SUMMER LEARNING PROGRAM 2014

Program Monitoring for Accountability

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BACKGROUND

Since 2009, the Council of Ontario Directors of Education (CODE) has coordinated programs, funded and guided by the LNS, and implemented by district school boards for primary students to take part in three week summer programs. These programs are intended to reduce summer learning loss and improve literacy and numeracy skills through a mix of high quality instructional programming and recreational programming for vulnerable students who face academic and socio-economic challenges in learning. In 2012, the focus of the program was expanded from literacy-focused instruction to include numeracy-focused, and First Nations, Métis and Inuit-focused programs. Additionally in 2014, some Summer Learning Program sites implemented a blended literacy/numeralcy-focused program.

Over 5200 students (K-3) from sixty four district school boards across the province of Ontario participated in the 2014 Summer Learning Program. The Summer Learning Program continued to help elementary students reduce summer learning loss and improve their literacy and numeracy skills over the summer of 2014.

The Summer Learning Program continues to be funded and is poised to expand the number of classes offered during the summer of 2015. Additional invitations to participate will extend beyond Grade 3 up to students who are exiting Grade 5. The Council of Ontario Directors of Education (CODE) will continue to lead the program, while the Student Achievement Division will continue to collect and analyze program data to measure ongoing impact. The longitudinal research study that is being conducted by our university partners with six district school boards is ongoing as well.

PURPOSE

The purpose of this report is to describe the findings from the analysis of student achievement data that was collected through the pre- and post-test STAR assessments in the Summer Learning Program in the summer of 2014. In particular, the focus for analysis was to address the following research questions:

1) Who participates in the Summer Learning Program? Are boards targeting participation in the program for students who are most in need of literacy and numeracy intervention?

2) Does participating in the Summer Learning Program make a difference for reducing summer learning loss, and, if so, by how much and for whom?

3) Which programs are more successful in reducing learning loss and achieving gains in student achievement?
RESEARCH PROTOCOLS IN DATA COLLECTION

District school boards participating in the non-longitudinal study were informed that they would be involved in an accountability and evaluation process. In previous years, this process was led by our university research partners. However, the focus of their work shifted to a longitudinal study to investigate the question “Do the benefits of participating in the Summer Learning Program continue over time?” So in 2014, the accountability and evaluation component for all participating district school boards was assigned to and led by the Research, Evaluation, and Data Management Team at the Literacy and Numeracy Secretariat (LNS) at the Ministry of Education. The data collection process was coordinated by the Council of Ontario Directors of Education (CODE). Board contacts were asked to complete and submit a Student Information Spreadsheet to identify participating students in each of the programs that were offered in their board. Over time, the amount of information requested has greatly reduced in size. In 2014, this information included:

- Student Name
- Ontario Education Number (OEN) or a pre-assigned Student Identification number
- Gender
- Grade
- IEP in Reading or Mathematics
- First Nations Métis and Inuit Self-Identification
- English Language Learner Identification
- Final June Reading Report Card Grade
- Final Mathematics Report Card Grade
- Number of Days Student was Late in the Summer Learning Program
- Number of Days Student was Absent in the Summer Learning Program

In cases where there were discrepancies or missing data, all efforts were made to reach out to board contacts through their CODE regional coordinators to verify information. Boards were asked to provide either a student OEN or an alternate pre-assigned student ID number for each student participating in the Summer Learning Program. This student ID number also served as the student’s STAR login username. This information was submitted by each board contact to their regional coordinator who then submitted completed spreadsheets, along with information about the program type, length, and timing to the Research, Evaluation, and Data Management Team at the LNS.

The STAR testing assessments for reading, mathematics, and early literacy are used as diagnostic assessments for progress-monitoring within the Summer Learning Program. These assessments are reliable, valid, and efficiently computer-adaptive to reflect the strengths and needs of the learner. For example, the questions progress or digress in difficulty based on answers that are provided in previous questions.
Boards were requested to have all participating students complete STAR testing on either, the first day and last day of the program, or in late June and early September. Students participating in all program types were asked to complete a STAR reading assessment, and in addition to this, students participating in numeracy and literacy/numeracy-blended programs were asked to also complete a STAR math assessment. Students in kindergarten were asked to complete a STAR Early Literacy assessment. This Early Literacy test includes ten sub-domains of literacy. One of these sub-domains is an early numeracy component which assesses a students’ ability to identify and name numbers; 1 to 1 correspondence; sequencing; compose and decompose groups of up to ten; and compare sizes, weights, and volumes.

At the end of the summer, board spreadsheets were merged with STAR testing results for participating students who completed pre- and/or post-tests in reading, mathematics and early learning. Unsuccessful attempts in testing were also identified and recorded.

**Methodology used in the analysis**

Student achievement and demographic data from 49 participating English-language district school boards were included in the analysis. Two of the boards included in the analysis are participating in the longitudinal study but had additional non-longitudinal program classes as well. Only data from participating students in the non-longitudinal classes in these boards were included in the analysis.

Data from participating students (Grades 1-3) with both pre and post assessment results were used in analysis. Normal curve equivalent (NCE) scores were used in the analysis. These scores are designed to be used for most statistical analyses. NCE scores were then translated through a relative calculation into weeks of instructional time. Average gains or losses in time were only calculated when NCE scores were found to have had a statistically significant change between pre- and post-tests.

Changes in pre- and post-test scores and differences in average achievement were assessed using t-tests and ANOVAs. Dependent samples t-tests were used to examine achievement change within groups (i.e. grade level) while independent samples t-tests were used to compare achievement changes between two groups (i.e. males/females). Multinomial difference tests examined statistical significance of category changes for participating kindergarten students who had both pre and post assessment results.

There were many cases where students were missing either demographic data (which was to be provided in the Student Information Spreadsheets submitted by boards) and/or where a student was missing a score from the STAR pre- or a post-test in math and/or reading. Figure 1 shows a description, by program type and grade level, of participation in the 2014 Summer Learning Program and figure 2 shows a description of the of student participation in STAR testing across grade levels. There were 36 cases where students beyond Grade 3 were identified as participants in the Summer Learning Program. These students may have been older siblings or older students in need of additional support in literacy and mathematics.
**Figure 1: Participation in the Summer Learning Program by Grade Level and Program Type**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Literacy</th>
<th>Numeracy</th>
<th>Literacy/Numeracy Blend</th>
<th>First Nations, Metis and Inuit</th>
<th>Total Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>JK/SK</td>
<td>349</td>
<td>95</td>
<td>43</td>
<td>42</td>
<td>529</td>
</tr>
<tr>
<td>1</td>
<td>930</td>
<td>162</td>
<td>196</td>
<td>116</td>
<td>1404</td>
</tr>
<tr>
<td>2</td>
<td>657</td>
<td>405</td>
<td>147</td>
<td>85</td>
<td>1294</td>
</tr>
<tr>
<td>3</td>
<td>272</td>
<td>282</td>
<td>96</td>
<td>76</td>
<td>726</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>4</td>
<td>0</td>
<td>20</td>
<td>36</td>
</tr>
<tr>
<td>Grade not identified</td>
<td>549</td>
<td>653</td>
<td>26</td>
<td>2</td>
<td>1230</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2769</strong></td>
<td><strong>1601</strong></td>
<td><strong>508</strong></td>
<td><strong>341</strong></td>
<td><strong>5219</strong></td>
</tr>
</tbody>
</table>

**Figure 2: Participation in STAR Testing by Grade Level**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Total Number of Students</th>
<th>STAR Reading Test *</th>
<th>STAR Math Test *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Both Pre &amp; Post</td>
<td>Only Pre</td>
</tr>
<tr>
<td>JK/SK</td>
<td>529</td>
<td>367</td>
<td>58</td>
</tr>
<tr>
<td>1</td>
<td>1404</td>
<td>1088</td>
<td>147</td>
</tr>
<tr>
<td>2</td>
<td>1294</td>
<td>1011</td>
<td>136</td>
</tr>
<tr>
<td>3</td>
<td>726</td>
<td>563</td>
<td>74</td>
</tr>
<tr>
<td>Other</td>
<td>36</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Grade not identified</td>
<td>1230</td>
<td>947</td>
<td>168</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5219</strong></td>
<td><strong>3979</strong></td>
<td><strong>586</strong></td>
</tr>
</tbody>
</table>

*All students were expected to complete pre- and post-testing using the STAR Reading assessment, while only students enrolled in Numeracy or Literacy/Numeracy Blend classes were expected to complete both pre- and post-testing using the STAR Reading as well as the STAR Math assessment.

**FINDINGS**

An analysis of pre- and post-program student assessment data collected during the summer of 2014 indicates not only a reduction in learning loss for students who participated in the Summer Learning Program, but evidence of gains made as well. A view of all participating students across all program types showed a statistically significant average improvement between the start and end of the program with average gains in reading and mathematics of approximately three weeks of instructional time.
Achievement Gains across Program Types

Digging deeper into specific program types there is more good news to share. For example, pre- and post-test scores in reading show that students enrolled in literacy program classes made average gains in reading of approximately five weeks in instructional time and students enrolled in literacy/numeracy-blended program classes made similar gains in reading as well as average gains in mathematics of approximately seven weeks in instructional time.

One of the key findings in this analysis relates to gains and losses across program types. The testing protocol was the same for students participating in numeracy-only and literacy/numeracy-blended programs. All students were to complete a pre- and post-test in both STAR Math and STAR Reading. An analysis of average changes uncovered that students participating in numeracy-only classes did not show statistically significant average changes in mathematics scores and also showed a statistically significant average change (NCE -2.4) in reading scores. This change in reading roughly corresponds to a loss of five weeks of instructional time. As these programs were focused solely on numeracy, this result is not completely surprising. However, an analysis of average changes for students participating in literacy/numeracy-blended programs did show statistically significant average changes in reading scores (NCE +3.8) as well as statistically significant average changes in mathematics scores (NCE +6.6). These gains in reading roughly correspond to five weeks in instructional time and the gains in mathematics roughly correspond to seven weeks in instructional time. This leads us to further questions about the links between literacy learning and mathematics. While there are numerous factors that could explain the differences for changes in student achievement across these program types, this could be something to explore further in future research studies.

Achievement Gains and Demographic Characteristics

Overall, the gains made by students identified as English Language Learners (ELL) were lower than other students in most programs with the exception of those who participated in literacy/numeracy-blended programs. While ELLs did make statistically significant gains in both math and reading in literacy/numeracy-blend programs, their gains were not statistically significantly greater than other students in the same program. For ELLs, there were statistically significantly lower gains in reading scores across all other program types as well as in math scores in numeracy-only programs in comparison to other students in the same program.

There were no statistically significant differences in achievement changes between girls and boys, students self-identified as First Nations, Métis & Inuit learners and other students, or students with and without an IEP. Figure 3 shows a demographic profile of participating students—as described through the Student Information Spreadsheets provided by boards—by gender, as English Language Learners (ELL), as self-identified First Nations, Métis & Inuit learners (FNMI), and as learners with Individual Education Plans (IEP) in reading and/or mathematics. The categories are not mutually exclusive (i.e. one student
could be identified in more than one category). Further analysis of this data is ongoing in order to
determine whether or not these percentages similarly reflect proportions of students with these
demographic characteristics across the province.

*Figure 3: A Demographic Profile of Participating Students*

<table>
<thead>
<tr>
<th>Percentage of Students Participating in SLP</th>
<th>Gender (Male)*</th>
<th>Gender (Female)*</th>
<th>ELL</th>
<th>FNMI Self ID</th>
<th>IEP Reading</th>
<th>IEP Math</th>
<th>% of Students achieving below Level 3 (B) in Reading**</th>
<th>% of Students achieving below Level 3 (B) in Math**</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>36%</td>
<td>7.3%</td>
<td>7%</td>
<td>7.8%</td>
<td>5.5%</td>
<td>42%</td>
<td>37%</td>
<td></td>
</tr>
</tbody>
</table>

*There were 1255 (24%) cases where gender was not specified.

** These percentages are based on marks provided from the June 2014 Report Card for reading and math (NSN),
and provide a baseline view of student achievement upon entering the Summer Learning Program.

What is the impact on early learning?

Grade one students showed the greatest improvements of any grade level this year. With average
changes in reading (NCE+5.7) and in math (NCE+4.7), these students made gains that roughly
correspond to eight weeks of instructional time in reading, and seven weeks of instructional time in
mathematics.

Data from a total of 367 participating students in kindergarten grades who completed both pre- and
post-tests using the STAR Early Literacy assessment tool were analyzed for changes in student
achievement. Students were classified into four stages of literacy development that are defined by and
measured through the STAR Early Literacy assessment tool.

These levels are based on scaled score (SS) results from pre- and post-tests and are defined by STAR as:

- **Early Emergent Reader (SS 300-487)**
  - Student is beginning to understand that printed text has meaning, orientation to print
    (left to right, top to bottom of page), and is beginning to identify the names of letters and
    numbers.

- **Late Emergent Reader (SS 488-674)**
  - Student can identify most of the letters of the alphabet and can match most of the letters
to their sounds, is starting to “read” picture books and familiar sight words.
• **Transitional Reader (SS 675-774)**
  ✓ Student has mastered alphabet skills and letter-sound relationships, can identify beginning and ending consonant sounds, blended consonant sounds as well as long and short vowel sounds in order to read simple words.

• **Probable Reader (SS 775-900)**
  ✓ Student is becoming proficient at blending sounds and word parts to read words and sentences more quickly, smoothly, and independently with less time spent on sounding out words and more time understanding what has been read.

*Figure 4 shows that while most students did not move between levels (210 students, 57.2%), a statistically significantly greater number moved up by one or two levels (97 students, 26.5%) than moved down (60 students, 16.4%).

*Figure 4: Changes in Reading Level for Participants in Kindergarten*

<table>
<thead>
<tr>
<th>Student category Change: Pre/Post</th>
<th># of Students</th>
<th>% of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2 Levels</td>
<td>8</td>
<td>2.2%</td>
</tr>
<tr>
<td>+1 Level</td>
<td>89</td>
<td>24.3%</td>
</tr>
<tr>
<td>No Change in Level</td>
<td>210</td>
<td>57.2%</td>
</tr>
<tr>
<td>-1 Level</td>
<td>59</td>
<td>16.1%</td>
</tr>
<tr>
<td>-2 Levels</td>
<td>1</td>
<td>0.3%</td>
</tr>
</tbody>
</table>
While most of the participating students in kindergarten did not transition to the next reading level (57.2%) from the beginning to the end of the Summer Learning Program, figure 5 describes the number of students who did make gains of at least 33% in pre- to post-testing scores while remaining within the same reading level. An analysis across all reading levels shows that out of 210 students who remained within the same reading level, 47 (22.4%) of those students achieved gains in testing scores of 33% or more. More students in the late emergent reading level made gains in closing the gap for advancing to the next reading level than students in any of the other reading levels.

Figure 5: Closing Gaps within Reading Levels

<table>
<thead>
<tr>
<th>Reading Level Group</th>
<th>Number of Students who started in this level (pre-test)</th>
<th>Number of Students who remained in the same level (post-test)</th>
<th>Number of students who had an increase in score but remained within same reading level (SS Change +33% or more)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Emergent</td>
<td>87</td>
<td>34</td>
<td>5</td>
</tr>
<tr>
<td>Late Emergent</td>
<td>243</td>
<td>163</td>
<td>41</td>
</tr>
<tr>
<td>Transitional</td>
<td>33</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Probable</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>ALL Levels</td>
<td>367</td>
<td>210</td>
<td>47</td>
</tr>
</tbody>
</table>

Early Numeracy (EN) sub-domain scores from within the Early Literacy assessment showed a statistically significant average gain for all students combined, between the pre and post assessments, from an average score of (EN 56.1) to (EN 59.5) \((p=0.0008)\).

Does the timing of test dates impact achievement?

The majority of boards participating in the 2014 Summer Learning Program held STAR testing dates on the first and last day of programming. This pre- and post-test timing protocol was shared by 86.5% of participating boards. Alternatively, 5.8% of participating boards had students take pre- and post-tests at the end of June and early in September, while another 7.7% of participating boards had pre- and post-testing dates that did not reflect either of the other protocols. No statistically significant differences were found between these three different types of testing protocols in the analysis of student achievement gains.
LIMITATIONS

Data from three district school boards were excluded from the analysis due to missing or incomplete data. Data from the eight participating French-language boards was also excluded from the analysis as students were engaged in an alternative testing protocol rather than through the use of STAR testing.

Variables within this dataset cannot be linked to other available data sources which limits the scope of possible analyses to those available within this dataset only.

RECOMMENDATIONS AND CONSIDERATIONS FOR FUTURE RESEARCH

One of the recommendations for future data collection is to use Ontario Education Numbers (OEN) for all participating students which would be submitted directly to the research team at the Literacy and Numeracy Secretariat at the Ministry of Education. From there, all OEN’s would be replaced by unique student identification numbers which would subsequently be entered into the STAR assessment software to serve as student usernames. This would protect student confidentiality by eliminating the chance that OENs would be entered into STAR. The OENs would only be accessed in the final analysis and would provide a direct link to OnSIS data to potentially enable more robust analyses such as linking to achievement results on EQAO, large scale (national and international) assessment data, Canadian Census data, Homework Help usage, etc. Additionally, this would require much less data collection and entry at the school site or at the board level as there would be no need to record other demographic data such as gender, English Language Learner, First Nations, Metis and Inuit self-identification, IEP, report card data etc. The only data boards would be asked to collect would be the Student first names, OENs, and attendance throughout the Summer Learning Program. Student information spreadsheets could also be redesigned to be automated with drop-down features to eliminate data input errors or misinterpretations.

In addition to reaching out to students in lower socio-economic areas, district school boards should continue to promote the Summer Learning Program to a wide range of students. Targeted efforts should be made to reach out to students who may benefit from additional instructional support in literacy and numeracy, as well as culturally responsive approaches to teaching and learning and more opportunities for engaging in recreational experiences.
Site visits could also be leveraged to learn more about the different program types. The intention would not be to rank program types across program sites, but rather to further explore similarities and differences between blended program approaches that incorporate both literacy and numeracy instruction, and stand-alone programs focusing on either literacy or numeracy instruction. What can we learn about the relationship between literacy and mathematics by engaging in further qualitative research through the Summer Learning Program? What can we learn from specific strategies that are making a difference in teacher pedagogy and student achievement within the First Nations, Métis and Inuit-focused programs? How can this new learning contribute to increasing instructional effectiveness, closing gaps, and raising student achievement through the Summer Learning Program and extend beyond it into the school year?

**CONCLUSION**

The Summer Learning Program continues to help elementary students reduce summer learning loss and improve their literacy and numeracy skills. The Ministry of Education will continue to work in partnership with our university partners, participating district school boards and the Council of Ontario Directors of Education to support and monitor these efforts for achieving excellence, ensuring equity, promoting well-being, and enhancing public confidence.