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Community-Engaged Literary Pen Pal Program
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Abstract

Background

This community-engaged research project, titled Bridge Through Books, paired Chicago Public School (CPS) and District 64 suburban third grade students in a literary pen pal program. Bridge Through Books aimed to improve reading and writing frequency and enjoyment. The program also sought to develop social connections among the urban and suburban youth. The researcher hypothesized that students would cite increased frequency and enjoyment of reading and writing after the intervention compared to the control group. Furthermore, the researcher hypothesized that social connectedness and discussions about books with students from other schools would be higher among those participating in the program.

Methods

Eight schools were selected to participate, four in CPS and four in District 64. School librarians delivered the interventions. The intention was for each student to write three letters to their literary pen pal or pen pals. Each school had an intervention group that participated in the program and a control group that did not participate in the program. Surveys were completed by control and experimental classrooms prior to and after the intervention. These surveys were then assessed to determine if the program objectives were accomplished. The intervention was delivered from January through March, 2020.

Results

Two out of eight schools completed the pre-intervention and post-intervention survey data. Pre-intervention data was retrieved from seven experimental classrooms and six out of eight control classrooms among participating schools. Pre-intervention survey responses were similar across the control and experimental groups. Among the two schools that completed pre-intervention and post-intervention data, a statistically significant higher number of students perceived they developed friendships with students from their partner school after completing the intervention ($p=<0.001$). Additionally, a statistically significant higher number of students in the experimental group stated that after the intervention, they spoke to friends at other schools about books ($p=<0.001$). There was no statistical improvement in reading and writing frequency and enjoyment. Fisher's exact tests were used to compare the equality of survey response proportions.

Discussion

Due to the small sample size of control group and experimental group students that completed both surveys, it is difficult to say whether or not the program achieved its objectives. However, the groups that participated in the program felt friendships were developed and that books were talked about more with students who went to other schools. Because of project implementation difficulties, inconsistent communication between the lead researcher and participating librarians, and outside factors such as the CPS 2019 strike and the 2020 COVID-19 pandemic, not all schools completed the intervention. Bridge Through Books, a novel literary pen pal program, was implemented in the Chicagoland area in an effort to promote reading, writing, and social connectedness among urban and suburban third grade youth. The program was not successful in achieving all of these goals and should be altered if the program were to be

implemented again to address these unaccomplished goals and to address the potential burden the program placed on participating librarians.

Introduction

Positive youth development interventions strive to improve the social skills and competencies of youth.[1] Two potential areas for positive youth development are in the realm of literacy and social support, both of which are social determinants of health.[2] There are many benefits to literacy. Extensive research has explained the importance of health literacy on one's health.[3,4,5] Specific to youth, a Malawi-based study found that literacy levels of youth were associated with duration of illness and one's perceived health status.[6] In a study of nearly 1000 adults, being illiterate was associated with a greater chance of incident as well as prevalent dementia.[7]

Reading and writing are main components of literacy. There are well-researched health benefits to reading and writing. A Liverpool study found that participation in a reading group led to statistically significant mental health improvements.[8] Researcher Jeremy Nobel has written about how creative writing can help with negative emotions.[19] Reading helps with emotional development, and writing can help foster social connections.[9,10]

Furthermore, the importance of social connections are clear in the literature. A meta-analysis of nearly 150 studies and over 300,000 participants found that having strong social connections is associated with a lower risk of death.[11] Social ties are associated with mental well-being.[12] Specifically among youth, analysis from a sample of over 11,000 adolescents concluded that greater social integration positively impacts mental health.[13]

Given the importance of literacy and social connectedness demonstrated through the above literature review, one opportunity to promote positive youth development is to implement an intervention that seeks to improve literacy and a child's social connections. A type of program that often attempts to unite literacy skills and social connectedness are pen pal programs. One literary pen pal program that took place between elementary school students and college students described numerous benefits, including the fact that elementary school students felt writing letters helped them express emotion.[14] A program linking adults and urban youth reading the same books found that youth in the intervention had higher reading achievement standardized test scores compared to their fellow students who were in a control group.[15] Another pen pal program that paired elementary school students and adults and included small group discussions led to an increase in literacy motivation scores.[16]

Literacy development is important for youth of all ages. Yet, it is been studied that age eight can serve as a turning point between enjoying reading and not.[17] A 2019 study found the prevalence of reading decreases from age eight to nine.[18] While four in ten eight year olds participating in the study stated that they have a love for reading, this number dropped to less than three in ten among nine year olds.[18]

Furthermore, the Institute of Education Sciences published in 2016 that reading and writing should be done in tandem with each other.[19] A book titled "Writing to read: Evidence for how writing can improve reading" found that writing about what one reads can help students with their reading, thinking, as well as learning skills.[20] Furthermore, the authors of the previously mentioned book found that an increase in the amount of writing a student does can be beneficial for one's comprehension abilities.[20] Writing more can help students regardless of if they receive feedback from teaching staff or not.[21] Another study of third grade elementary

school students found that those who were good writers utilized reading skills in while writing and in a similar way, successful readers incorporated writing skills into the activity of reading.[22]

There is evidence in the literature explaining how social connection development can be facilitated through a pen pal program. The same pen pal program mentioned above engaging college and elementary school students found that students expanded their understanding of books as well as their pen pals.[14] This pen pal program also facilitated friendship development through letter writing. Studies exist detailing the benefits of international pen pal programs.[14] There are gaps in the literature, however. One gap present is exploring friendship development across an urban and suburban pen pal program.

This community-engaged research project engaged with various stakeholders in schools located in different communities throughout the Chicagoland area to test the effectiveness of a reading, writing, and socialization intervention. This intervention was the creation of a literary pen pal program, titled Bridge Through Books, pairing urban and suburban third grade students. The researcher engaged with CPS, as well as suburban schools. Engaging with educators served as a proxy for hearing the voices of students. Therefore, this is the first study connecting urban and suburban elementary school students in Chicago. That makes this program a novel opportunity that is primarily focused on improving the lives of the participating youth.

The aim of this program, titled Bridge Through Books, is that having a literary pen pal in another community where the main topic of discussion is books leads to more reading and writing, more joy from reading and writing, and more friendship. The objectives of the intervention were for students to state that they read and write at home, besides for homework, that they enjoy reading and writing, that they had friends at other schools, and that they spoke about books with friends who go to other schools. Although the research is not measuring

reading and writing skills, the assumption is that more frequent reading and writing along with development of social connections can be associated with improving reading and writing skills. The assessment of the program was done through a survey. This program was inspired by the researcher's experience as a suburban student, often feeling divided from the City of Chicago and CPS students. The researcher also wanted to pursue an independent research project, engage stakeholders of varying backgrounds, and help promote reading and writing skills as well as social connectedness among Chicagoland youth during a time where technology allows more people to feel socially isolated.

Methods

This project demonstrates community engagement on a partnership level as defined on Arnstein's Ladder.[23] The librarians and CPS Library Coordinator, Dorsey Chambers-Malewig, involved in this project had power in decision-making in multiple areas of the research. These were the areas of recruitment, intervention design, and survey development. The data collection decision was suggested by the researcher and confirmed by all other project leaders. The data analysis decision-making was led by the researcher and the consulting biostatistician.

Study/Intervention Design

The idea of Bridge Through Books was conceived by the researcher in the summer of 2019. The researcher contacted CPS library officials, including the Library Coordinator. The Library Coordinator responded with interest and the project development started from there. The idea of conducting an experimental research project with control and intervention classrooms was not developed until the intervention idea was formalized.

With respect to intervention design, this program was initially going to be implemented as an after school extracurricular activity. The researcher created an information form while under the belief that the project would be an afterschool activity. This information form included questions such as name, home room, and genre of book the student is interested in. This information form was used by one librarian but was not incorporated as part of the program. The librarian from school #5 (Table 1) suggested that the program instead be implemented as a part of librarians' curriculum. This idea was incorporated by the researcher and shared with the other librarians. This adjustment eliminated the need for school employees to stay after school or do work outside of their normal responsibilities. There was also the dilemma present of what books students would read. Through further collaboration with the aforementioned librarian, it was decided that librarians who participate in the Monarch Award book program would be eligible for this intervention. The Monarch Award book program is a competition where librarians share books with certain grade levels.[24] Thereafter, students vote on their favorite books. The intervention was then decided to be students writing letters about Monarch Award book nominees. This also allowed for literary pen pals to discuss the same books in their letters if their librarians had already read a book the partner school was reading.

The researcher asked librarians to choose another classroom of third grade students to serve as a control group. This classroom would be the same grade level as the group receiving the intervention and interact with the librarian in the same format as the classroom that was receiving the intervention. Therefore, the study was an unblinded, randomized controlled trial, in that classrooms were randomly assigned to receive the intervention or control. The randomization took place at the level of the classroom, while the analysis was at the student level. Students within each class were not individually randomized to receive the intervention.

The researcher provided large envelopes to the participating librarians so that pen pal letters could be sent to partner classes through the mail.

Librarian Recruitment

Regarding recruitment, the original project was going to consist of one CPS and one suburban class. Once again after speaking with the librarian from school #5, the researcher and the librarian decided to invite other librarians from that school district. The CPS library coordinator was tasked with recruiting CPS librarians. In total, eight librarians were recruited to participate in the project. One CPS librarian received an alteration in work responsibilities and therefore, an additional CPS librarian was recruited. Only librarians that participated in the Monarch Award book program were invited to participate. The suburban librarians were recruited from District 64 because the researcher attended school in this district. The researcher utilized this connection as opposed to inviting librarians from different school districts to participate. All communication for recruitment was done via email. Consent of the librarians was not obtained for participation in this study.

Data Collection and Analysis

The main vehicle of data collection to measure the effectiveness of this intervention was a survey. It was decided that a survey would add the least amount of work to the full-time librarians' schedules. The idea of a written exam to assess reading and writing skills was not pursued in an effort to not administer an unnecessary exam to students who already must complete many exams. Further reasons for why an exam format for data collection was avoided are presented in the discussion section.

In terms of survey development, the researcher created the first iteration of the survey. The survey was then altered and adjusted by the researcher's project mentor, Dr. Jenifer Cartland, Research Associate Professor of Pediatrics at Northwestern University. Then, the final drafts of the surveys were sent to the librarians and the Library Coordinator for feedback. One question that the librarians and the Library Coordinator agreed to eliminate from the survey was asking about gender. The researcher and project mentor were interested in how gender may affect survey results and believed stratifying results by gender could have allowed for interesting analysis. It has been studied that female third grade elementary school students are more motivated to read than male elementary school students.[25] However, to respect the students who are non-binary in terms of gender and to not distract from the overarching goals of the intervention, this question was removed. The final survey was 10 questions long. These questions can be seen in Table 2.

The librarians delivered the survey to students and sent these results back to the researcher for analysis. The researcher provided large envelopes to the librarians so surveys could be sent to the researcher for analysis. The researcher worked with a biostatistician in the Department of Preventive Medicine at Northwestern University, Dr. Lauren Balmert, to construct the data analysis plan. The final draft of the data analysis plan was also sent to the project mentor and the CPS Library Coordinator for approval.

The data were input into an Excel spreadsheet. Excel 2013 was used for the data collection. The statistical analysis could not be done using pair-wise testing as surveys were not linked pre-intervention and post-intervention. Rather, all survey results are presented in an aggregate manner. Descriptive statistics, including frequencies and percentages, were summarized for all pre-intervention and post-intervention survey data, stratified by group

(intervention vs. control). Fisher's exact tests were used to compare the distributions of each question between the pre-intervention and post-intervention survey within the intervention and control arms, respectively. The paired nature of the pre-post design was ignored in analyses due to limitations of data collection, described above. Lastly, the pre-intervention survey were results were stratified by whether or not the student completed the post-survey results. This data analysis was done in an effort to assess the generalizability of the study results. Tests of statistical significance were not run on these survey results.

These tests were conducted in R Studio version 1.2.5033. The cutoff for statistical significance was a p-value of less than or equal to 0.05, reflecting the nominal type I error rate. No formal correction was applied to account for multiple comparisons. Data collection took place from January to March, 2020. Data analysis took place from March to May, 2020.

Furthermore, the librarian from school #5 sent two example letters that students wrote to their literary pen pals. Aspects of these letters will be detailed in the results section. There will be no further analysis of these letters beyond quoting elements of the letters as the sample size of example letters is small.

An IRB exemption form was obtained for this research project as no identifying information was asked in the survey, and the researcher had no communication with any participating students.

Results

The researcher received pre-intervention survey data from seven of eight experimental group classrooms (n=161 students) and pre-intervention survey data from six of eight control group classrooms (n=133 students). One librarian did not respond to communication past an

initial expression of interest in participating and is believed to have dropped out of the project. Another librarian only administered the pre-intervention surveys to the experimental group and not the control group classroom.

The pre-intervention survey results are shown in Table 2. The responses to survey questions are quite similar across the experimental and control group students. This similarity ensures that an adequate control group was present. Tests of statistical significance were not run comparing the pre-intervention results on the control and experimental groups as these tests were deemed to be unnecessary.

The researcher received post-intervention survey data from only two control and two experimental groups. Schools #1 and #5 completed the intervention. A number of factors influenced this result, and these factors will be discussed extensively in the discussion section. Among the experimental group, the post-intervention survey results indicated that a higher percentage of students, 72%, answered "yes" to the survey item "I read at home" compared to 59% of pre-intervention respondents (p-value=0.17), although this increase was not statistically significant. Comparatively, a smaller percentage of students in the control group answered "yes" to this question post-intervention versus pre-intervention (63% post vs. 68% pre, p-value = 0.85), although not statistically significant. A higher percentage of experimental and control group students answered "yes" to the survey item "Besides for homework, I read at home" following the intervention, although not significantly different.

A very similar yet slightly higher percentage of students read alone at home post-intervention compared to pre-intervention, 84% post vs. 82% pre, in the experimental group, while post-intervention, a higher percentage of control group participants read at home by themselves, 60% post vs. 53% pre. A non-significant but lower percentage of both control and

experimental group participants answered “yes” to the survey items “it is fun to read” and “it is fun to write” post-intervention compared to pre-intervention. A greater percentage of control and experimental group students answered “yes” to “I write at home” on the post-intervention survey.

The greatest difference between control and experimental group participants’ post-intervention survey results was in the area of social connection development. Approximately 93% of experimental group participants who answered a post-survey stated that they had a friend at a different school, which is greater than the experimental group pre-intervention survey results of 86% (p-value=0.48). Yet, an even greater increase was observed in the control group classrooms for this question (83% pre vs. 94% post, p-value=0.16). Over 80% of participants in the experimental group stated that they talked about books with these friends who went to other schools. The pre-intervention survey result for this item was 34.09%. Therefore, there was a statistically significant increase in the intervention group students stating that they talked about books with their friends who go to other schools (p-value=<0.001). Comparatively, the pre-intervention and post-intervention survey results from the control group in answering this survey item was 35% and 31.43%, respectively (p-value=0.81).

Lastly, to measure whether or not students made social connections with their literary pen pals, a survey item was included that stated “I have friends at [partner school].” This partner school refers to their literary pen pal’s school. This survey item was customized, meaning students at school A, for example, that had literary pen pals at school B, answered the survey item, “I have friends at School B.” Only the experimental group was asked this question because it was deemed unlikely that a control group student would make a friend that attended the partner school during the intervention. Zero out of the 44 respondents among the school partnership that

completed both pre-intervention and post-intervention data stated that they had friends at the partner school prior to the program. The post-intervention data indicated that over half, or 58.14% of respondents perceived they had friends at this partner school. This indicated a statistically significant increase from pre-intervention to post-intervention regarding development of friends at the partner school, with a p-value of less than 0.001. Table 3 summarizes the survey results only for the experimental classrooms that completed pre-intervention and post-intervention surveys.

None of the survey results comparing pre-intervention and post-intervention control group participants' responses yielded statistically significant differences. Table 4 summarizes the survey results only for the control classrooms that completed pre-intervention and post-intervention surveys.

Tables 5 and 6 present the pre-intervention survey results stratified by completion of the post-survey intervention results for the experimental and control groups, respectively. There were no systematic differences between those who completed the intervention and those who did not complete the intervention. The most substantial difference observed is that students who completed the intervention, both in the control and experimental groups, reported much higher percentages of reading by themselves at home when compared to those who did not take the post-survey.

The librarian from school #5 sent two example letters that students had written to their pen pal. Both of these letters were the third letter in the intervention. One student remarked, "I really hope we meet in person one day. I am sad that is my last letter to you." Another student wrote about a similar sentiment to their pen pal, writing, "I enjoyed having you as a pen pal the past few months!"

Discussion

This is the first study to assess a literary pen pal intervention connecting urban and suburban elementary school students. It is believed that the intervention was effective in terms of the youth participating developing friendships with their literary pen pals. The intervention did not lead to statistically significant increases in reading and writing frequency or enjoyment. Given the small sample size of students who completed pre-intervention and post-intervention surveys, it is not a surprise that statistically significant results were not produced for many of the survey items. The researcher's hypotheses in the area of social connections was confirmed while other hypotheses relating to Bridge Through Books leading to increased reading and writing enjoyment and frequency were not confirmed.

In assessing the generalizability of the survey results to those who did not take the post-intervention survey or complete the intervention, it is important to observe that there are no systematic differences in the pre-intervention survey results by whether or not they completed the post-intervention survey (Tables 5 & 6). Therefore, it is reasonable to conclude that the post-intervention survey results could be generalized to those who did not complete the intervention. It would not be appropriate to generalize the results of this study beyond the participating schools.

As briefly mentioned in the methods section above, the researcher and the consulting biostatistician were interested in quantifying the number of students who improved or did not improve in the areas of reading and writing enjoyment and frequency and social connectedness. Unfortunately, the researcher did not conduct pair-wise testing as students' survey results were not linked pre-intervention and post-intervention.

The researcher had hoped that students would talk about more than the books in their letters to each other. One librarian sent the researcher two letters with students' names blacked out to ensure confidentiality of the students as an IRB exemption was obtained for this study. The example letters included writing that discussed additional topics beyond the Monarch Award books. Other aspects of the letters included saying hello and asking how the person was doing, talking about video games, and conversing about the friendship between the literary pen pals. The results section only briefly mentioned the two letters were received as this is a very small sample size and no plan was in place to analyze the students' letters.

This study confirms the results of past studies that have found how pen pal programs can support the development of social connections. However, the study did not confirm that students' motivation to read and write at home increased in a statistically significant manner as a result of this intervention.

The following paragraphs will explain the many limitations of the study. One limitation that exists is that the researcher encountered survey results that were unexpected in the form of students including additional answers and answering survey items in more than one way. The protocol for addressing these problems was as follows. Many students answered the survey item of "At home, I usually read with a:" with the response of "myself" or "alone." This was not one of the survey response items. Since so many students added this response as their answer to this survey item, this response item was added into the presentation of the data. However, there is an issue with this result as some librarians may have been more accepting of including this survey response item than others. For example, perhaps a student asked their librarian how this response item should be answered, and the librarian informed students to fill in a new response item. The point is that protocol had not been established prior to the survey administration regarding

additional response choices. Future studies should either incorporate a fill-in-the-blank additional answer choice or have the survey pilot tested with students so this issue can be avoided.

Regarding filling out more than one answer choice, the researcher established a protocol when this issue was encountered. It would have been better if this protocol had been established prior to the data analysis phase. For students who filled in more than one response to the survey item "At home, I usually read with a:," all responses were recorded. On the other hand, some students selected an intermediate answer choice to questions such as "I have friends at [partner school]" or "I talk about books with friends who go to other schools." These intermediate answer choices included stating the student had a single friend at the partner school and the student sometimes spoke about books with these friends who go to other schools. Both of these intermediate answers were coded as the affirmative, meaning their answer was assessed as "yes" to the item "I have friends at [partner school]" and as "yes" to the item "I talk about books with my friends who go to other schools." Furthermore, some students selected both "sometimes" or "some days" as well as "yes" or "every day" to survey items inquiring about reading and writing frequency. The researcher decided to code these multiple answers as the less frequent response in an effort to be conservative. In other words, the researcher felt it would be more appropriate to code these responses as "sometimes" or "some days" in an effort to avoid the inaccurate reporting of students' reading and writing frequency habits. Once again, protocol for how to handle these data collection questions should have been established prior to the data analysis taking place. That is why these points are brought up in the discussion section. Future researchers should consult with biostatisticians in advance of data analysis to determine the best ways to deal with these data collection questions. These above survey protocol adjustments are

considered limitations of this study because not every student was made aware of the possibility of adding in answer choices. However, researcher was consistent throughout in coding the data.

Another limitation present in this study is the potential of Hawthorne's Effect taking place. Third grade students taking a survey may have the intention of pleasing their teacher or worry that they are being graded on this survey. The survey was meant to be completely anonymous, as no identifying information was asked on the form. However, some students may have felt uncomfortable handing in a form to their librarian where they stated they did not like to read.

Another possible limitation is that the survey may not have accurately measured reading and writing enjoyment or the development of social connections. This was not a validated survey, nor was it measured for reliability. Therefore, there is no way of knowing whether or not these survey questions measured what was intended.

A further limitation in the realm of the survey was that it is not possible to know if reading or writing frequency and enjoyment is correlated with reading and writing skill development. While it would have been beneficial to measure if this intervention led to skill development in the areas of reading and writing, it was deemed inappropriate to provide an additional, non-school related test. This would have placed an undue burden on students as test situations can be stressful for students. An undue burden would also have been placed on librarians as parent permission forms likely would have been necessary to collect. Also, it would have been unethical to administer an exam to students without having extensive discussions with parents, staff, and the students. This is why a survey about reading and writing frequency was collected as opposed to administering a reading and writing exam.

There is also the limitation that students may not have known the name of their literary pen pal's school. Additionally, some students may have had friends at a school that had the same name as their partner school. This latter possibility would have overestimated how many friends were developed as a result of the program. This was likely not a problem for the school partnership that completed Bridge Through Books, as zero students indicated they had friends at the partner school or a school with the same name as the partner school on the pre-intervention survey. In the future, the researcher could perhaps reword the survey item as "I have friends in the Bridge Through Books program." Posing the survey prompt in this manner would allow for the participating student to assess the social connections developed from the program.

This above limitation leads to the potential conclusion that social connections between urban and suburban youth may not have been developed. In other words, students may have simply made friends with a student at another school, not knowing whether this student was a CPS or District 64 student. While a student stating they made a friend is undeniably a positive result of this project, Bridge Through Books was attempting to develop social connections across the invisible divide between urban and suburban elementary school students. Future studies could ask clearer survey questions that are more to the point of the research. A potential question could ask suburban students, "Do you have a friend or friends who attend a Chicago Public School?" For the CPS students, the question could ask, "Do you have a friend or friend who attends a school outside of Chicago Public Schools?" The obvious limitation with this set of questions would be that students may not know which schools are classified as CPS.

A further limitation is in the realm of study completion. Since the analysis was performed on a small percentage of the enrolled sample, we have to be cautious with generalizing the results beyond this particular sample. If the mechanism of missing data was in fact missing not at

random, our results based on complete case analysis may be biased. Only one of the four librarian pairs completed the intervention. Therefore, it is logical to examine whether or not the intervention was too much work given the constraints of adding additional work into an already full-time librarian's schedule. The librarian from school #7 shared that writing a letter took two classes since the students had never written a letter before. That same librarian expressed how school meetings, students missing class because of illness, and the time it took to actually read a book to the students presented a challenge given the circumstance that the librarians met with students only once a week. The librarian from school #4 explained how the CPS school strike of 2019 altered her academic schedule and thereby delayed the start of her administering the program. Communication was lost between the researcher and the librarian from school #8. Yet, the pair of librarians from schools #2 and #6 were preparing to write a fourth letter, beyond the program's intended three letters. Therefore, it is clear that the burden of the program was dependent on a number of factors, including the intervention itself as well as other responsibilities and factors outside of the intervention.

Then, the coronavirus pandemic of 2020 led to school closures and school transitions to online settings. In an effort to respect the librarians and the students, who were likely already experiencing immense periods of transition, the researcher decided it would be best to halt any further data collection.

While nothing could be done with respect to the CPS strike or the COVID-19 pandemic, the other challenges detailed above could have been addressed. Many steps could have been taken to prevent or at least attempt to prevent some of the aforementioned burden. The researcher never met with any of the participating librarians or the CPS Library Coordinator. It would have been more beneficial to have face-to-face contact with these librarians prior to project

implementation. Also, a contract or memoranda of agreement could have been created so expectations were clear regarding the project (i.e., committing to the project, being clear with communication, etc.). The researcher had never conducted his own community-engaged research prior to Bridge Through Books. This inexperience led to difficulties in maintaining participation among other aspects of the project.

Lastly, it is important to acknowledge that approximately only 20% of the district-run CPS schools have a librarian.[26] Beyond this fact, only schools that participated in the Monarch Award book program were invited to participate. Therefore, there were many CPS and suburban students that did not have the opportunity to engage with Bridge Through Books given the current design of the program. If this program were to expand or take place again, there could be the incorporation of this project into reading or English classes in addition to the option of librarians running the project. Also, enrollment would not be limited to those who are engaging with the Monarch Award book program. Once the final results are shared with the participating librarians and the CPS Library Coordinator, any next steps regarding dissemination will be determined.

This novel literary pen pal program took place from January till March, 2020, with project development taking place in the months prior. The program, titled Bridge Through Books, was initiated in an effort to enhance reading and writing enjoyment and frequency as well as help develop social connections between Chicago urban and suburban third grade elementary school students. Eight schools initially committed to participating in this project. The project leaders were the CPS Library Coordinator, a researcher at Lurie Children's Hospital, a biostatistician at Northwestern Medicine, and Master of Public Health student at Northwestern

University. All librarians were invited to have a say in study design, intervention design, and survey development.

The program was only completed, meaning survey results were gathered pre-intervention and post-intervention, by one of the four school partnerships. The reasons for this lack of completion included communication difficulties between project leaders and participating librarians, struggles implementing the program, burden of the program on librarians' schedules, the 2019 CPS strike, and the COVID-19 pandemic.

Assessing pre-intervention and post-intervention survey data from the schools that completed the program, Bridge Through Books was successful in facilitating social connections among the experimental group. There was a statistically significant increase in students stating they had friends at the partner school (p-value=<0.001) and stating that they discussed books with friends who attended schools different from their own (p-value=<0.001) when comparing the experimental group pre-intervention and post-intervention data. The program was not successful in increasing reading and writing enjoyment and frequency in a statistically significant manner among experimental group students.

Future research studies should create a memoranda of agreement prior to project implementation, facilitate better interaction among the project leaders and librarians through face-to-face meetings, broaden the scope of participation criteria, and alter survey questions based on student input. Depending upon feedback from the participating librarians, the CPS Library Coordinator, and other CPS library leaders, this project may or may not take place again. Many of the challenges above would be addressed and allow for a smoother implementation of Bridge Through Books.

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Table 1: Schools Listed According to Location, Number of Letters Written, and Completion of Surveys

School Number*	School Location	Number of letters written	Received Pre-Intervention Survey Results		Received Post-Intervention Survey Results	
			Control	Experimental	Control	Experimental
1	CPS	3	Yes	Yes	Yes	Yes
2	CPS	3	Yes	Yes	No	No
3	CPS	1	Yes	Yes	No	No
4	CPS	0	Yes	Yes	No	No
5	Suburban	3	Yes	Yes	Yes	Yes
6	Suburban	2	Yes	Yes	No	No
7	Suburban	1	No	Yes	No	No
8	Suburban	0	No	No	No	No

*This numbering system is arbitrary and does not reflect any sort of school ranking.

Table 2: Aggregate Pre-Intervention Survey Data (n=7 schools for experimental classrooms and n=6 schools for control classrooms)

Survey Item	Survey Response	Control: (n= 133) n (%)	Intervention: (n= 161) n (%)
I read at home.	Yes	74 (55.64%)	85 (53.13%)
	Sometimes	52 (39.10%)	68 (42.5%)
	No	7 (5.26%)	7 (4.38%)
Besides for homework, I read at home.	Yes	51 (38.35%)	45 (27.95%)
	Sometimes	67 (50.37%)	105 (65.22%)
	No	15 (11.28%)	11 (6.83%)
At home, I usually read with a:	Alone/by myself	40 (29.63%)	54 (32.93%)
	Parent or other adult	46 (34.59%)	60 (36.59%)
	Brother or sister	21 (15.56%)	22 (13.41%)
	Friend	19 (14.07%)	9 (5.49%)
	Other family member	4 (2.96%)	9 (5.49%)
	I don't read at home (except for homework)	5 (3.70%)	10 (6.10%)
It is fun to read.	Yes	83 (62.41%)	95 (59.38%)
	Sometimes	38 (28.57%)	59 (36.88%)

	No	12 (9.02%)	6 (3.75%)
I write at home.	Yes	63 (47.37%)	73 (45.34%)
	Sometimes	47 (35.34%)	68 (42.24%)
	No	23 (17.29%)	20 (12.42%)
Besides for homework, I write at home.	Yes	30 (22.56%)	26 (16.15%)
	Sometimes	82 (61.65%)	106 (65.84%)
	No	21 (15.79%)	29 (18.01%)
It is fun to write.	Yes	73 (54.89%)	81 (50.31%)
	Sometimes	40 (30.08%)	63 (39.13%)
	No	20 (15.38%)	17 (10.56%)
I have friends at [partner school].	Yes	N/A	4 (2.90%)
	No	N/A	134 (97.10%)
I have friends at a different school.	Yes	113 (84.96%)	125 (78.13%)
	No	20 (15.38%)	35 (21.88%)
I talk about books with my friends who go to other schools.	Yes	47 (35.34%)	41 (25.47%)
	No	85 (63.91%)	120 (74.53%)

Table 3: Experimental Group Data among Classes That Completed Pre-Intervention and Post-Intervention Surveys (n=2 classes)

Survey Item	Survey Response	Intervention (Pre): (n=44) n (%)	Intervention (Post): (n=43) n (%)	p-value[1]
I read at home.	Yes	26 (59.10%)	31 (72.09%)	0.1731
	Sometimes	18 (40.91%)	11 (25.58%)	
	No	0 (0%)	1 (2.33%)	
Besides for homework, I read at home.	Yes	8 (18.18%)	13 (30.23%)	0.2311
	Sometimes	35 (79.55%)	27 (62.79%)	
	No	1 (2.27%)	3 (6.98%)	
At home, I usually read with a:	Alone/by myself	36 (81.82%)	36 (83.72%)	0.5545
	Parent or other adult	7 (15.91%)	4 (9.30%)	
	Brother or sister	1 (2.27%)	1 (2.33%)	
	Friend	0 (0%)	0 (0%)	
	Other family member	0 (0%)	0 (0%)	
	I don't read at home (except for homework)	0 (0%)	2 (4.65%)	
It is fun to read.	Yes	38 (86.36%)	34 (79.07%)	0.4734
	Sometimes	6 (13.64%)	8 (18.60%)	

[1] Fisher's exact test

	No	0 (0%)	1 (2.33%)	
I write at home.	Yes	21 (47.73%)	22 (51.16%)	0.5642
	Sometimes	21 (47.73%)	17 (39.53%)	
	No	2 (4.55%)	4 (9.30%)	
Besides for homework, I write at home.	Yes	8 (18.18%)	8 (18.60%)	0.1182
	Sometimes	34 (77.27%)	27 (62.79%)	
	No	2 (4.55%)	8 (18.60%)	
It is fun to write.	Yes	25 (56.82%)	21 (48.84%)	0.6475
	Sometimes	15 (34.09%)	16 (37.21%)	
	No	4 (9.09%)	6 (13.95%)	
I have friends at [partner school].	Yes	0 (0%)	25 (58.14%)	<0.001
	No	44 (100%)	18 (41.86%)	
I have friends at a different school.	Yes	38 (86.36%)	40 (93.02%)	0.4839
	No	6 (13.64%)	3 (6.98%)	
I talk about books with my friends who go to other schools.	Yes	15 (34.09%)	35 (81.40%)	<0.001
	No	29 (65.91%)	8 (18.60%)	

Table 4: Control Group Data among Classes That Completed Pre-Intervention and Post-Intervention Surveys (n=2 classes)

Survey Item	Survey Response	Control (Pre): (n=40) n (%)	Control (Post): (n=35) n (%)	p-value[2]
I read at home.	Yes	27 (67.5%)	22 (62.86%)	0.8459
	Sometimes	11 (27.5%)	12 (34.29%)	
	No	2 (5%)	1 (2.86%)	
Besides for homework, I read at home.	Yes	16 (40%)	16 (45.71%)	0.2337
	Sometimes	18 (45%)	18 (51.43%)	
	No	6 (15%)	1 (2.86%)	
At home, I usually read with a:	Alone/by myself	21 (52.5%)	21 (60%)	0.5758
	Parent or other adult	9 (22.5%)	9 (25.71%)	
	Brother or sister	5 (12.5%)	1 (2.86%)	
	Friend	4 (10%)	2 (5.71%)	
	Other family member	0 (0%)	1 (2.86%)	
	I don't read at home (except for homework)	1 (2.5%)	1 (2.86%)	
It is fun to read.	Yes	31 (77.5%)	22 (62.86%)	0.3126
	Sometimes	7 (17.5%)	8 (22.86%)	

[2] Fisher's exact test

	No	2 (5%)	5 (14.29%)	
I write at home.	Yes	15 (37.5%)	14 (40%)	0.4777
	Sometimes	19 (47.5%)	19 (54.29%)	
	No	6 (15%)	2 (5.71%)	
Besides for homework, I write at home.	Yes	5 (12.5%)	5 (14.29%)	0.4915
	Sometimes	29 (72.5%)	28 (80%)	
	No	6 (15%)	2 (5.71%)	
It is fun to write.	Yes	23 (57.5%)	20 (57.14)	0.5764
	Sometimes	12 (30%)	13 (37.14%)	
	No	5 (12.5%)	2 (5.71%)	
I have friends at a different school.	Yes	33 (82.5%)	33 (94.29%)	0.1618
	No	7 (17.5%)	2 (5.71%)	
I talk about books with my friends who go to other schools.	Yes	14 (35%)	11 (31.43%)	0.8091
	No	26 (65%)	24 (68.57%)	

Table 5: Pre-Intervention Data Stratified by Completion of the Intervention among Experimental Group Classrooms

Survey Item	Survey Response	Experimental (Pre) and took post-intervention survey: (n=44) n (%)	Experimental (Pre) and did not take post-intervention survey: (n=117) n (%)
I read at home.	Yes	26 (59.10%)	59 (50.86%)
	Sometimes	18 (40.91%)	50 (43.10%)
	No	0 (0%)	7 (6.03%)
Besides for homework, I read at home.	Yes	8 (18.18%)	37 (31.62%)
	Sometimes	35 (79.55%)	70 (59.83%)
	No	1 (2.27%)	10 (8.55%)
At home, I usually read with a:	Alone/by myself	36 (81.82%)	18 (15.79%)
	Parent or other adult	7 (15.91%)	51 (44.74%)
	Brother or sister	1 (2.27%)	18 (15.79%)
	Friend	0 (0%)	8 (7.02%)
	Other family member	0 (0%)	9 (7.89%)

	I don't read at home (except for homework)	0 (0%)	10 (8.77%)
It is fun to read.	Yes	38 (86.36%)	57 (49.14%)
	Sometimes	6 (13.64%)	53 (45.69%)
	No	0 (0%)	6 (5.13%)
I write at home.	Yes	21 (47.73%)	52 (44.44%)
	Sometimes	21 (47.73%)	47 (40.17%)
	No	2 (4.55%)	18 (15.38%)
Besides for homework, I write at home.	Yes	8 (18.18%)	18 (15.52%)
	Sometimes	34 (77.27%)	71 (61.21%)
	No	2 (4.55%)	27 (23.28%)
It is fun to write.	Yes	25 (56.82%)	56 (47.86%)
	Sometimes	15 (34.09%)	48 (41.03%)
	No	4 (9.09%)	13 (11.11%)
I have friends at [partner school].	Yes	0 (0%)	4 (4.26%)
	No	44 (100%)	90 (95.74%)
I have friends at a different school.	Yes	38 (86.36%)	87 (75%)
	No	6 (13.64%)	29 (25%)
	Yes	15 (34.09%)	26 (22.22%)

I talk about books with my friends who go to other schools.	No	29 (65.91%)	91 (77.78%)

Table 6: Pre-Intervention Data Stratified by Completion of the Intervention among Control Group Classrooms

Survey Item	Survey Response	Control (Pre) and took post-intervention survey (n= 40) n (%)	Control (Pre) and did not take post-intervention survey: (n= 93) n (%)
I read at home.	Yes	27 (67.5%)	47 (51.65%)
	Sometimes	11 (27.5%)	41 (45.05%)
	No	2 (5%)	5 (5.49%)
Besides for homework, I read at home.	Yes	16 (40%)	35 (37.63%)
	Sometimes	18 (45%)	49 (52.69%)
	No	6 (15%)	9 (9.68%)
At home, I usually read with a:	Alone/by myself	21 (52.5%)	19 (21.59%)
	Parent or other adult	9 (22.5%)	34 (38.64%)
	Brother or sister	5 (12.5%)	14 (15.91%)
	Friend	4 (10%)	14 (15.91%)
	Other family member	0 (0%)	3 (3.41%)
	I don’t read at home (except for homework)	1 (2.5%)	4 (4.55%)
It is fun to read.	Yes	31 (77.5%)	52 (55.91%)

	Sometimes	7 (17.5%)	31 (33.33%)
	No	2 (5%)	10 (10.75%)
I write at home.	Yes	15 (37.5%)	48 (51.61%)
	Sometimes	19 (47.5%)	28 (30.11%)
	No	6 (15%)	17 (18.28%)
Besides for homework, I write at home.	Yes	5 (12.5%)	25 (26.88%)
	Sometimes	29 (72.5%)	53 (56.99%)
	No	6 (15%)	15 (16.13%)
It is fun to write.	Yes	23 (57.5%)	50 (53.76)
	Sometimes	12 (30%)	28 (30.11%)
	No	5 (12.5%)	15 (16.13%)
I have friends at a different school.	Yes	33 (82.5%)	80 (86.02%)
	No	7 (17.5%)	13 (13.98%)
I talk about books with my friends who go to other schools.	Yes	14 (35%)	33 (35.87%)
	No	26 (65%)	59 (64.13%)