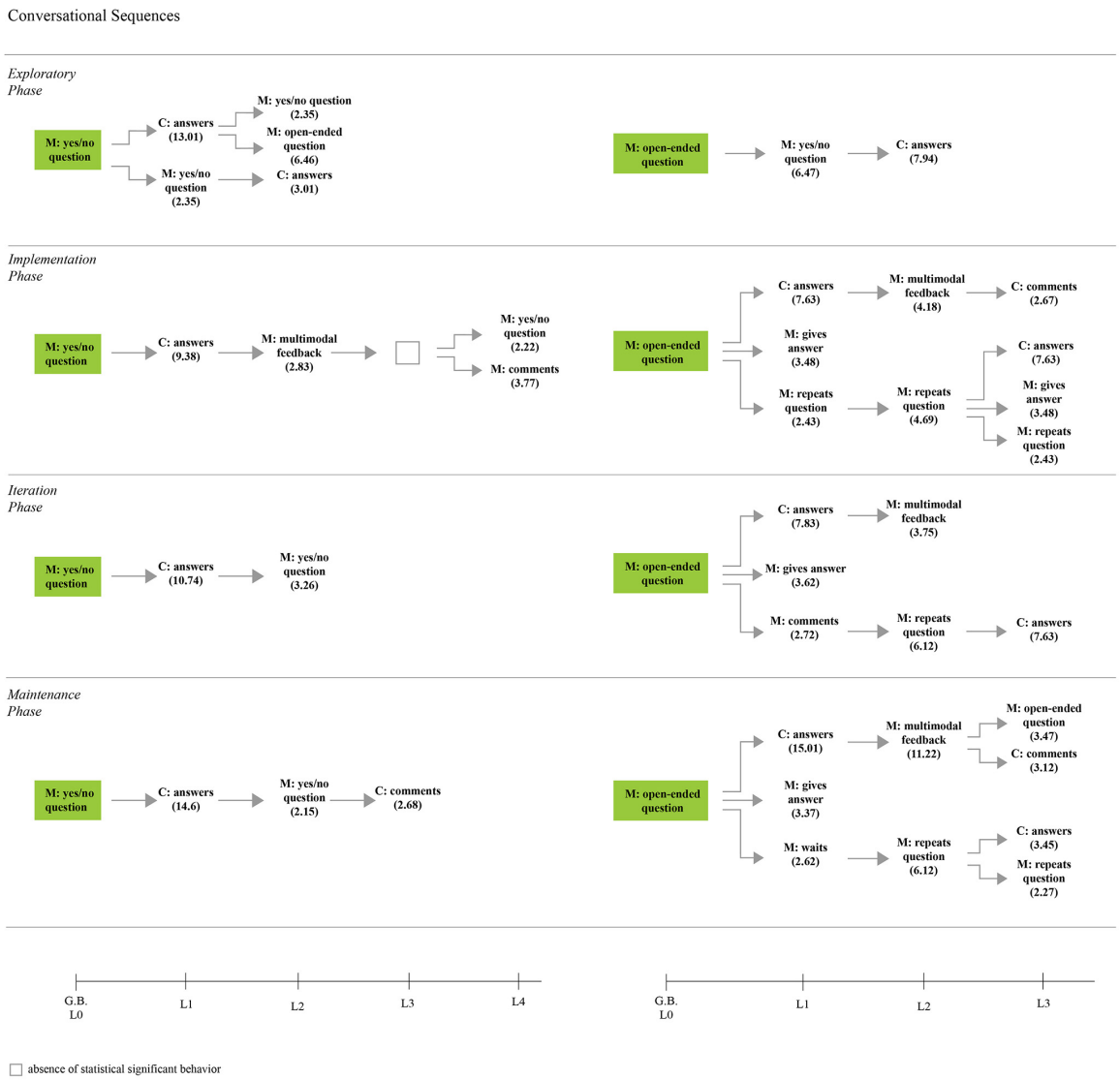



**FIGURE 6 |** Sequential communicative patterns obtain in each phase during the storybook reading with the mother's closed-ended and open-ended emotion-related questions as given behavior [M, Mother; C, Child].

by a stable behavior pattern of the child's response, succeeded by another mother's query in all of the phases (**Figure 6**). One exception to this appeared in the implementation phase, which was followed by the mother's feedback and then another closed-ended question or comment about emotions. In the exploratory phase, the mother showed a pattern of asking more than one closed-ended question at a time, followed by the child's response. A significant change in the pattern was shown in the maintenance phase where the child, after a second closed-ended question, tended to respond with also a spontaneous comment:

[Talking about character's feelings]
M: Mmm, I wonder why, do you know why?
C: Stick tongue [gesture for no]
M: Or do you think he is gonna be angry?
C: Looks up [gesture for yes], confused [selected via AAC]
M: Yes, and he is confused.

A considerable difference before and after the training session can be seen when the mother asked emotion-related open-ended questions (**Figure 6**). In the exploratory phase, even though the mother asked open-ended questions, it was immediately followed by a closed-ended question (e.g., What do you do when you are scared? Can I see a face that you think is scared?). Nevertheless, in the phases following the training session, significant combinations of conversational turns about emotions were observed when the mother asked an open-ended question: (1) the child engaged actively in the conversation by responding (answers), and this behavior was followed by the mother's feedback; (2) The mother, after questioning,

answers immediately, and (3) Repeats the question, which in turn could finish the sequence with the child's response. The following clinical vignette, taken from the implementation phase, demonstrates the first sequence explained above:

> M: So, when somebody is so sad, what they can do?
> C: Need a hug [AAC]
> M: Oh, need a hug, yes, he was so sad that he needs a hug, ok.

An example of the behavioral sequence of open-ended question – mother's comment – repeat question – child answers observed in the iteration phase would be:

> M: And when you feel stressed, what should you do?
> M: Cause when you feel stressed your body tenses up
> M: So, if you feel stressed, what should you do?
> C: [child smiles] Cheer up mate! play [AAC]
> M: Oh, I know, you want someone that says cheer up! And you wanna play.

## Answering and Giving Feedback

Answering and giving feedback are behaviors expected to be contingent on previous actions; thus, significant behavioral patterns observations from the retrospective (e.g., lag –1 to –5) and prospective (lag + 1 to 5) analysis were included in this section (**Figure 7**).

Feedback providing utterances significantly changed and were maintained after the training session. In the exploratory phase, this behavior related to emotional content was not observed, whereas in subsequent phases it was preceded by the child's emotional comments and responses, and feedback, in turn, activated another child's emotional comments:

> [Discussing character's emotions]
> C: Overwhelmed
> M: Overwhelmed, yes, it's too much [for the character]
> C: Surprise
> M: Yes, he is probably surprised, because he lost his M.

In other cases, offering feedback activated another mother's query or emotional comment (the mother's comment was only significant in the implementation phase).

The mother's expression of answering her questions was not directly associated with the child's response, neither retrospectively nor prospectively. In phases 3 and 4, after the mother answered, she made another open-ended question encouraging the child's conversation:

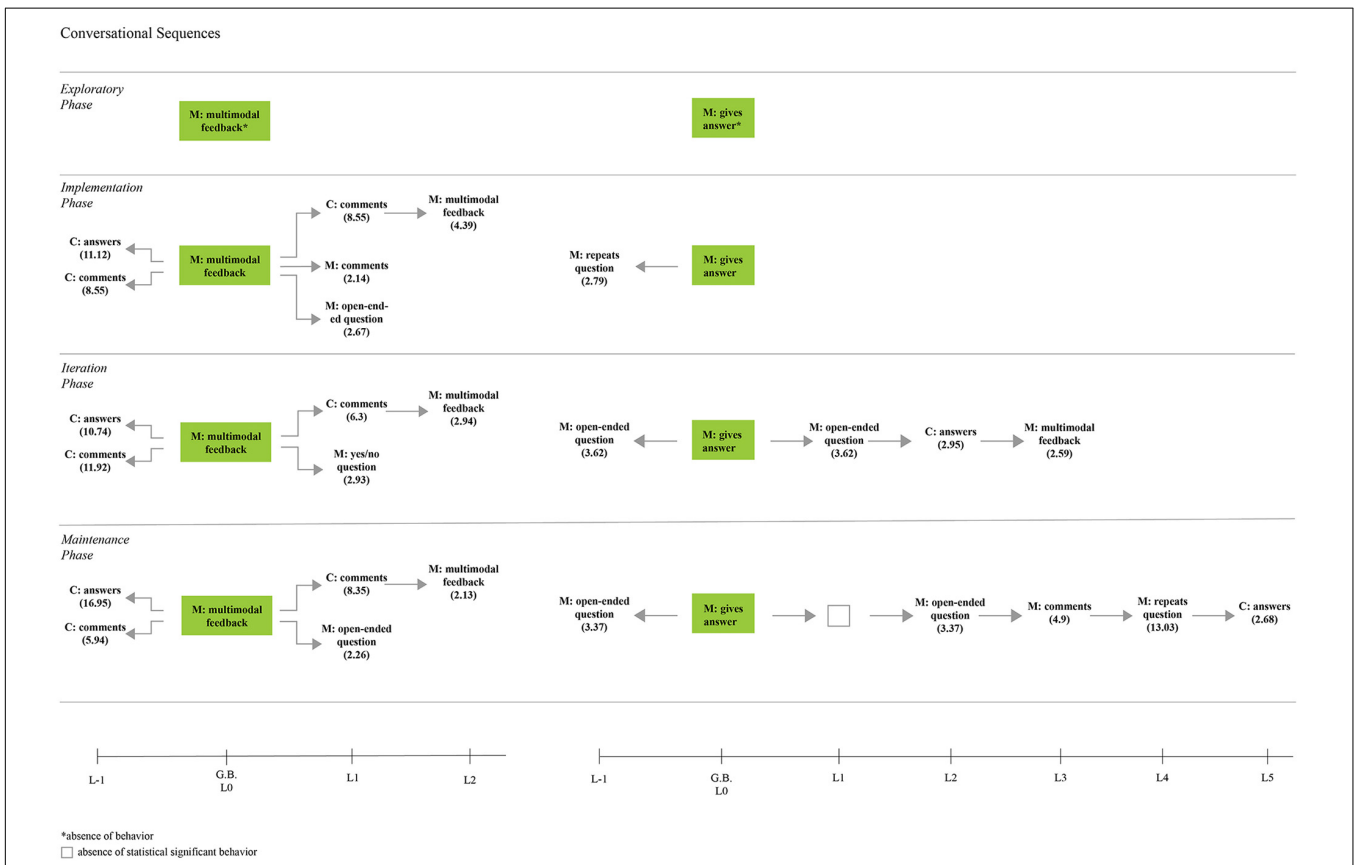



**FIGURE 7 |** Sequential communicative patterns obtain in each phase during the storybook reading with the mother's providing feedback and answers as given behavior [M, Mother; C, Child].

[discussing storybook]
M: They were what?
M: Maybe there is not an emotion, but they were safe
C: Looks up [gesture for yes]
M: So, they are now rescued. How do you think they felt?
C: Glad, happy [AAC]
M: Absolutely, yes, that's great. So, they were so happy now because they were safe.

## Commenting to Encourage Child's Participation

The mother's emotional comments were observed in all phases (**Figure 8**), with a simultaneous mother's use of AAC in the phases after the training session (remember lag 0, **Figure 3**). During the phases 1 and 2, the mother's personal comments about emotions were not prospectively associated with a significant child's communicative behavior, whereas, by phases 3 and 4, the mother's emotional opinions were followed by the child's comments about emotion-related events:

[Talking about what the child can do when he feels sad because his body tenses up]
M: Maybe you can "wait" [AAC] a little bit and "breathe" [AAC]
C: Try again [AAC]
M: Yes, you can also try again.

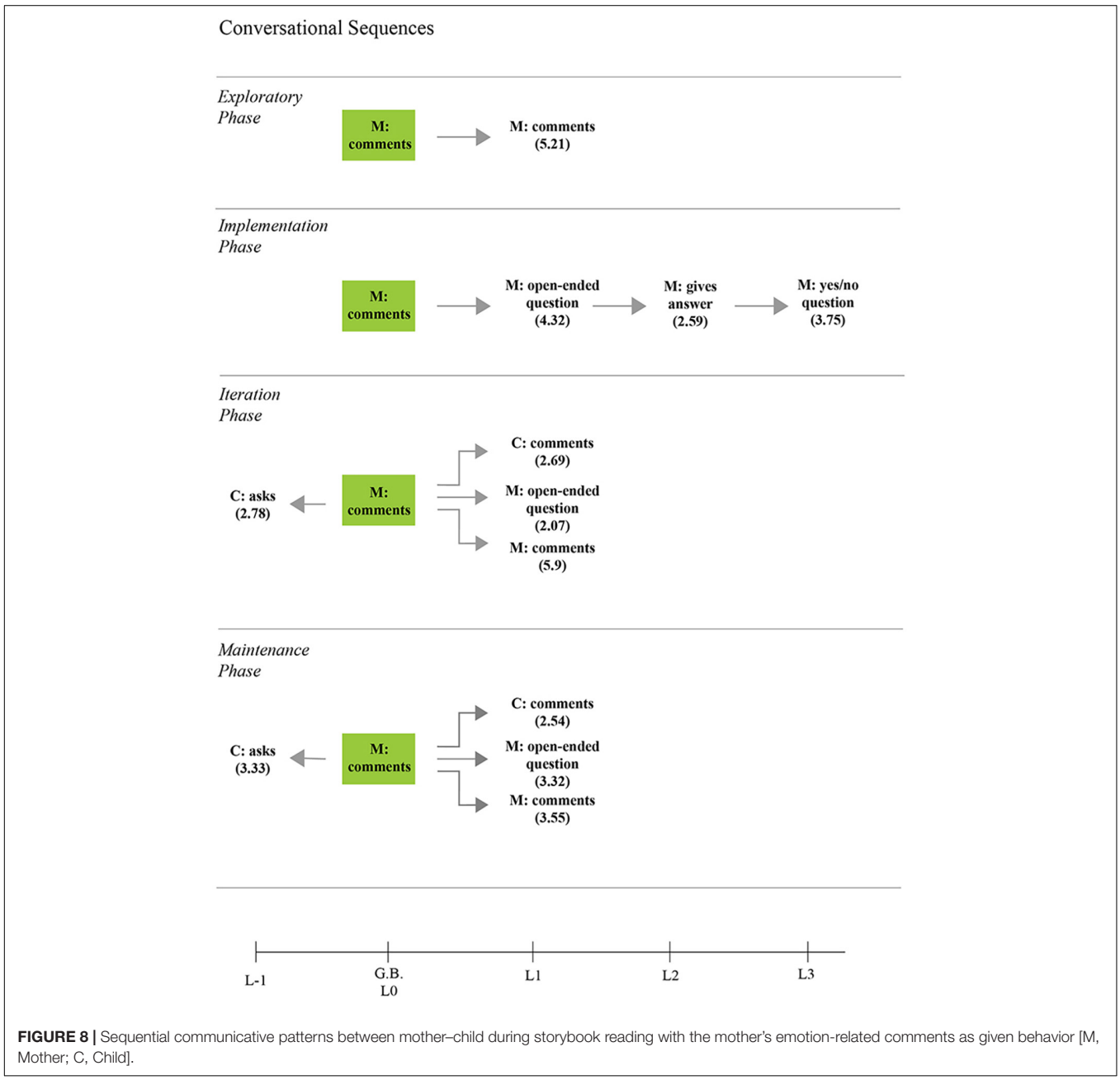



**FIGURE 8 |** Sequential communicative patterns between mother–child during storybook reading with the mother's emotion-related comments as given behavior [M, Mother; C, Child].

In phases 3 and 4, the mother's emotional comments were significantly preceded by child's questions:

> [Talking about what can the child do if he were the book's character]
> M: What can you do?
> C: I need a break [AAC]
> M: Yes, sure, you will need a break from all these crayons
> C: What would you do? [AAC]
> M: If I were him, I would say, "good job" guys, "thank you" for your service, and then I will say I will "think of a strategy" [AAC].

## Relationships Between Mother–Child Interactive Communication About Emotions

**Figures 9–14** show the vectorial graphs from the polar coordinate analysis in each phase. Those graphs present the relationships between mother-child interactive emotion-related conversations. Behaviors taken as focal were mother's closed-ended question, open-ended question, multimodal feedback, give answer, emotional comment, and AAC model. The child's answers, comments, questions, and modes of expression were selected as the conditioned behaviors. In this section, only the vectors with significant results will be discussed (i.e., with a length $> 1.96$, $p < 0.05$, are represented in purple; vectors with a length $> 2.58$, $p < 0.01$ are represented in red). Vectors in blue are not significant.

### Mother's Questions and Child's Engagement in Conversations

Similar to what was found in the lag-sequential analysis, **Figure 9** shows the significant stable mutual activation (Quadrant I) in all of the program phases between the mother's closed-ended questions and the child's answers through gestures. The child's AAC mode of expression in the maintenance phase was also significant and located in quadrant II, indicating that closed-ended questions inhibit the child's use of AAC, whereas this expression activates mother's closed-ended questions.

Concerning open-ended questions (**Figure 10**), a stable mutual stimulation with the child's emotion-related answers was identified during all of the phases. Nevertheless, changes were found in terms of the child's modes of expression. In the exploratory phase, the mother's open-ended questions inhibit the child's gestures, but this behavior, in turn, activates the mother's questioning. A different pattern was observed after the training session, where the child's AAC use mutually activate the mother's open-ended questions in phase 2 and 4. In contrast, in phase 3, the child's AAC use is situated in quadrant IV, indicating that the mother's open-ended questions activate the child's AAC expressions, but the AAC use inhibits the mother's open-ended questioning.

### Mother's Emotional Comments and Child's Engagement in Conversations

No relationship was found in the exploratory phase between the mother's emotional comments and the child's behaviors (**Figure 11**). Phase 2 presented a mutual excitatory association between the mother's comments and the child's emotional comments. However, in phase 3, the reciprocal activation was between the mother's comments and the child's questioning. By phase 4, this communicative link changed to quadrant II, implying that the child's inquiry about emotions stimulates the mother's comments but not vice versa. A similar relationship was observed with the child's gestures (quadrant II) in phases 3 and 4; that is, the mother's comments inhibit the child's gestures, but those gestures activate the mother's comments. Finally, the

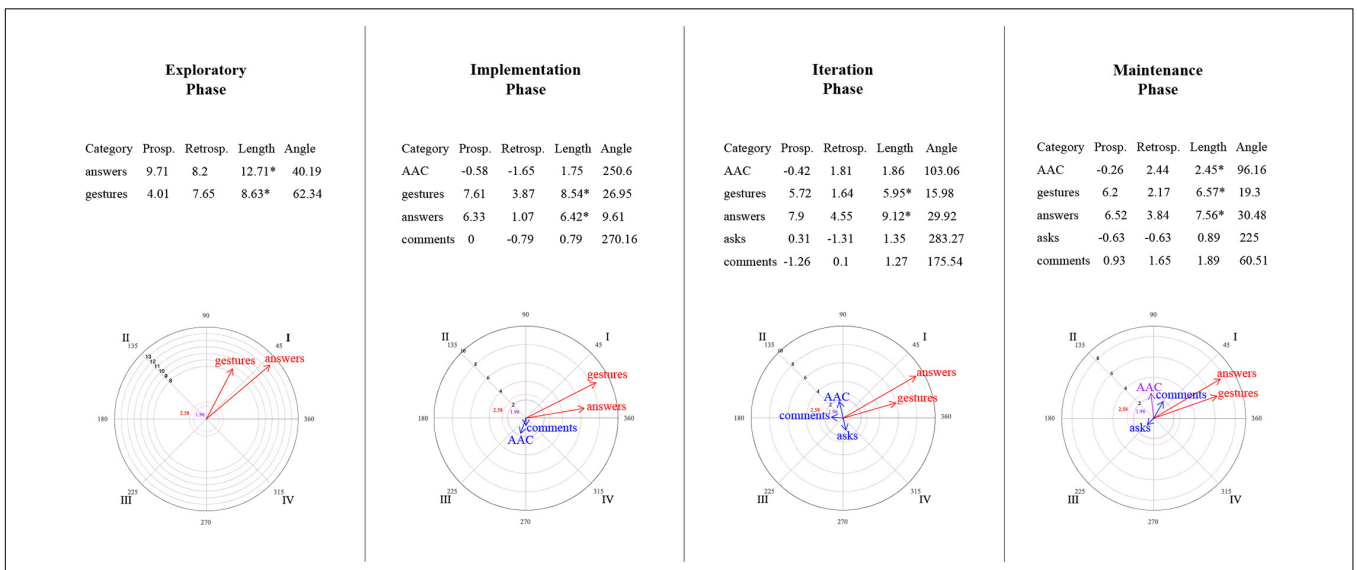



**FIGURE 9 |** Vectors corresponding to the mother's emotion-related closed-ended question as focal behavior, and the child's emotion-related communicative turns [answers, comments, asks] and methods of expression [AAC, conventional gestures] as conditional behaviors.

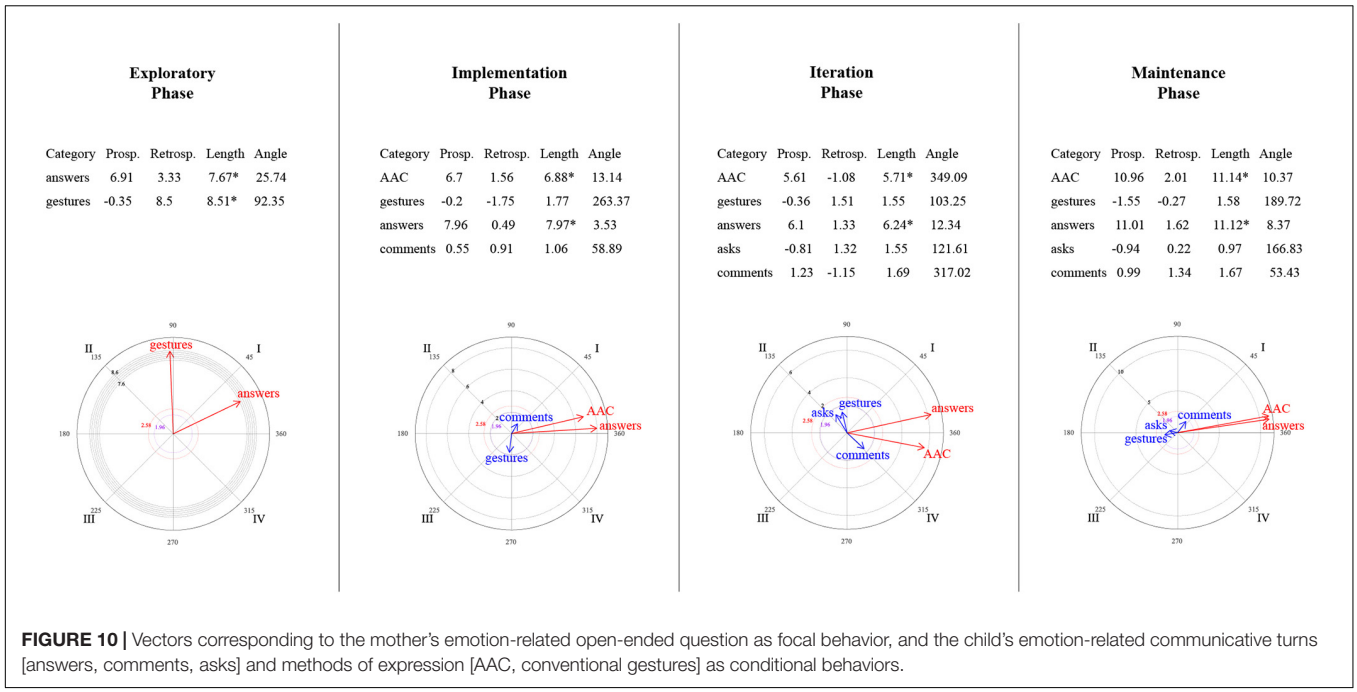



**FIGURE 10 |** Vectors corresponding to the mother's emotion-related open-ended question as focal behavior, and the child's emotion-related communicative turns [answers, comments, asks] and methods of expression [AAC, conventional gestures] as conditional behaviors.

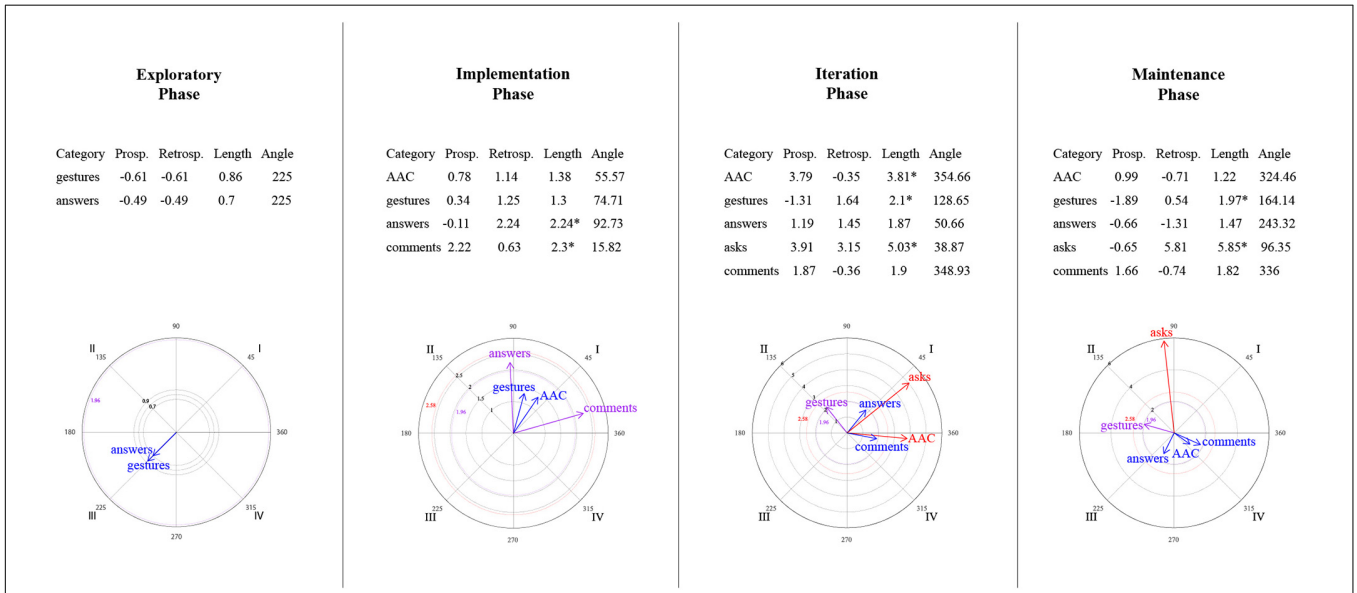



**FIGURE 11 |** Vectors corresponding to the mother's emotion-related comments as focal behavior, and the child's emotion-related communicative turns [answers, comments, asks questions] and methods of expression [AAC, conventional gestures] as conditional behaviors.

AAC child's mode of expression was significantly associated with the mother's comments in the iteration phase (quadrant IV), where the focal behavior stimulates the child's AAC use but not conversely.

## Mother's Feedback/Answer and Child's Engagement in Conversations

A significant relationship was found between the mother's multimodal feedback and the child's behaviors after the training session (**Figure 12**). Feedback was strongly mutually activated with the child's emotional comments in all phases, and with the child's responses to questions in phases 2 and 4. In phase 3, the mother's feedback inhibited the child's answers, but this response activated the mother's feedback.

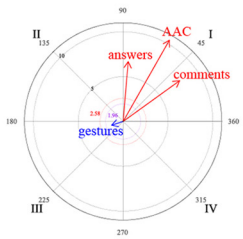
Concerning the mother's answering of her questions (**Figure 13**), in phase 2, the child's AAC use and the mother's giving the answer inhibited each other (Quadrant III). At the same time, the child's gestures activated the mother's

**Exploratory Phase**

*Absence of behavior

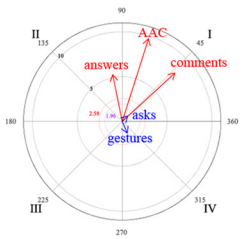
**Implementation Phase**

| Category | Prosp. | Retrosp. | Length | Angle |
|---|---|---|---|---|
| AAC | 5.16 | 9.07 | 10.43* | 60.36 |
| gestures | -1.28 | -0.42 | 1.35 | 198.01 |
| answers | 0.56 | 6.68 | 6.7* | 85.17 |
| comments | 6.3 | 4.55 | 7.77* | 35.82 |




**Iteration Phase**

| Category | Prosp. | Retrosp. | Length | Angle |
|---|---|---|---|---|
| AAC | 2.94 | 9.24 | 9.69* | 72.35 |
| gestures | 0.57 | -1.3 | 1.42 | 293.56 |
| answers | -1.06 | 5.22 | 5.33* | 101.49 |
| asks | 0.61 | 0.61 | 0.86 | 44.98 |
| comments | 5.87 | 5.4 | 7.98* | 42.58 |




**Maintenance Phase**

| Category | Prosp. | Retrosp. | Length | Angle |
|---|---|---|---|---|
| AAC | 2.72 | 9.1 | 9.5* | 73.39 |
| gestures | 0.71 | -2.98 | 3.07* | 283.38 |
| answers | 0.41 | 7.16 | 7.17* | 86.73 |
| asks | 0.59 | -1.26 | 1.39 | 295.26 |
| comments | 4.01 | 1.78 | 4.39* | 23.96 |

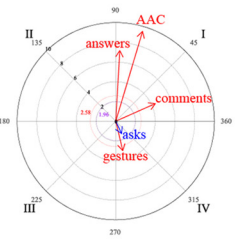


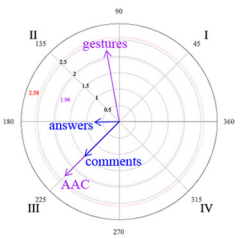

**FIGURE 12 |** Vectors corresponding to the mother's providing multimodal feedback as focal behavior, and the child's emotion-related communicative turns [answers, comments, asks] and methods of expression [AAC, conventional gestures] as conditional behaviors.

**Exploratory Phase**

*Absence of behavior

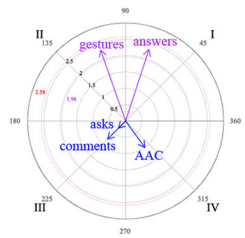
**Implementation Phase**

| Category | Prosp. | Retrosp. | Length | Angle |
|---|---|---|---|---|
| AAC | -1.65 | -1.65 | 2.34* | 225 |
| gestures | -0.39 | 2.18 | 2.21* | 100.17 |
| answers | -0.75 | -0.01 | 0.75 | 181.09 |
| comments | -1.06 | -1.06 | 1.49 | 225 |




**Iteration Phase**

| Category | Prosp. | Retrosp. | Length | Angle |
|---|---|---|---|---|
| AAC | 0.59 | -0.81 | 1 | 306.06 |
| gestures | -0.77 | 2.17 | 2.3* | 109.42 |
| answers | 0.71 | 2.19 | 2.3* | 71.92 |
| asks | -0.22 | -0.22 | 0.31 | 225 |
| comments | -0.55 | -0.55 | 0.78 | 225 |




**Maintenance Phase**

| Category | Prosp. | Retrosp. | Length | Angle |
|---|---|---|---|---|
| AAC | 0.51 | -0.84 | 0.98 | 301.53 |
| gestures | 0.55 | -0.82 | 0.99 | 303.75 |
| answers | 0.53 | -0.83 | 0.99 | 302.5 |
| asks | -0.1 | -0.1 | 0.14 | 225 |
| comments | -0.55 | -0.54 | 0.77 | 224.72 |

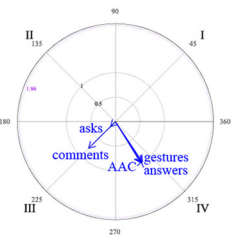



**FIGURE 13 |** Vectors corresponding to the mother's giving of the answer to her own questions as focal behavior, and the child's emotion-related communicative turns [answers, comments, asks] and methods of expression [AAC, conventional gestures] as conditional behaviors.

giving the answer (a similar association was also observed in phase 3). In addition, significant excitatory association was noted in the iteration phase between the child's response and the mother's answering. Phase 4 did not present a significant relationship between the focal behavior and the child's behaviors or expression methods.

## Mother's AAC Modeling and Child's Engagement in Conversations

In the exploratory phase, no AAC model was presented (**Figure 14**). Nevertheless, in the implementation phase, the mother's use of AAC, while discussing emotions, involved mutual activation with the child's gestures and

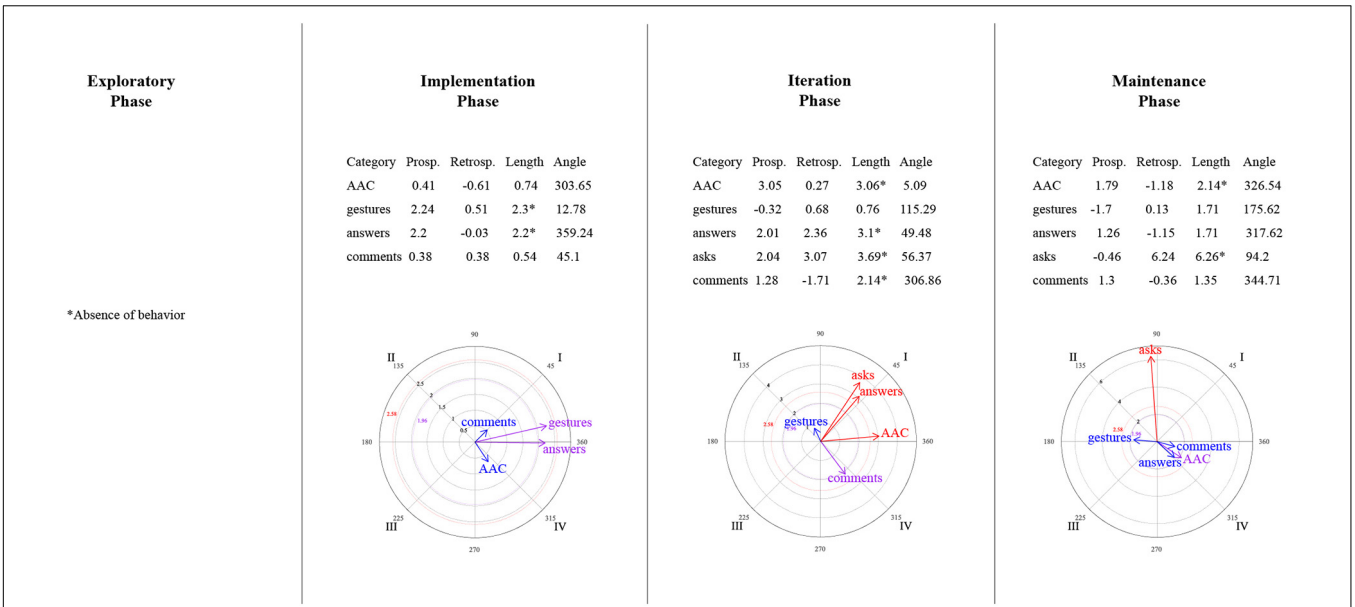



**FIGURE 14 |** Vectors corresponding to the mother's AAC modeling as focal behavior, and the child's emotion-related communicative turns [answers, comments, asks] and methods of expression [AAC, conventional gestures] as conditional behaviors.

prospective activation with the child's emotional answers to the mother's questions.

By the iteration phase, modeling AAC showed a reciprocal activation with the child's answers, questions, and AAC use to communicate emotion-related events; and a unilateral activation with the child's comments. However, these relationships were not sustained in the maintenance phase. It was observed that the child's questions stimulated the mother's AAC model, and the mother's AAC model activated her child's AAC use, but none of them conversely.

## Mother–Child Social Validation

A written satisfaction survey was sent to the mother and her child by the end of the maintenance phase to evaluate the training and program's social validity.

The mother expressed feeling extremely satisfied with the support provided during the program and considered it helpful and very easy to learn emotional communication strategies. She commented that participating taught her:

> how to have a deeper conversation with my son. To be mindful of the characters in the books and use them as a tool to talk to my son (. . .) this [the emotion communication strategy learned] enables otherwise a superficial, two-dimensional conversation to be more interesting. I got to learn more about how my son feels. (. . .) Got to understand more about the importance of discussing the emotions and how to deal with the emotions. (. . .) [the "how to respond" page] has helped my son to also think deeper. [this program] opens up many more opportunities to use AAC and talk about more abstract issues (not just factual questions).

The child indicated that he enjoys talking about emotions in the storybook reading activity "a lot" and that he learned something new about emotions: "(I learned) to ask questions like How are you? To answer like fantastic. To communicate." He also shared that he "absolutely" likes to talk with his mom using his AAC device, and what he likes the most about the emotion-related AAC pages is "to be able to express I like, I love," whereas what he like the least was "dizzy – too many choices." When asked to complete the sentence "I want to say that. . .," he commented, "Ready and sharing – Enjoyed."

# DISCUSSION

The present study highlights the importance and promising implications of providing interactive learning experiences in natural settings to encourage emotional conversations in children with CCN. Similar to the findings presented by Na and Wilkinson (2018), participating in the program resulted in improvement in the communicative exchanges between mother–child about emotion-related events.

During the exploratory phase, the child rarely had opportunities to discuss emotions, and his participation was mainly summarized in answering yes/no questions. Although the mother occasionally promoted a richer emotional discussion (asking open-ended questions), this was followed by a closed-ended question. Research has shown that asymmetries between discourse patterns between partner-individual with CCN are frequently expected (Todman et al., 1994) and that there is a tendency to engage individuals with CCN through yes/no questions in communicative exchanges as it speeds up the interaction. Nevertheless, asking closed-ended questions limits their experience and opportunities to learn, discuss and interact actively (Light et al., 1985; Beukelman and Light, 2020).

After the training session, a considerable improvement in the child and mother's utterances and communicative

patterns was observed. The mother's prompts to encourage the child's involvement in conversations about emotions, as well as the proper culturally sensitive AAC system design, facilitated the child's active participation during the storybook-reading activity. The availability of emotion-related vocabulary contributed to the child's ability to sustain and start conversations about emotions. The behavioral patterns obtained permitted analyzing the communicative change over time between mother–child emotional conversations. Maintaining the mother's prompting to foster emotional talk helped increase the child's conversational contributions substantially in terms of making spontaneous comments rather than just responding to questions, asking questions about emotion-related events to others, and talking about himself rather than only the storybook's characters.

The analysis carried out allowed for the identification of what types of the mother's behavior encourage or inhibit particular behaviors by the child. For example, it was noticeable how the conversational sequence and relationship with the child's behavior changed during the program phases around the mother's emotional comments. Even though the mother made emotional comments during the exploratory phase, the child did not show any conversational response. In contrast, in the following phases, when she commented about emotions, concurrently with modeling the use of AAC, the child showed interactive behaviors that were significantly connected to that mother's prompt. These findings are consistent with the literature that highlights the importance of supporting communication partners in providing models and opportunities, deliberately, to foster interaction and development of emotional and communicative competencies in individuals with CCN (Biggs et al., 2018; O'Neill et al., 2018; Wilkinson et al., 2021).

The present case study sheds light on the promising efficacy of supporting communication partners online in creating interactive learning environments at home to encourage emotional and communication skills to discuss emotions, while respecting the family conditions and cultural background. At the beginning of the program, the mother expressed some concerns about engaging in the intervention due to specific family situations and difficulties in having the time to make the activity and record it. Despite the family time barriers to engaging in the program within a brief period [e.g., less than 3 months as in Na and Wilkinson (2018)'s multiple-baseline research design], the intervention still showed positive results. Sometimes, family effective engagement in interventions may be hindered by logistical barriers like parents' work schedules (Brotman et al., 2011). Being flexible to the context and understanding the child with CCN, family, and socio-cultural needs and interests are essential in creating appropriate and sensitive interventions that support children's learning (Rangel-Rodríguez et al., 2021). Systematic observation approaches provide the flexibility needed to studying natural settings and everyday life without losing rigor in the investigation (Anguera et al., 2018).

An evident drawback of the study was the limited number of participants. However, the observational methodology employed in the present study allows intensive research, being inversely related to the extensiveness required by other methodologies. Moreover, single case studies are the best path to follow when the topic to be studied is emerging (Swanborn, 2010). The analysis used illustrates a novel approach for conducting single case studies in the field of communication (including AAC), psychology, and education. Polar coordinate analysis and lag sequential analysis provide an innovative way to model the conversational pathways that change over time after an intervention in everyday contexts. These analyses offer information on the relationship and sequences between behaviors that cannot be understood through other conventional analyses, such as those that measure the frequency of appearance of a target behavior.

Further research is needed to continue validating the intervention and involving more children with CCN, from different socio-cultural backgrounds and linguistic levels. Additional work is warranted to identify the generalization of the emotion conversational abilities obtained in other settings outside the storybook-reading activity. The mother commented they had conversations about emotion-related events outside the storybook-reading sessions, where the child accessed his AAC emotional communication pages to discuss specific events. Further studies are relevant to adapt the program in other contexts, such as including both parents, siblings, or group settings (e.g., at school, group therapy); and in other activities, such as role-playing, watching movies or series, playing games, etc.

To sum up, significant communicative changes between the mother and child occurred in the interaction when the mother encouraged opportunities to discuss emotions in a storybook-reading activity. The present findings support the promising outlook of providing interactive home learning environments to foster emotional talk in children with CCN who may benefit from AAC.

## DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

## ETHICS STATEMENT

The study was reviewed and approved by the Ethics Committee of the Universitat Autónoma de Barcelona. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

GR-R documented, designed, developed the project, carried out the study, and wrote the manuscript. MB and SB made direct contributions to the work, revised the manuscript, and approved it for publication. All the authors contributed to the article and approved the submitted version.

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## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.674755/full#supplementary-material

**Supplementary Material 1 |** STEPS Instruction Page (adapted).

**Supplementary Material 2 |** Example of AAC emotion-related boards.

**Supplementary Material 3 |** Observation Instrument for interactions between communication partners and children with CCN during a storybook-reading activity (full version).

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