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Parent- Implemented Phono Graphix ™ to Improve the Phonological Awareness of the Children at Risk- of Reading Difficulty

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ABSTRACT This study was conducted during COVID 19 pandemic when face-to-face instruction was suspended, and access to teacher-led reading intervention was unavailable. Different distance learning modalities were implemented to not disrupt the continuity of basic education. The challenge with these modalities was not only in dealing with students who could not learn by themselves but more so in managing students who were already struggling in reading, even during face-to-face instruction. In the old normal, it is resolved by having struggling readers undergo remediation or intervention with the supervision of either teachers or tutors; however, such a resolution is impossible in the present situation. One of the possible solutions was to solicit the help of the primary school partners- the parents. Using a quasi-experimental method with pre-test and post-test comparison, the efficacy of a parent-implemented Phono-Graphix™ program in improving the phonological awareness (PA) skills of children at-risk of reading difficulty was examined. Parents of 11 grade 1 children implemented the reading intervention five times a week for 20-30 minutes per session. PA skills of the participants were assessed before and after the reading program. Descriptive analysis was used to statistically describe the pre-test and post-test results and graphs for visual presentation. To test the difference in scores, Wilcoxon signed-ranks test was utilized, where a p-value less than 0.05 was considered significant. Findings revealed that the phonological awareness skills of the participants improved after eight weeks of the parent-implemented Phono-Graphix™ program. Results and implications for future research are further discussed.

Keywords: Phono-Graphix™, reading intervention, parent-implemented, phonological awareness

A. INTRODUCTION

The declaration of the COVID-19 world pandemic (WHO, 2020) has forced most countries to lock down. Like other countries, the Philippine government has suspended face-to-face instruction (IATF, 2020). The department mandated to ensure the delivery of basic education of this country has addressed its challenges by coming up with distance learning modalities so that the students can still learn while staying at home. These learning modalities presuppose that students can learn on their own. The challenge is not only in dealing with students who are not capable of learning by themselves**,** but the more challenging task is in managing students who are already struggling in their academic subjects, particularly those with reading difficulty. In fact, it has been reported in Luaña (2021) that poor reading skills of the children is one of the reasons why Filipino parents commit the malpractice of answering their children's self-learning modules. This problem must be addressed for learning to take place. As school partners, parents or any capable family member must be empowered and encouraged to facilitate learning at home and this is possible by providing them

detailed instructions on how to implement reading lessons with their children (Grindle, Tyler, Murray, Hastings, & Lovell, 2019). Support interventions of parents are necessary in diminishing the adverse effect of limited learning opportunities between teachers and students.

During this pandemic, children could not receive the usual reading instruction provided by their teachers. They were left to learn at home, relying on modules and their parents' guidance. Modular reading lessons usually contain stories parents read while their children listened and later answered questions. This scheme does not teach the core reading skills of the children. Since face-to-face instruction with teachers was not doable, a workable solution was a parent-implemented intervention. Soliciting parents' support could resolve the children's education problems (Viliger, Hauri, Tettenborn, Hartman, Naflin, Hugener & Niggli, 2019). This study aimed to determine the efficacy of a parent-implemented reading intervention known as Phono-Graphix™ in improving the phonological awareness skills of grade 1 children at risk of reading difficulty.

B. REVIEW OF LITERATURE

Children can learn skills and gain knowledge by themselves, as posited both by Piaget and Bruner in their concept of discovery learning (Bada & Olusegum, 2015), which is usually applied in solving mathematical problems (Wen, 2018). However, some skills necessitate assistance and guidance from more competent individuals. Vygotsky's (1978) concept of mediated learning, specifically the zone of proximal development, theorizes that complicated skills can be acquired only under competent supervision. Reading is not a natural skill (McGuinness & McGuinness, 1998) and learning to read is a complex method (Rayner & Reichle, 2010) that may not be completed without the assistance of more knowledgeable others.

When signs of reading difficulty are exhibited by students in the first grade, a reading intervention must be provided immediately to prevent its ramifications (Eissa, 2014; McConnell & Kubina, 2016), which may emerge in all periods of life starting from meagre school performance to juvenile delinquency issues up to adult psycho-social problems (Smart, Youssef, Sanson, Prior, Toumbourou, & Olsson, 2017).

Studies reveal that reading difficulties are caused by the failure of students to master core reading skills (Capellini, Cesar, & Germano, 2015). Among these core skills, phonological awareness (PA) is the mark of an accomplished reader (Skibbe, Gerde, Wright & Sample-Steele, 2016). It has to be noted that reading difficulty is associated with the ability of students to process phonologically (Wulanir & Pandjaitan, 2017) and such difficulty may happen even in

children with excellent or complete intelligence (Simos, Fletcher, Sarkari, Billingsley-Marshall, Denton & Papanicolaou, 2017).

PA, a concept under phonological processing, is defined as the skill to differentiate, employ and direct individual sounds in oral syntax (Lemons, King, Davidson, Puranik, Fulmer, Mrachko, Partanen, Al Otaiba, & Fidler, 2015). The skill involves proficiency in carrying out sound-letter correspondence patterns (Tilanus, Segers, & Verhoeven, 2016). It advances the discovery that sounds (phonemes), and sound pictures (graphemes) are associated with each other (Lemons et al., 2015). The present hypothesis is that PA training, to be effective, must include the improvement of blending, segmenting and manipulating phonemes (Palmer, 2000 as cited in Antonio & Santillan, 2020). Consequently, core deficits in the three skills are responsive when explicit instruction is applied for improvement (Braun, Austin, & Ledbetter-Cho, 2017).

Teachers and researchers recognize the need and have been providing intensive and explicit instruction to students with reading difficulty (Smith, Doabler, & Kame' enui, 2016); however, nationwide lockdown due to the pandemic made it challenging to provide reading intervention. A feasible solution is to seek the help and support of the school's major partners- the parents (Viliger, et al., 2019). Consistent with the concept of mediated learning, education usually assents to paraprofessionals to accommodate the needs of students with reading difficulty (O'Keeffe, Slocum, & Magnusson, 2013) and more often these paraprofessionals are the parents acting as tutors (Lam, Chow-yeung, Wong, Lau & Tse, 2013). This is reasonable since studies reveal that parent-mediated interventions have encouraging results equally from both health and educational fields (Grindle et al., 2019).

As mentioned earlier, reading is not a natural ability; henceforth, it is not always apparent in some children, and oftentimes, an intensive instruction is required as soon as the first signs of reading difficulty are manifested (Viliger et al., 2019). The question now is what reading intervention can be employed that uses explicit instruction, targets PA skills and can be implemented by parents at home.

Phono-Graphix™ is a reading method that utilizes explicit instruction and focuses on improving PA skills. It was first introduced as a remedial method addressing reading difficulties (McGuinness, McGuinness, & McGuinness, 1996). The succeeding study compared its effectiveness vis a vis other reading programs (Diaz & Juniper, 2002). In comparison, another study performed it as a support strategy (Shaw & Davidson, 2009). The program was also examined with elementary and high school students (Endress et, al., 2007). Its efficacy in improving PA skills was further investigated with special needs learners who have hearing

impairment (Palmer, 2000), dyslexia (Wright & Mullan, 2006), and, most recently, ADHD (Antonio & Santillan, 2020). Results of mentioned studies concluded that Phono-Graphix™ method was indeed effective; however, all these used a teacher-led methodology. Hence, further investigation is recommended using a parent-led methodology.

Initially, Phono-Graphix™ was designed for instructor-led intervention; subsequently, the proponents designed a parent-implemented program to be administered intensively and explicitly by willing parents to teach their children how to read. Studies found that parents if given specific instruction on how to implement a particular reading intervention could improve the reading efficiency of children at-risk of reading difficulty (Zhou, Dufrene, Mercer, Olmi, & Tingstom, 2019).

C. METHOD

A quasi-experimental method with pre-test and posttest design without comparison group was employed. This design presupposed that any difference upon the start of the reading program can be ascribed as its direct effect (Ghanaat Pisheh, Sadeghpour, Nejatyjahromy, & Mir Nasab, 2017). Thus, in this design, the participant served as his control factor. To determine the PA skills of the participants, four Phonological Processing Tests were administered prior and after the intervention. Reading lessons using the Phono-Graphix™ method were delivered 20-30 minutes a day for five days a week.

Participants: Children and Parents

A total of 11 grade 1 students received 14-20 hours of reading instruction from their parents within an eight-week period. They were six boys and five girls. Using the subject sampling technique, the researcher ascertained who would fit to achieve the study's objectives. A child qualified if s/he was: (1) enrolled in grade 1 (2) not receiving his/her school's reading intervention program (3) as reported by teachers, with poor PA skills, which later on was confirmed by the pre-test scores and (4) not attending any reading tutorial.

As to the parents, only those who volunteered were considered. The closeness that parents and children shared meant ease in interaction and could bridge communication. In the same light, this familiarity could also bring out impulsiveness, which could lead to conflicts (Villiger et al., 2019). To prevent this, the eagerness of the parents to teach their children how to read was the utmost consideration. A parent was considered eager and willing if upon learning of this program, s/he inquired and volunteered to implement the intervention. In addition, the parent's capability to teach was considered. Hence, a parent qualified if s/he (a) volunteered and (b) had at least a college level of education. For this study, the term parent meant not only

the biological parents but also capable members of the child's immediate family living in the same household. Real names of the children and parents were not mentioned in this study; rather, fictitious names were used.

1. John and Lyn. John could sight read, name all the letters and identify most of the basic codes in the alphabet; however, he could not read independently. During the pre-test, he could identify the basic codes but could not put them together and discriminate individual sounds. John's summary of scores appears in Table 1 below.

Table 1. Summary of pre-test and posttest scores of the participants

Participant	**Blending (15 points)**		**Segmentation (42 points)**		**Phoneme Manipulation (10 points**		**Code Knowledge Scored as %**	
	Pre-	Post	Pre-	Post	Pre-	Post	Pre-	Post
John	0	12	2	40	1	9	44	84
Elijah	3	10	4	37	1	7	12	62
Fonti	9	15	0	32	5	10	62	80
Yuri	0	13	0	40	1	9	8	78
Mali	1	11	16	32	2	7	10	48
Jana	3	9	4	36	1	9	10	60
Arielle	1	7	14	24	0	5	16	56
Jared	1	10	0	31	0	6	18	56
Cherry	2	11	10	42	0	9	10	84
Janice	2	13	9	41	0	9	12	80
Ethan	0	10	0	38	0	8	0	76

2. Elijah and Paul. Elijah had good eyesight, but she had trouble matching big and small letters. Pre-test scores showed that she had difficulty in blending, segmenting and manipulating phonemes.
3. Fonti and Rona. Fonti's teacher observed that his incomplete tasks were due to his reading struggles. A reading tutor was hired but there was no noticeable improvement to his reading ability even after three months of intensive tutorial.
4. Yuri and Aunt Charity. Yuri failed the initial reading assessment conducted by his school. Pre-test scores revealed that he could not blend and segment sounds.
5. Mali and Elsa. Mali could neither name letters nor recognize the sounds they represent. During the assessment, Mali displayed unusual inattentiveness and pre-test scores confirmed his inability to blend, segment and manipulate sounds.
6. Jana and Anne. Jana could identify only the sounds the five vowels represent. Her pre-test scores revealed her difficulty in all sub-skills.

7. Arielle and Hazel. Arielle could recite the alphabet but could not identify the letter pictures. She could barely blend sounds and had no skill in manipulating phonemes.
8. Jared and Vilma. Jared's pre-test score in the code knowledge test revealed that although he knew all the alphabet letters, he could hardly identify the sounds the letters represented. He could not score in segmentation and phoneme manipulation tests.

Participants 9-11 were all referred by their grade 1 teacher. All three failed the reading assessment test conducted by the school.

9. Cherry and Jenny. The pre-test revealed Cherry's inability to manipulate phonemes and difficulty blending sounds.
10. Janice and Nica. Pre-test scores indicated that Janice lacked the skill to manipulate phonemes and could barely blend and segment sounds.
11. Ethan and Aunt Ella. Pre-test scores showed that Ethan had no core reading skills.

Instructional Materials

Preparation and distribution of materials were done by the researcher. All materials originated from the book "Reading Reflex: The Foolproof Phono-Graphix™ Method for teaching your Child to Read" (McGuinness & McGuinness, 1998). It was designed for home-based implementation and can be purchased online. Included in the book were (1) comprehensive instructions on how to deliver each lesson (2) instructional materials including preparation and storage ideas (3) list of additional materials needed to support instruction (4) suggestions on how to address common errors committed by the learning child and (5) four phonological processing tests. The book provided all the instructional materials required to teach children how to read.

Procedures

The implementation of the program was geared in gaining core reading skills required for the improvement of children's PA ability. The intervention's goals and expected results were explained to the parents personally and virtually. The materials were prepared **a**nd copies of lessons were arranged by the researcher so that parents could devote the 20–30-minute sessions in administering the reading instruction.

The PA skills of the children who met the set criteria were assessed using four Phonological Processing Tests. The researcher administered the pretest and posttest in the participants' abode. Assessment started on the last week of February 2021, and the last participant was evaluated on the first week of May 2021. The test results established the pupils' reading core skills which were blending, segmenting and the ability to manipulate phonemes as well as their code knowledge.

The blending test determined the child's ability to build a word by putting individual sounds together. A total of 15 words were presented, one point each. In this test, the assessor said some sounds and the child should tell what word it sounded like. To illustrate, the assessor said each sound in a word, with a one-second interval between sounds /b/ /u/ /g/. The child was asked to tell the word it sounded like if those sounds were put together.

The segmentation test ascertained the ability of the children to discriminate between individual sounds. For this test, a child was asked to listen and tell the individual sounds s/he heard in the uttered word. For example, the researcher said the word 'pin' and asked the child to identify each sound s/he heard in that word. Perfect score for this test was 42 points, one point per correct sound.

For the phoneme manipulation test, a child was invited to repeat a word and was encouraged to say it again if a particular sound was removed. For example, "say pig" the pupil would say "pig". "Now say 'pig' without /p/" or "say nest without /s/." There were 10 items for this test, and a point for each item.

The last test was Code Knowledge which established the children's familiarity with the English code. A child was presented a sound picture and was asked, Iff you see this in a word, what sound will you say?" An example of a sound picture was <ea> which can represent the sound /ee/ as in the word 'each' or /ai/ as in the word 'steak' or /e/ as in the word 'bread.' A child got a correct score if s/he offered any of the three sounds. The perfect score for this test was 50 points.

Reading instructions using the Phono-Graphix™ method were given to children by their parents for eight weeks. Parents were advised to hold the sessions preferably at the same time of the day. Working parents held sessions every after dinner before the children go to sleep. In contrast, stay-at-home parents usually held their sessions after lunch when the children's modular lessons or online classes were done.

The whole Phono-Graphix™ program has four skill levels; however, this study' cover only the first three levels. Teaching the basic code was the first skill level. Lessons included three-sound word building, directed reading, spelling practice, and reading stories. Except for sounds /k/, /qu/, /x/ and /y/, all sound pictures in the alphabet were part of the basic code lessons. Most of the participants completed this level after three weeks.

The second skill level was focused on blending adjacent consonants. Teaching instruction included auditory processing where the child was made to understand that s/he could create and change words involving adjacent consonants by moving, removing, and adding

sounds. Word building and reading stories in this level contained VCC, CVCC and CCVC words. Most parents were able to cover the lessons after two weeks.

Teaching the advanced code was the third skill level. The skill level goals were to make the child appreciate that sometimes a single sound can be represented by two or more letters like the sound /oe/ and that nearly all sounds could be presented in more than one way like the sound /ee/ which could also be represented by sound picture <ea> in 'east', <ie> in 'chief', <y> in 'happy.' Parents taught the advanced code through mapping and sorting, sound sorting, word analysis, spelling and reading stories.

The fourth and last skill level was multisyllable management , where a child should have been taught to recognize words that could be read in one portion and words that involve two or more syllables. With only eight weeks, none of the participants reached this level.

Data analysis

Descriptive statistics such as mean were utilized in the study. This technique is usually used in education research to ascertain the causal effects of an intervention by describing or summarizing its impact to the participants of studies (Loeb, Dynarski, McFarland, Morris, Reardon, & Reber, (2017). Graphs were also used for visual presentation. The difference in the scores was computed to see if there was an improvement in scores.

To test the difference in pre-test and posttest scores, Wilcoxon signed-ranks test was applied. Wilcoxon T-test is a non-parametric counterpart and alternative to the Paired T-test particularly when it cannot be assumed that the data are normally distributed due to few participants (MacFarland & Yates, 2016). For this test, a p-value less than 0.05 was regarded significant.

D. FINDINGS AND DISCUSSION

Research Findings

The test scores of each child were analyzed to determine whether the pre-test/posttest scores fell in the good, low–moderate or poor category (McGuinness et al., 1996). This analysis allowed the researcher to conclude whether there had been any improvement in the children's basic phonological awareness skills after the parent-implemented Phono-Graphix™. Table 2 below shows how the scores are interpreted.

Table 2. Score Interpretation

	Poor	**Low Moderate**	**Good**
Blending	0-10	11-14	15
Segmentation	0-35	36-40	41-42

Phoneme Manipulation	0-4	5-8	9-10
Code knowledge			
For 6 years old	-50 %	50-60%	60-100%
For 7 years old	-60%	60-70%	70-100%

For blending test, children's scores during pre-test were all considered poor as none of them scored more than 10. All scores increased after intervention. Fonti who got a perfect score moved up to good, five children who scored 11-14 went up to low moderate while the other five remained under poor category. Figure 1 provides a visual presentation of the blending test outcome.

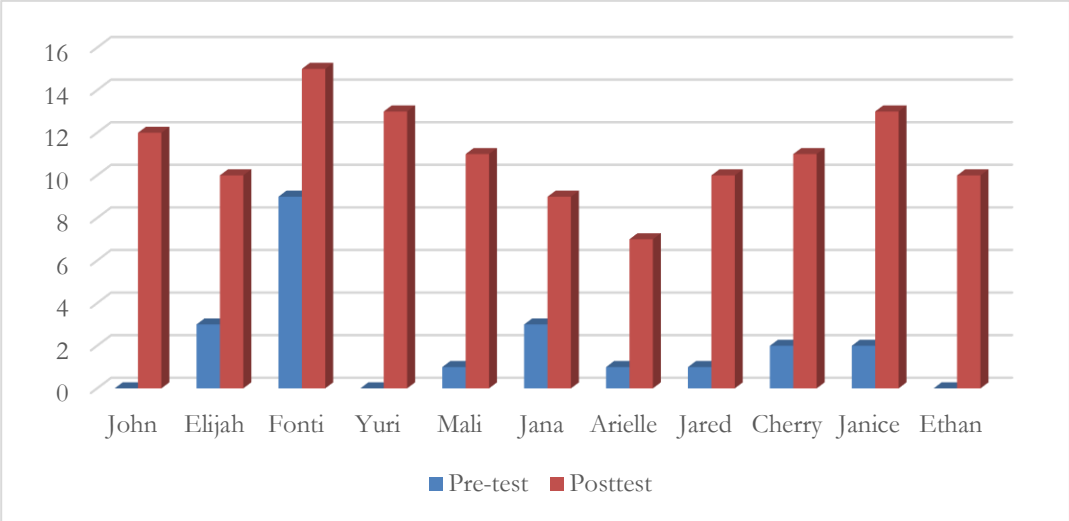

Figure 1 Blending Test (maximum score: 15)

As for the segmentation test, all scores were interpreted as poor before the program. Post-intervention scores increased. Cherry even recorded a perfect score of 42 followed by Janice with only one mistake. Their scores moved up from poor to good. Five pupils who scored 36-40 went up to low moderate, while the other four who scored less than 36 stayed under the poor category. Among the children under segmenting skill, Yuri could be considered the most improved, from 0 to 40. Figure 2 provides a visual comparison of the pre-test and post-test scores for the segmentation test.

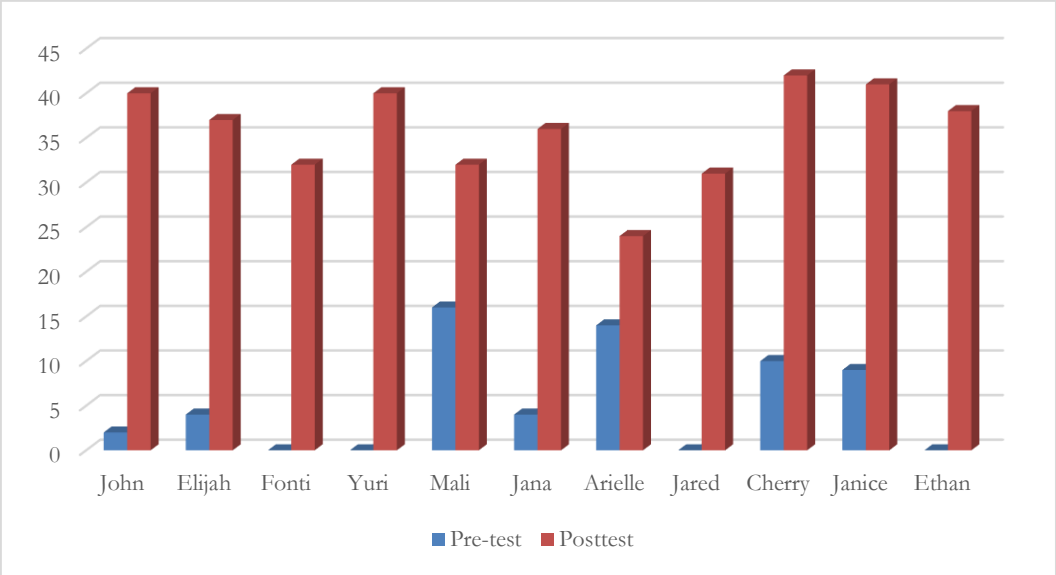

Figure 2 Segmentation Test (maximum score: 42)

For phoneme manipulation, most of the children demonstrated immense difficulty during pretest as five of them lack the skill and another five barely scored. After the intervention however, all scores had improved and none of them remained under poor category. Scores of six children went up from poor to good with Fonti getting a perfect score, and five students who scored 5-8 were considered low moderate. Visual comparison of scores in phoneme manipulation test can be seen in Figure 3.

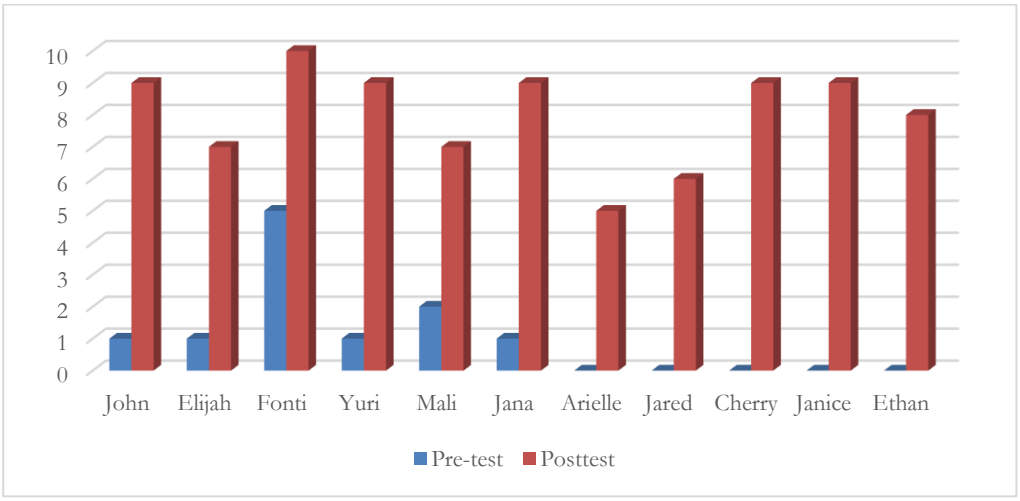

Figure 3 Phoneme Manipulation Test (maximum score: 10)

Lastly for code knowledge test, the scores were converted into percentage. Score interpretation was based on the age of the children during the test. Six students were still 6 years old in April 2021 while five were already 7 years old. During pre-test, only Fonti was able to recognize more than 50% of the code sounds which was still considered low moderate while the others' knowledge of the English code was considered poor. However, posttest scores

showed improvement. Code knowledge of eight students rose from poor to good, two students were also up to low moderate while only Mali's score was retained under the poor category.

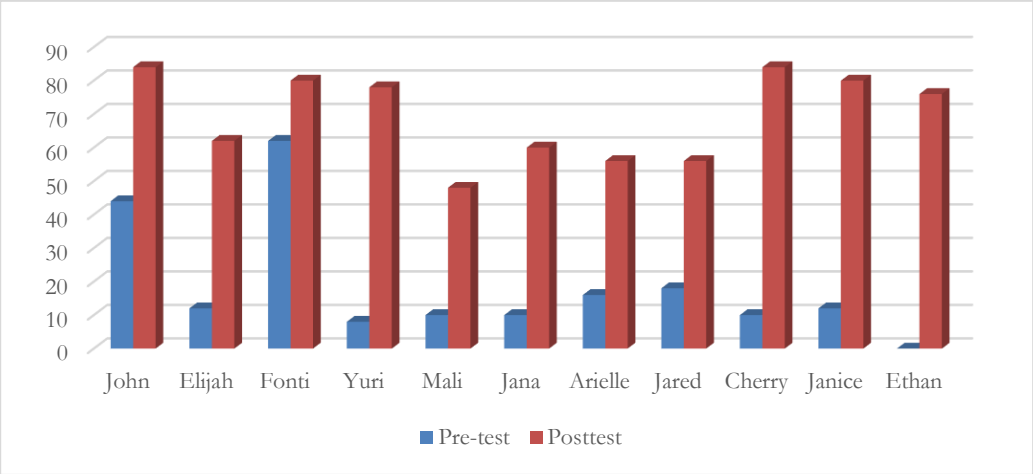

Figure 4 Code Knowledge Test (scored as %)

The difference in the scores was computed to see the improvements in scores. The highest average gain was in their segmenting skills with 72.29% followed by phoneme manipulation with 70%, blending skill with 60% and code knowledge with 51.09%. Regarding individual gains, Yuri had the most gains in blending with 86.67% and segmenting skills with 95.24%. As for phoneme manipulation, Cherry and Janice had the most gains with 90% for each. For code knowledge, Ethan had the most gains with 76%. Table 3 shows the equivalent percentage of scores and gains of the participants.

Table 3 Equivalent percentage of score and gains

Participants	**Blending**			**Segmentation**			**Phoneme manipulation**			**Code Knowledge**		
	Pre-	Post	Gain	Pre-	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
John	0	80	80	4.76	95.23	90.48	10	90	80	44	84	40
Elijah	20	66.67	46.67	9.52	88.10	78.57	10	70	60	12	62	50
Fonti	60	100	40	0	76.19	76.19	50	100	50	62	80	18
Yuri	0	86.67	86.67	0	95.23	95.24	10	90	80	8	78	70
Mali	6.67	73.33	66.67	38.1	76.19	38.10	20	70	50	10	48	38
Jana	20	60	40	9.52	85.71	76.19	10	90	80	10	60	50
Arielle	6.67	46.67	40	33.33	57.14	23.81	0	50	50	16	56	40
Jared	6.67	66.67	60	0	73.10	73.81	0	60	60	18	56	38
Cherry	13.33	73.33	60	23.81	100	76.19	0	90	90	10	84	74
Janice	13.33	73.33	73.33	21.42	97.62	76.19	0	90	90	12	80	68
Ethan	0	66.67	66.67	0	90.48	90.48	0	80	80	0	76	76
Ave. Score%	13.33	73.33		12.77	85.06			80		18.36	69.45	
Ave. Gain %			60			72.29			70			51.09

To determine the difference in pretest and posttest scores, Wilcoxon signed-ranks test was utilized. Results showed a significant difference in blending, segmentation, phoneme manipulation, and code knowledge before and after intervention. Table 4 shows the results of Wilcoxon signed-ranks test.

Table 4 Wilcoxon matched-pairs signed-ranks test results.

	Test p-value	Interpretation
Blending	0.0033	With significant difference
Segmentation	0.0032	With significant difference
Phoneme Manipulation	0.0031	With significant difference
Code Knowledge	0.0033	With significant difference

Discussion

Initial assessment showed that participants scored poorly in all four tests except for one whose score in phoneme manipulation was marked as 'low moderate'. During the code knowledge test, most children gave the letter's name instead of the sound it represented. Three children confused the sound picture /b/ from /d/, /h/ from /n/, and /g/ from /p/ and /q/. During blending and segmentation tests, most children guessed the sounds and words. According to Carnine, Silbert, Kame'enui, and Tarver (2010), children engaging in guessing strategy will continue to experience reading errors which can cause frustrations and confusion to the struggling reader. The proponents of Phono-Graphix™ anticipated this error; hence, the program is instructions to parents on how to correct such errors. One of the suggested corrections is to discourage the child in guessing by simply saying "*do not guess just say that you do not know*." Pre-test scores indicate that among the core reading skills, pupils exhibited difficulty in manipulating phonemes as they had no idea what to utter when asked to say the word they could make by removing or adding a specific sound.

After determining the PA skills of the children, Phono-Graphix™ method was implemented by parents for eight weeks. Upon completion of the lessons in basic code, children were expected to recognize the sounds represented by the 22 letters in the alphabet. Three children displayed confusion between /b/ and /d/, /c/, /e/ and /r/; one participant had difficulty in producing sound /r/; and another one mixed up sounds /g/, /p/, /n/, /u/, /h/,/b/ and /d/.

All subtests' Post-intervention scores demonstrated clear improvements in PA skills due to parent-implemented Phono-Graphix™ intervention. The most significantly improved among the children was Ethan, whose skills in segmenting, manipulating phonemes and code knowledge all went up to good from zero. Also noteworthy were Fonti and Cherry. The former got perfect blending and phoneme manipulation scores, while the latter got all 42 sounds in the segmentation test. On the other hand, Arielle and Jared had difficulties blending and segmenting sounds. At the same time, Mali still struggled to identify the basic sound pictures /b/, /d/, /g/ and /p/, and distinguishing sounds in a word (segmenting). As per score interpretation, phoneme manipulation skill could be considered the most improved skill of most children, while blending skill is their weakest skill. Of the three core reading skills, segmenting skill garnered the highest average gain while blending skill garnered the lowest, which could be considered as the most difficult skill to remediate.

Most of the parents-participants were the mothers. As only one father participated in this study, no comparison was made as to who performed better among the children with mother or father as implementor of the program. While lack of cooperation among parents was one of the many problems reported by teachers here in the Philippines (Chan, Marasigan & Santander, 2021) during COVID 19 pandemic distance learning scheme, the present study witnessed differently. All parents were observed to be cooperative and frequently communicated with the teacher and the researcher. The parents of John, Fonti, Yuri, Mali and Jared regularly contacted the researcher for clarifications in doing a particular lesson and sometimes they would ask if they understood the instruction correctly. This regular contact and inquiry may be attributed to the fact that these parents knew the researcher. The parents of Cherry, Janice and Ethan coursed through their inquiries to the teacher who referred them to the program. The teacher noticed increased communication between her and the parents. This increased communication is consistent with the report presented in Cole, Pickard and Stredler-Brown (2019), that parents were more likely to interact with teachers when directly involved with their children's intervention program. Direct observation as to the effect of the reading program to their children led them to inquire more. This behavior is in accord with Thorndike's law of effect which states that any behavior with favorable results is likely to be pursued, and any behavior with unfavorable results is likely to be avoided (Thorndike, 1927). Only the parents of Elijah, Jana and Arielle did not make any follow up inquiry as to how to implement the intervention. But when asked if they had any questions, they said they strictly followed the instructions in the program.

Although it was suggested in Rice and Broome (2004 as cited in McConnell & Kubina, 2016) that incentives be given to parents to maintain participation, no incentive was given to the parents of this study; nevertheless, participation was maintained. In the study of Jabar, Garcia, and Valerio (2020), it was contended that Filipino parents would find ways to partake in their children's studies despite their financial status. Parental involvement in children's education is part and parcel of Philippine culture and Filipino parents tend to their children's education by actively maintaining parent-teacher connection (Garcia, 2018)

Undoubtedly, the involvement of the parents to this research intervention led to the improvement of the PA skills of the children. Providing instructional materials and detailed instructions to the parents aided the delivery of the Phono-Graphix™ lessons. This supports the findings in Zhou et al. (2019) that when parents are provided specific instruction on implementing a reading intervention, their children's reading abilities are more likely to improve.

The results of this research reinforce Vygotsky's zone of proximal development which posited that complicated skills such as reading particularly PA skills, can only be learned under competent supervision. Findings also support the conclusion in McGuinness et al. (1996) that segmenting skill, which garnered the highest average gain, is the easiest to remediate vis-a-vis blending and phoneme manipulation. This research further affirms that PA skills, blending, segmenting and manipulating phonemes are responsive to intensive and explicit instructions (Braun et al., 2017). Furthermore, the outcomes conform to the report that students benefit from parental instruction (McConnell & Kubina, 2016) and that parental involvement is most effective when working on a single academic issue (reading) of their children (Fisher & Ramirez, 2005). Finally, this study justifies the call to empower and enable parents to competently facilitate learning at home particularly when face-to-face instruction is not available and when children are at-risk of reading difficulty (Luaña, 2021).

E. CONCLUSION

The findings of this study indicated the efficacy of a parent-implemented Phono-Graphix™ program in improving the PA skills of children at-risk of reading difficulty because post-intervention scores showed increases in all subtests. The researcher anticipated these increases in the post-intervention scores as they were emphasized during instruction. It was also hoped that parents would provide the children reading instruction for 20-30 minutes a day, which they did throughout the intervention; hence, children received 14-20 hours of Phono-Graphix™ program.

Post-intervention results implied that the PA skills of the participants improved through the parent-implemented Phono-Graphix™ program. The findings that segmenting skill was easy to remediate while the blending skill was challenging to improve among the core reading skills indicate that teachers in reading need a teaching strategy that can better address deficits in blending skills.

Data further revealed that a parent-implemented Phono-Graphix™ program could strengthen the cooperation and partnership between teachers and parents. Such a program could empower and enable the parents to facilitate learning at home particularly when children are at-risk of reading difficulty.

On the question of how much of the improved skills could be attributed to the provided intervention, it could be assumed that the amount of improvement would be improbable without the Phono-Graphix™ program, given the significant difference of tests scores before the beginning of the program, against the scores gained at the end. Considering also the state of enhanced community quarantine imposed during this study, the presence of other reading programs would be unlikely.

The findings are very encouraging; however, this study has limitations. Notable limitations were the limited number of participants and the lack of a control group. Further studies may include regular and atypical students regardless of grade level, whether from public or private schools. Another limitation was the absence of a formal monitoring tool to assess the PA gains upon completion of a particular skill level. Therefore, a future study is also recommended to validate a monitoring tool that could measure children's gains upon completion of a skill level during a parent-implemented Phono-Graphix™ intervention. A training program for reading teachers to improve teaching strategies to address the students' deficiency in blending skills is also recommended.

Finally, school leaders are urged to use the Phono-Graphix™ program to empower and capacitating parents to facilitate learning at home, particularly when their children are having reading difficulty.

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