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Distance Education for children with a disability and/or from vulnerable families

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Abstract

Different reasons may hinder the right to education of children with a disability and/or from vulnerable families; for example, living in rural areas where they do not have access to public transport, restriction of opportunities to access schools, precarious economic situations, lack of minimum services that meet the needs of hygiene and personal care, among other reasons. This has made it necessary to implement changes in traditional education systems. For this reason, the objective of this study is to build a theoretical base that facilitates the understanding of the requirements of these children in terms of distance education. To do this, the authors interviewed primary education teachers who work with children with a disability and/or from vulnerable families. A qualitative research methodology was used with the focus group as a technique for collecting information. Ten primary school teachers participated in an interview made up of a set of open-ended questions that facilitated their narratives regarding education strategies used for students with a disability and/or those living in vulnerable families, which were later grouped into categories. As a result of this research, the following strategies used by the participating teachers were collected: recreating the feeling of the physical classroom in the virtual classroom, fostering friendship and companionship among students, designing engagement strategies, and considering the socio-cultural variables that influence learning. The teachers assured that distance education is a perfectly viable alternative for children with a disability and/or from vulnerable families.

Keywords Children · Disability · Distance education · Learning difficulties · Vulnerable families

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1 Introduction

People with a disability (both children and adults) have the right to education, but they often encounter significant difficulties in obtaining it. These are difficulties associated with the physical reach of the place of study, technical difficulties associated with the use of tools and teaching aids, and methodological difficulties associated with the need for individualized and inclusive training programs that take into account disability (Kingery, 2018; Muncunill, 2015). The elimination of these difficulties may require significant transformations in the system and methods of education. The educational system has changed significantly in recent years, as have teaching methods. Throughout the world, the methods used for teaching have undergone transformations. As Ayzemberg (2009) and Oassim-Al-shboul et al., (2015) indicate, these changes have occurred for various reasons. The first reason refers to time, as many people find it difficult to get to educational centers and to meet their teachers and other students on time. Likewise, distance represents another important factor, as it decreases the probability that people who live far from school can move easily. Finally, there are difficulties related to the demand, because traditional teaching methods do not allow creating and offering courses in smaller cities (Oassim-Al-shboul et al., 2015).

The situation is more difficult for people with a disability and/or from vulnerable families. According to the report issued by the United States Department of State (Taftaf & Williams, 2020), these people face challenges that put their well-being at risks, such as transportation shortages, overcrowding in large cities, lack of opportunities to access schools, and lack of minimum services that satisfy the needs of hygiene and personal care. In addition to this, Mendenhall et al., (2017) and Taftaf & Williams (2020) express that most individuals, including boys and girls under 18 years of age, must stay in urban neighborhoods and suffer constant episodes of violence, exploitation, xenophobia, and forced labor.

Specifically for girls, opportunities for access to education are affected by extreme poverty (Meenambigai, 2018; Tsvara, 2018). The current phenomenon of distance education has little benefit for children, with only some of them taking advantage of the few opportunities that are given to the group with a disability and/or from vulnerable families (Meenambigai, 2018). This fact has resulted in a significant decrease in the opportunities for people to obtain university quotas and future jobs (Meenambigai, 2018).

An online education model assumes a format for presenting educational information, completing educational tasks, and communicating based on online platforms using a desktop computer and/or mobile devices (Picciano, 2021). The widespread use of computers and other gadgets connected to the Internet makes such learning more distributed, personalized, and accessible.

These findings highlight the importance of guaranteeing opportunities that benefit all people equally, without distinction. Research has indicated that guaranteeing access to online education for children with a disability increases personal development, as long as institutions promote the use of online education platforms in an equitable manner, prioritizing children living in vulnerable families (Tsvara, 2018).

In this sense, distance education positively influences the increase of future professional opportunities and equal education (Meenambigai, 2018; Tsvara, 2018).

Allowing children access to distance education is a way of guaranteeing flexibility (Meenambigai, 2018). This online education modality has become an indispensable tool for the empowerment of children with a disability regardless of age, helping them to face the demands of the current economic system (Meenambigai, 2018). Therefore, autonomy and freedom are key elements of distance education (Meenambigai, 2018; Tsvara, 2018).

In Europe, some institutions recognize and endorse the importance of distance education, guaranteeing opportunities for those most in need. Different universities offer assistance plans for addressing groups that require inclusive services, such as the Open University of the Netherlands, International Telematic University (UNINETTUNO) in Italy, and even Anadolu University in Turkey. These study centers provide students with a disability with all the resources necessary to complete their courses (Muncunill, 2015). They commonly offer completely free books, CDs, and DVDs with classes, as well as forums, eBooks, and virtual portfolios, among others. Most European institutions guarantee up to 8,000 h of study on different subjects such as science, art, languages, and history, which children from vulnerable families use to continue their academic training (Muncunill, 2015).

Education plays an important role to overcome poverty or any vulnerable situation that affects children with a disability and their families. However, there is currently insufficient research to determine the extent to which children are affected by the impact of poverty (Harris et al., 2022). As Ridge (2002) and Horgan (2009) indicate, institutions do not know how the fact that children are from vulnerable families affects their performance in school, and especially, how the issue of social inclusion is dealt with in the face of other children from higher social classes.

Even though most of these supporting spaces for vulnerable families offer opportunities for the education of children, many of the parents decide not to send their children to school. The main reason is the fear that their children could face bullying and violence (Harris et al., 2022; Schmidt, 2013; Taftaf & Williams, 2020). Similarly, Ridge (2002) and Horgan (2009) found that 10-year-old children who lived in vulnerable families were more likely to be rejected from social groups at school. For these reasons, homeschooling using technology represents a broad field (Harris et al., 2022). The possibilities that distance education provides to children and teachers are increasing (Volkova et al., 2018). Many modern researchers believe that new information technologies constitute a new symbolic reality that formalizes the bases for a computer-based interaction, available to all of society (Volkova et al., 2018). A characteristic element of these tools is the student's ability to actively experiment with the content that is developed during the academic period.

In summary, distance education can be defined as a pedagogical concept that goes beyond the physical separation between a student and a teacher (McMillion & Tucker King, 2017). The characteristic elements of distance education (Bennett et al., 2015; McMillion & Tucker King, 2017) are the following:

- a structure for instruction;
- student-teacher interaction;

- student management.

Distance education allows one to create courses using the different options offered by the Internet and facilitates the development of courses that can combine both face-to-face and online modes. Online courses are those that have at least 80% of the content available on a platform supported by the Internet. Currently, different education centers are aware of the benefits that the use of distance education provides in the achievement of academic objectives (McMillion & Tucker King, 2017); whereas other institutions have opted for combinations between traditional and distance education formats, obtaining equally favorable results (McMillion & Tucker King, 2017).

Some of the advantages that online education provides are the following:

- access to varied information sources;
- the opportunity for a student to study independently and select the most convenient time and place to learn;
- the possibility of direct and personal communication with a teacher, as well as having instant online advice (McMillion & Tucker King, 2017).

The need for trained teachers to facilitate learning processes effectively is essential to student success. The budget approved by the Federal Fund to cover the training of teachers and other professionals dedicated to child welfare was 239 million USD; despite this, the results have not been entirely favorable for families. In 2016, the budget fell to 18 million USD as indicated by Kingery (2018), which shows a significant decrease in the attention directed towards the development of traditional methods.

In this sense, training continues to be insufficient while new strategies related to technologies for use in distance education are developed (Kingery, 2018). Child welfare agencies have been carrying out learning programs through electronic devices so that teachers are the ones who carry out the teaching processes themselves (Oassim-Al-shboul et al., 2015). With these measures, costs are reduced, and smart time consumption is promoted through traditional teaching methods. For this reason, research needs to provide teachers with adequate training on the correct use of new educational technologies applied to distance education (Kusmawan, 2017). The benefit of achieving these goals translates into the well-being of the neediest families.

The objective of this qualitative research was to build a theoretical base that facilitates the understanding of the needs of this group of children in terms of distance education, by exploring the narratives of primary education teachers who serve children from vulnerable families. The problems of distance learning for primary school children in connection with the experience gained during the COVID-19 pandemic have a wide academic discussion. However, with regard to primary school children who belong to poor and vulnerable social groups, there is a gap in the study of online learning methods and evaluation of their practical effectiveness from various points of view. This gap is partially covered in the proposed study. The novelty of the study lies in the assessment of the most widely used methods in a particular focus group from the point of view of parents. The results of this study will serve to formu-

Table 1 Sociodemographic characteristics of the study participants

Gender	Age (years)	Typical deviation	Min-Max
Female	35.4	3.6	25–52

late a model that allows adapting new information technologies to serve the neediest children, and in turn, promoting the development of teachers in new pedagogical strategies.

2 Materials and methods

2.1 Sample

A qualitative methodology was used to explore the use of strategies linked to distance education by teachers of primary education. In the first instance, informed consent was obtained from the workers of an educational institution to voluntarily participate in a focus group session. The selection of the focus group as a method for collecting information is a strategy that economizes the expenses of the research process and generates data rich in elaborations that are then analyzed (Fontana & Frey, 2000).

Ten primary school teachers participated, whose sociodemographic information is shown in Table 1. All participating teachers teach children whose parents participated in the survey; all features of the parent sample are described in detail below. The teachers represent 3 different schools and the principles for forming a focus group of teachers are presented in subsection 2.2 Inclusion criteria below.

Forty parents (25 women and 15 men) of children also participated in the study. Parents who entered the study were chosen as follows. First, the children in the class were randomly selected. A total of 50 children were selected. After that, the parents of these children were interviewed and 40 parents of 30 children agreed to participate in the study. Of these, both parents of 10 children participated (20 parents), and the rest agreed to participate alone (one of the parents).

2.2 Inclusion criteria

The following inclusion criteria were determined to reduce the error in the research:

That the teachers only carried out teaching functions in the classrooms, and that they had no other responsibilities related to a different position in the school.

Teachers had to have a range of experience in teaching and learning processes in classrooms of at least ten years.

Of the required number of years of experience, at least seven years of experience had to be in distance education.

2.3 Methods

The focus group session was conducted remotely via Skype. Regarding the instrument used in the research, a set of open questions was designed to facilitate teachers' narratives in relation to the education strategies used for students from vulnerable families.

Parents of children were asked to complete a survey. All four strategies used by teachers were included in the survey. For each of the strategies, a full description of its essence and the methods used to implement it and make it effective was given. Parents, based on their impressions of their children's success, and on their own opinion, scored the effectiveness of each strategy. The lowest score was 1, and the highest was 5.

2.4 Questions

As the research was qualitative, the researchers' intention was to find out the opinions and attitudes of the teachers regarding each of the topics indicated in the questions. These questions were selected from the study of Harris et al., (2022), and were the following:

Share an experience of a time when a student or group of students were engaged during one of their courses.

What strategies or approaches do you use to involve students in the class?

Do you use different strategies with distance education students compared to the ones you use in the school classroom? If so, what are these strategies?

How do you define student participation in a distance learning environment?

Due to the semi-structure of the focus group technique, other types of questions were added to follow up on the teachers' responses. These questions were, for example, "Do you provide examples along with theoretical material?", "Could you explain why you think the strategy has been effective?", "Does any participant have anything else to add?" During the focus group, participants were invited to narrate the distance education strategies they used to allow the involvement of children with a disability in their classes.

2.5 Data analysis

After the focus group, the narratives of each of the participants were transcribed to proceed with the main categories analysis of Coffey & Atkinson (1996). These authors have proposed a method for analyzing the data obtained, which can be applied to a wide range of social disciplines. The variables of analysis include the following:

- Interviews. The interview is the primary method of obtaining quantitative data.
- Discourse and Spoken Action. This can be very important when considering the conversational activity of children with speech disabilities.
- Visual and Material Culture, which can be important in the context of visual materials tendencies.

Among the directions proposed by these authors, it was decided to use the interview most actively, because through the speech and visual contact it is possible to obtain specific and score-based information. The resulting data are divided into three categories: articulated data; attributional data; emergent data.

Articulated data refer to data that can be formulated as a direct response to a request for information. This is a direct statement of opinion, a shared meaningful

experience, and a reflective statement. Attributional data are those that cannot be obtained with a direct question but can be obtained from the context, discussion, comments, clarifications, and descriptions of real practices. A good example is an assessment by middle managers of their boss and his/her actions. Often it cannot be expressed directly in full but can be obtained from the description of practices and their results. The authors of the applied method call emergent data group values, processes, and norms, which are an unforeseen product of comments and the exchange of opinions between members of the studied group. These may include informal normative assumptions that underlie social behavior. As a rule, the group is not able to develop or consciously reflect on such norms, but they can be identified during structural analysis, expressed by researchers, and confirmed by members of the study group after realizing these norms (Massey, 2011).

The resulting data are converted into points, which are compared with each other using statistical tests. Conversion into points makes it possible to compare different factors. This approach allowed the transcription to be organized following an index that reduced the narratives to equivalent categories. With this information, the data were expanded and transformed into dimensions that were later analyzed by the researchers.

They were asked about categorizing and identifying directions. After that, they compared the results obtained and discussed them and the result was a complete consensus between specialists. Five successive rounds of consultations were held to gradually converge the estimates until a consensus was reached.

The indexation of individual factors and the conversion of categories into digital form took place as follows. The articulated data selected by experts as a result of consensus, the wording of which corresponds to one of the categories, received 3 points; attributive data received 2 points and emergent data received 1 point for each wording recorded in the statements, ratings, and comments (answers) of one participant. This type of assessment was also formulated by the experts who took part in the assessment. This conversion principle gives more value to conscious, thoughtful, rationalized practices that can be freely expressed. Fewer points were given to implicit and unconscious practices, since, according to observations and in comparison with the assessment of the methods' effectiveness given by parents, they are much less repetitive, more affective, and to a lesser extent manifest themselves in the real regular practice of communication with children.

This evaluation method reflects the frequency of mentioning certain categories, and at the same time, their significance. The more frequently mentioned categories are guaranteed to get a higher score.

During the categorization process, each of the categories was compared to determine the fit of the data to the dimensions found in the analysis. In this process, some categories that did not correspond to the research objective were discarded, obtaining, as a result, a total group of four interconnected categories that described the opinions and attitudes of teachers regarding the use of distance education for children with a disability and/or from vulnerable families.

The categories were as follows: (1) recreate the feeling of the physical classroom in the virtual classroom, (2) foster friendship and camaraderie among students, (3) commitment strategies, and (4) socio-cultural variables that influence learning. These

were selected considering the main themes found in the teachers' narratives. Each one represents a key factor in understanding the use and applicability of distance education strategies for children with a disability and/or from vulnerable families.

The validity and reliability of measurement tools have been ensured by compliance with the principles of validity of a qualitative study (Mohamad et al., 2015). The Employing moderator principle allows to overcome personal biases, since the analysis of the collected data was carried out by experts in the role of third-party moderators. The Triangulation principle ensures that research from multiple perspectives is carried out, which is ensured by the participation of three independent and unfamiliar experts analyzing the same data. The principle of Respondent Validation is to test that initial results still ring true for the participants by re-discussing and confirming by the respondents the final results of the analysis conducted by the experts.

Ensuring that research is relatable is supported by the principles of Refutational analysis and the use of Comprehensive data and data comparison, formal organization of data, and the use of operationally accurate and previously verified methods of processing them in accordance with formal features and methods, as described above.

2.6 Statistical analysis

The obtained data (survey results of a group of parents) were analyzed using the STATISTICA software, version 10. Each of the teachers used certain strategies in relation to certain students; thus, for each teacher, the number of times each strategy is applied is determined. The strategies were compared among themselves on the basis of the average number of times they were used by all the teachers. This average means was used for the Student's t-test. The Student's t-test is designed to determine whether there are statistically significant differences in the frequency of use of each of the strategies by teachers. The results of the test should demonstrate that there is a perceived greater effectiveness or popularity in the use of certain strategies and prove that differences in the popularity and effectiveness of individual strategies are not the result of random fluctuations. The level of reliable differences is $p \leq 0.05$.

In addition, for comparison, 20 parents whose children had been taught by these teachers were interviewed. The parents' survey was necessary to consider their opinions regarding the effectiveness of the teaching strategies used by the teachers. Parents rated the effectiveness of a particular strategy on the Likert scale from 1 to 5 where 1 means "minimum effectiveness" and 5 – "maximum effectiveness". Comparison of the average ratings given by parents on a 5-point Likert scale for each of the strategies used by teachers was also tested for statistically significant differences using the Student's t-test. The relevant data in descriptive means and the Student's t-test's results are presented in the next tables.

2.7 Research limitations

The study used an assessment of changes in children's success through the perception of parents and did not use any methods of objective assessment, since in this context the application of such methods is difficult. The use of a focus group provides an

Table 2 Frequency of different learning strategies among 10 surveyed teachers

Strategies	Number and ordinal number of teachers actively applying the strategy
Recreate the feeling of the physical classroom in the virtual classroom	3 (4, 7, 8)
Foster friendship and camaraderie among students	3 (3, 5, 9)
Commitment strategies	3 (1, 6, 10)
Socio-cultural variables that influence learning	2 (2, 7)

Table 3 The results of the comparative Student's t-test for assessments of different learning strategies ($df=9$; t-values are indicated in one cell of the table with p-value: t/p)

Strategy (with index number)	1	2	3	4
Recreate the feeling of the physical classroom in the virtual classroom (1)		2,099/0.004	2,092/0.013	2,094/0.044
Foster friendship and camaraderie among students (2)			2,096/0.021	2,099/0.031
Commitment strategies (3)				2,092/0.028
Socio-cultural variables that influence learning (4)				

important insight into the effectiveness of teachers' methods from a parent's point of view but cannot be considered statistically representative.

3 Results

3.1 Analyzing the frequency of different teaching strategies used by teachers

There were significant differences in the frequency of use of different teaching strategies among teachers in relation to children (Table 2). A comparison of the average scores for each of the categories expressing teachers' strategies using the Student's t-test demonstrated statistically significant differences between these categories while maintaining the significance test $p<0.05$ (Table 3). Table 2 shows the order of strategies from highest to lowest and lists the conditional indices of participating teachers for which a given strategy was represented by a significantly higher frequency index than for others.

This approach allows one to observe how different strategies are equivalent and compatible with each other in practice, and which ones are preferred by teachers.

As can be seen from the data in Table 2, each of the 4 groups had an equal concentration of teachers (groups 1–3, $p\leq0.05$). Only teachers from group 4 were fewer in number ($p\leq0.05$ with the other groups).

Table 3 presents data confirming the presence of statistically significant differences between the average number of times teachers used each of the strategies (frequency). Moreover, statistically significant differences are observed between all strategies compared in pairs.

This indicates that the strategies used were approximately equally often chosen as the main strategies by the teachers. From this it follows that each of the teachers approached the choice of an effective instructional strategy in a highly individual-

ized way. Below is the rationale for each group of teachers as to why they chose this learning pathway.

Recreate the feeling of the physical classroom in the virtual classroom.

The teachers interviewed expressed the different challenges they have had to face in this regard; it is, in many cases, a difficult objective to achieve given the nature of the dynamics provided using technological tools in distance education. In this sense, the teachers' opinions are as follows.

Teacher 4:

Having them in front of the computer is already an achievement, another thing is to make them believe that they are inside the classroom.

Teacher 7:

I have stopped using the term classroom, the class becomes a moment, independent of the place, so the vision and the disposition of the children towards the class are different.

Teacher 8:

Many children lose interest or lose concentration easily because, not being in the classroom, they hardly understand that they must study while being at home.

Parents often help me in this regard.

Foster friendship and camaraderie among students.

The above is evidenced in what was indicated by the interviewed teachers, who stated that:

Teacher 3:

It turns out that the inclusion aspect is missing; the institutions are not committed to this; it is essential in the growth of children and is an important point also in their formation. I am looking for ways for them to interact with each other as much as possible.

Teacher 5:

Many have become friends and even visit each other; it is curious how parents also get involved and are part of the relationships that are created.

Teacher 9:

Teamwork has always seemed important to me, especially involving children with disabilities in these teams for their integration. Institutions should ensure the inclusion of these children.

Commitment strategies.

Several of the teachers interviewed stressed the effect of living conditions of the children from vulnerable families on their distance education possibilities. Given this, teachers comment:

Teacher 1:

Yes, the truth is that many children live in very remote areas, and not only that, sometimes they are in a state of poverty, but it is admirable to see how they try to keep up with everyone in the class.

Teacher 6:

Everyone in my group has a smartphone that facilitates both communication and learning.

Teacher 10:

Table 4 Effectiveness of the teaching methods used (parents' opinions), points

Strategy	Average number of points ± error of the mean
Recreate the feeling of the physical classroom in the virtual classroom (1)	4.5 ± 0.2
Foster friendship and camaraderie among students (2)	3.5 ± 0.1
Commitment strategies (3)	4.0 ± 0.1
Socio-cultural variables that influence learning (4)	2.5 ± 0.4

Sure, in my case too. It happens to me that I find more commitment from them when I involve activities that require their creativity, I put them to write about a specific topic and that makes them even more interested.

Socio-cultural variables that influence learning.

In this research, it was found that the interviewed teachers have found various strategies to promote such integration through these platforms, along with different options to establish educational dynamics that strengthen teamwork.

Given this, the teachers interviewed stated that children with a disability and/or from vulnerable families present difficulties that often hinder and even block the teaching process.

This is how the teachers expressed that:

Teacher 2:

Sometimes children connect to the class from areas of extreme danger and street violence… many times there are problems on the streets, and they are forced to leave the class due to the violent environment.

Teacher 7:

For several children, in the different classrooms in which I teach, giving distance classes has been a very significant solution because children with a disability and/or from vulnerable families have been integrated, who otherwise would not be able to attend, there are children who would have to come from towns outside the city.

3.2 Parents' opinion on the effectiveness of the methods used

The results of the parent survey are presented in Table 4.

The strategy that scored the highest than the other strategies was *recreate the feeling of the physical classroom in the virtual classroom* ($p \leq 0.05$ with strategies 2 and 3, $p \leq 0.01$ with strategy 4). Strategy 2 was less effective than strategy 1 but more effective than strategy 3 ($p \leq 0.05$). Finally, only strategy 4 was less effective than strategy 3 ($p \leq 0.05$). Sixteen parents out of 20 indicated that strategy 1 was the most important because the children get a sense of being in a classroom where they feel comfortable and where they interact with their peers and classmates. 10 parents indicated that relationships between students in the classroom were also important ($p \leq 0.05$ with the number of parents who indicated strategy 1 as the most effective). Finally, strategies 3 and 4 were the least important and effective, supported by only 7 and 4 parents, respectively ($p \leq 0.01$ with the number of parents supporting strategies 1 and 2) (Table 5).

Table 5 The results of the comparative Student's t-test for assessments of the strategies used by teachers by the parents of students (df=19; t-values are indicated in one cell of the table with p-value: t/p)

Strategy (with index number)	1	2	3	4
Recreate the feeling of the physical classroom in the virtual classroom (1)		2,093/0.024	2,097/0.013	2,868/0.004
Foster friendship and camaraderie among students (2)			2,092/0.021	2,869/0.001
Commitment strategies (3)				2,099/0.02
Socio-cultural variables that influence learning (4)				

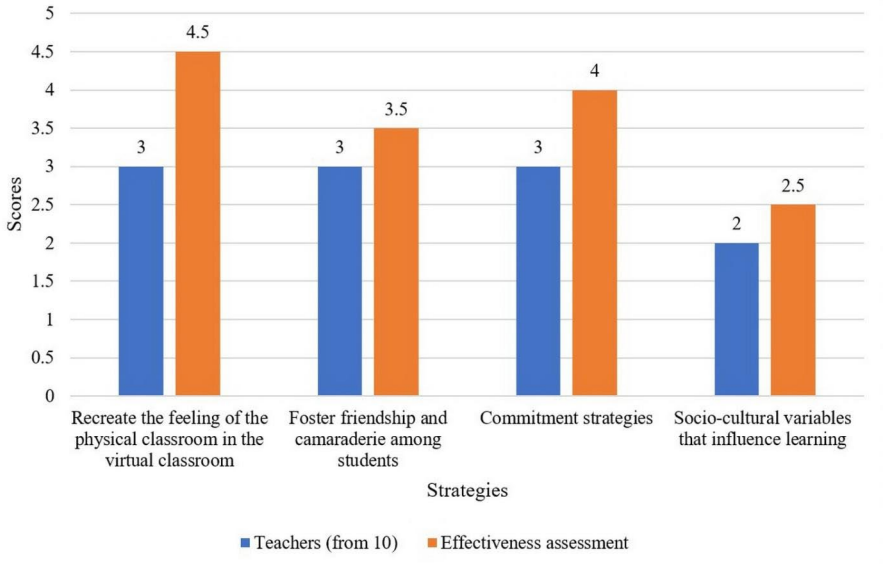

Fig. 1 The number of teachers using a certain strategy and the assessment of its effectiveness by the interviewed parents of students

In general, the data obtained from the parents' survey coincide with the data obtained for the teachers, although the number of parents supporting the effectiveness of strategies 1 and 2 is clearly higher compared to the number of parents supporting strategies 3 and 4. Among teachers the choice of strategies is more aligned, which can be explained by two factors:

a. the smaller number of teachers who participated in the survey compared to the number of parents;
b. the factor of professionalism - teachers, as specialists in pedagogy, know better the most effective teaching strategies, compared to parents.

On the other hand, the choice of specific teaching strategies is mostly individual.

The combined data on the number of teachers from the focus group who used different strategies in their practice and the assessment of the same strategies by the interviewed parents of students is presented in Fig. 1.

From the figure and the statistical data presented, it can be noted that the ratings of parents and teachers are on average the same: teachers are less likely to use those strategies that are relatively lower rated by parents, for example, focusing on socio-cultural variables that affect learning (Fig. 1). The most valuable from their mutual point of view are strategies for replacing a regular class with an online audience and communication strategies between students (strategy commitment).

4 Discussion

The aforementioned proposes a challenge that is consistent with what different authors (Harris et al., 2022; Volkova et al., 2018) expose when referring to distance education as a new symbolic reality. The experience of receiving and teaching the class comes to mean a different experience, as stated by Teacher 7, as the way of interaction between the educator and the students is different from the usual one, where both are physically involved in the same space. Teachers refer to this by explaining that distance education, as a concept in pedagogy, transcends physical space.

In most cases, when studying studies on distance education for children with disabilities, there are not holistic models ready for use, but certain approaches and methods that are integrated into an already existing curriculum (Muncunill, 2015; Picciano, 2021). This curriculum is usually based on behavioral cognitive therapy, which justifies its use, and elements of distance learning are designed to either provide online education for children with special needs in self-isolation, or increase the effectiveness of the teaching methods used (Buchnat & Wojciechowska, 2020; Fedorova et al., 2018). The prevalence of this approach is what makes the proposed study of the evaluation of the methods used by teachers and parents of children so relevant (Volkova et al., 2018).

On the other hand, the testimony of Teacher 8 highlights the importance of distance education for parents. The evidence of the commitment that the parents acquire to make the teaching and learning process as optimal as possible is remarkable. This is reinforced in the teachers' statements by including elements such as school, family, and the different tasks that a child can carry out within their home and community. Including parents during the teaching-learning process is part of the strategies used by teachers to maintain a classroom-like environment (Volkova et al., 2018). Similarly, it is part of a strategy that promotes and facilitates the use of distance education tools for children with a disability (Harris et al., 2022).

A part of the challenges of distance education is usually related to variables linked to attendance at the educational institution. Socialization with other students of similar age allows development as human beings and social individuals (Ayzemberg, 2009). The authors (Harris et al., 2022; Ridge, 2002) refer to institutions' need to recognize the importance of the inclusion of children with a disability and/or from vulnerable families. Therefore, the need to maintain the interaction between students and, above all, the integration of the children with a disability and/or from vulnerable families is evident. The purpose of facilitating inclusion is not only educational, but it also promotes the necessary strategies for the integration of students as a study team,

strengthening relationships and developing their social and communication skills (Harris et al., 2022; Kingery, 2018; Oassim-Al-shboul et al., 2015).

In this way, it is observed how digital media offer different options so that students with a disability and/or from vulnerable families develop a genuine commitment when carrying out different activities. Various authors (Bennett et al., 2015; Kusmawan, 2017; McMillion & Tucker King, 2017) ensure that microblogging positively reinforces the establishment and application of distance education and is often a preferred method to the conventional one with pencil and paper. Students have been shown to write about a topic more frequently over a longer period of time when using microblogging, leading to a deeper commitment to the learning process (Kusmawan, 2017).

Teacher 2 agrees with what has been stated by several authors (Meenambigai, 2018; Taftaf & Williams, 2020), who refer to the environment of violence and social chaos that is characteristic of vulnerable areas. Experts consider how the living conditions in vulnerable families present different impediments and difficulties so that children, especially those with a disability, cannot safely attend school and receive education in a safe environment (Harris et al., 2022; Taftaf & Williams, 2020).

As other authors have shown (Harris et al., 2022; McMillion & Tucker King, 2017; Taftaf & Williams, 2020), most children with a disability and/or from vulnerable families do not have access to quality education. Therefore, distance education positively influences the increase in educational opportunities (Meenambigai, 2018; Tsvara, 2018). The necessary conditions for a cognitive commitment and learning difficulties are a subject worth studying in the massive incorporation of information and communication technologies and their application to education and training, offering highly satisfactory results to fulfill the equal right to education by overcoming the barriers imposed by attending conventional classrooms (McMillion & Tucker King, 2017).

It is necessary to note that the willingness of teachers to implement programs and content of distance education guarantees not only the success in the academic performance of children with a disability and/or from vulnerable families, but also the projection and future validation of training opportunities (Bennett et al., 2015; Harris et al., 2022; Kingery, 2018). Similarly, with the application of these technological tools, social mobility is promoted as a product of the training received, as can be seen from the contributions given by the theories (Oassim-Al-shboul et al., 2015).

By understanding the relationship between the needs of students and distance education, it is possible to establish and promote different options for the development of the population that has difficulty accessing opportunities (Harris et al., 2022). The findings of this study thus consolidate the opportunity to broaden the search for options for people with a disability, as presented by Harris et al., (2022), because the teacher who works in this type of educational modality is a professional who has a high level of responsibility and concern for their work (Kingery, 2018), is ready to detect needs, and tries to find solutions to them (Kusmawan, 2017).

The teachers interviewed in this research corroborated the theory cited above. The teachers assured that distance education is a perfectly viable alternative so that children with a disability and/or from vulnerable families can access and enjoy this basic right. The method is used by them to teach children unable to physically access

schools in neighborhoods with high rates of violence in the streets and hostile environments that do not offer the optimal conditions for these children to attend school.

5 Conclusion

This study considered the use of distance education as a tool to facilitate access to education, training, and instruction, especially for children with a disability and/or from vulnerable families. Distance education allows granting these children the universal human right that every citizen has (the right to education).

Technological advances have invaded all areas of everyday life, including education. Therefore, technology plays a preponderant role in the education, training, and instruction of children with a disability and/or from vulnerable families, because it facilitates the construction of their own learning, added to the fact that in the labor market the use of technologies is a demanded skill.

The interviewed teachers considered it important to motivate the participation of parents, which guarantees the success of their work and the academic achievement of those who join it. The instructional strategies of distance education are a valuable means to incorporate the use of the internet in the learning environment, and thus replace the traditional class based on direct interaction between teacher and student. This requires the supervision of teachers, institutions, and parents so that students with a disability and/or from vulnerable families overcome difficulties and achieve better academic performance.

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Data Availability Data will be available on request.

Declarations

Geolocation information.
This study was carried out at the University Citadel of the University of Guayaquil. Located at Avenida Delta s/n and Avenida Kennedy, Guayaquil, Ecuador. Coordinates: 2°11′00″S 79°53′45″O.

Conflict of interest Authors declare that they have no conflict of interests.

References

Ayzemberg, C. (2009). *Análisis de Las Estrategias de Aprendizaje/Enseñanza En Un Contexto de Educación a Distancia: E-Learning*. University of Granada

Bennett, S., Agostinho, S., & Lockyer, L. (2015). Technology tools to support learning design: Implications derived from an investigation of university teachers' design practices. *Computers & Education*, *81*, 211–220. https://doi.org/10.1016/j.compedu.2014.10.016

Buchnat, M., & Wojciechowska, A. (2020). Online education of students with mild intellectual disability and autism spectrum disorder during the COVID-19 pandemic. *Interdyscyplinarne Konteksty Pedagogiki Specjalnej*, *29*, 149–171. https://doi.org/10.14746/ikps.2020.29.07

Coffey, A., & Atkinson, P. (1996). *Making sense of qualitative data: Complementary research strategies*. London: Sage Publications, Inc.

Fedorova, M. A., Tsyguleva, M. V., Vinnikova, T. A., & Sishchuk, J. M. (2018). Distance education opportunities in teaching a foreign language to people with limited health possibilities. *Astra Salvensis*, *1*, 631–637

Fontana, A., & Frey, J. H. (2000). The interview: From structured questions to negotiated text. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 645–672). Thousand Oaks, CA: Sage

Harris, L., Dargusch, J., Ames, K., & Bloomfield, C. (2022). Catering for 'very different kids': distance education teachers' understandings of and strategies for student engagement. *International Journal of Inclusive Education*, *26*(8), 848–864. https://doi.org/10.1080/13603116.2020.1735543

Horgan, G. (2009). 'That child is smart because he's rich': the impact of poverty on young children's experiences of school. *International Journal of Inclusive Education*, *13*(4), 359–376. https://doi.org/10.1080/13603110802707779

Kingery, L. S. (2018). *Understanding E-Learning as Professional Development for Rural Child Welfare Professionals.* Doctoral dissertation, Walden University

Kusmawan, U. (2017). Online microteaching: A multifaceted approach to teacher professional development. *Journal of Interactive Online Learning*, *15*(1), 42–56

Massey, O. T. (2011). A proposed model for the analysis and interpretation of focus groups in evaluation research. *Evaluation and Program Planning*, *34*(1), 21–28. https://doi.org/10.1016/j.evalprogplan.2010.06.003

McMillion, T., & Tucker King, C. S. (2017). Communication and security issues in online education: Student self-disclosure in course introductions. *Journal of Interactive Online Learning*, *15*(1), 1–25

Meenambigai, R. (2018). Women empowerment through allowing access and distance education. *International Journal of Research in IT and Management*, *8*(12), 19–24

Mendenhall, M. A., Russell, S. G., & Bruckner, E. (2017). *Urban refugee education: Strengthening policies and practices for access, quality, and inclusion*. State Department Bureau of Population, Refugees and Migration

Mohamad, M. M., Sulaiman, N. L., Sern, L. C., & Salleh, K. M. (2015). Measuring the validity and reliability of research instruments. *Procedia-Social and Behavioral Sciences*, *204*, 164–171. https://doi.org/10.1016/j.sbspro.2015.08.129

Muncunill, A. V. (2015). Distance learning in higher education. Models, challenges and opportunities. *Oficina Regional de Cultura Para América Latina y El Caribe*, *1*(1), 1–22

Oassim-Al-shboul, O. M., Sabiote, C. R., & Álvarez-Rodríguez, J. (2015). Professors' perceptions of distance education in virtual environments: The case of the Education Faculty of University of Al-Yarmouk (Jordan). *Digital Education Review*, *28*, 142–162. https://doi.org/10.1344/der.2015.28.142-162

Picciano, A. G. (2021). Theories and frameworks for online education: Seeking an integrated model. In *A Guide to Administering Distance Learning* (pp. 79–103). Brill. https://doi.org/10.1163/9789004471382_005

Ridge, T. (2002). *Childhood Poverty and Social Exclusion: The Child's Perspective*. Bristol: Policy Press

Schmidt, C. (2013). *Education in the Second Largest Refugee Camp in the World.* Global Partnership for Education. Retrieved 3 May 2022 from https://www.globalpartnership.org/blog/education-second-largest-refugee-camp-world

Taftaf, R., & Williams, C. (2020). Supporting refugee distance education: A review of the literature. *American Journal of Distance Education*, *34*(1), 5–18. https://doi.org/10.1080/08923647.2020.1691411

Tsvara, I. (2018). *Challenges and opportunities for the girl child in the wake of the new curriculum: A survey of two schools in Makoni District, Zimbabwe.* Doctoral dissertation, Great Zimbabwe University, Department of Educational Foundations

Volkova, O., Ananchenkova, P., & Besschetnova, O. (2018). Using of distance learning technologies in the educational process of orphans and children left without parental care. In *Proceedings of the 13th International Conference on Virtual Learning, October* (Vol. 26, No. 28, pp. 155–158). Romania