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IMPLEMENTATION OF AN INCLUSIVE MULTILEVEL MODEL FOR READING INSTRUCTION IN A BILINGUAL SYSTEM

IMPLEMENTACIÓN DE UN MODELO MULTINIVEL INCLUSIVO EN EL ÁREA DE LECTURA EN INGLÉS DENTRO DEL SISTEMA BILINGÜE

Laura Aracely Martínez Magaña[a]
International Iberoamerican University, Honduras
[laura.martinez@doctorado.unib.org] [https://orcid.org/0000-0003-3267-3237]
Rosa Eva Valle Florez
University of León, Spain
[rosa-eva.valle@unileon.es] [https://orcid.org/0000-0001-9078-1557]

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ABSTRACT

This research analyzes the implementation of an inclusive multilevel model in bilingual education to teach English as a second language in elementary school. An Inclusive Educational Plan by its acronym in Spanish (PIE) was designed and validated based on the Ainscow and Booth Inclusion Index (2015), the Multi-Level Support System (MTSS) and the application of Universal Learning Design (ULD) principles. It studied the interrelationship of the inclusive multilevel model in the English reading class and the academic performance of students with and without some type of educational need. This study is structured as a quantitative, descriptive and comparative design between an experimental group and a control group. A total of 132 first grade students of elementary school from the Escuela Internacional Sampedrana and 20 students with Specific Educational Needs (SEN) participated. Data collection was carried out through specific academic reading tests in English and a satisfaction survey of the students of the experimental group. Among the most valuable findings, it stands out that all the students in the experimental group, with and without special needs, showed significant increase in the academic performance, and reading skills. The study validated the implementation of the inclusive multilevel model. In the survey, the students also showed high satisfaction with the type of methodology implemented to strengthen their learning of English as their second language.

Palabras clave:

RESUMEN

Esta investigación analiza la implementación de un modelo multinivel inclusivo para la enseñanza del inglés como segunda lengua en estudiantes de escuela primaria de educación bilingüe. Se

[a] Corresponding author.

NEAE, sistema multinivel de apoyo, Inglés, educación Inclusiva.	diseñó y se validó una propuesta de intervención educativa denominada Plan Integral Educativo (PIE) basado en el Index de Inclusión de Ainscow y Booth (2015), el Sistema de Soporte Multi Nivel (MTSS) y la aplicación de los principios del Diseño Universal del Aprendizaje (DUA). Se estudia la interrelación del modelo multinivel inclusivo en clase de lectura en inglés y el rendimiento académico de estudiantes sin y con una necesidad educativa. Es un diseño descriptivo y comparativo entre un grupo experimental y un grupo control. Participaron 132 estudiantes del primer grado de primaria de la Escuela Internacional Sampedrana de Honduras y 20 estudiantes con Necesidades Específicas de Apoyo Educativo (NEAE). La recolección de datos se realizó mediante pruebas académicas de lectura en inglés y una encuesta de satisfacción a los estudiantes del grupo experimental. Entre los hallazgos más valiosos se destaca que el estudiantado de grupo experimental, sin y con NEAE, mostraron un incremento significativo en el rendimiento académico de las diferentes capacidades implicadas en la lectura de inglés con la implementación del modelo multinivel inclusivo. En la encuesta los estudiantes mostraron además una alta satisfacción con el tipo de metodología implementada para afianzar su aprendizaje del segundo idioma.

Introduction

Diversity and multilingualism are two predominant characteristics in the social community and a latent reality in many international schools and educational centers in numerous countries. Bilingual education, with teaching programs in English and Spanish, has become a common option in many schools. The access of students with functional diversity to these programs is a controversial topic at the institutional and family level, full of myths and prejudices that requires in-depth studies to gather evidence of the results of these programs on a wide range of student abilities. Family aspirations of schooling sons and daughters with some type of Specific Educational Support Needs (hereinafter SEN) in bilingual systems are compromised as it is considered a very complex process, therefore, it is not an educational option for these students (Arregi, 1997). Bilingual schools attempt to respond to these needs by implementing different and multilevel educational models that enable neurodiverse students, whether mild, moderate or severe, to succeed educationally in these institutions.

The universal educational trend is to favor an inclusive and accessible quality education, a school where there are opportunities to optimize the individual potential of each person without limits to their participation. Achieving educational equity and overcoming all types of discrimination is the fourth Sustainable Development Goal and the European Agenda 2030 (UN, 2018), as well as one of the cooperation priorities of the Ibero-American Educational Organization (IBE-UNESCO, 2018). Attention to the diversity of students and groups at greater risk of exclusion requires an inclusive and multilingual quality educational response that is adjusted to the specific needs of each learner, to the cultural context of each country and to future socio-labor demands (Martín-Pastor and Durán, 2019). Inclusive education emphasizes the restructuring of spaces, resources and teaching practices to make learning physically and cognitively accessible to all students. The inclusive approach considers that the effort of schools should focus on offering learning opportunities for all and that differences should be considered a factor of enrichment to the educational process, not of exclusion. Consequently, the bilingual education system must have pedagogical innovation programs that facilitate the use of inclusive practices and curricular flexibilization (Fundación ONCE, 2017). The main international educational organizations (OEI, 2010; UN, 2018; IBE-UNESCO, 2018) support in the same sense, the need for inclusive and bilingual education to adjust to the demands of the 21st century, in which multilingual competencies must be acquired to function in a global society.

Literature review on the subject

The search for studies on the schooling of students with special needs in bilingual contexts carried out in the main databases (WOS, Scopus, Dialnet) indicates that these studies are very few in number. This would result in the need to deepen and investigate further the intersection of the two topics of interest of our research: inclusive education and bilingual education.

Authors such as Baker, 2011; Ainscow et al., 2013; Marchesi et al., 2014; Genesee and Fortune, 2014, defend the right of all students to an inclusive education in equity of opportunity. The results of this research highlight the need to restructure the organization and methodologies prevailing in regular schools to adjust to the collective and individual needs of each student. They demand education in normalized environments and greater educational support for these students. Students with permanent or transitory SEN are usually excluded from bilingual programs and do not

receive education in a second language, only in their native language (De Valenzuela et al., 2016; Fundación ONCE-Ilunion, 2017). This exclusion is argued on the learning limitations of neurodiverse students that affect their performance. The term neurodiverse cannot be understood as limitation or disability, according to Armstrong (2012), neurodiversity understands and explains that each brain may have different neural functions and behavioral traits that need diversity of ways to access learning. From this perspective, the difficulties cannot be explained only by differences in capabilities, but by the lack of adjustment of curricular programs and methodologies (Cooc, 2019). To effectively implement bilingual education, Bialystok (2016) points to curriculum flexibility to teach subjects with a gradual transition from the native language to the second language and over a period of several years. In this way, inclusive practices are opened up in accordance with the needs of the students and not with guidelines set by a rigid system of a pre-established bilingual curriculum.

For Castey (2020) it is essential to analyze the advantages of bilingualism from the early childhood stage, since "bilingualism develops cognitive potential from an early age" (p.5). The results of their studies clarify that bilingual students are able to develop cognitive skills that directly impact school performance. These facts would indicate that bilingualism helps to enhance cognitive skills and is not a problem that produces academic delays or interferes with other school abilities.

Despite the above, research conducted with SEN students in bilingual programs is scarce and its results are not conclusive given the variability of contexts and learning needs. Therefore, it is necessary to continue researching and deepening on the subject to find more solid evidence. Nevertheless, we highlight the positive trend of some factors identified as "good practices" for these experiences to be successful. Genesee (2014), De Valenzuela et al. (2016) and Cooc (2019), highlight the need to design inclusive learning spaces to favor bilingualism, evidence that students with some disability can achieve bilingual competence, within the limitations established by their difficulties, if the amount of exposure to each language is proportional and functional to their needs. Therefore, it is necessary to support both languages in their daily life, providing language support in both the first language (L1) and the second language (L2). Thordardottir (2010), has provided useful suggestions on how to support the learning of both languages in classes that are very heterogeneous in ability and motivation. Kay-Raining Bird et al., (2018) found that bilingual immersion programs with students with SEN have been beneficial and effective in L2 acquisition when using L2 as a communicative pathway.

The severity and characteristics of SEN may compromise overall academic performance and take longer to achieve effective communication processes in both L1 and L2. Some types of SEN affect cognitive and intellectual potential, and may take longer to acquire certain skills to learn to speak and write in two languages and may not fully develop in certain areas. Despite needing more time, according to Kay-Raining Bird (2018, p.2), "being bilingual does not hurt them in all other learning."

Martín-Pastor and Durán (2019), studied the implementation of bilingual programs from an inclusive perspective with the presence of students with SEN and how they receive supports. The results show that students with SEN drop out of bilingual programs in their transition to higher grades, as support strategies are more frequent and inclusive in the primary education stage than in secondary education. Another finding found is that students' difficulties are alleged as reasons to justify their exclusion, while school management issues and inclusive practices that provide access to education for all are ignored.

In Latin America, one of the biggest obstacles to implementing inclusive bilingual practices is the predominance of traditional teaching paradigms; rigid and conventional

curricula, expository methodologies and standardized learning processes with little or no adaptation to meet the specific needs of students (Marchesi et al., 2014).

Finally, we highlight a successful trend of bilingual learning with SEN students using the Universal Design for Learning (UDL) approach proposed by the Center for Applied Special Technology (CAST, 2011). The SAD is an inclusive global model that takes into account the diversity of the school population by minimizing physical, sensory, cognitive and cultural barriers in schools.

According to CAST (2011) the goal of SAD is to make use of a varied and flexible teaching methodology to eradicate barriers to quality education and effective learning. The DUA is considered a very useful model for bilingual students who are learning English as a second or third language. The SAD facilitates learning opportunities with three principles: I. Provide multiple means of representation (the what of learning); II: Provide multiple means of action and expression (the how of learning); III: Provide multiple forms of engagement (the why of learning).

Based on the conclusions of the review carried out, the hypothesis of the study arises: can students with SEN learn in a bilingual context if an inclusive multilevel model of student support is implemented? The objective of this research is to validate the functionality and effectiveness of a Comprehensive Educational Plan with the application of inclusive best practices for students with SEN within a bilingual education system with Spanish as the first language and English as the second language.

Method

The research adopts a descriptive experimental approach (Hernández et al., 2016) to analyze the implementation of a multilevel educational method designed specifically for this study, independent variable, in order to determine how it affects the performance and satisfaction (dependent variables) of those who participate in the study (experimental group) compared to the control group that has not participated in the implementation of the designed program. The study considered all members of the first grade school community: students, teachers, administrators and families.

For reasons of space, we only detail the results of the instruments applied to the students; specifically, we compare the quantitative data of the pre- and post-tests of reading achievement in English of first grade students in the control and experimental groups, including the results of neuro-diverse students in both conditions, to conclude with the data of the satisfaction survey of the experimental group.

Research objective and hypothesis

The objective is to analyze the effectiveness of an inclusive multilevel model implemented in a bilingual school with students with SEN and its impact on academic achievement in reading in English. The following research hypotheses were proposed: There is no difference in the average score of the post-test applied between the control and experimental groups (H0) and there is a difference in the average score of the post-test applied between the control and experimental groups (H1).

The procedures are based on the application of three academic tests that measure the level of individual growth of students in the control and experimental groups at the beginning and end of the study (pre- and post-test).

Study participants

A non-probabilistic, purposive sample was selected from the first grade of primary school at the Sampedrana International School in San Pedro Sula (Honduras), ages 6 to 8 years old. A total of 132 students participated, including 20 students with SEN, grouped in two situations, a control group (n=64 students) and an experimental group (n=68 students). In each group we found 10 neuro diverse students with similar characteristics in their educational support needs. For the formation of the two groups, the results of the pretest in the academic tests specified below were considered in order to form two groups with the most similar performance and educational needs possible. Three sections (64 students) were formed as control group and three sections (68 students) as experimental group, in each group there are 10 students with similar SEN. The profile of students with SEN is diverse, ranging from moderate to severe. The most frequent diagnoses are: Attention Deficit Disorder, emotional and behavioral disorders, cognitive limitations, autism spectrum disorders and situational crises.

Informed consent was obtained from participants and families according to the Declaration of Helsinki and the approval of the institution's Ethics Committee.

Study phases and timing

A search was conducted to support the theoretical framework and to select/arrange the necessary data collection instruments. In the second phase, the first quarter of the 2021-22 academic year, an analysis of the context and an initial diagnosis were carried out in order to develop the experimental design. In the third phase, the Multilevel Comprehensive Educational Plan (PIE) is designed and implemented with the contributions of the SAD and the support of the Multilevel Support System (MTSS). The fourth phase is developed in the 2nd and 3rd quarters to implement and evaluate the SIP. Finally, the test results are analyzed and the final report is generated.

Data collection instruments used

A variety of specific academic tests are used to determine participants' initial English reading level. The tests are validated by the Northwest Evaluation Association (NWEA) and adapted to the Honduran context by the Escuela Internacional Sampedrana (2022). The objective in the selection of tests is to provide a detailed analysis of all the elements involved in reading:

MAP (Measures of Academic Progress) is a standardized, summative online assessment test with digital devices (NWEA, 2020). The Northwest Evaluation Association (NWEA) website built and maintains the academic assessments for students in kindergarten through high school.

The Reading Control (Running Records) is a formative and individual reading test. It is recorded by means of a lettered level scale in alphabetical order where the lowest level is AA and the highest level is Z2.

The Phonics Screener involves phonetic categories designated in patterns in order of difficulty to encourage decoding of syllables by phonetic patterns. The following are analyzed: the name and sounds of the letters, words with 2 and 3 letters, words with digraphs, words with the silent letter e at the end, words with two vowels together, words with diphthongs, words with r syllables, compound words and finally the total mastery which is the sum of all the categories that is reflected in a percentage of final achievement.

The Sight Words Screener is a formative assessment that evaluates the automaticity of reading certain words in order of difficulty. The words are in sets of 215 words in each set, starting with the easiest to read to those multi-syllabic words that are complex to read.

Finally, a Likert-type survey with 5 gradients was applied to the students of the experimental group on satisfaction with the application of the multilevel program in English reading.

Data Analysis

The analysis compares the arithmetic means of academic test scores at the beginning and end of the program in the experimental and control groups.

Comprehensive Multilevel Educational Plan for bilingual education

The Comprehensive Educational Plan (PIE) is based on inclusion and educational equity with a multilevel model of support to improve in-class support for SEN in order to achieve reading expectations in the second language, English in the area of reading. The EIP is designed according to the Index for Inclusion (Ainscow and Booth, 2011) on three fundamental pillars: inclusive policies, practices and values.

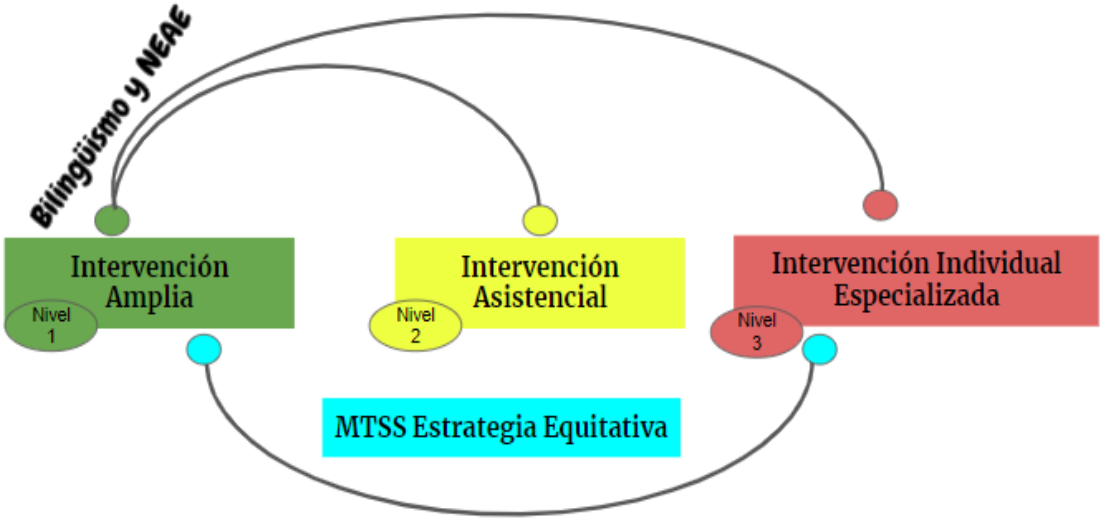
The PIE follows the Multi-Tiered System of Support (MTSS) model proposed by the Individuals with Disabilities Education Act (IDEA, 2018) as an inclusive strategy recognized in different educational contexts to address the latent needs of students with and without SEN. The MTSS according to Massengale et al. (2020, p.15), is a contemporary framework that allows schools to establish structures and practices to provide the entire community with the supports for school success and academic support.

The Project consists of three different levels of support for students depending on the adjustment to the proposed academic objectives and the implementation of the SAD:

- Level 1: aimed at the whole class with general support
- Level 2: support for small collaborative groups within the classroom
- Level 3: intensive small group or individual support in or out of the classroom.

Figure 1

PIE Student Support Model in Bilingual Teaching of Students with SEN based on Multilevel Structure



Tier 1- Extensive educational support intervention when needs are mild and can be met with group support within the classroom. These are non-significant curricular accommodations with a flexible curriculum and assessment.

Tier 2 - Welfare intervention, if needs are moderate and can be met in the classroom with small group/individual support using equitable teaching-learning strategies. Curricular accommodations can be non-significant with some significant modifications that directly impact the type of assessment, resources used and methodology implemented. Require an Individual Informal Accommodation Plan and/or specific counseling services.

Level 3- Specialized individual intervention when needs are significantly severe and their cognitive and academic potential is highly compromised. Requires intensive individual work to suit your needs in or out of class. Significant modifications directly impact the achievement objectives, the type of assessment, the resources used and the methodology implemented. At this level they require many curricular accommodations for second language acquisition. Students require an Individualized Education Plan, an Intervention Plan, a Behavior Plan and serious social/behavioral concerns that do not necessarily have a formal plan.

The PIE is based on studying the curricular content of the reading class in English as a second language (L2) in order to make that content more flexible according to the needs of the students and to implement differentiation practices in instruction. Basic, non-significant curricular accommodations are made that impact the use of varied resources and execution time in activities. The SAD is applied and in the most extreme cases, significant curricular modifications that impact the achievement of objectives, forms of evaluation and type of methodology are applied (CAST, 2011). In this way, meaningful learning is fostered in accordance with each student's scholastic potential.

PIE teaching methodologies for learning English as an L2

Lindamood-Bell's (2021) strategies for fluent and comprehensive reading were used. Lindamood-Bell is an educational company that promotes intensive and preventive didactic teaching programs for the entire school population and as a specialized intervention for students with moderate to severe SEN. Specifically, the Seeing Stars method was used, a structured English phonics program that reinforces the decodable part of the language. It relies on a multisensory approach, using the different senses to help students connect sounds, letters and words. Another method used is Visualizing & Verbalizing, which focuses on the power of visualizing dynamic images in the mind and verbalizing what they represent through enrichment of oral expression to describe illustrations, words, sentences and even paragraphs and entire complex content. Visualization of concepts is successfully stimulated (Lindamood-Bell, 2021, p.45). These strategies develop connections between concrete elements and abstract elements; it strengthens the capacity of comprehension between text and reasoning, giving meaning to the text and allowing them to access the information they have visualized and verbalized to use it when they need it.

All students in the experimental group received SAD implementation, differentiated reading instruction, small group reading by levels and simultaneous reading stations (individual reading, pair/trio reading, phonics practice, practice of frequently used words, ICT reading using the Reading A-Z platform).

Procedure used in the application of the Comprehensive Multilevel Inclusive Educational Plan

The implementation of the PIE in the experimental group was applied with the three levels of student support described above. This support involves the classroom teacher, the teaching assistant and the specific student support staff, known in our institution as the School Success Center. We detail the actions implemented for each level:

Actions at Level 1

A. Classroom instruction: the teaching staff assesses each student individually, respecting his or her profile of strengths and areas for improvement. Support needs are identified according to PIE levels 1, 2 and 3.
B. Utilization of inclusive active methodologies including 1st grade team planning sessions for collaboration, consultation, co-teaching with classroom profile meetings, modeling, coaching and resource sharing.
C. Application of Lindamood-Bell programs for the whole class in a general way.
D. Type of tasks for reading in English: implementation of reading instruction, guided reading, reading aloud, shared reading, reading-writing stations.

Actions at Level 2

A. Inclusive strategies and methodologies: the teaching staff applies inclusive strategies referenced by Acevedo et al (2020): learning by discovery, pedagogical contract, multilevel strategy, organization of content based on center of interest, group splitting, flexible groups, interactive groups, flexible organization of space, work in stations graduated by level of difficulty, shared teaching, peer tutoring, among others.
B. Intensive application of Lindamood-Bell programs: Seeing Stars and Visualizing /Verbalizing with in-classroom reinforcement by small group teaching assistants for students who show difficulty in their reading fluency is done in learning corners two or three times a week for 20-30 minutes.
C. Type of tasks for reading in English: reading groups by homogeneous levels to specifically reinforce phonics, reading fluency, vocabulary or comprehension.

Actions at Level 3

Individual Monitoring: individual goals are set for reading skills with individual follow-up and monitoring. Design of individual plans: IEP, IP, Informal Accommodations, Behavior Plan.

Classroom accommodations/modifications: classroom teachers and teaching assistants provide significant accommodations and modifications. Individual plan design is reviewed, monitored and followed up. Differentiation is made in instruction considering the significant elements of the curriculum (objectives, activities parallel to the expected curriculum, evaluation of expectations and achievements).

Inclusive strategies: individualized instruction inside and/or outside the classroom by student support staff, co-teaching within the classroom.

English reading: intensive paired or individual instruction for students identified with SEN using Lindamood Bell programs.

Reinforcement class in reading by the student support staff: intensive individual or small group reinforcement for students with a severe level of difficulty.

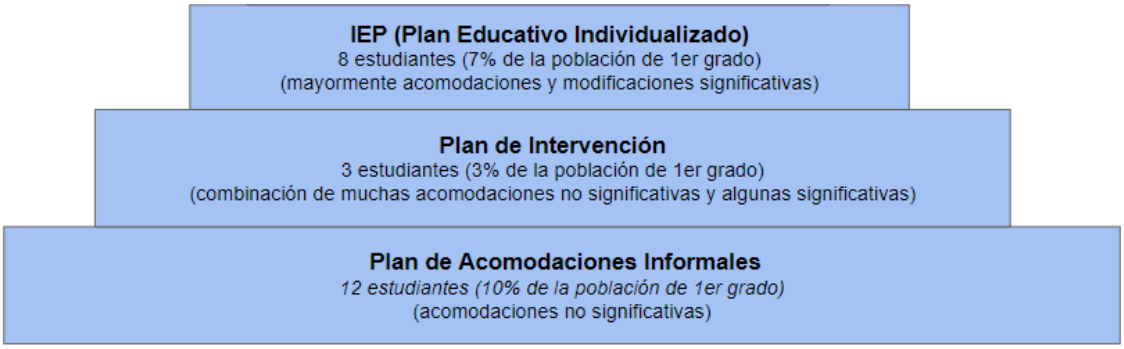
Results

Shown on this ladder are the results of the different types of individual plans for students already identified with a diagnosis requiring student support.

Among the plans are: the Informal Accommodations Plan, non-significant accommodations to the curriculum. The Intervention Plan provides for a combination of many non-significant accommodations and some significant accommodations according to the type of need. And the Individualized Education Plan (IEP), where most accommodations and significant modifications are made to the academic curriculum.

Figure 2

Laddering of Individual Plans and type of student support



The Informal Accommodations plan is the predominant support in 1st grade with 12 students which equals 10% of the total 1st grade population. Secondly, the IEP plan where significant curriculum accommodations are written with 8 students representing 7% of the total 1st grade population. Third, the Intervention Plan, which is a mix of a few significant and mostly non-significant accommodations with 3 students representing 3% of all 1st grade students.

There is a percentage of academic plans with 23 students, equivalent to a percentage of 18%. Of the total of 132 students in the study, 109 (82%) do not require any type of individual plan, although 40 of them require Level 1 support with some basic adaptations in order to guarantee the achievement of the objectives of the bilingual program for 1st grade.

Initial and final assessment results on the MAP (Reading Measures of Academic Progress/Test de lectura en inglés) test

The MAP tests are located on the NWEA website (NWEA, 2020) which measures the results through the RIT (Rasch Unit). The RIT is based on a scale to measure and compare the academic performance and growth of a student, a class, a grade level, or an entire school or school district. The RIT scale spans all grades, allowing a student's score to be compared at various points throughout his or her education. Percentile rank measures in ranges from 0 to 99 are used to group test scores into ranges: At Risk rank (0% to 15%), Low rank (16% to 20%), Low Average rank (21% to 40%), Average rank (41% to 60%), High Average rank (61% to 80%), and High Rank proportions (81% to 99%).

Table 1

2020 MAP Achievement Standards English Reading Test

Grade	Beginning of the Year	New Year's Eve
	RIT - Average	RIT - Average
Kinder	136.65	153.09
1	155.93	171.40
2	172.35	185.57
3	186.62	197.12

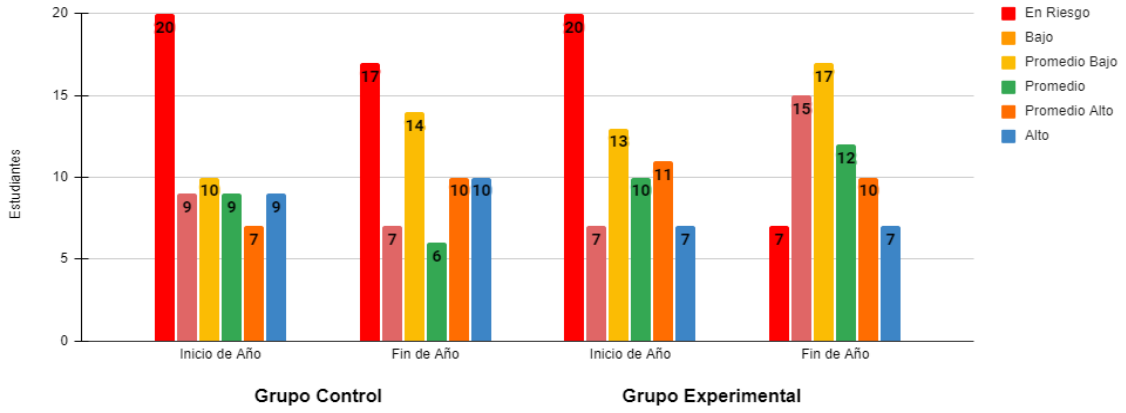
Rangos Percentiles
Rango En Riesgo Percentil: %ile <15
Rango Bajo Percentil: %ile 16-20
Rango Promedio Bajo Percentil: %ile 21 -40
Rango Promedio Percentil: %ile 41 -60
Rango Promedio Alto Percentil: %ile 61 -80
Rango Alto Percentil: %ile 81-99

Note. Source: NWEA Regulation 2020

Below, we show the number of students located in each of the described levels-ranges comparing the control and experimental groups before applying the Program and at the end of its implementation.

Figure 3

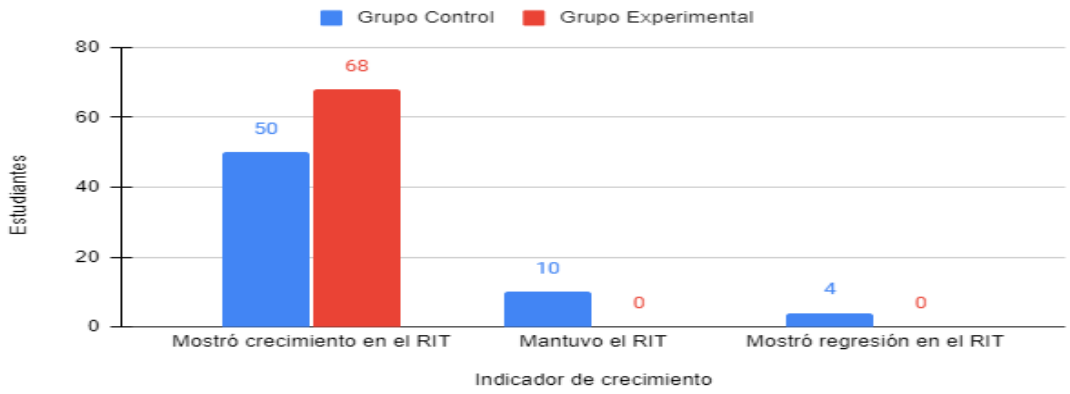
Comparison of percentile ranks of MAP English Reading Test at the beginning and end of the test. Control vs Experimental Group of all Students without and with SEN



The experimental group increased its performance level by decreasing students in the Risk and Low ranges. The vast majority of students in both groups increased their performance level comparing the beginning and the end of the year. Emphasis is placed on the comparative analysis of the control vs. experimental group since, at the end of the course, only 7 students in the experimental group were in the risk range, as opposed to the control group, which shows 17 students still in the risk range. In the 1% range, 5 students in the control group and no students in the experimental group, alluding to a positive and significant evolution of achievement. In total, 13 students moved from the risk range to the low range, showing significant growth, unlike the control group, where only 3 students moved from the risk range to the low range.

Figure 4

Comparison in English Reading Test, control group vs. experimental group



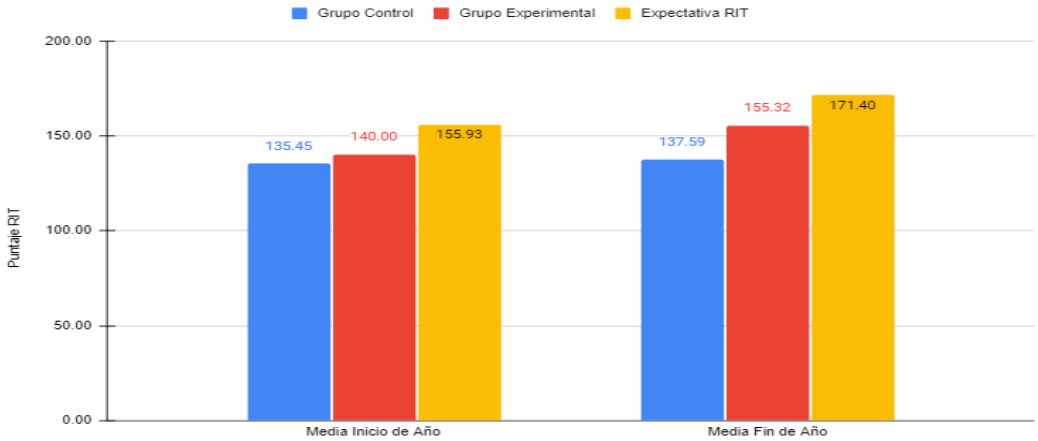
In the control group, 50 of 64 students, with and without SEN, showed growth in the MAP English Reading Test RIT score, 10 students obtained the same score at the beginning and end of the year, and 4 students showed regression in their score.

In the experimental group, all 68 students with and without SEN showed growth in the MAP English Reading Test RIT score; no student remained at the same score or showed regression.

In general, the experimental group shows an improvement in the number of students who improve their reading skills. Also evident is the individual growth of the students in the experimental group as they received individualized and small group support within the MTSS level 2 and level 3 scheme to increase their English reading skills.

Figure 5

Comparison Arithmetic Mean of RIT MAP Reading between control and experimental group



The figure above shows the comparison of the mean scores before and after the start of the program in the control group, experimental and RIT expectations, represented in the yellow column (for first grade students at the beginning of the course it is 155.93 and for the end 171.40).

In the NEAE experimental group they have higher growth (arithmetic mean of 155.32) although they fail to reach the RIT expectation of 171.40.

Figure 6

Reading Control Test Expectations (Running Records) from 1st to 3rd Grade

	Inicio de Año	Fin de Año
1er Grado	B+	I+
	A	H
	AA	Debajo de G
2do Grado	I+	M+
	H	L
	Debajo de G	Debajo de K
3er Grado	M+	R+
	L	Q
	Debajo de K	Debajo de P

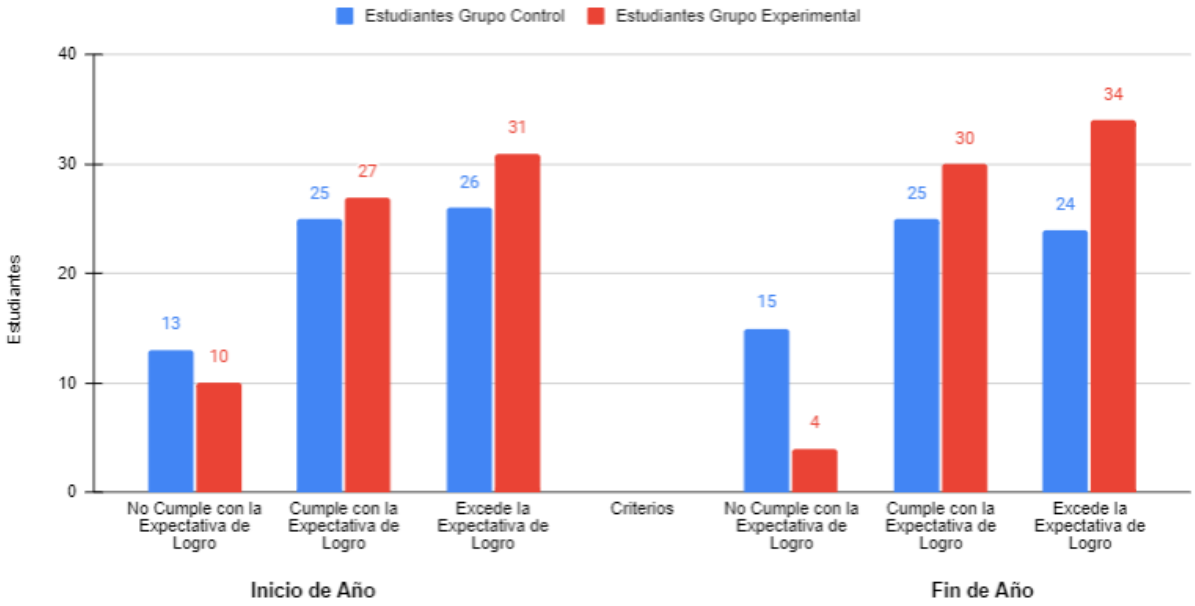
Codigo:	
	Excede la Expectativa de Logro
	Cumple con la Expectativa de Logro
	No Cumple con la Expectativa de Logro

Note, Adapted from (Learning a-z, 2020)

The Reading Control test, Running Records, represents reading levels on an alphabetical scale from AA to Z where "AA" is the lowest level and "Z" is the highest.

Figure 7

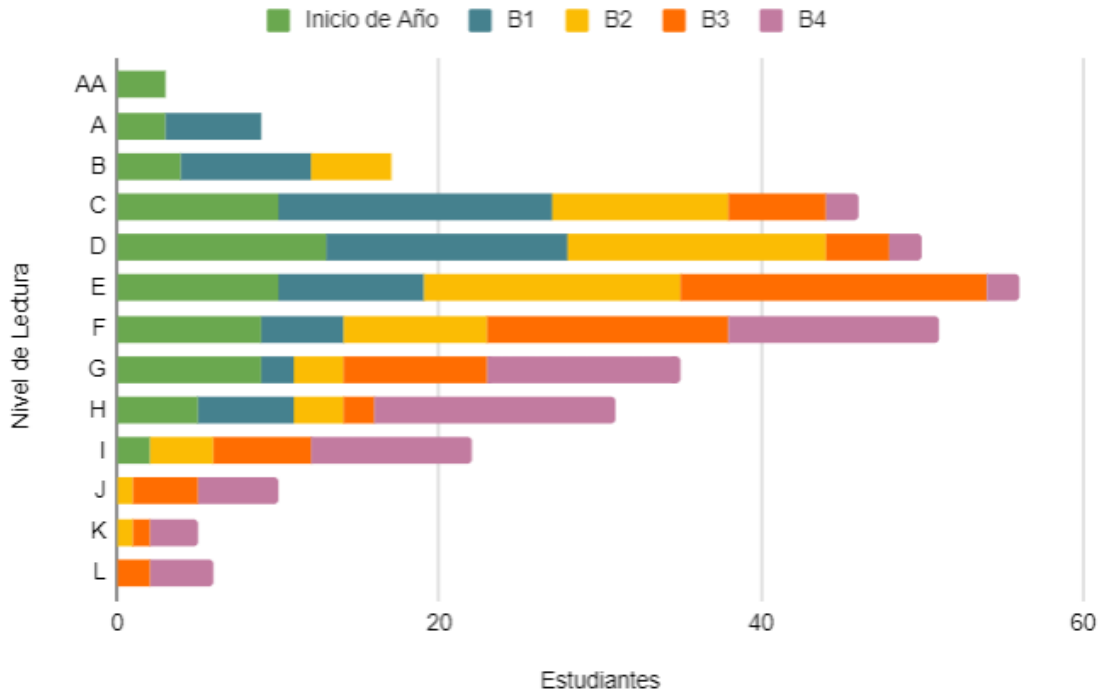
Comparison of number of students in the control vs experimental group of the English reading test



At the end of the course, the number of students in the experimental group that exceeds the achievement expectation increases while the number of students in the control group decreases slightly and the number of students who do not meet the achievement expectation at the end of the course decreases.

Figure 8

Number of Students in the Experimental Group without and with SEN according to Reading Levels in each of the four bimesters of the school year



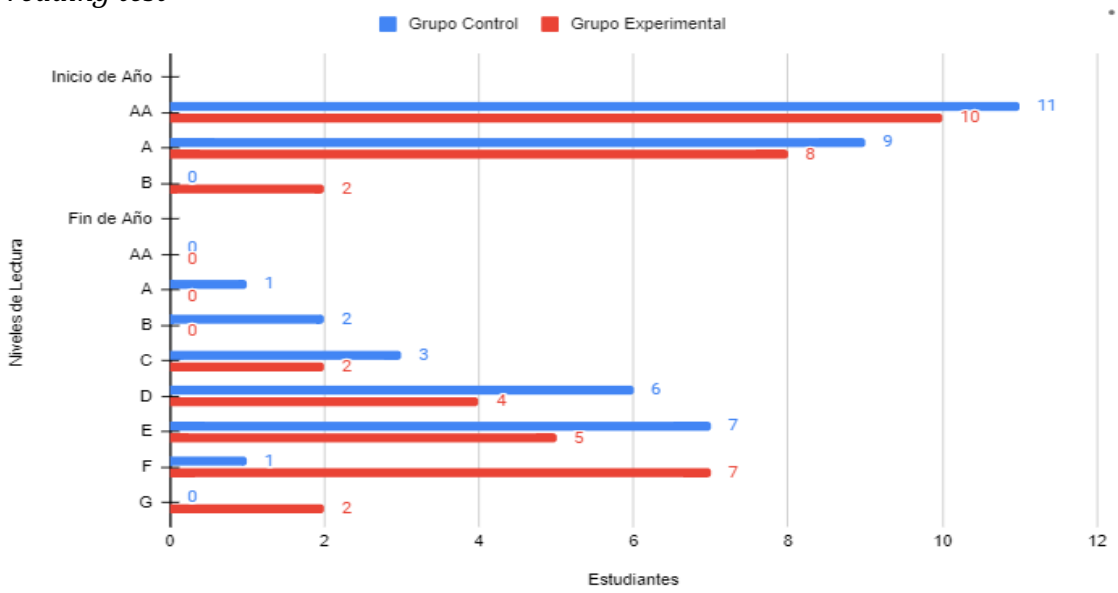
Note. The following codes are used: B1- 1st Bimester, B2- 2nd Bimester, B3 - 3rd Bimester, B4- 4th Bimester. The levels are taken from (Learning A-A, 2020) using a system of levels based on alphabetical letters where AA is the lowest and ZZ the highest

The experimental group received English reading intervention at Level 3 with individualized support inside the classroom by teaching staff; support outside the classroom was provided three times per week for 25 minutes. Those students in Level 2, close to the achievement expectation, had small group English reading support in the classroom by teaching staff three times per week for 15 minutes.

The implementation of the PIE with intensive small group and individual intervention in Tier 3 reflects a marked increase in reading and comprehension levels in English. The students identified with SEN showed higher school performance, obtaining a greater number of students in the expected normative standard. Certain students reflect accelerated growth of up to 3 levels in one period.

Figure 9

Comparison of number of students with SEN in the control vs. experimental group in the English reading test



We observed progress in reading in both groups, with the growth of the experimental group standing out in the final test. Although no student identified with SEN in both groups reaches the achievement expectation, in the experimental group most students are closer to reaching the ultimate goal.

In the experimental group, 68 students benefited from the intervention according to the multilevel structure, students with a SEN received support at level 2 and 3 to accelerate their L2 learning. Progress was observed in both groups, growing according to the expected levels. The implementation of the SIP demonstrated greater effectiveness with the intensive intervention at level 3, which is the most vulnerable population.

Table 3

Comparison of control vs. experimental group in the percentage of mastery of the English phonics test (Phonics Screener) at the beginning and end of the course

	Phonetic Patterns Percentage										
	Letter Names	Sound of Letters	2 letter words	Words of 3 after	Digraph Words	Words e at the end	Words 2 vowels together	Diphthong words	Words with syllable r	Words Compound syllables	Total Domain
Expectation of Achievement	26	26	13	5	5	5	5	5	5	5	100%
Control Group Home	5	4	2	1	0	0	0	0	0	0	12%
Experimental Group Start	6	4	2	1	0	0	0	0	0	0	13%
Final Control Group	18	16	7	3	3	3	3	2	2	3	60%
Final Experimental Group	26	23	13	5	5	4	4	4	5	5	94%

In the control group, the results of mastery of phonetic patterns show an important

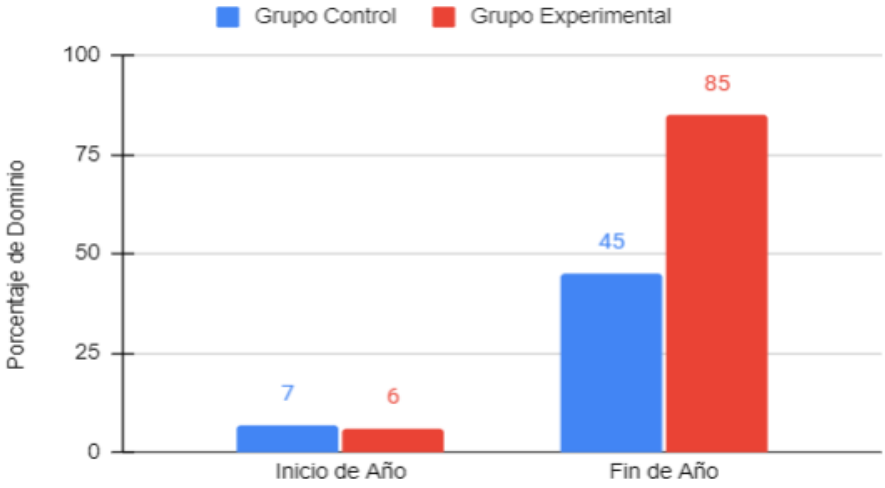
growth comparing the initial and final performance of all students; at the beginning, the arithmetic mean is 12% in the risk range. At the end of the year, 60% of the total is in the average range.

In the experimental group, at the beginning of the course, 13% of the students were in the at-risk range. At the end of the school year, the percentage of mastery is 94%, which indicates the achievement of the planned objectives.

In the experimental group, the phonetic pattern with the lowest dominance is diphthongs and those with the highest dominance are 3-letter words. Differences are shown between the acquisition of the other phonetic patterns showing greater growth in the experimental group.

Figure 10

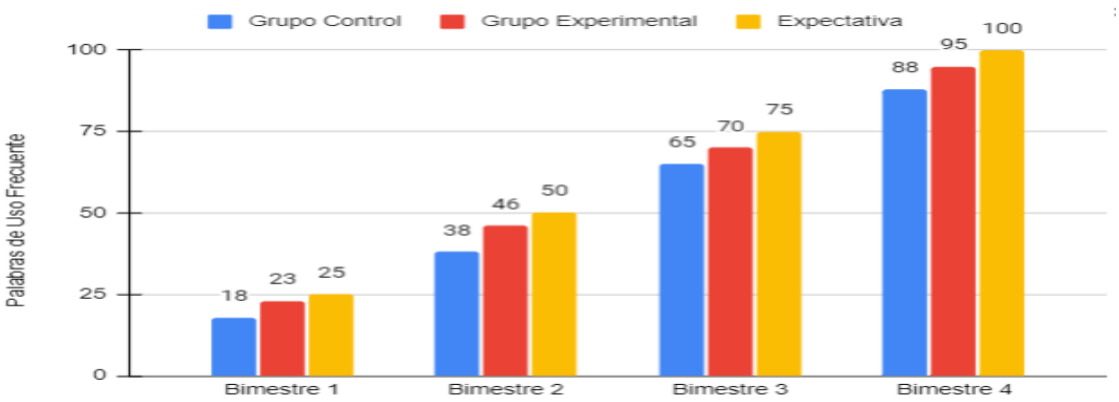
Comparison of the percentage of mastery of the phonics test at the beginning and end of the course in the control group vs. the experimental group exclusively with students with SEN



The results of the initial evaluation show fairly similar average scores in both groups. On the contrary, the results after applying the PIE show a great advantage of the group of students with SEN of the control group over the experimental group in the mastery of phonetic patterns.

Figure 11

Comparison at percentage of mastery with automaticity of the frequently used words test (Sight Words) control vs experimental group

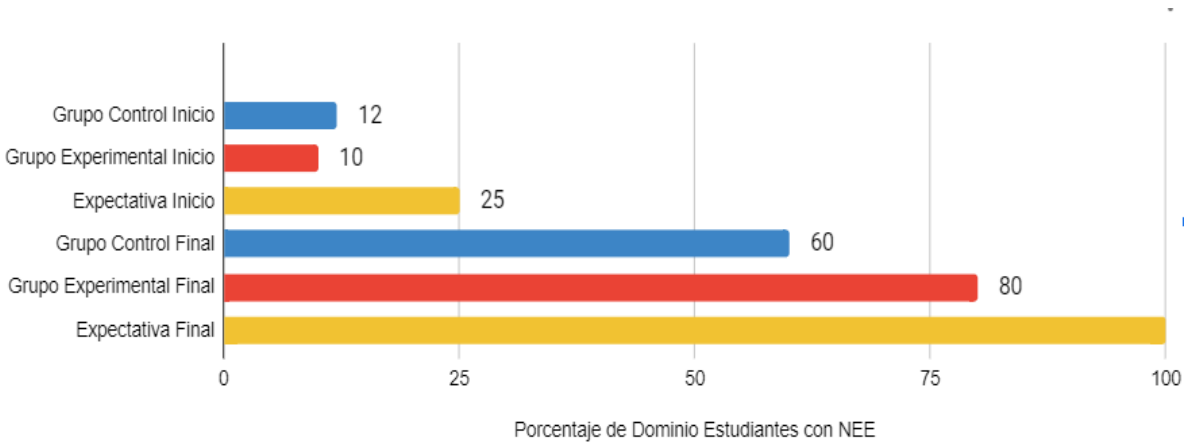


The results show greater growth in the academic performance of students in the experimental group over the control group throughout all the bimesters of the course. In the 1st bimester the control group scored 15 and 23 the experimental group, with an expectation of automatic reading proficiency of 25 words. At the end of the last bimester the control group demonstrated an arithmetic mean proficiency of 60 words, the experimental group of 23 when the expectation of automatic reading proficiency was 25 words.

The results show greater growth in the experimental group than in the control group on the Frequently Used Words test. The control group achieved 88% mastery of frequently used words while the experimental group achieved 95% mastery of these words.

Figure 12

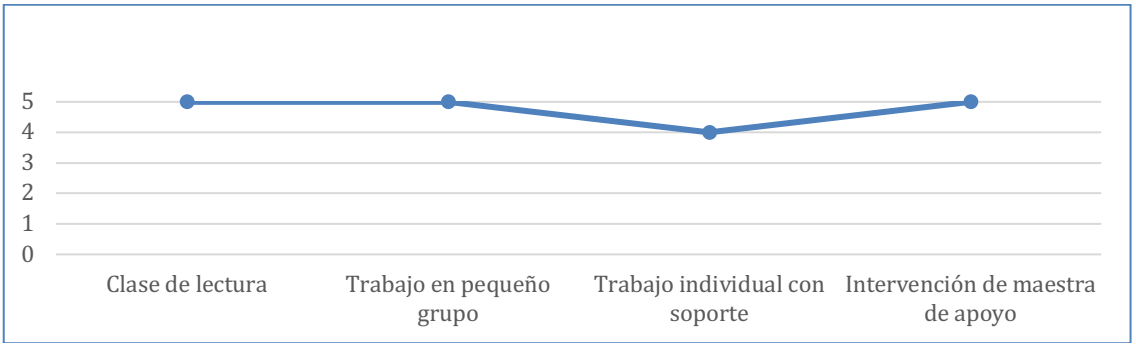
Percentage of mastery of the frequently used words test students with SEN control vs experimental group



Again, the results show a higher growth in the experimental group (80%) of students with SEN than in the control group (60%) on the Frequently Used Words test. Although no student with SEN in either the control or experimental group reached the expected reading expectation of 100 words for 1st grade, students in the experimental group came closer to it.

Figure 13

Arithmetic mean of the degree of satisfaction of the experimental group as a function of the grouping used



In addition to the better performance obtained in all tests by all students in the experimental group, the results of the survey also show a high level of satisfaction on the part of these students in the different groupings used, as can be seen in the figure above. In three of the learning situations assessed, the maximum score was obtained on average (5/5 in 100%). Only the "individual work with support" obtained a slightly lower average (4/5). In the observations section of the survey, the comments that stand out most in terms of changing attitudes and values are: "I respect other people's differences", "we are all smart in different ways", "we are all different, we are all special", "we are all good at something". On the academic side, we highlight the comments from students with SEN: "I learned a lot in these classes", "I finally learned to read," "now I know a lot of star words and I read a lot of books", "now I like to read", "now I can read, I learned to read more, to be better at school so I can read things I didn't know before", "I learned to read faster, know more words and speak English", "now I read very fast and I don't make up words", "now I read a lot and I feel good", "I came from another school where they didn't read English, now I speak a lot, I understand English and I love it" (Escuela Internacional Sampedrana, 2022).

Discussion and conclusions

In the review of articles similar to the topic of study, very little directly related research has been found to be contrasted. Among the references reviewed, we highlight the work of De Valenzuela et al. (2016), with the aim of showing evidence of L2 learning in students with some disability. This study also shows that students with some type of SEN were able to learn to read and comprehend in English as their second language. It was necessary, as in our study, to create the ideal learning conditions for their achievement: respecting their learning pace, internalization time and implementing curricular accommodations adjusted to their needs. The results of the study by Martín-Pastor and Durán (2019), along the same lines, indicate that support strategies and inclusive practices provide second language learning opportunities at the primary education stage for students with SEN. This study applies an inclusive multilevel model with neurodiverse students who are able to learn to decode English phonetic patterns, read short paragraphs, and express themselves verbally in English with comprehension on narratives at their level. In our study, we can conclude that the implementation of the PIE favors the academic performance analyzed in reading in English of students without and with SEN, in all the tests performed the results of the experimental group are superior to the control group. The experience proved satisfactory for those participants who received level 2 and 3 support to reinforce reading and English skills. The 22 students with SEN rated the classes received with 95% satisfaction.

The structure of the implemented SIP, in line with MTSS models (Massengale et al., 2020), provide a framework that allows schools to provide the supports they need to be successful in school and provide academic support. Our study verifies that multilevel curriculum design is effective for bilingual learning including students with SEN. The multilevel structure made it possible to provide reading support in English to students who show significant difficulty in acquiring the second language with optimal results.

The application of SAD in multilevel activities (Acevedo et al., 2020) provided opportunities to access content with varied auditory, visual and tactile modalities that increased comprehension and learning with the support of digital resources. Our results show that inclusive practices benefit all students, both AcNEAE and those considered normal. The experience gained has provided detailed short-term guidelines to be more

effective in individualized supports, coordination with school staff and the need to schedule a work plan with families of students with SEN. As a future line of research, we plan to: adjust work protocols, reach a consensus on the decisions of the school support department regarding services, number of students and case management; triangulate data and results in each school semester; establish collaborations with other departments involved and, in the medium term, make adaptive replications of the PIE in other primary grades and extend the experience to similar organizations.

Despite the achievements, we found some limitations, the Coronavirus pandemic left sequelae in face-to-face learning even in the 2021-2022 school year. Some families for health and safety reasons remained in the virtual system resulting in a hybrid learning modality. This modality represented an enormous educational challenge for the teaching staff and a limitation for the students. The virtual modality lowered the levels of motivation, the disposition towards learning and the opportunity to participate in the different activities planned in real interaction among peers.

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