RESPECTIVE SOLUTIONS GROUP

External Evaluation of Cohort 10, 21st Century Community Learning Centers (CCLC) Grant

2020-2021 School Year (Year 2 of Cohort 10 Grant, Hybrid/Virtual Format for all)

Regularly Attending (≥ 30 days) School Districts Served:

Blacklick Valley (K-6th grades)

Cambria Heights Elementary (K-5th grades)

Cambria Heights Middle School (6th-8th grades)

Jackson Elementary (K-5th grades)

Central Cambria Middle School (6th-8th grades)

Glendale Elementary (2nd grade; n = 1)

Harmony Schools (K-7th grades)

Northern Cambria Elementary (K-4th grades)

St. Michael's School (K-8th grades)

Non-regularly Attending School Districts Omitted from Year 2 Report:

Central Cambria Elementary

Portage School District

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External Evaluator

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I. Concise Overview of Cohort 10 Year 2 (2020/21) Results

- Figures 1a-1c verifies that in Year 2, no matter how one defines "improvement in math report card letter grades by half a letter grade", anywhere from 24-53% of K-5th graders and 33-45% of 6th-8th graders showed better math grades in spring than fall semester.
    - 53% of the Bottom 2/3 of K-5th grade RSG youth improved their math grades by ≥ 4% from fall to spring, according to local PA school definitions; 24% of all K-5th grade RSG youth improved their math grades by ≥ 5%, according to PDE grant target standards (see Figure 1a).
    - 45% of the Bottom 2/3 of 6th-8th grade RSG youth improved their math grades by ≥ 4% from fall to spring, according to local PA school definitions; 33% of all 6th-8th grade RSG youth improved their math grades by ≥ 5%, according to PDE grant target standards. Relative to C10 Year 1 middle school youth, *consistently triple the percentage* of Year 2 6th-8th graders were able to improve their math grades by half a letter grade regardless of how that is defined (see Figure 1b).
    - Figure 1c shows that across all K-8th graders 29-48.6% of RSG youth improved their math grades from fall to spring Year 2 no matter how one defines a half a letter grade.

Most likely Year 2 greater math report card grade improvements found relative to Year 1 can be attributed to some combination of these influences:

1. Teacher Survey results verified that the percentage of RSG youth (82%) who showed homework completion improvement across K-8th grade in Year 2 surpassed the target of 77%; this remained consistently high from Year 1, which was also at 82% (see Figure 5). However, further analysis verified that schools who assigned pass/fail grades in spring of Year 1, by Year 2, showed the lowest percentage of K-8th grade RSG youth rated by teachers as improving across all Teacher Survey items.

2. 99% of RSG parents strongly agreed/agreed that RSG met their child's specific needs in Year 2 (see Figure 6). 85% of parents reported their child improved in math skills, and 82% of parents reported their child improved in reading skills during Year 2 (see Table 8c). The most common open-ended comment parents gave (n = 16) was remarking on how grateful they were that RSG helped their child complete homework before heading home.

3. PSSA math test scores in Year 2 verified that RSG 6th-8th grade math skills were most commonly at the "Below Basic" level, suggesting math skills were in most need of improvement in Year 2 for this at-risk group (see Figure 4a). PSSA reading test scores were most commonly at higher levels overall for both K-5th and 6th-8th graders. However, even 26% of K-5th graders scored "Below Basic" on the reading test; only 6% of 6th-8th graders scored "Below Basic" on reading (see Figure 4b).

4. Saint Francis University PSYC 201-202 community engagement students provided materials for 4 RSG fun math games corresponding to PDE common core math standards (i.e., measurements and statistics standards). Each game included materials at four levels of

difficulty, allowing greater customization of tutoring practice to meet unique, current learner skill practice needs (see Executive Summary Section C and Section G for further discussion).

- Figures 2a-2c verify that the percentage of RSG youth in Year 2 showing reading report card grade improvements by half a letter grade were somewhat lower than in Year 1 (i.e., showing a 3-4% lower percentage of youth across all grade levels improving in Year 2 compared to Year 1 in reading grades, no matter how improvement was defined, see Figure 2c). Despite this, within Year 2 itself, 22-40% of RSG youth improved by half a letter grade from fall to spring semester in their reading report card grades no matter how improvement was defined (see Figure 2c).
    - Figure 2a shows that 42% of K-5th graders showed improvement in reading report card grades when only the Bottom 2/3 were analyzed and when half a letter grade improvement was defined at $\geq$ 4%. This need corresponds to the PSSA reading test score results for Year 2 (see Figure 4b), which showed that while 6th-8th graders most commonly scored at the "Proficient" level in reading (43%), the K-5th graders most commonly scored at the "Basic" level in reading (42%).

Overall, the pattern of math and reading report card grade improvements shown in Year 2, viewed in the context of the PSSA test scores, strongly supports that RSG tutoring and teaching more generally has been helping those students where they most need skill-building. Middle school math and elementary school reading report card grades showed the most improvement in Year 2, corresponding to where PSSA test scores in these subject areas suggested the most improvement was needed.

Additional results were included in this C10 Year 2 report, that broke RSG youth down into the Top 1/3 vs. Bottom 2/3 of report card grade earners (see Figures 3c-3d). Figures 3c-3d verify that consistently over time the Bottom 2/3 of C10 RSG youth most frequently show improvement from fall to spring in Year 2 by at least 1% or more, while the Top 1/3 most frequently decline by at least 1% or more. This data supports that RSG youth who most benefit from after school tutoring are those with the weakest incoming fall grades to start with.

Figures 3e-3f further compare three different types of grading system process schools from Year 1 to see how they fared in Year 2 for their report card grades. In response to Pandemic Year 1, yellow-coded schools gave out Quarter 4 grades as percentages as usually done. Peach-coded schools reported only Quarter 3 grades as percentages. Blue-coded schools reported pass-fail grades in spring of Year 1. Figures 3a-3e collectively provide evidence that school systems that used pass-fail grades in Year 1 showed the lowest improvements in report card grades in Year 2. For example, Figure 3a shows there was no significant average improvement in math report card grades from fall to spring of Year 2 overall across all schools and all grade levels. However, once the pass-fail school data was removed, there was an almost significant finding (with 94% confidence level) that fall math grade averages improved by 1% in spring of Year 2 (see Note 2, Figure 3a). It is unclear from available data if the pass-fail grading system subsequently caused worse Year 2 results due to lowered student motivation levels, or whether those school districts have a history of on-going greater amounts of at-risk youth; perhaps the pass-fail grading decision in Year 1 was a symptom of ongoing struggles rather than the root cause of new struggles in Year 2.

II. Cohort 10 RSG Executive Summary and Recommendations

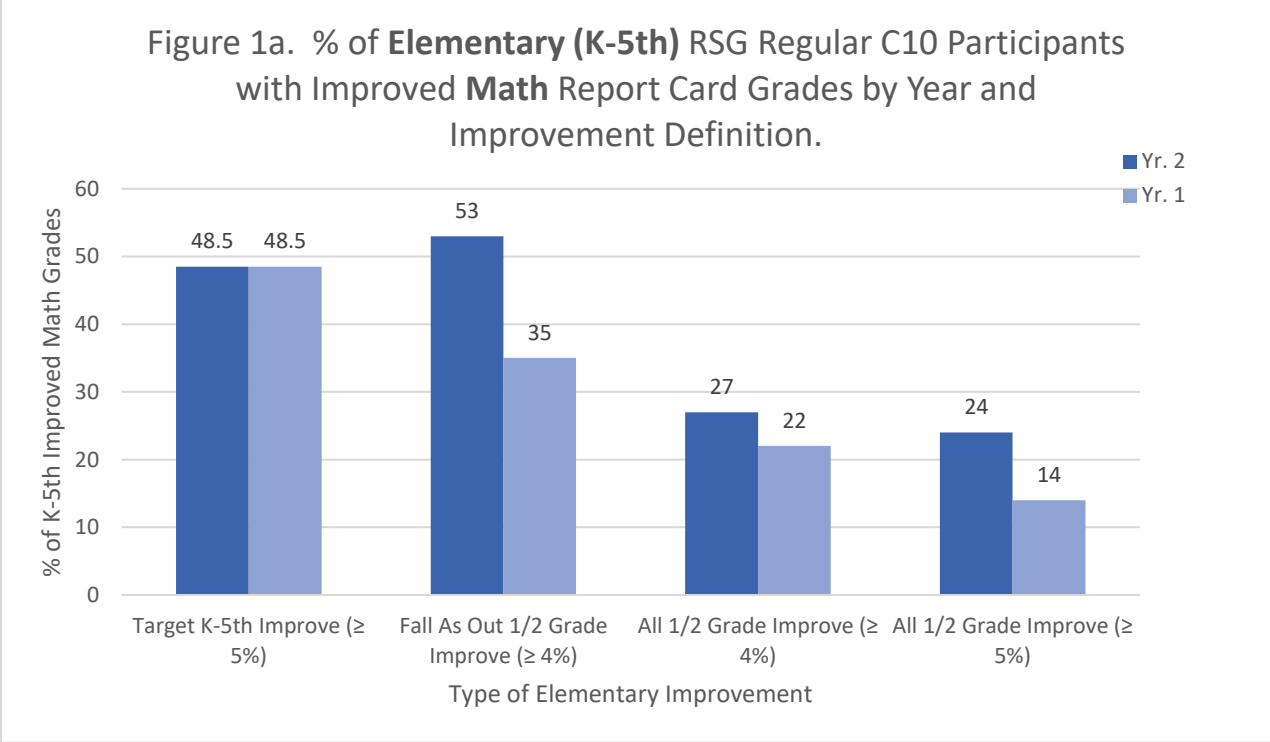
A. Summary of 21st CCLC Grant Performance Measure 1 and Recommendations

Cohort 10 (C10) Years 1-2 results describe K-8th graders and are set within the context of the COVID-19 pandemic. Year 1 results included fall report card grades occurring pre-March 2020, while spring report card grades post-March 2020 were reported as either Quarter 4 percentages like usual (yellow schools), Quarter 3 percentages only (peach schools), or as pass/fail grades with 100% of RSG youth passing math and reading (blue schools). Respective Solutions Group (RSG) was able to respond to Year 1 by transitioning to virtual after-school tutoring. Summer 2020 RSG tutoring was attended by double the typical percentage of local youth, with 35/157 (22%) of regular Year 2 summer attendees. This supports that some local families were particularly concerned in reaction to the pandemic about providing their children opportunities to "catch up" from the confusion of Year 1 spring transition to online learning.

All RSG Year 2 (2020/21) programs were offered in a hybrid format, with some in-person learning mixed with virtual learning activities throughout the year. RSG worked closely with the area school districts in Year 2 by adopting their reliance on hybrid format. The Year 2 C10 total regular attendees of 157 youth falls within normal ranges for the RSG program (i.e., 128-220 have regularly attended annually since 2014/15). Table 1a shows that while Year 1 RSG regular attendees were dominated by K-5th graders (85%), a more even spread of elementary (60%) and middle school (40%) regular attendees occurred during C10 Year 2. This fluctuation in grade level distribution is typical for RSG programs historically.

Table 2 later in the report summarizes that most Year 2 RSG activity types remained the same, and most occurred with the same frequency per week as in Year 1. The main change to Year 2 types of RSG activities was the nature of the community engagement (CE) activities with Saint Francis University students, constrained to a virtual-only format by the pandemic. Section G. of the full report outlines the four sets of "Common Core" PDE math standard learning game materials created and distributed to all RSG tutoring programs in Year 2 targeting 1st grade – 5th grade measurement and statistics standards; the main advantage over Year 1 of these Year 2 activities was that they could be used as frequently as desired by tutors to help youth with their math skills. Four difficulty levels within each of the four math games allowed tutors to customize two of the games to individual student needs and two of the games to small group learning needs. Informal feedback from tutors verified that the customizable game materials were the most useful elements. In Year 1 university students were able to visit RSG youth in person, but only for one day that year with a focus on educating youth about PA career categories rather than the Year 2 focus on math skills in an unlimited frequency, self-paced format. Regarding typical, in-house RSG activity frequency changes from Year 1 to Year 2, there was a decrease from 5 to 4 times per week for the Social Emotional Learning activities and a decrease from 3 to 2 times per week for the STEM/STEAM activities. This occurred because RSG switched from a 5-day to a 4-day week, mainly because in the past youth attendance on Fridays has been noticeably lower. The same total hours per week of tutoring were offered in Year 2 as in prior years, though, since after-school tutoring ended at 6:00 pm instead of 5:00 pm.

All specific C10 grant performance outcomes are individually listed in Tables 3-5 later in the report for Years 1-2. Partially related to the challenge of online access from home for some rural, low-income families, there were not enough regular RSG attendees from Portage Area Schools or Central Cambria Elementary - CCEL (i.e., notably Year 1 pass/fail spring schools) to include any of their individual student grades or test scores in this Year 2 report (see Tables 1a-1b for all Year 2 attendance results later in the report). Also, the transition to a 4-day tutoring week with extended hours made it more difficult to obtain willing tutoring staff from Portage and CCEL. Nevertheless, all youth from these two school districts who were interested in after-school tutoring were able to be accommodated and served in Year 2 given the hybrid format.



Figures 1a-1c in this summary show C10 RSG regular participants' improved math report card grades from fall to spring semester in Years 1-2 (see also Tables 3, 6a-6b, 6e, and 7a-7b for other math grade breakdowns). Figure 1a above shows elementary math grade improvements in blue, Figure 1b below shows middle school math grade improvements in orange, and Figure 1c combines all K-8th grade RSG participants' math grade improvements using gray bars.

Figures 2a-2c show C10 RSG regular participants' improved reading report card grades from fall to spring semester in Years 1-2 (see also Tables 3, 6c-6d, 6f, and 7a-7b for other reading grade breakdowns). Figure 2a shows elementary reading grade improvements in yellow, Figure 2b shows middle school reading grade improvements in green, and Figure 2c combines all K-8th grade RSG participants' reading improvements using gray bars.

Figure 1b. % of **Middle School(6th-8th)** RSG Regular C10 Participants with Improved **Math** Report Card Grades by Year and Improvement Definition

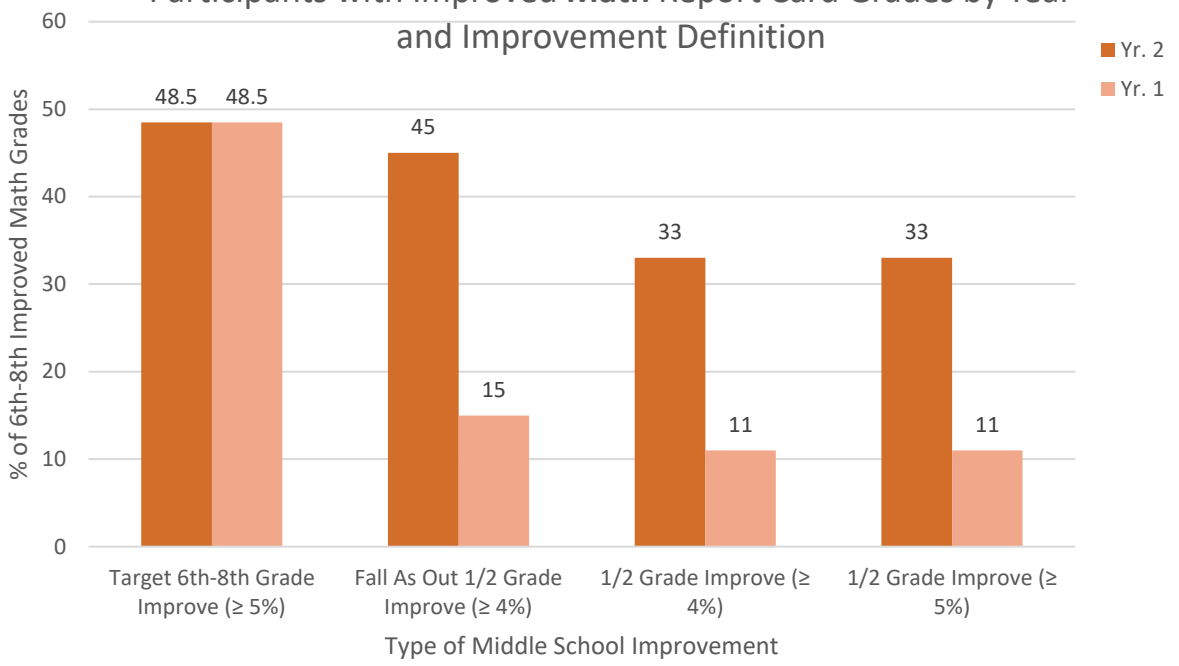
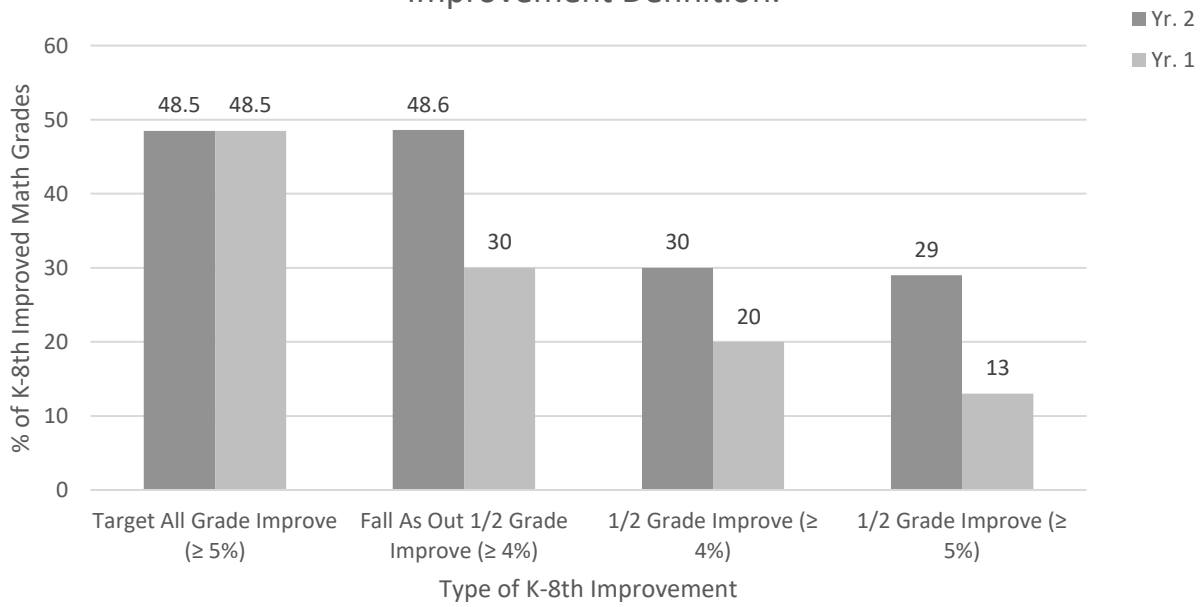


Figure 1c. % of **ALL K-8th grade** RSG Regular C10 Participants with Improved **Math** Report Card Grades by Year and Improvement Definition.



The multiple bars within each of Figures 1a-1c and 2a-2c are used to emphasize that there are a few different ways to calculate report card grade improvement, as improvement is defined as "an increase by half a letter grade". The right-most bar in each graph reflects half a letter grade improvement as any student who increased their grade from fall to spring by 5% or more, as required for grant reporting purposes. Given that all RSG school districts actually define half a letter grade improvement as increasing grades by 4% or more, the second bar from the right end in each graph is used to show the percentage of regular RSG participants who attained that more accurate definition of improvement. The second bar from the left end in each graph reflects the increasing grades by 4% or more AS WELL AS removal of students who had already achieved a high level of grade performance at the beginning of the school year (i.e., those earning a 92% or higher in the fall semester). Removal of fall A-grades was done to eliminate those who did not have much room for improvement to begin with (i.e., also defined as the top 1/3 of Quarter 1 report card grade earners). All three of these RSG regular participant percentages per graph can be compared to the grant target percentage bar of 48.5% at each graph's far left.

There was notably a higher percentage of RSG youth improvement compared to Year 1 in C10 math report card grades for both K-5th graders in Year 2 (24-53%, depending on "improved" definition, see Figure 1a) and Year 2 6th-8th graders (33-45%, see Figure 1b). Year 2 middle school RSG youth math grade improvements were particularly impressive, as they tripled no matter how improvement was defined compared to Year 1 (see Figure 1b). The bottom 2/3 of fall middle school RSG math report card grader earners almost reached the target of 48.5% improvement, since 45% of them improved by half a letter grade in Year 2! Also impressive was that elementary RSG youth in Year 2, when only the bottom 2/3 of fall K-5th grade math report card grade earners were examined, surpassed the target; 53% of elementary RSG youth improved math grades from fall to spring (see Figure 1a)! These accomplishments occurred DESPITE the pandemic-driven, hybrid format of the RSG program in Year 2, suggesting that RSG and central PA school teachers in general were able to effectively help 48.6% of K-8th graders overall improve their math skills over the academic year (see Figure 1c, where the bottom 2/3 of K-8th graders met the target of improving in math by half a letter grade).

Figures 2a-2c focus instead on C10 Year 2 reading report card grade improvements from fall to spring semester, showing a different pattern of results than the math grades. The percentage of Year 2 RSG youth who improved their reading grades was consistently somewhat lower than Year 1 improvement levels, regardless of how "improvement" was defined – with one exception. Figure 2a shows that the same percentage of bottom 2/3 of K-5th graders in Year 2 improved their reading grades as did so in Year 1 (i.e., 42% of the bottom 2/3 of Year 2 fall youth improved by half a letter grade in reading both years). Figure 2a shows that 17-42% of C10 Year 2 RSG elementary youth improved their reading report card grades by half a letter grade, depending on how "half" was defined; in Year 1 24-42% of K-5th graders improved in reading. Figure 2b shows that 27-39% of C10 Year 2 RSG middle school youth improved their reading report card grades by half a grade; in Year 1 29-50% of 6th-8th graders improved in reading. Overall then 22-40% of Year 2 K-8th graders improved their reading grades by half a letter grade, somewhat lower than the 25-44% who did so in Year 1 (see Figure 2c).

Figure 2a. % of **Elementary (K-5th)** RSG Regular C10 Participants with Improved **Reading** Report Card Grades by Year and Improvement Definition.

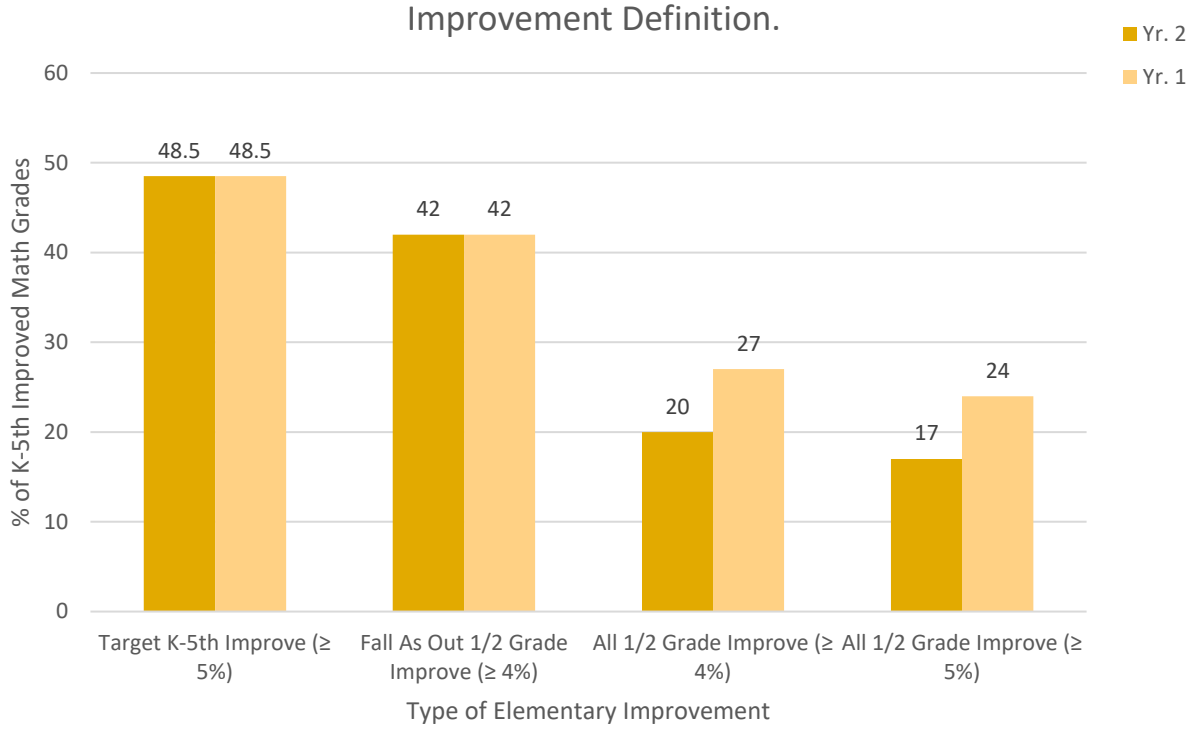
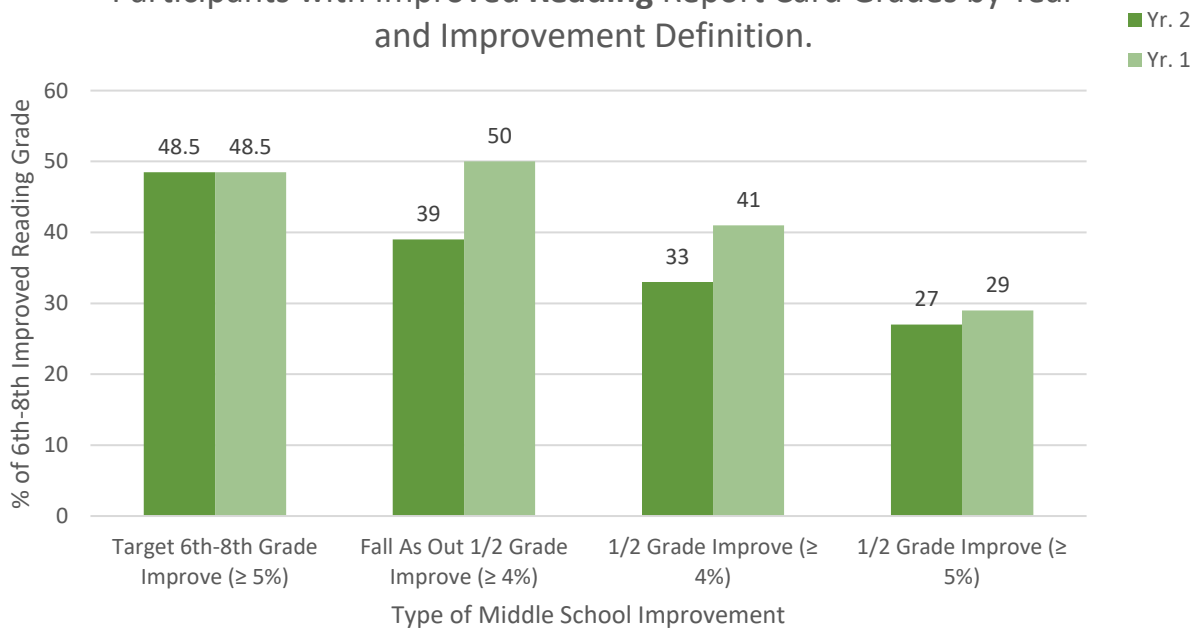
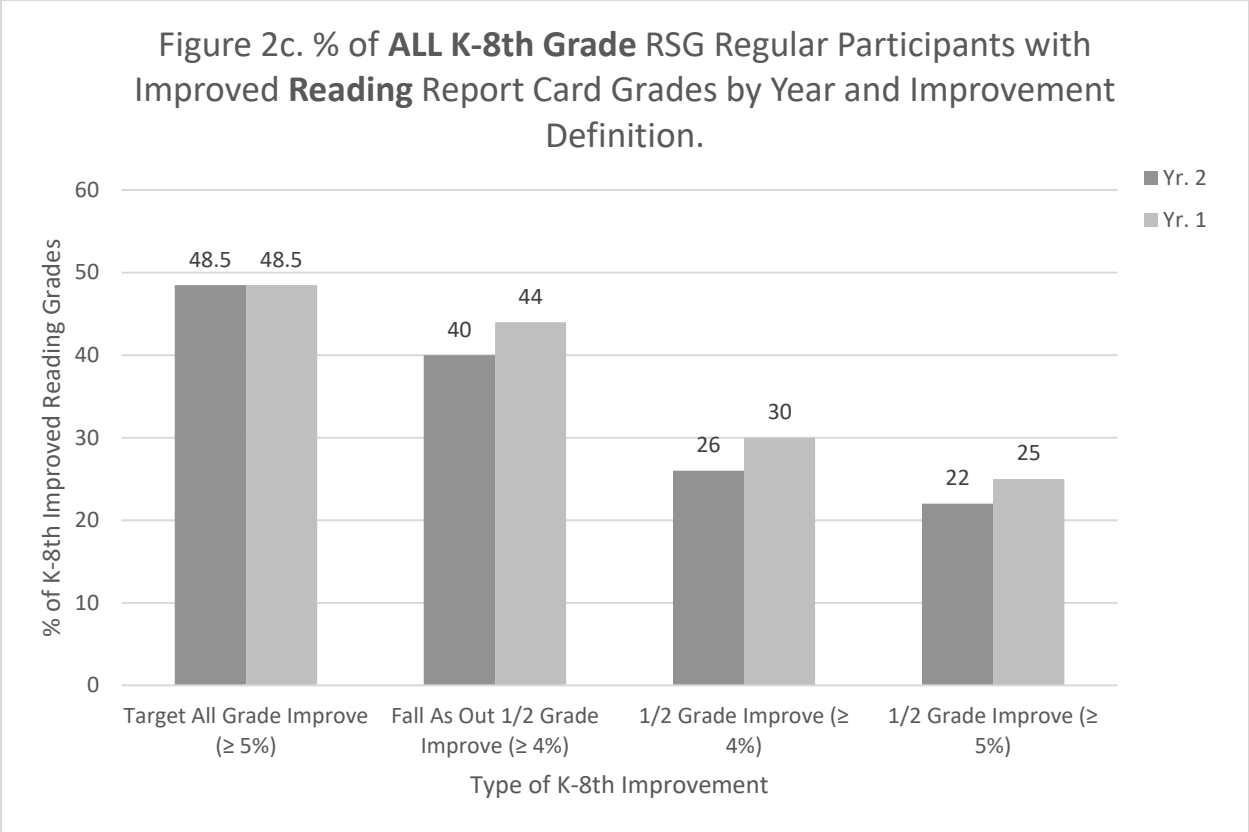


Figure 2b. % of **Middle School** (6th-8th) RSG Regular C10 Participants with Improved **Reading** Report Card Grades by Year and Improvement Definition.

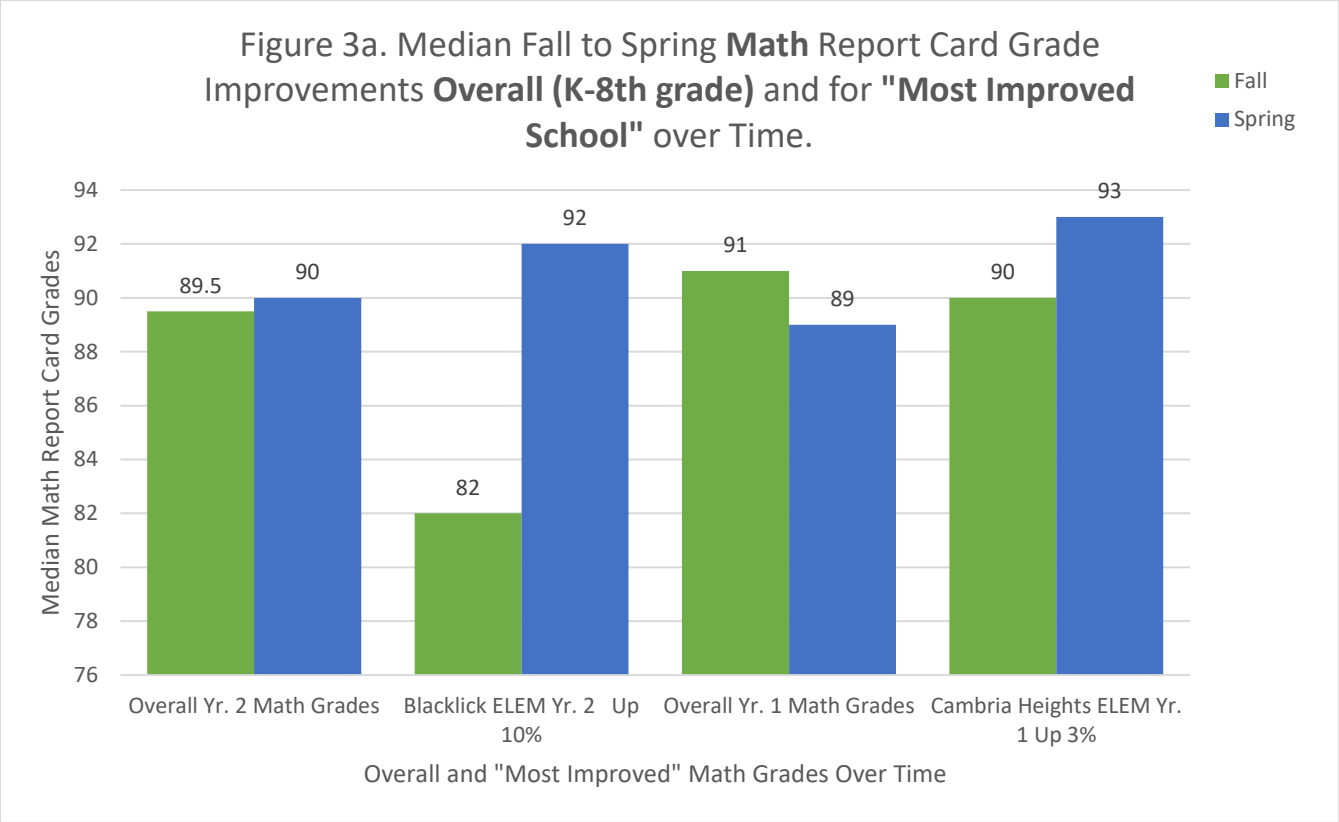




Year 2 report card grade improvement results seem to have reversed the tendency from Year 1, in which greater reading than math grade improvements were made (compare Figures 1a-1c to Figures 2a-2c. Generally, a higher percentage of math grades improved in Year 2 over Year 1 for C10 RSG youth, whereas the percentage of reading grade improvements was higher in Year 1 than Year 2.

Overall average (i.e., 50th percentile) math and reading report card grade percentage changes from fall to spring during Year 2 can be seen in Figures 3a-3b. Unlike Year 1, in Year 2 there were no significant overall average percentage changes for math or for reading grades across Cohort 10 RSG youth. One contributing factor to explain the Year 2 lack of significant overall average differences between fall and spring math and reading grades is that only Year 2 data included additional youth percentages from those who had been assigned "Pass" grades during Year 1. The fact that Year 1 reading grades significantly improved by 1% with 95% confidence, while Year 1 math grades significantly declined by 2% with 99% confidence, occurred only among the subset of RSG youth who received percentage-based spring grades that year.

Regarding math, by Year 2 possibly the hybrid format and new adoption by some schools of an organizational Learning Management System (e.g., Canvas, Blackboard, etc.) with visually-based learning tools made it easier to help K-8th grade RSG youth in math than in reading, as suggested by comparing Figures 1c to 2c. Additionally, Year 2 teachers and tutors may have tried to compensate for Year 1 math spring declines by paying extra attention to math skill practice in Year 2. Figure 3a overall verifies that on average Year 2 RSG youth math grades

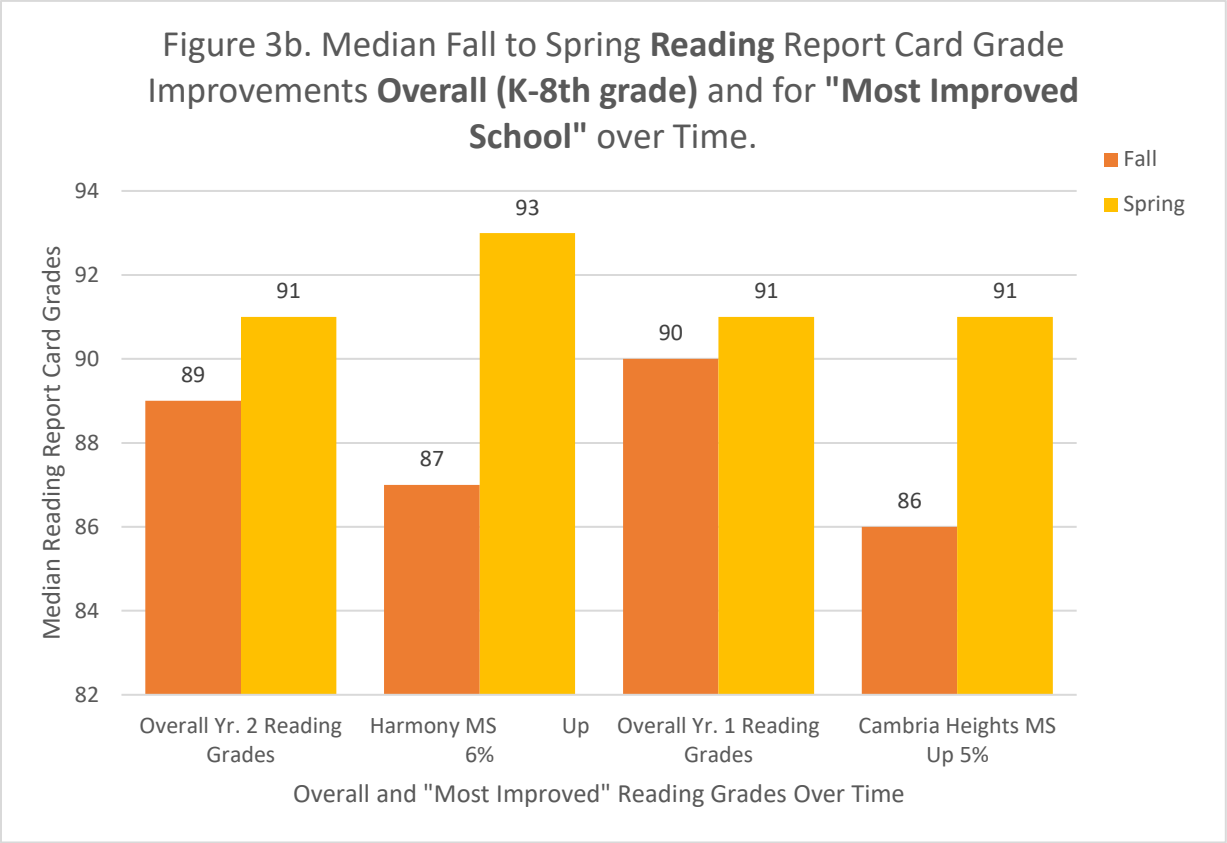


Note 1. Table 7a later in the report shows a slight, non-significant overall average improved math report card grade in Year 2 from 89.5% to 90% across all school districts. This is better than the Year 1 math grade overall results, when we were 99% confident that math grades on average significantly *declined* by 2% in Year 1 overall, once pass/fail schools were removed from fall grades. More Year 2 individual schools also showed improved average math report card grades, with Blacklick Elementary being most improved in Year 2 by on average going up by 10% (see above and also Table 6a)! Also in Year 2 Harmony Middle School improved their average math grade from 82% to 90% (up 8%), Jackson Elementary improved their average math grade from 85% to 88% (up 3%), Cambria Heights Middle School improved from 93% to 96% (up 3%), and Glendale Elementary improved from 97% to 98% (up 1%). The remaining Year 2 school districts had fall and spring averages that either stayed the same or declined over time.

Note 2. Removal of Year 1 blue schools that assigned pass/fail spring grades from Year 2 Wilcoxon rank sign test statistical analysis of fall (*Mdn* = 92.00; SE_k = .25) vs. spring (*Mdn* = 93.00; SE_k = .25) grades revealed a near-significant trend that math report card grades in Year 2 actually almost significantly improved on average for yellow and peach schools combined, Z = -1.91, p = .056.

remained consistent from fall to spring, which is an improvement over the significant Year 1 math grade decline by 2%. In fact, Note 2 of Figure 3a explains that once Year 2 overall math grade data was re-analyzed AFTER removal of the pass/fail Year 1 blue schools, Year 2 did show an almost significant improvement (i.e., 94% confidence) in average math grades from fall to spring by 1%. This supports the interpretation that Year 1 use of pass/fail spring semester grades by some school districts may have lowered the motivation of students, teachers, and tutors alike in Year 2 to work on improving RSG K-8th grade math skills! It is also possible that Year 1 pass/fail grade school districts were less equipped to teach math effectively to begin with, leading them to adopt that grading system in response to the pandemic. Whatever the actual cause, results suggest that blue-coded schools from Year 1 that used the pass/fail spring semester

grading system (i.e., Central Cambria, Jackson, Portage, and St. Michael's) may include particularly at-risk students in math, who require innovative RSG program efforts in the future. Table 7b, Note 2, in the later report verifies this problem applies to both the Top 1/3 (and Bottom 2/3 of RSG youth in blue-coded school districts with Year 1 pass/fail spring grades relative to peach and yellow schools. More specifically, 14-40% LESS of blue-school Top 1/3 of RSG youth improved in math Year 2 compared to yellow/peach schools, while 29-31% LESS of blue-school Bottom 2/3 improved in Year 2 math compared to yellow/peach schools. Figure 3a also shows that the "most improved" school for math report card grades in Year 2 was Blacklick Elementary, which went from an 82% fall average grade to a 92% spring average grade. This 10% improvement at Blacklick was much higher than the 3% "most improved" school from Year 1 in math report card grades.



Note 1. Table 7a later in the report shows no significant difference in Year 2 reading report card grade improvements overall on average, despite being 95% confident in average reading grade improvements in Year 1. Even though Year 2 average overall reading grades improve by 2%, whereas they only improved by 1% in Year 1, there was much more variability in fall vs. spring reading report card grades during Year 2. The "most improved" Year 2 school district for reading grades was Harmony MS (up by 6%). Jackson Elementary also improved reading grades from 90% to 93% (up 3%), Blacklick Valley MS also improved reading from 88% to 90% (up 2%), and Northern Cambria Elementary increased from 89% to 90% (up 1%). All other schools' reading grades stayed the same or declined in Year 2 from fall to spring.

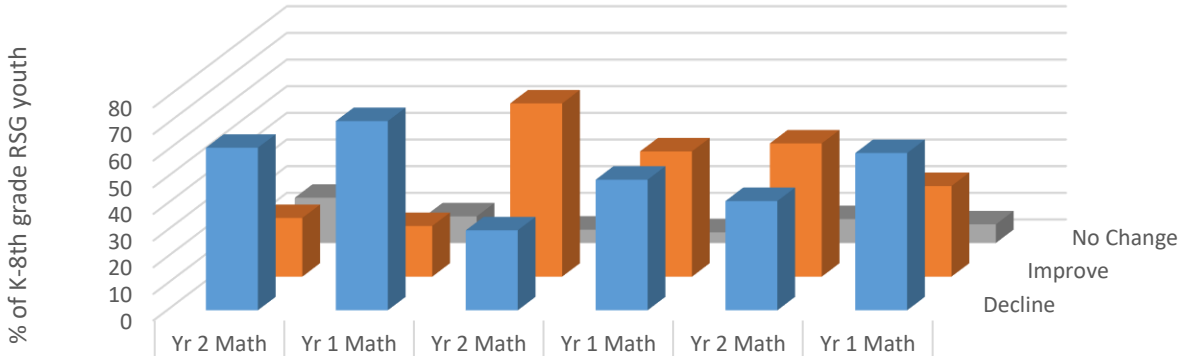
Note 2. Removal of Year 1 blue schools that assigned pass/fail spring grades from Year 2 Wilcoxon rank sign test statistical analysis of fall (*Mdn* = 91.00; SE_k = .25) vs. spring (*Mdn* = 91.00; SE_k = .25) grades revealed no significant average change in reading report card grades in Year 2 for yellow and peach schools combined, Z = -.47, p = .637.

Possibly overall average K-8th grade reading grades significantly improved in Year 1 only because the difficulty of suddenly transitioning to online learning, in some cases without school use of an online Learning Management System, temporarily forced RSG youth (i.e., those who were still earning percentage-based grades) to improve their reading more than usual simply to figure out how to locate and complete their online work. Figure 3b at first glance seems to suggest there was a greater reading improvement in Year 2 (up 2% from fall to spring) than in Year 1 (up 1% fall to spring only). However, broader ranges of reading grade changes occurred in Year 2 than in Year 1, making it more difficult to achieve statistically significant results in Year 2. Figure 3b, Note 2, reflects that removal of the Year 1 pass/fail blue-coded schools when comparing Year 2 reading grade changes from fall to spring did not seem to reveal any new information, though. Therefore, no conclusions are warranted linking the pass/fail grading system used by some Year 1 schools to changes in reading skills observed during Year 2. The "most improved" school for reading grades in Year 2 was Harmony Middle School, which improved by 6% on average from fall to spring (see Figure 3b).

The Year 1 grant report outlined various possible U.S. nation-wide projections of the degree to which the percentage of academic year learning gains in math and reading would be reduced over Summer 2020 compared to typical summers (Kuhfeld et al., 2020)[1]. Although changes from Year 1 to 2 in RSG youth fall to spring semester grades cannot be used as direct evidence supporting any one of these projections over the others, one of their projections (i.e., the COVID-slide projection – based on Hurricane Katrina data) was the possibility to assume school closures of Spring 2020 were equivalent to starting summer break in March, approximating it by typical rates of summer learning loss between grade-level promotions. "Under the COVID Slide projections, students were predicted to end the abbreviated 2019-2020 school year with roughly 63-68% of the learning gains in reading but only 37-50% of the average gains in mathematics compared with those of a normal school year" (Kuhfeld et al., p. 556). Kuhfeld et al. even extended the COVID Slide projections to the beginning of C10 RSG program Year 2 when they argue, "Under our projections, returning students are expected to start fall 2020 with approximately 63 to 68% of the learning gains in reading and 37 to 50% of the learning gains in mathematics relative to a typical school year. If this projection accurately describes the overall pattern of C10 Year 2 RSG data shown in Figures 1a-1c, 2a-2c, and 3a-3b, it would suggest that more dramatic improvements in Year 2 math skills over Year 1 than those found with reading may have been partially driven by the nation-wide need for American youth generally to show greater improvement in math than in reading skills. As teachers and tutors interacted with RSG youth online during Year 2, they may have noticed and responded to evidence that K-8th graders needed special attention aimed at improving their math skills. Alternatively, the C10 Year 2 report card grades (see Figures 1a-1c; 2a-2c) may simply contradict Kuhfeld et al.'s projections. In other words, it is possible that a higher percentage of Fall 2020 learning gains from the previous year in math actually occurred, opposite to the COVID slide projection. Figures 3a-3b show fairly equivalent overall average math and reading fall semester report card grades, which likewise do not seem to reflect Kuhfeld et al.'s predicted, pandemic-spurred reduction in Year 2 learning gains being strongest for math over reading.

[1]Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the Potential Impact of COVID-19 School Closures on Academic Achievement. *Educational Researcher*, *49* (8), 549–565. DOI: 10.3102/0013189X2096591

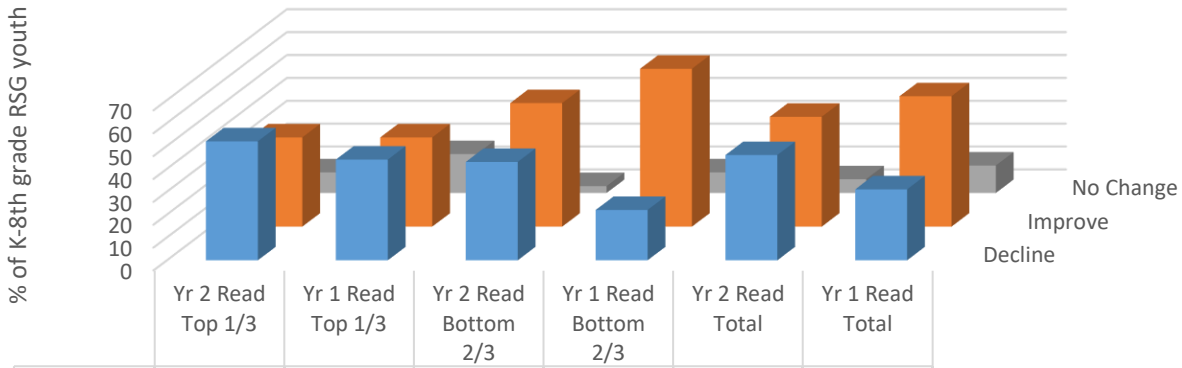
Figure 3c. Comparison of % of **Top 1/3** vs. **Bottom 2/3** of C10 Regular RSG K-8th graders whose **Math Report Card Grades** Changed by 1% or more.



	Yr 2 Math Top 1/3	Yr 1 Math Top 1/3	Yr 2 Math Bottom 2/3	Yr 1 Math Bottom 2/3	Yr 2 Math Total	Yr 1 Math Total
Decline	61	71	30	49	41	59
Improve	22	19	65	47	50	34
No Change	17	10	5	4	9	7

% of Math Report Card Grades Changing by ≥ 1% Over Time for Top 1/3 vs. Bottom 2/3 of Fall Grades

Figure 3d. Comparison of % of **Top 1/3 vs. Bottom 2/3** of C10 Regular RSG K-8th graders whose **Reading Report Card Grades** changed by 1% or more.



	Yr 2 Read Top 1/3	Yr 1 Read Top 1/3	Yr 2 Read Bottom 2/3	Yr 1 Read Bottom 2/3	Yr 2 Read Total	Yr 1 Read Total
Decline	52	44	43	22	46	31
Improve	39	39	54	69	48	57
No Change	9	17	3	9	6	12

% of Reading Report Card Grades Changing by ≥ 1% over Time for Top 1/3 vs. Bottom 2/3 of Fall Grades

Note 1 for Figures 3c-3d. The Top 1/3 of RSG youth within any C10 year were identified as those who in the fall semester earned an A grade in any subject area of 92% or higher. The bottom 2/3 within any year all earned 91% or less in the fall semester that year. Improvement was counted when RSG youth improved from fall to spring by 1% or more, whereas decline meant their grades dropped by 1% or more. The small percentage showing no change each year was added so that each column of numbers below Figures 3c and 3d summed to 100%.

Figures 3c-3d also provide interesting data from a different perspective, by breaking down report card grade changes by ≥ 1% in either direction from fall to spring into the Top 1/3 vs. Bottom 2/3 of RSG youth; the Top 1/3 were identified based on their incoming Quarter 1 fall grades of 92% or higher. Table 7b later in the report mirrors this data also, comparing Years 1-2. The most interesting pattern of results shown in Figures 3c-3d is that, for both math and reading report card grades respectively, a higher percentage of the *Bottom 2/3* of RSG youth *consistently improved* rather than declined in math (47-65% improved) and reading (54-69% improved) grades during Years 1-2. However, the *Top 1/3* of RSG youth *consistently were more likely to show declines* than improvements in grades from fall to spring, whether in math (61-71% declined) or reading (44-52% declined) report card grades over Years 1 and 2.

This pattern of results may indicate that the weaker students (i.e., Bottom 2/3 of a given subject area based on Quarter 1 grades) were better able to maintain motivation on self-improved skills virtually than they usually would be if doing typical in-person only learning. When students who struggle the most are not constantly put in a position to compare their own efforts to those of their peers, as may happen more easily during in-person learning, there may be self-esteem benefits that help keep them motivated to continue to improve over the academic year. Alternatively, the Bottom 2/3 of RSG youth may be forced to rely more on themselves than usual for understanding class material, as they are less often able to conveniently rely on in-person stronger peers for help. Working from a distance may even especially help the Bottom 2/3 avoid distractions that so easily deter them in in-person learning contexts. Finally, another possibility is that the constraints of using hybrid format for schooling and after school tutoring may encourage teachers and tutors to focus even more effort than usual on addressing the needs of the weaker learners.

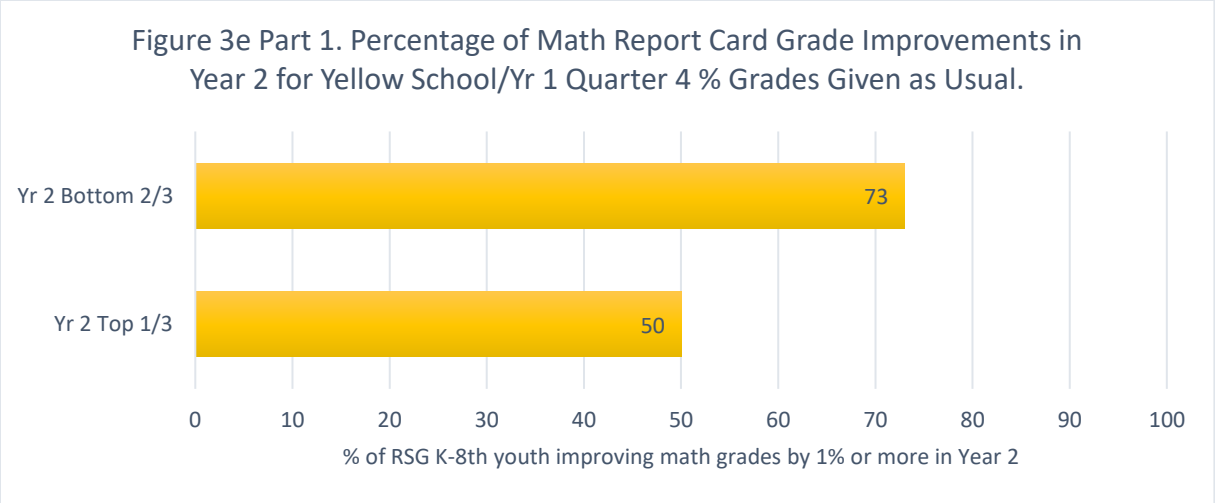
The Top 1/3 may instead consistently decline from fall to spring, partly because they have so much less room to improve by already starting fall with A-grades. Also, if teachers and tutors were forced to focus greater attention on the students who struggle the most with the hybrid format, this could unintentionally disadvantage the brighter students. Alternatively, it is possible that the Top 1/3 of RSG youth were not actually "the smartest", but were instead the "hardest workers". Perhaps the Top 1/3 include many youth who particularly excelled at holding onto the learning gains from the previous year, demonstrated in the Quarter 1 schools' heavier emphasis on reviewing previous year's skills. Despite maintaining previous learning gains the best, the Top 1/3 may actually consist of a good percentage of youth who struggle the most to transition to new, higher-level skills. Whatever the reason, the data in Figures 3c-3d appears to contradict

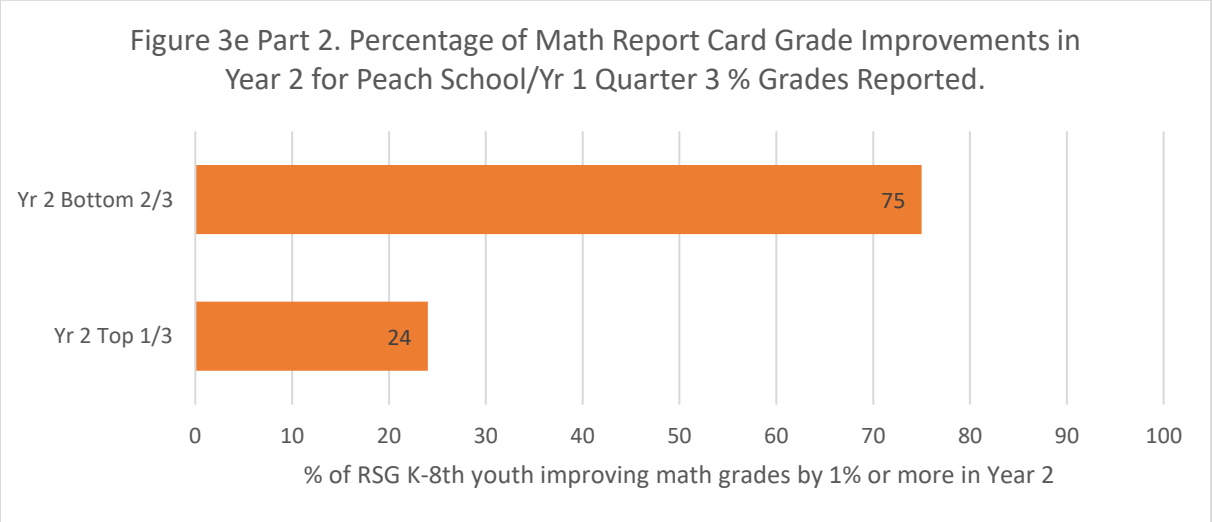
Kuhfeld et al.'s (2020) prediction that the Top 1/3 of American youth nation-wide would especially improve in their reading skills during the 2020/21 academic year.

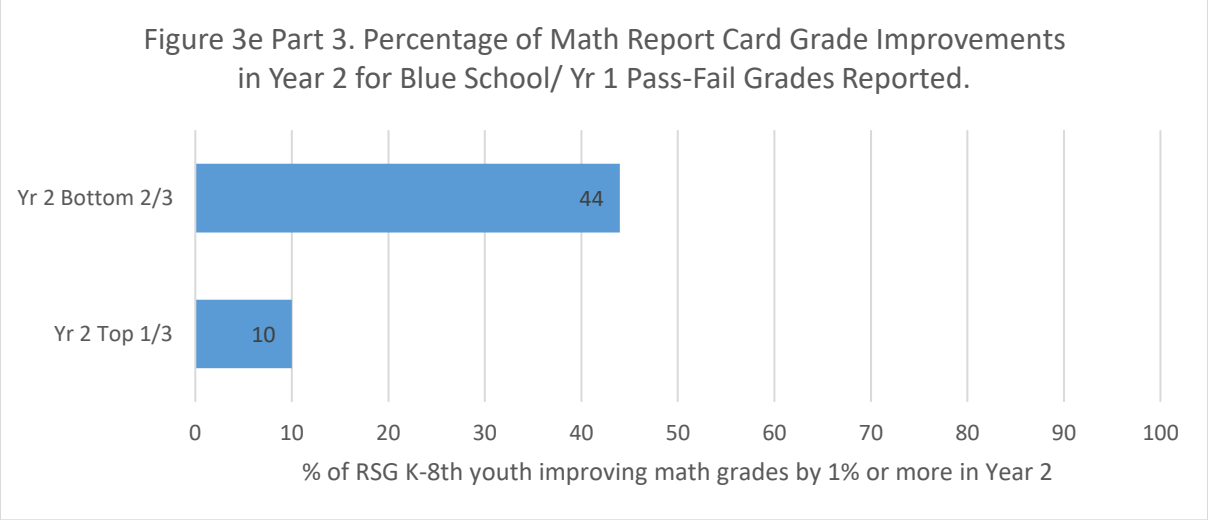
Partial support for Kuhfeld et al.'s prediction on the Top 1/3, however, is shown by Year 1 pass/fail blue schools when examined alone; Figures 3f, Parts 1-3 below, outlines how 78% of Top 1/3 blue school students improved their reading grades in Year 2 – this far surpassed yellow (0% of Top 1/3) and peach schools (30% of Top 1/3). This may suggest that the Top 1/3 of blue school youth in particular compensated for the lowered grading expectations in their Year 1 pass/fail school districts by increasing their own individual reading practice time aimed at self-selected content of interest. This pass/fail school boost for the Top 1/3 did NOT extend to math grade improvements, though, as they were the lowest percentage (blue Top 1/3 at 10% only compared to 50% yellow and 24% peach Top 1/3 youth improvement) of all three Year 1 grading type schools to show math grade improvements (see Figures 3e, Parts 1-3 below). The finding that pass/fail blue schools also showed the lowest percentage of Year 2 improvements for the Bottom 2/3 of RSG youth (at 44%) compared to yellow (73%) and peach (75%) schools still requiring percentage grades by end of Year 1 suggests that overall use of the pass/fail grading system in response to the pandemic may have been the least effective choice of Year 1 grading systems. Use of pass/fail Year 1 grading may have given permission for youth at all levels to "disengage" from school-provided learning the most, especially related to math skills.

Alternatively, pass-fail school districts may simply reflect sociocultural environments where the RSG youth have consistently been more "disengaged" consistently for some time; perhaps the use of pass/fail grading by these districts is simply a symptom of their extra ongoing challenges rather than the cause of any new results. Regardless of the accuracy of Kuhfeld et al.'s multiple, nation-wide projection models, their analysis based on data from 5 million 3rd-8th graders provides the much-needed benchmark context to lay the foundation for fully grasping why C10 Years 1-2 results are likely to be lower than future C10 grant year reports.

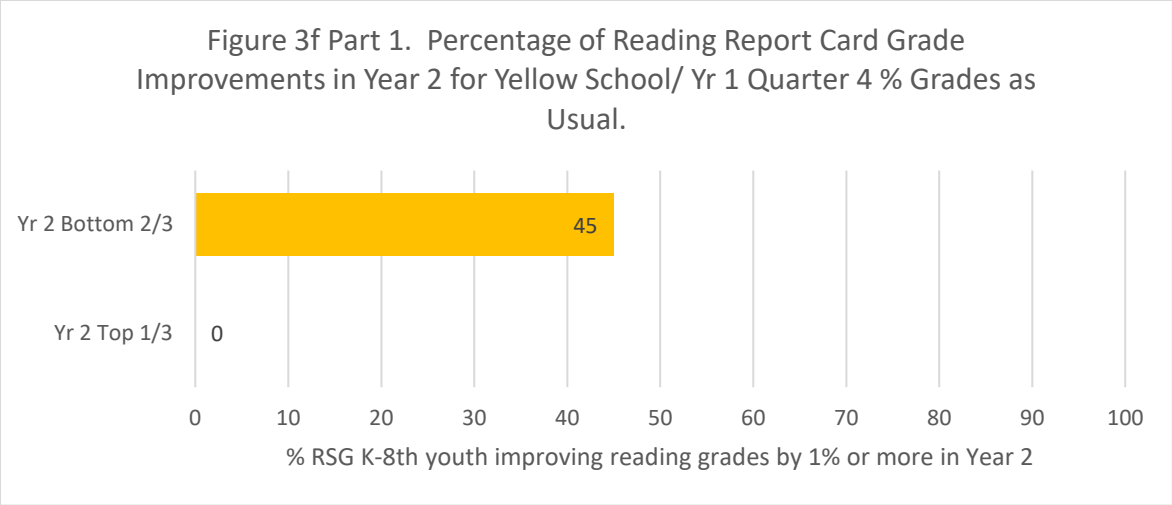
Overall Figures 3c-3d show a puzzling reversal of report card grade changes by ≥ 1% in either direction when we compare Years 1-2. In Year 1 the majority of RSG K-8th graders overall declined in math (59%) while at the same time the majority improved in reading (57%). This reversed in Year 2, as the majority of RSG K-8th graders overall improved in math (50%) while at the same time the majority declined in reading (48%). Examination of the math and reading PSSA test scores from Year 2 in the next section of this summary (see Figures 4a-4b) may especially shed light on this reversal. Figure 4a verifies that RSG youth are particularly weak in their math skills overall than in reading, so it makes sense that much more effort would need to be put forth by teachers, tutors, and students to work on math skills in Year 2. However, since there were no PSSA test scores available in Year 1 with the pandemic starting, there is no way to know if math skills were clearly much lower than reading in Year 1 also.

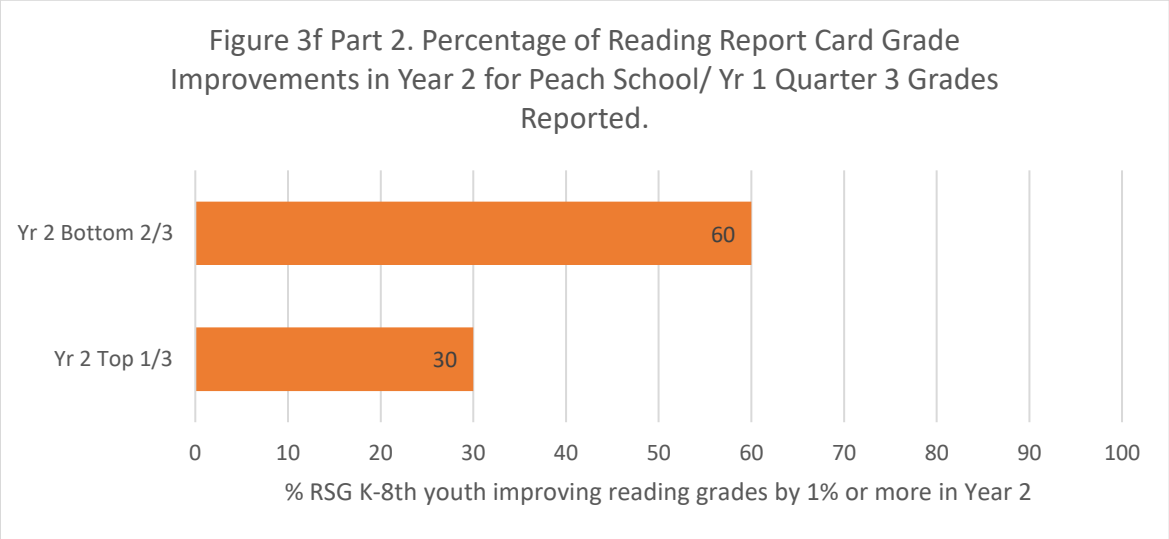


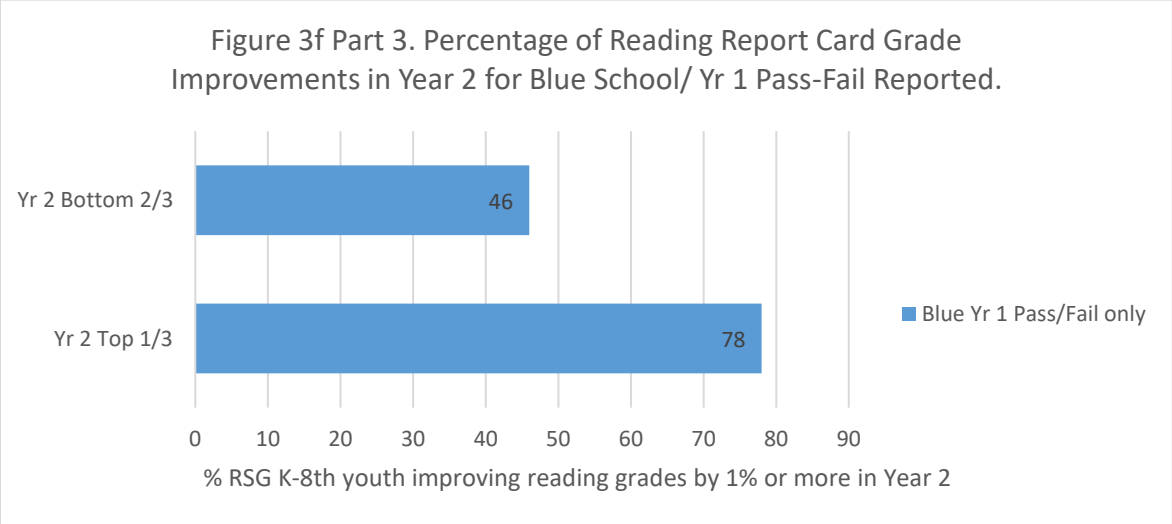




Note 1. Figures 3e Parts 1-3 are based on different total frequency of RSG youth. In Year 2 there were 13 yellow school youth, 82 peach school youth, and 35 blue school youth (see also Tables 6a-6b for school-specific details and Table 7b, Note 2 for detailed frequency counts).







Note 1. Figures 3f Parts 1-3 are based on different total frequency of RSG youth. In Year 2 there were 13 yellow school youth, 80 peach school youth, and 35 blue school youth (see also Tables 6c-6d for school-specific details and Table 7b, Note 3 for detailed total frequency counts).

Year 2 PSSA math and reading test score results

In Year 1 the sudden pandemic-related transition to online learning meant that no PSSA test results were available to report. By Year 2 many students were once again administered the PSSA test, however some school districts did not provide test scores for analysis as done in normal years (i.e., no test scores were provided by Blacklick Valley Elementary, Jackson Elementary, or St. Michael's Elementary). Overall, then, grant-related improvements in elementary reading and middle school math PSSA scores will not be available for reporting until C10 Year 3 next year. Therefore, the C10 Year 2 PSSA data shown below in Figures 4a-4b reflects simply the percentage of RSG youth who earned Below Basic, Basic, Proficient, and Advanced test scores in Year 2; PSSA improvement in scores will not be available until C10 Year 3 next year (see also Table 3 last few rows).

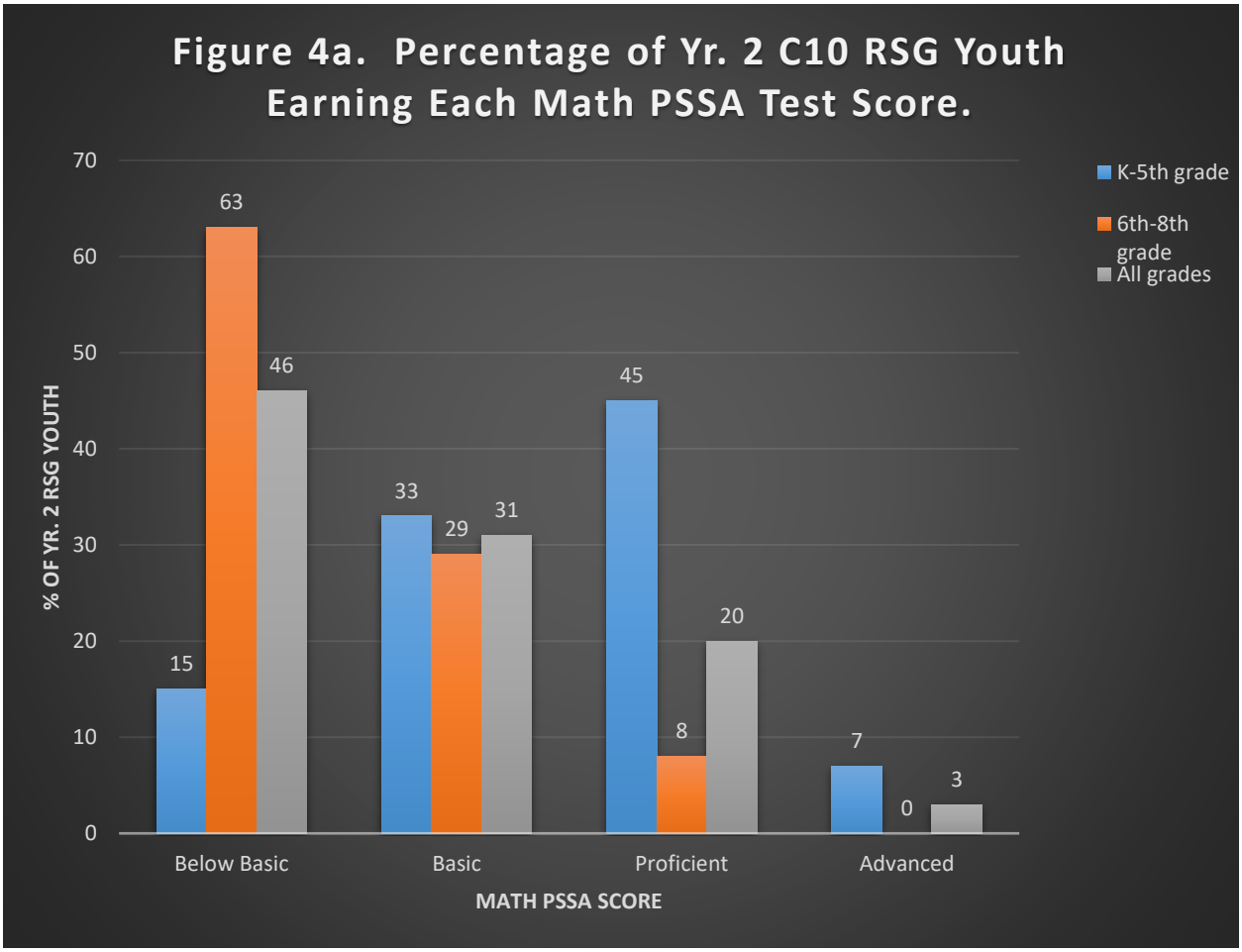
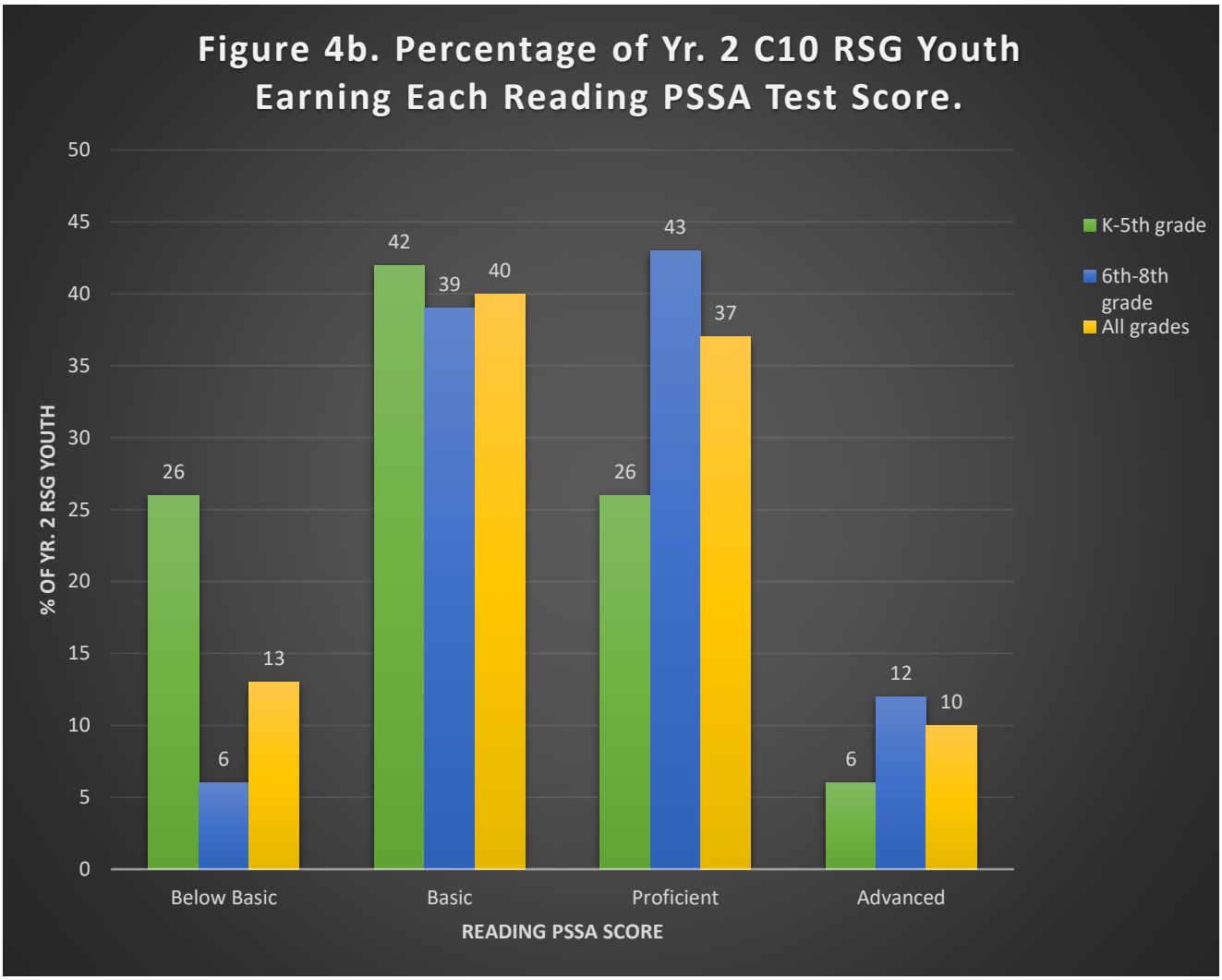


Figure 4a shows the percentage of RSG youth who earned each possible Math PSSA test score in Year 2. Middle school youth (63%) most commonly scored at "Below Basic" in math on the PSSA in Year 2, while elementary youth (45%) most commonly scored at "Proficient" in math on the PSSA test in Year 2. Table 3 in the full report includes the full set of total frequency counts and percentages for all math PSSA scores.

Figure 4a PSSA math scores may at first glance suggest that by middle school grades, the only youth who still attend after-school tutoring are the smaller percentage who struggled the most also when they were in K-5th grades among several other youth. This interpretation is contradicted by the finding, however, that out of all Year 2 math PSSA test scores reported, only 27/78 (35%) were from RSG youth in K-5th grades. This lower total frequency for K-5th graders is related in part to the lack of PSSA data reported by three Year 2 elementary schools. Nevertheless, out of the 65% of RSG youth providing all PSSA math test scores, who were in 6th-8th grade to begin with, 63% of them (32/51) scored "Below Basic" in math. This supports the interpretation that Year 2 C10 RSG youth in 6th-8th grade were particularly at-risk as having lower than desirable math skills relative to their Pennsylvania peers in general. Given the dramatic percentage of Year 2 C10 RSG middle school youth who improved their math report card grades by half a letter grade or better (see Figure 1b), the data from Figure 4a and Figure 1b combined suggests that the RSG after-school tutoring program did an excellent job at helping their particularly "at-risk" middle school youth improve their math skills in Year 2!

Figure 4b shows the percentage of RSG youth who earned each Reading PSSA score in Year 2. Similar to the math test scores, the reading PSSA test scores reflect more middle school youth (n = 51) than elementary youth scores (n = 31). However, the pattern of most common PSSA reading scores earned is notably very different than the math test pattern. For reading PSSA test scores, most commonly the 6th-8th grade RSG youth scored "Proficient" (43%), closely followed by "Basic" (39%). However, K-5th grade RSG youth scored most commonly at "Basic" (42%), with much fewer scoring at "Proficient" (26%). Overall then Year 2 C10 RSG youth show different patterns for being "at-risk" with math vs. reading skill areas relative to their Pennsylvania peers generally. The majority of RSG middle school youth in 2020/2021 are most likely at risk for undesirably low math skills, while RSG elementary youth are more likely to show weaker reading skills on the PSSA tests compared to RSG 6th-8th graders. However, even the K-5th grade RSG youth are scoring adequately in reading since most commonly they are at the Basic level. Of most concern for reading, though, is that 26% of RSG K-5th graders are scoring "Below Basic", whereas only 6% of RSG 6th-8th graders score at "Below Basic".

Together Figures 4a-4b show that across ALL grade levels K-8th, almost half of RSG youth (46%) scored at "Below Basic" on the PSSA math test, whereas 13% across all grades scored "Below Basic" on the PSSA reading test. The PSSA data for Year 2 verifies that a greater percentage of youth are showing "at-risk" math than reading skills, which likely led RSG tutors in Year 2 across school districts to devote extra attention to helping area youth improve their math skills the most (see Figures 1a-1c). While RSG youth in Year 2 were helped to improve their math report card grades much more so than in Year 1, this may help explain why reading report card grades most commonly declined in Year 2 (see Figures 2a-2c; Figures 3c-3d).



One more set of results is worth summarizing in this section related to the PSSA test scores for RSG youth in Year 2. It is common practice with standardized testing to provide proof of test score validity (i.e., accuracy) by correlating the test scores with report card grades. The idea is that if the PSSA math test is an effective measure of math skills, then PSSA math test scores should positively correlate more strongly with math report card grades than reading grades. Likewise, if the PSSA reading test is an effective measure of reading skills, then PSSA reading test scores should positively correlate more strongly with reading report card grades than math grades. So the higher RSG youth score on any specific PSSA subject area test, the higher their report card grades should be for that same subject area (as opposed to the other subject area).

When I used Spearman's rho correlations to relate the Year 2 spring report card grades with the Year 2 PSSA test scores provided for C10 RSG youth, I discovered the following surprising relationships:

Overall grades K-8th:

math PSSA – math spring grades r_s (73) = +.32 at 99% confidence
math PSSA – reading spring grades r_s (71) = +.43 at 99% confidence
reading PSSA – reading spring grades r_s (75) = +.29 at 95% confidence
reading PSSA – math spring grades r_s (77) = +.36 at 99% confidence

After double-checking that I had not mis-labeled or mis-read the data from the original data file sent to me by RSG for analysis, I was surprised to find that knowing RSG youth math PSSA test scores is a stronger predictor of their *reading* (more so than math) spring report card grades. Likewise, knowing the RSG youth reading PSSA test scores is a stronger predictor of their *math* (more so than reading) spring report card grades. While all correlations above support generally that RSG youth who score higher on the PSSA test also score higher report card grades in spring semester, it is unclear why the subject area of the PSSA test does not match up best with the subject area of the spring report card grades as one might expect. For example, one would expect the strongest correlations between PSSA reading test and spring reading report card grades. One would also expect the strongest correlations between PSSA math test and spring math report card grades.

This pattern of correlations was very similar when the data was further broken down by K-5th graders vs. 6th-8th graders; if anything, the unexpected "reversal" in highest correlations strengthened even more for middle school RSG youth alone.

Middle school 6th-8th grade only:

math PSSA – math spring grades r_s (51) = +.45 at 99% confidence
math PSSA – reading spring grades r_s (51) = +.55 at 99% confidence
reading PSSA – reading spring grades r_s (51) = +.38 at 99% confidence
reading PSSA – math spring grades r_s (51) = +.42 at 99% confidence

Since these correlations are based on at most around 70 RSG youth, aside from excluding data from three schools who did not provide Year 2 PSSA test scores, it would not be appropriate to critique the validity of the PSSA math and reading tests. The main value in showing these correlations, however, is to emphasize how intertwined math and reading skills really are. Across all grades K-8th, the Year 2 math PSSA test scores and the reading PSSA test scores showed a positive correlation of r_s (76) = +.24 with 95% confidence. This means that the better RSG youth in all grades did on the math PSSA test, the better they did on the reading PSSA test also. Likewise, the Year 2 math and reading spring report card grades showed a very strong positive relationship of r_s (128) = +.73 with 99% confidence. One final issue to consider, then, is whether greater efforts at *integrating* math and reading homework help may be of particular benefit to RSG youth. Perhaps more attention could be given to helping youth practice math word problems, for example, since they simultaneously require youth to read and do math for the same set of problems.

C10 Year 2 Recommendations for Report Card Grades and PSSA Scores

Recommendation 1a: An important Cohort 10 finding was that 14-40% LESS of blue-school (i.e., pass-fail grades used in Year 1) Top 1/3 of RSG youth improved in math Year 2 compared to yellow/peach schools, while 29-31% LESS of blue-school Bottom 2/3 improved in Year 2 math compared to yellow/peach schools (see Figures 3c-3d, Note 2). Also, Figure 3a, Note 2 above highlights that Year 2 average math report card grades only almost significantly improved from fall to spring overall upon removal of the blue schools' data from analysis. This supports that Year 1 pass/fail grade school districts, including CCEL, CCMS, Jackson Elementary, Portage, and St. Michael's, may serve K-8th graders who are especially at-risk in their math skills. This is true whether the RSG youth are in Top 1/3 or Bottom 2/3 of their peers regarding math skills. Overall, RSG may want to place extra attention on addressing the unique needs of the at-risk youth math skills in these school districts.

Recommendation 1b: It may also be worthwhile to further study why blue-coded schools (i.e., those using pass/fail grading systems in spring Year 1) show evidence of having the most at-risk RSG youth (see Tables 6a-6d and Table 7b, Note 2 later this report). Since evidence historically from Central Cambria Elementary + Middle Schools and Jackson Elementary suggests that pre-pandemic it was most common for all these schools to show improved average math and reading report card grades from fall to spring, this may point to the C10 blue school use of the pass/fail grading system in Year 1 as being an important disincentive to learn and improve even in Year 2. Alternatively, these school districts may be especially likely to attract families with at-risk learners to begin with due to the well-developed special education programs offered by the Central Cambria School district; this may actually explain why these schools even chose the pass/fail grading system in initial response to the pandemic. Portage and St. Michael's, also Year 1 pass/fail schools, are too new for historical insights here, as they only recently began to participate in RSG programs.

Recommendation 2: Assess whether online format tutoring activities are better suited for improving math than for reading skills, and explore new ways that online tutoring can be enhanced to more effectively target reading skills. Perhaps future SFU virtual learning games created for RSG could include an expanded role by targeting more reading skills to correspond to the existing math skills required (e.g., increased use of word problems for solving math). Alternatively, when in-person R.E.D Day visits to area RSG programs are once again allowed, perhaps these visits can be used by the university students to introduce the fun learning games designed to improve both math and reading skills.

Recommendation 3: Given the PSSA test score results shown in Figures 4a-4b above, one suggestion is to maybe interview Year 2 tutors. It may be useful to ask tutors if they felt they needed to spend much more time helping RSG youth with math rather than reading homework because the incoming math skills for so many were obviously much lower (see Figure 4a). Related to this, the pattern of correlations shown in the PSSA test score summary section above suggests that maybe a new, integrated strategy of including math word problems into tutoring would be worth trying out. Because math word problems integrate both math and reading skills simultaneously, RSG youth may benefit in both areas even more if they are challenged to use the skills together more than using them alone. Lupo et al. (2022) discuss the importance of infusing

content (e.g., math) into literacy instruction for K-6th graders in particular. They discuss math word problems as best being taught when educators encourage youth to read word problems for overall meaning rather than to identify "key words", to explain the action in the problem by drawing pictures or using manipulatives, and to critically analyze if their answers make sense to the problem asked. Lupo et al. also distinguish math word problems in which the "start is unknown", the "change is unknown", and the "end is unknown". Lupo et al. argue that youth have the most difficulty solving "start unknown" problems. For example:

Laura had some dolls (start unknown)

Her sister gave her two more dolls for her birthday.

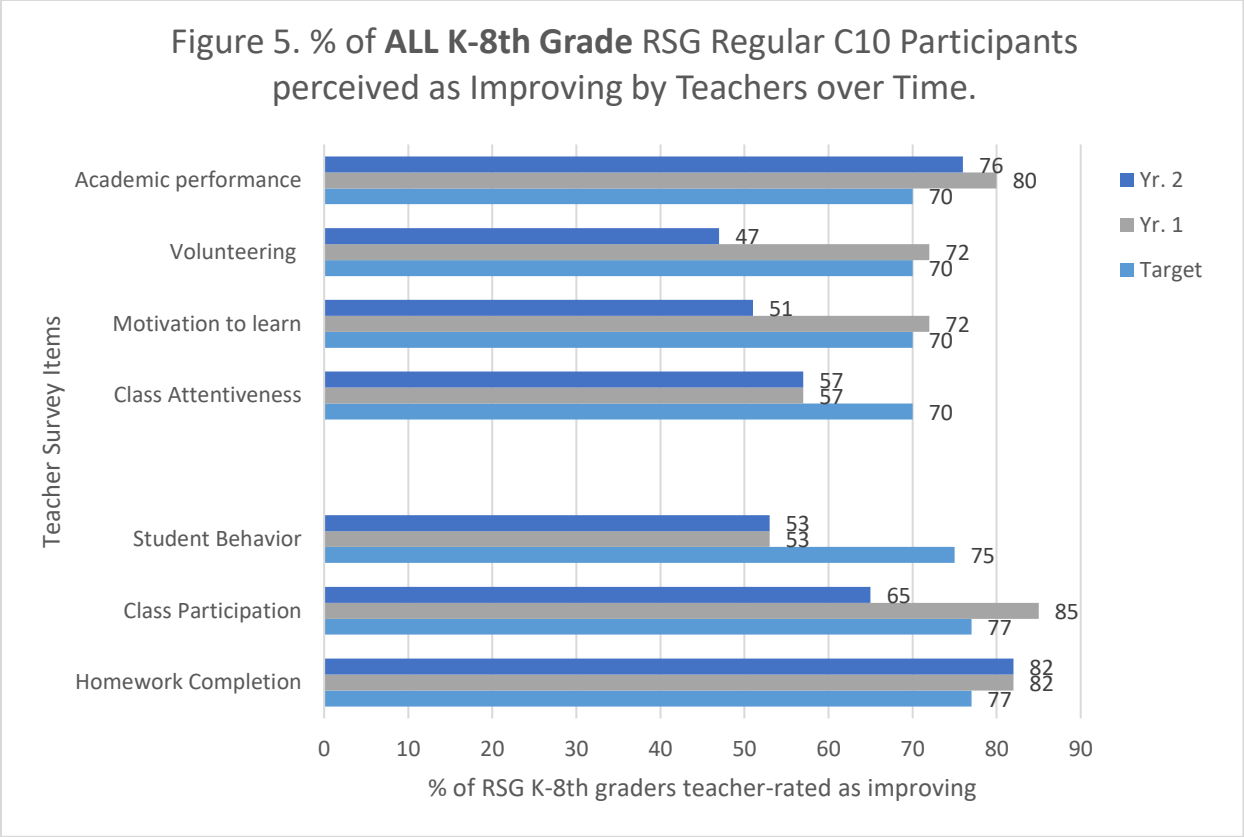
How many dolls did Laura have before her birthday?

RSG youth may benefit from increased tutoring time spent practicing their ability to integrate reading and math skills, especially since emphasis during the school day may often be placed on teaching math separately from reading.

Lupo, S.M., Hardigree, C., Thacker, E.S., Sawyer, A.G., & Merritt, J.D. (2022). *Teaching Disciplinary Literacy in Grades K-6: Infusing Content with Reading, Writing, and Language* (p. 165). New York: Routledge.

B. Summary of 21st CCLC Grant Performance Measures 2-3 and Recommendations

Figure 5 shows Years 1-2 Teacher Survey results based on teachers' end-of-year ratings of how much they perceived RSG youth as improving in various areas (see bottom three items in Figure 4 for grant performance indicators with targets from 75-77%). The C10 grant goals were especially focused on improvements in student behavior, class participation, and homework completion. RSG tutoring was able to surpass the 77% improvement targets for homework completion in Years 1-2 (82% of K-8th graders improved both years). Although class participation improvement in Year 1 was quite high for all RSG youth (85%, surpassing the target), only 65% of Year 2 youth were perceived by their teachers as improving at class participation (see Figure 5). Related to this, Figure 5 shows that teacher-rated RSG youth motivation levels dropped from 72% improving motivation to learn in Year 1 to only 51% doing so in Year 2. Also, RSG youth volunteering for extra responsibility decreased dramatically from 72% to 47%, according to teacher perceptions of K-8th graders overall. This pattern of Teacher Survey results supports that the declining percentage of Year 2 youth showing reading report card grade improvements discussed above can be linked to lower youth motivation levels, possibly connected to the hybrid format used in Year 2 (see Figure 2c).



Note 1. Teacher Survey Items 1-4 at the top of Figure 5 had targets arbitrarily set at 70% to correspond to previous years' estimates, even though for Cohort 10 no target percentages were set for them. Only the bottom three Teacher Survey Items on Improvements in Student Behavior, Class Participation, and Homework Completion had C10 targets set between 75-77%. In C10 Year 2 varying degrees of improved vs. declined were eliminated for all Teacher Survey items, so that all RSG youth were rated more generally as either improving, showing no change, declining, or not needing to improve.
Note 2. For Year 2 teacher-rated improvements in Student Behavior, 62% of K-5th graders improved (up 9% from Yr. 1) and 36% of 6th-8th graders improved (down 14% from Yr. 1); neither grade level reached the target of 75%. For improvements in Class Participation, 25% of K-5th graders improved (up 11% from Yr. 1) and 49% of 6th-8th graders improved (down 33% from Yr. 1), neither surpassing the target of 77%. For improvements in Homework Completion, 88% of K-5th graders improved (up 6% from Yr. 1), surpassing the 77% target, while 72% of 6th-8th graders improved in Year 2 (down 12%). Tables 4-5 also list these results.

On the other hand, student behavior, class attentiveness, and academic performance were all perceived fairly consistently in terms of percentage of RSG youth improving in Years 1-2 (see Figure 5). Academic performance improvement rates (80% Year 1; 76% Year 2) have consistently surpassed the target of 70% for Cohort 10, despite notable declines in Year 2 class participation, motivation, and volunteering for extra responsibility over time. This, along with the consistently high homework completion improvement ratings supports that RSG youth overall are "getting the job done" from teachers' perspectives, despite noticeably lower learning interest levels in Year 2.

Additional analyses of the Year 2 Teacher Survey results verified that *across all survey items* blue schools that assigned pass/fail spring grades in Year 1 consistently in Year 2 showed the

lowest percentage of improved RSG youth from teachers' perspectives. This was true overall across all K-8th graders from blue schools and for the Bottom 2/3 of blue school youth when examined separately.

Figure 6 summarizes the overwhelmingly positive parent perceptions of the high quality of the RSG program during Year 2. No Year 1 parent survey results were collected.

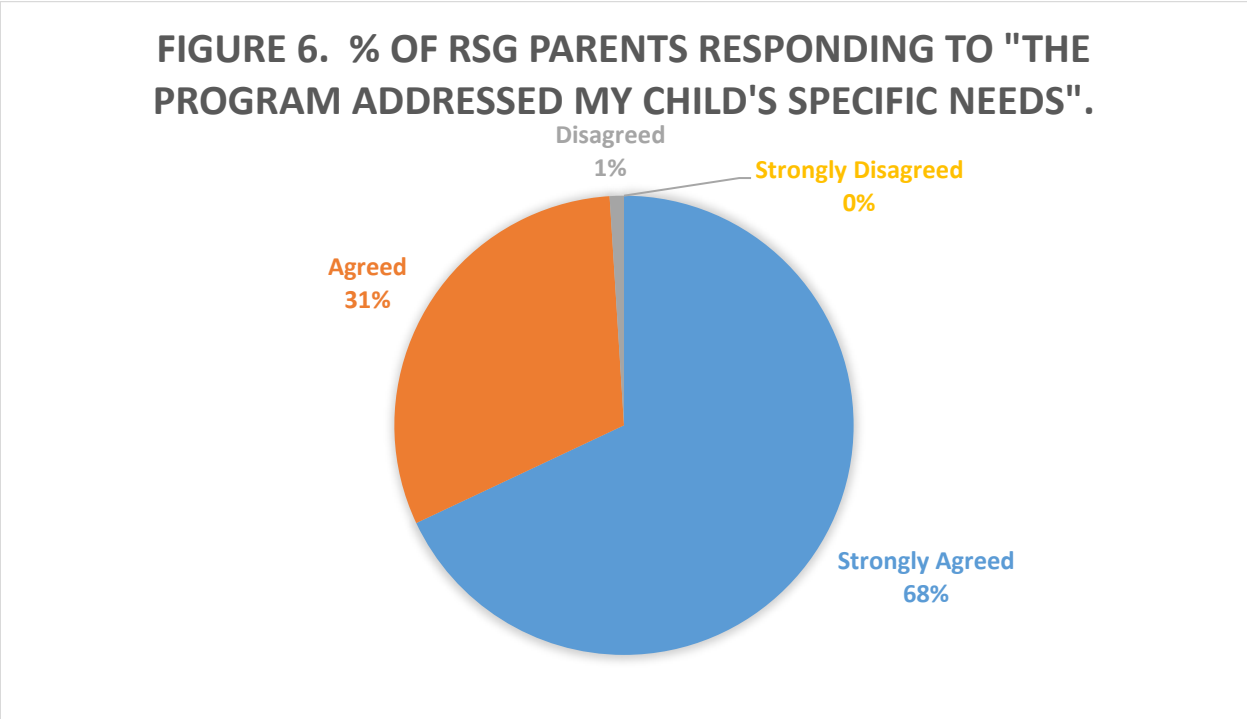


Figure 6 verifies that 99% of responding parents of RSG youth "strongly agreed/agreed" that the program met their children's specific needs. This was no easy task during a second pandemic year. Section H at the end of the report outlines all Year 2 Parent Survey results, which were all very positive (see Tables 8a-8e). Table 8c verifies that 85% of parents perceived their children as improved in math skills over Year 2, while 82% saw reading improvements. Over ¾ of parents (76%) strongly agreed/agreed that their children improved in homework completion over the year, corresponding with the most frequent parent comment later on that the most positive result they saw about RSG was the role it plays in helping youth complete their homework. This supports the consistently positive teacher perceptions about RSG youth homework completion (see Figure 5).

C10 Year 2 Recommendations for Teacher and Parent Survey Results

Recommendation 4: Teachers consistently were happy that a high percentage of RSG youth improved in homework completion and academic performance in Years 1-2, but noticed a sharp decline in the percentage of Year 2 youth improving in class participation and motivation relative to Year 1. Teachers and tutors should collaborate in trying to find new ways to make hybrid

format learning activities fun and engaging, so that more motivation and class participation are once again observed in the future.

Recommendation 5: Eleven percent of RSG parents surveyed "disagreed/strongly disagreed" they were invited to participate in program activities along with their children (see Question 2, Table 8b). These 11% all came from Blacklick and N. Cambria school districts, suggesting that tutors in these two schools may need to make an extra effort to devise alternative parent communication modes to invite parents and/or may need to identify unique parent needs or interests in the future to help shape family programming. There were no glaring commonalities in areas for improvement mentioned by RSG parents in the Parent Survey. Only 2% of parents (n=2) mentioned desiring more one-on-one time to address their child's unique needs and 2% of parents would like more convenient program times related to the hours they work/desiring a return to 5 days a week for tutoring. To address the few instances where more customized youth tutoring was needed, early in the fall semester of each academic year should be used by tutors across all school districts to invite parent feedback about any youth needing extra attention related to academic skills, attitudes towards school, and/or difficulties some youth may have in asking for the extra help they need. This will likely eliminate all concerns and increase the total number of regularly attending youth even more.

C. Saint Francis University and RSG Community Engagement Collaboration and Recommendation

Dr. Marnie Moist, the PDE external evaluator and grant report author, is also a psychology professor who teaches PSYC 201-202 Research Methods and Statistics I-II as a community engaged course each fall and spring semester at Saint Francis University in Loretto, PA. Over the past three years Dr. Moist, Sue Sheehan (RSG Vice President), and Chelsea Brinks (RSG staff) have had annual discussions that led Saint Francis University students to collaborate with RSG in a mutually beneficial way that would improve both university student learning and RSG youth quality of Positive Action Program activities.

In 2018/2019 14 SFU students each visited three middle schools in small groups during Reaching Every Door (R.E.D.) Day of service to the community in October, 2018. Fifteen RSG youth were shown that psychology is a science by participating in university student-designed simulations of psychology experiments, followed by Q&A on college life.

In 2019/2020, Cohort 10 Year 1, 40 SFU students (along with Dr. Moist) each visited one of 11 elementary and middle schools in small groups to offer PA Career Day during R.E.D. Day in October, 2019. Local youth were taught about PA Career clusters and engaged in fun learning games to learn more about college life as a possible future career path. Simultaneously data on 118 RSG youth was collected across all 11 schools for later analysis on future interest in STEM careers. Additionally, in Spring 2020 pre-pandemic, 39 more RSG youth from 3 middle schools were visited by 3 SFU students, who taught them about making S.M.A.R.T goals while collecting more data on RSG youth.

In 2020/2021, C10 Year 2, no in-person school visits were made by SFU PSYC 201 students due to the pandemic and use of hybrid tutor program format. Instead, all PSYC 201 students worked in one of four groups to create and distributed via e-mail attached files containing PDE math learning game materials (stimuli, test questions, etc.) and tutoring instructions (see Section G of this report later for full details, relevant PDE math measurement and statistics standards, and sample math game materials). The main advantage of this year's virtual math games over the one-day, in-person visits from the previous two years was that tutors could re-use the math game materials as often as desired to customize math learning practice using fun games designed to increase youth motivation. Four skill levels per game were created to target both individual and small group math learning led by the tutor, with answer keys provided and verified for accuracy by an expert elementary math educator. Two games, Santa Clocks and Rock/Paper/Scissor Clocks Scavenger Hunt, targeted math PDE skills for 1st-3rd graders on telling time. The other two games, Park Planner and Geoparty, targeted math PDE skills for 3rd-5th graders on measurement scale conversions and fractions. It is possible that if enough tutors used these SFU math game materials and did so repeatedly over time, they may have contributed somewhat to the Year 2 math report card grade jump in percentage of RSG K-8th graders who improved by half a letter grade from fall to spring.

C10 Year 2 Recommendations for SFU PSYC 201 Community Engagement

Recommendation 6a: Given the C10 Year 2 lower percentage of RSG youth improving their reading report card grades from fall to spring than in Year 1, one focus of the PSYC 201 students during the 2021/22 academic year could be on devising more virtual recordings of education games/presentations that intentionally *integrate* PDE common core reading and math standards through use of math word problems. PSSA scores verify math skills overall are lower in RSG youth then reading skills, yet the reading skills showed the least evidence of improved report card grades. Ideally, SFU students could create pre-made, fun game materials that include math word problems (Lupo et al., 2022), with supplemental recordings of simulated game play for instructional purposes. With the ongoing pandemic, live Zoom interactive sessions could even be scheduled to be run by SFU students as the vehicle through which to positively motivate RSG youth to consider a future college experience.

Recommendation 6b: When PSYC 201 SFU students are planning out their own small group research projects, a few groups especially interested in education could be assigned to design research studies aimed at comparing effectiveness of different strategies for improving RSG youth skills in math, reading, or both subject areas integrated. These research projects would be required at a minimum to base any learning game activities they create on the PDE common core math and language arts/reading standards that are grade-appropriate and available online. Students can also be referred to PDE resources available online. For example, the PDE core language arts/reading website includes reading standard-related toolkit materials that may be useful, such as the Text Dependent Analysis Toolkit that offers ideas on how to help youth use text-based information and evidence to distinguish inference from analysis. Other education-related web sites include a variety of useful resources, including ideas for various graphic organizers to enhance comprehension skills and colorful images that could be used for more active, math counting manipulatives.

Recommendation 7: Other interested SFU students, who may be willing to work at RSG during the spring semester for a paid internship, could be asked to complete a needs-based assessment to better identify why the Top 1/3 of RSG youth most commonly decline in report card grades over time in math and reading, while the Bottom 2/3 of RSG youth most often improve in both subject areas in Years 1-2 (see Figures 3c-3d; Table 7b). This may help us to better understand and design customizable tutoring activities in future years. Relevant need assessment questions may include the following:

- Should the Top 1/3 have unique types of individualized activities, different from the Bottom 2/3, that allow them to move up in skill level at their own pace to keep their motivation levels high?
- Should these individualized activities particularly target difficulty with transitioning to learning new, more complex skills?
- Might the Top 1/3 be attending RSG programs more for socialization opportunities rather than needing as much as extra help in math and reading skills?

Alternatively, extended 1-on-1 tutoring time between an SFU intern and a few carefully selected RSG youth could provide an opportunity to track a more customized progress of learning for one or a few students needing extra help. Emphasis by the SFU intern could be placed on repeatedly over tutoring days using the fun RSG games that integrate math and reading skills via word problems (Lupo et al., 2022). This could be in the form of a single-subject or small n design with test scores graphed out over several days or weeks, with qualitative field notes to provide supplemental contextual information.

III. Results for Cohort 10 Years 1-2 Respective Solutions Group

D. Demographics

Table 1a. Cohort 10 Total Regular Attending RSG Students Served in Years 1-2 and by School District.

COHORT 10 All K-5th Elementary All 6th-8th Middle	**Year 2 (20/21) Regular Attendees[1]**	**Year 1 (19/20) Regular Attendees [1]** **TOT**
TOTAL	**157**	**220**
Elementary (K-5th grades)	95 (60%)	188 (85%)
Middle School (6th-8th grades)	62 (40%)	32 (15%)

Note 1. Regular attending participants were defined as those students who attended RSG tutoring for 30 days or more during Fall 2019 (traditional format) and Spring 2020 (virtual format). The Year 1 RSG delivery format transition marked the start of the COVID pandemic in March, 2020. Summer 2019 attendance in Year 1 was zero days for all RSG youth. Year 2 summer through spring was hybrid format for all RSG participants the entire academic year, except for 1 virtual only participant; use of hybrid format may explain why the Year 2 percentage of regular middle school participants increased, while elementary participants decreased.

Total Regular RSG Attendees by School District	**Year 2 (2020/21)**	**Year 1 (2019/20)**
Blacklick Valley	16	11
Cambria Heights Elementary/Middle	61	32
Central Cambria Elementary	0 Regular	18
Jackson Elementary	10	14
Central Cambria Middle School	17	5
Glendale Elementary	1	18
Harmony Schools	18	14
Northern Cambria	17	41
Portage Schools	0 Regular	41
St. Michael's School	17	26

Table 1b. Breakdown of RSG Regular Attendance in Year 2 (2020/21).

Year 2 RSG Attendance 2020/2021
Summer 2020 (*M* = 3.03 days; 0-24 days) Total Students = 35/157 (22%)
FA 2020+SP 2021 (*M* = 60.86 days; 30-131 days) Total Students = 157/157 (100%)
(Mean = 63.89 days overall; 30-137 days)
30-59 days: 83 (53%)
60-89 days: 51 (32%)
≥ 90 days: 23 (15%)

Note 1. In Year 1 zero youth attended RSG in Summer 2019; in Summer 2020 22% of Year 2 regular attendees also received tutoring help the prior summer, most likely to catch up skills. All Summer 2020 RSG youth were from Blacklick Valley, Harmony and Glendale, which notably were NOT schools who used the pass/fail Year 1 grading.

Table 2. Most to Least Frequent C10 Respective Solutions Group Program Activities in Year 2 (2020/21).

Program Type	**Skill(s) Targeted**	**Frequency Offered**
Social Emotional Learning (SEL)[2]	ALL performance indicators	4 times per week[1] X 36 weeks
Group Popcorn Reading[2]	Reading	2 times per week X 36 weeks
STEM/STEAM	Math, Reading, Art, Science, Technology, Engineering	2 times per week[1] X 36 weeks 2 times per week X 36 weeks
Creative Arts	Reading/Reading Comprehension	1 time per month X 36 weeks 1 time per week X 36 weeks
Nutrition	Math and Reading	1 time per week X 36 weeks
TOTAL RSG Activity Days[1] = 144	Year 2, through Saint Francis University community engagement with PSYC 201 Research Methods and Statistics I (taught by Dr. Marnie Moist; consultation with math PDE expert Dr. Katherine Remillard), four recorded Zoom math game links were created and used by all participating RSG schools. Two math games (Santa Clocks; Rock-Paper-Scissors Scavenger Hunt) corresponded to 1st-3rd grade PDE math measurement/statistics standards, and two math games (Park Planner; GeoParty Trivia Board game corresponded to 4th-6th grade PDE math measurement/statistics standards).	

Note 1. Year 2 involved changing RSG programs to 4 days per week rather than 5 related to use of Hybrid format For all but one virtual only participant. This also reduced STEM/STEAM activities to 2 times per week rather than the usual 3 times per week.

Note 2. Social Emotional Learning (SEL) activities began all sites in 2018/19. Group/popcorn reading activities were used at all sites starting in 2016/17 for the first time.

E. Performance Measures 1-3 Results for 21st CCLC Grant Cohort 10

<table>
<tr><td colspan="6">Table 3. 21st CCLC Performance Measure 1 Results from Report Card Grades, PSSA, and Teacher Survey for Respective Solutions Group Cohort 10 over Time[1-5].</td></tr>
<tr><td colspan="6">Performance Measure 1: Students regularly participating in the program will meet or exceed state and local academic achievement standards in reading and math.</td></tr>
<tr><td>Performance Indicator GPRA 1.1 Target 48.5%</td><td colspan="5">The percentage of elementary[1] 21st CCLC regular program participants[2] whose mathematics grades improved from fall to spring.[3]
Tutoring, homework help, study skills, STEAM labs</td></tr>
<tr><td></td><td></td><td></td><td></td><td>2021 Yr. 2 Results</td><td>2020 Yr. 1 Results[4]</td></tr>
<tr><td></td><td></td><td></td><td></td><td>17/70
(24%)
5% math grade improvement

19/70
(27%)
4% math grade improvement</td><td>12/87
(14%)
5% math grade improvement

19/87
(22%)
4% math grade improvement</td></tr>
<tr><td>Performance Indicator GPRA 1.2 Target 48.5%</td><td colspan="5">The percentage of middle school[1] 21st CCLC regular program participants[2] whose mathematics grades improved from fall to spring.[3]
Tutoring, homework help, study skills, STEAM labs</td></tr>
<tr><td></td><td></td><td></td><td></td><td>2021 Yr. 2 Results</td><td>2020 Yr. 1 Results[4]</td></tr>
<tr><td></td><td></td><td></td><td></td><td>20/60
(33%)
5% math grade improvement

20/60
(33%)
4% math grade improvement</td><td>2/18
(11%)
5% math grade improvement

2/18
(11%)
4% math grade improvement</td></tr>
</table>

Performance Indicator GPRA 1.3 Target 48.5%	The percentage of *all* 21st CCLC *regular* program participants[2] whose *mathematics grades* improved from fall to spring.[3] Tutoring, homework help, study skills, STEAM labs				
				2021 Yr. 2 Results	**2020 Yr. 1 Results[4]**
				37/130 **(29%)** 5% math grade improvement 39/130 **(30%)** 4% math grade improvement	14/105 (**13%**) 5% math grade improvement 21/105 (**20%**) 4% math grade improvement
Performance Indicator GPRA 1.4 Target 48.5%	The percentage of *elementary*[1] 21st CCLC *regular* program participants[2] whose *reading/English grades* improved from fall to spring.[3] Read-aloud, small-group instruction, book clubs, Accelerated Reading time, Study Island supports, reading specialist supports, caregiver assistance				
				2021 Yr. 2 Results	**2020 Yr. 1 Results[4]**
				12/70 **(17%)** 5% reading grade improvement 14/70 **(20%)** 4% reading grade improvement	21/88 (**24%**) 5% reading grade improvement 24/88 (**27%**) 4% reading grade improvement

Performance Indicator GPRA 1.5 Target 48.5%	The percentage of *middle* school[1] 21st CCLC *regular* program participants[2] whose *reading/English grades* improved from fall to spring.[3] Read-aloud, small-group instruction, book clubs, Accelerated Reading time, Study Island supports, reading specialist supports, caregiver assistance				
				2021 Yr. 2 Results	**2020 Yr. 1 Results[4]**
				16/60 **(27%)** 5% reading grade improvement 20/60 **(33%)** 4% reading grade improvement	5/17 (**29%**) 5% reading grade improvement 7/17 (**41%**) 4% reading grade improvement
Performance Indicator GPRA 1.6 Target 70%	The percentage of *all* 21st CCLC *regular* program participants[2] whose *reading/English grades* improved from fall to spring.[3] Read-aloud, small-group instruction, book clubs, Accelerated Reading time, Study Island supports, reading specialist supports, caregiver assistance				
				2021 Yr. 2 Results	**2020 Yr. 1 Results[4]**
				28/130 **(22%)** 5% reading grade improvement 34/130 **(26%)** 4% reading grade improvement	26/105 (**25%**) 5% reading grade improvement 31/105 (**30%**) 4% reading grade improvement

Performance Indicator GPRA 1.7 Target 45%	The percentage of *elementary* 21st CCLC *regular* program participants who improve from not proficient to proficient or above in *reading on state assessments* (PSSA/PASA). Above tutoring, YOGA, anxiety-reduction programs				
			2022 Yr. 3 Results 1st Year Improvement Results will be Available	**2021 Yr. 2 Results** 1st year resumed PSSA testing n = 31	**2020 Yr. 1 Results[4]** Data not available due to COVID
				Below Basic 8/31 (26%) *Basic* 13/31 (42%) *Proficient* 8/31 (26%) *Advanced* 2/31 (6%)	N/A
Performance Indicator GPRA 1.8 Target 25%	The percentage of *middle school* 21st CCLC *regular* program participants who improve from not proficient to proficient or above in *math on state assessment* (PSSA). Above tutoring, YOGA, anxiety-reduction programs				
			2022 Yr. 3 Results 1st Year Improvement Results will be Available	**2021 Yr. 2 Results** 1st year resumed PSSA testing	**2020 Yr. 1 Results[4]** Data not available due to COVID
				Below Basic 32/51 (63%) *Basic* 15/51 (29%) *Proficient* 4/51 (8%) *Advanced* 0/51 (0%)	N/A

The percentage of *regularly* attending students improving their *academic performance* as measured by the *Teacher Survey*[5].					
All RSG Activities					
				2021 Yr. 2 Results	**2020 Yr. 1 Results[4]**
				99/131 (**76%**) were rated by their teachers as improving **academic perform.** **24%** showed no change; **0%** declined	122/153 (**80%**) were rated by their teachers as improving **academic perform.** **18%** showed no change; **2%** declined

Note 1. Elementary school participants included K-5th grade; middle school were 6th-8th grade.

Note 2. Regularly attending participants were defined as students who attended RSG program activities for 30 days or longer during each academic year.

Note 3. Improvement was defined as fall to spring semester half a letter grade increase of ≥ 5% for 21st Century grant purposes. The actual grading scales of all schools in this report, though, better reflect half a letter grade increase as ≥ 4%, so both local and grant improvements were included in the full report.

Note 4. In Year 1 the COVID-19 pandemic makes it difficult to use Year 1 data from fall to spring semester as a useful baseline for future Cohort 10 grant year comparisons. In Year 1 one school district reported Quarter 1 vs. Quarter 4 grades, four school districts reported Quarter 1 vs. Quarter 3 grades, and five school districts reported either Quarter 1 vs. Pass/Fail or some version of year-long Pass/Fail, with 100% of students passing. As COVID-19 continued into Year 2, 156/157 (99%) regular participants attended RSG the entire year using a Hybrid format (in-person attendance in cycles), while 1 participant was virtual only. In Year 2 143/157 (91%) participants were graded on a normal percentage scale, 11 (7%) were graded using some other format for lower grades or did not provide grades, and 3 (2%) were graded on a 4-pt. scale (4 = highest grade). Also in Year 1 no PSSA test scores were reported for analysis, so the first "improvement" data will not be available until Year 3. All PSSA test score percentages above were calculated after removal of any RSG youth receiving "Other" or "4-pt. scale" fall and spring grades only, in order to make the data match the report card grade data as much as possible. Also, some school districts still did not report any PSSA scores in Year 2, including Blacklick Valley, Jackson, and St. Michael's.

Note 5. In Year 2 Teacher Survey ratings were simplified to emphasize "improved", "no change", or "declined", unlike Year 1 when slight/moderate/significant changes were rated for improvements and declines. This count did not include the 26/157 students (17%) for whom academic performance improvement was not needed to begin with.

Table 4. 21st CCLC Performance Measure 2 Results from Teacher Survey for Respective Solutions Group Cohort 10 over Time.

Performance Measure 2: Students regularly participating in the program will show improvement in the performance measures of school attendance, classroom performance, and/or reduced disciplinary referrals[1]					
Perform-ance Indicator GPRA 1.9 Target 90%	The percentage of *elementary* 21st CCLC *regular* program participants with teacher-reported improvement in *homework completion* and *class participation* (of students needing to improve). Homework check-in, assignment check-out, caregiver communication on school day and homework, Positive Action, Life Skills Training, homework with direct support				
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				72/82 **(88%)** rated by teachers as improving **homework completion**; 10/82 **(12%)** no change; **(0%)** declined 58/77 **(75%)** rated by teachers as improving **class parti-cipation**; 19/77 **(25%)** showed no change; **(0%)** decline	108/132 (**82%**) rated by teachers as improving **homework completion**; 22/132 (**17%**) no change; 2/132 (**1%**) declined 119/140 (**85%**) rated by teachers as improving **class parti-cipation**; 19/140 (**14%**) showed no change; 2/140 (**1%**) decline

GPRA 1.10 Target 93%	The percentage of *middle school* 21st CCLC *regular* program participants with teacher-reported improvement in *homework completion* and *class participation* (of students needing to improve). Homework check-in, assignment check-out, caregiver communication on school day and homework, Positive Action, Life Skills Training, homework with direct support				
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				33/46 **(72%)** rated by teachers as improving in **homework completion**; 13/46 **(28%)** no change; (**0%**) decline 23/47 **(49%)** rated by teachers as improving in **class partic-ipation**; 24/47 **(51%)** no change; (**0%**) decline	16/19 (**84%**) rated by teachers as improving in **homework completion**; 3/19 (**16%**) no change; (**0%**) decline 18/22 **(82%**) rated by teachers as improving in **class partic-ipation**; 4/22 (**18%**) no change; (**0%**) decline

GPRA 1.11 Target 77%	The percentage of *all* 21st CCLC *regular* program participants with teacher-reported improvement in *homework completion* and *class participation* (of students needing to improve). Homework check-in, assignment check-out, caregiver communication on school day and homework, Positive Action, Life Skills Training, homework with direct support				
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				105/128 **(82%)** rated by teachers as improving in **homework completion**; 23/128 **(18%)** no change; **0%** decline 81/124 **(65%)** rated by teachers as improving **class part-icipation**; 43/124 **(35%)** no change; **0%** decline	124/151 (**82%**) rated by teachers as improving in **homework completion**; 25/151 (**17%**) no change; 1**%** decline 137/162 (**85%**) rated by teachers as improving **class part-icipation**; 23/162 (**14%**) no change; **1%** decline
The percentage of *regularly* attending students improving their *class attentiveness*. All RSG Activities					
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				72/126 **(57%)** rated by teachers as improving **class atten-tiveness**; 53/126 **(42%)** no change; **1%** decline	89/157 (**57%**) rated by teachers as improving **class atten-tiveness**; 68/157 (**43%**) no change; **0%** decline

Note 1. Regular participants attended RSG programs ≥ 30 days over each academic year. Elementary students included K-5th, while middle school students included 6th-8th grades. Student improvement on the Teacher Survey was indicated by any teacher rating of "improved", "no change", "declined". This count excluded 29/157 (19%) who did not need to improve at homework completion, excluded 33/157 (21%) who did not need to improve at class participation, and excluded 31/126 (25%) who did not need to improve at class attentiveness.

Table 5. 21st CCLC Performance Measure 3 Results from Teacher Survey and Grade Progression for Respective Solutions Group Cohort 10 over Time.[1]

Performance Measure 3: Participants in the 21st Century programs will demonstrate additional positive educational, social, and behavioral changes.					
Performance Indicator GPRA 1.12 Target 75%	The percentage of *elementary* 21st CCLC *regularly* attending participants with teacher-reported improvements in *student behavior in class* (of students needing to improve). Positive Action Program, Life Skills Training				
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				45/73 **(62%)** rated by teachers as improving in **student behavior**; 28/73 **(38%)** no change; (**0%**) decline	40/75 (**53%**) rated by teachers as improving in **student behavior**; 35/75 (**47%**) no change; (**0%**) decline
GPRA 1.13 Target 75%	The percentage of *middle school* 21st CCLC *regularly* attending participants with teacher-reported improvements in *student behavior in class* (of students needing to improve). Positive Action Program, Life Skills Training				
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				14/39 **(36%)** rated by teachers as improving in **student behavior**; 25/39 **(64%)** no change; (**0%**) Decline	9/18 (**50%**) rated by teachers as improving in **student behavior**; 9/18 (**50%**) no change; (**0%**) decline

GPRA 1.14 Target 75%	The percentage of *all* 21st CCLC *regularly* attending participants with teacher-reported improvements in *student behavior in class* (of needing to improve). Positive Action Program, Life Skills Training				
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				59/112 **(53%)** rated by teachers as improving on **student behavior**; 53/112 **(47%)** no change, (**0%**) decline	49/93 (**53%**) rated by teachers as improving on **student behavior**; 44/93 (**47%**) no change, (**0%**) decline
The percentage of *regularly* attending students improving their *motivation to learn*. All RSG Activities					
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				61/119 **(51%)** were rated by their teachers as improving on **motivation to learn**; 58/119 **(49%)** no change; **0%** decline	88/123 (**72%**) were rated by their teachers as improving on **motivation to learn**; 31/123 (**25%**) no change; 4/123 (**3%)** decline
The percentage of *regularly* attending students improving their *volunteering for extra credit or more responsibility*. All RSG Activities					
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				56/120 **(47%)** were rated by their teachers as improving on **motivation to learn**; 63/120 **(53%)** no change; 1/120 **(1%)** decline	118/165 **(72%)** were rated by their teachers as improving on volunteering; 45/165 (**27%**) no change; 2/165 **(1%)** decline

The percentage of *all* 21st CCLC *regularly* attending students *promoted*[1] to the next grade or graduating at the end of the school year. All RSG activities					
				2021 Yr. 2 Results	**2020 Yr. 1 Results**
				157/157 **(100%)**	220/220 (**100%**)

Note 1. Whereas the first four PM 3 performance indicators were obtained from a Teacher Survey, the last indicator came from graduation/promotion or grade level enrollment records. Student improvement on the Teacher Survey was indicated by any teacher rating of "improved", "no change", or "declined". This count excluded the 45/157 (29%) who did not need to improve their behavior in class, the 38/157 (24%) who did not need to improve their motivation to learn, and the 37/157 (24%) who did not need to improve their volunteering.

Teacher Survey C10 "Most Frequent" Responses to Individual Items

- Academic performance (see Table 3)
  - Year 2: 99 "Improved" (63%)
  - Year 1: 65 "Did not need to improve" (30%); 59 "Slightly improved" (27%)
- Completing Homework to your Satisfaction (see Table 4)
  - Year 2: 105 "Improved" (67%)
  - Year 1: 63 "Did not need to improve" (29%); 46 "Moderately improved" (22%)
- Participating in Class (see Table 4)
  - Year 2: 81 "Improved" (52%)
  - Year 1: 55 "Did not need to improve" (25%); 48 "Moderately improved" (22%)
- Being Attentive in Class (see Table 4)
  - Year 2: 72 "Improved" (46%)
  - Year 1: 68 "Did not change" (31%); 63 "Did not need to improve" (29%)
- Behaving in Class (see Table 5)
  - Year 2: 59 "Improved" (38%); 53 "No Change" (34%)
  - Year 1: 127 "Did not need to improve" (58%); 44 "No change" (20%)
- Coming to School Motivated to Learn (see Table 5)
  - Year 2: 61 "Improved" (39%); 58 "No Change" (37%)
  - Year 1: 97 "Did not need to improve" (44%); 38 "Moderately improved" (17%)
- Volunteering for Extra Credit or More Responsibility (see Table 5)
  - Year 2: 63 "No Change" (40%); 56 "Improved" (36%)
  - Year 1: 54 "Did not need to improve" (25%); 46 "Moderately improved" (21%)
- Engaged in Learning
  - Year 2: 78 "Improved" (50%)

F. Additional Performance Measure 1 Results for ALL regular students: Fall vs. Spring Report Card Grades by School District

Table 6a. Average Fall vs. Spring Report Card *Math* Grades Over Time for RSG Regular Participants from K-8th Grade by School District.[1,2,3,4]

School District	Fall (Q1) Math Grade	Spring (Q4) Math Grade
Blacklick Valley Elementary YR 2 (n = 10)	YR 2 *Mdn* = 82%	YR 2 *Mdn* = 92%
Blacklick Valley Elementary YR 1 (n = 11) *4/11 ↓	YR 1 *Mdn* = 95% (Q1)	YR 1 *Mdn* = 89% (Q4)
Blacklick Valley Middle YR 2 (n = 3)	YR 2 *Mdn* = 82% YR 1 N/A	YR 2 *Mdn* = 75% YR 1 N/A
Blacklick Valley All Grades YR 2 (n = 13)	YR 2 *Mdn* = 82% YR 1 N/A	YR 2 *Mdn* = 90% YR 1 N/A
Central Cambria Elementary YR 1 (n = 9)	YR 2 N/A YR 1 *Mdn* = 92%	YR 2 N/A YR 1 = 100% Pass
Central Cambria Middle YR 2 (n = 17)	YR 2 *Mdn* = 79%	YR 2 *Mdn* = 79%
Central Cambria Middle YR 1 (n = 5)	YR 1 *Mdn* = 84%	YR 1 = 100% Pass
Jackson Elementary (CCSD) YR 2 (n = 5)	YR 2 *Mdn* = 85%	YR 2 *Mdn* = 88%
Jackson Elementary (CCSD) YR 1 (n = 14)	YR 1 = 100% Pass (Q1)	YR 1 = 100% Pass
Portage Elementary YR 1 (n = 36)	YR 2 N/A YR 1 *Mdn* = 85%	YR 2 N/A YR 1 = 100% Pass
Portage Middle YR 1 (n = 5)	YR 2 N/A YR 1 *Mdn* = 92%	YR 2 N/A YR 1 = 100% Pass
Portage All Grades YR 1 (n = 41)	YR 2 N/A YR 1 *Mdn* = 86%	YR 2 N/A YR 1 = 100% Pass
St. Michael's Elementary YR 2 (n = 11)	YR 2 *Mdn* = 99%	YR 2 *Mdn* = 97%
St. Michael's Elementary YR 1 (n = 22)	YR 1 *Mdn* = 93%	YR 1 = 100% Pass
St. Michael's Middle YR 2 (n = 2)	YR 2 *Mdn* = 86%	YR 2 *Mdn* = 77%
St. Michael's Middle YR 1 (n = 4)	YR 1 *Mdn* = 88%	YR 1 = 100% Pass
St. Michael's All Grades YR 2 (n = 13)	YR 2 *Mdn* = 98%	YR 2 *Mdn* = 97%
St. Michael's All Grades YR 1 (n = 26)	YR 1 *Mdn* = 91%	YR 1 = 100% Pass
Cambria Heights Elementary YR 2 (n = 24)	YR 2 *Mdn* = 94%	YR 2 *Mdn* = 94%
Cambria Heights Elementary YR 1 (n = 15-16)	YR 1 *Mdn* = 90%	YR 1 *Mdn* = 93% (Q3)

School District	Fall (Q1) Math Grade	Spring (Q4) Math Grade
Cambria Heights Middle YR 2 (n = 37)	YR 2 *Mdn* = 93%	YR 2 *Mdn* = 96%
Cambria Heights Middle YR 1 (n = 16)	YR 1 *Mdn* = 87%	YR 1 *Mdn* = 86% (Q3)
Cambria Heights All Grades YR 2 (n = 61)	YR 2 *Mdn* = 94%	YR 2 *Mdn* = 95%
Cambria Heights All Grades YR 1 (n = 31-32)	YR 1 *Mdn* = 89%	YR 1 *Mdn* = 89% (Q3)
Glendale Elementary YR 2 (n = 1)	YR 2 *Mdn* = 97%	YR 2 *Mdn* = 98%
Glendale Elementary[3] YR 1 (n = 14-15)	YR 1 *Mdn* = 88%	YR 1 *Mdn* = 85% (Q3)
Harmony Elementary YR 2 (n = 13)	YR 2 *Mdn* = 93%	YR 2 *Mdn* = 93%
Harmony Elementary YR 1 (n = 10)	YR 1 *Mdn* = 93%	YR 1 *Mdn* = 91% (Q3)
Harmony Middle YR 2 (n = 1-3)	YR 2 *Mdn* = 82%	YR 2 *Mdn* = 90%
Harmony Middle YR 1 (n = 1)	YR 1 *Mdn* = 94%	YR 1 *Mdn* = 87% (Q3)
Harmony All Grades YR 2 (n = 14-16)	YR 2 *Mdn* = 90%	YR 2 *Mdn* = 92%
Harmony All Grades[3] YR 1 (n = 11)	YR 1 *Mdn* = 93%	YR 1 *Mdn* = 90% (Q3)
N. Cambria Elementary YR 2 (n = 6-7)	YR 2 *Mdn* = 88%	YR 2 *Mdn* = 84%
N. Cambria Elementary YR 1 (n = 37)	YR 1 *Mdn* = 94%	YR 1 *Mdn* = 90% (Q3)
N. Cambria Middle YR 1 (n = 1)	YR 2 N/A YR 1 *Mdn* = 81%	YR 2 N/A YR 1 *Mdn* = 82% (Q3)
N. Cambria All Grades YR 1 (n = 38)	YR 2 N/A YR 1 *Mdn* = 94%	YR 2 N/A YR 1 *Mdn* = 90% (Q3)

Note 1. Averages are presented as medians (*Mdn* = 50th percentile grade), which are most accurate here given that the fall and spring grade distributions showed mostly A and B grades (i.e., were notably skewed). All percentages are rounded to the nearest whole number.

Note 2. Typically, fall vs. spring report card percentage grades within a grant year are reported. In Year 1 (2019/20) the COVID pandemic disrupted normal school and after-school programming operations around March 2020. This resulted in some Cohort 10 school districts comparing Quarter 1 vs. Quarter 4 grades (yellow rows), some comparing Quarter 1 vs. Quarter 3 grades (peach rows), and some comparing Quarter 1/other categories for fall vs. Pass/Fail grades (blue rows) for spring semester. Table 6a has been color-coded to reflect these three different ways of processing spring semester grades in Year 1. The Year 2 grading process returned to normal, by comparing Quarter 1 vs. 4 percentages, so white-colored rows above reflect this return to typical reporting.

Note 3. In Year 2 Blacklick Elementary (n = 3) included a few youth who were graded on a 4-pt. scale, with 4 being the highest grade, instead of the percentage system. Their results were excluded from Table 6a (but see Table 7b, Note 4). Glendale (n=3) and Harmony SD (n = 3) each included a few youth, who were graded using a non-percentage grade system in Year 1, so they were excluded from analysis since the majority of youth in these school districts reflected peach-colored school grading.

Table 6b. Overall Cohort 10 RSG School *Math* Report Card Grades over Time. [1,2]

3 Ways Spring Grades Handled in Year 1	Median Math Report Card Grades Quarter 1	Median Math Report Card Grades Quarter 4
YR 2 Yellow (Q1 vs. Q4) (n = 13)	*Mdn* = 82%**; SE_k = .62	*Mdn* = 90%; SE_k = .62
YR 1 Yellow (Q1 vs. Q4) (n = 11) 4/11 (36%) >= 4% ↑ 6th-8th grade: 0/11 (0%) 2nd-5th grade: 4/11 (36%)	*Mdn* = 95.00%*TR*[1]; SE_k = .66	Spring grades decreased by 6% on average.
YR 2 Blue (Q1 vs. P/F) (n = 35)	*Mdn* = 86%; SE_k = .40	*Mdn* = 83%; SE_k = .40
YR 1 Blue (Q1/Other vs. 100% Pass) (n = 81)	*Mdn* = 89.00%; SE_k = .27	Lowest Q1 math grades; 100% pass rate spring
YR 2 Peach (Q1 vs. Q3) (n = 83)	*Mdn* = 92.50%; SE_k = .26	*Mdn* = 94%; SE_k = .26
YR 1 Peach (Q1 vs. Q3 grades) (n = 95) 17/94 (18%) >= 4% ↑ 6th-8th grade: 2/18 (11%) K-5th grade: 15/76 (20%)	*Mdn* = 91.00%; SE_k = .25	Majority of spring grades decreased.
Overall YR 2 Math Grades	*Mdn* = 89.50; SE_k = .21	*Mdn* = 90.00; SE_k = .21

Note 1: A Kruskal-Wallis H test verified a near-significant trend (TR) in Year 1 that blue school districts, which reported 100% pass grades in spring, had the lowest pre-COVID, Quarter 1 average math report card grades out of all three ways pandemic-related grades were handled in Year 1, H (2) = 5.78, p = .056. Year 2 revealed a different pattern of Q1 math grade results, as the Kruskal-Wallis H test instead with 99% confidence showed that the single yellow school (i.e., comparing Q1 vs. Q4 grades as usual during Year 1) instead started out Year 2 with the lowest average Q1 math grades compared to blue or peach Q1 math grades, H (2) = 9.36, p = .009; in Year 2 peach schools newly showed the highest average Q1 math grades. Finally, another Kruskal-Wallis test comparing Year 2 average changes from Q1 to Q4 math report card grades between yellow, blue, and peach schools showed a near-significant trend that Year 1 yellow schools increased math grades by an average of 8% within Year 2 from Q1 to Q4, while Year 1 blue schools somewhat decreased math grades by an average of 3% within Year 2 from Q1 to Q4, H (2) = 5.30, p = .071.

Note 2: 36% (4/11) of Year 1 yellow school youth started out in fall semester with math grades less than 92%, showing need for report card grade improvement. 64% (52/81) of Year 1 blue school youth and 53% (50/95) of Year 1 peach youth did as well. By Year 2 69% (9/13) of yellow school youth started out in fall semester with math grades less than 92%, but 67% (6/9) who needed math grade improvement did improve them in Year 2 by 5% or more. In Year 2 69% (24/35) of blue school youth started fall with math grades less than 92%, and only 29% (7/24) who needed math grade improvement did improve them in Year 2 by 5% or more. In Year 2 45% (37/83) of peach school youth started fall with math grades less than 92%, and 51% (19/37) who needed math grade improvement did improve them in Year 2 by 5% or more.

Tables 6a-6b mainly show that across most Cohort 10 school districts average math report card grades declined from fall to spring during COVID-19 Year 1. Year 2 math grade improvements from fall to spring, however, appear to have bounced back for several schools; only blue schools

(i.e., those assigning 100% pass grades in Year 1) showed an overall average decline in math grades from fall (*Mdn* = 86%) to spring (*Mdn* = 83%) in Year 2 despite NOT starting out in fall with the lowest average Q1 math grades. The Year 2 yellow school Blacklick Valley across all grades showed the largest average improvement in math report card grades from fall (*Mdn* = 82%) to spring (*Mdn* = 90%; the 8% improvement in math tied with Harmony Middle School, peach), but this was driven by the Blacklick elementary RSG youth only. Year 2 peach schools on average also somewhat improved math grades from fall (*Mdn* = 92.5%) to spring (*Mdn* = 94%). It is possible that the continued reliance upon the usual percentage grading scale during pandemic Year 1 (rather than pass/fail spring grades) subsequently motivated Year 2 students to improve even more in their math grades to make up for the general decline in Year 1 average math grades across most schools. Year 2 RSG tutors' efforts to compensate for the Year 1 average math grade declines appears to have paid off, but mainly for those schools who continued to report spring grades using a percentage scale during Year 1.

Refined analysis of data shown in Table 6b, Note 2, further supports the merit of pandemic Year 1 schools that continued to report spring report card grades using percentages rather than pass/fail. By Year 2 69% (9/13) of yellow school youth started out in fall semester with math grades less than 92%, but 67% (6/9) who needed math grade improvement did improve them in Year 2 by 5% or more. In Year 2 69% (24/35) of blue school youth started fall with math grades less than 92%, and only 29% (7/24) who needed math grade improvement did improve them in Year 2 by 5% or more. In Year 2 45% (37/83) of peach school youth started fall with math grades less than 92%, and 51% (19/37) who needed math grade improvement did improve them in Year 2 by 5% or more. Overall, this data suggests that relying on pass/fail grades in response to the pandemic disrupting academics may be more likely to disincentivize continued learning growth efforts.

Table 3 (see also the middle column of Table 6e) verifies that across all K-8th grades in Year 1, only 13% of RSG youth improved their math report card grades by 5% or more. By Year 2 29% of RSG youth did so. The math grade improvement from fall to spring in Year 2 jumped most dramatically for middle school students (6th-8th graders), since 33% of them in Year 2 improved math grades by 5% or more; this was up 22% from the 11% of 6th-8th graders in Year 1 who improved their math grades! Elementary students (K-5th graders) also improved their math grades in Year 2, as 24% increased their grades from fall to spring by 5% or more unlike the 14% who did so in Year 1. Overall the clearly improved Year 2 math grade results compared to Year 1 are most likely due to RSG tutors finding ways to more effectively help youth practice their math skills using the hybrid format. Another possible benefit may have been the Zoom-recorded math games based on PDE math measurement and statistics standards, provided by the Saint Francis University PSYC 201-202 students for online tutoring aids.

Table 6c. Average Fall vs. Spring Report Card *Reading/Language Arts* Grades over Time for RSG Regular Participants from K-8th Grade by School District.[1,2,3,4]

School District	Fall (Q1) Reading Grade	Spring (Q4) Reading Grade
Blacklick Valley Elementary YR 2 (n = 10)	YR 2 *Mdn* = 90%	YR 2 *Mdn* = 90%
Blacklick Valley Elementary YR 1 (n = 11)	YR 1 *Mdn* = 90%	YR 1 *Mdn* = 90%
Blacklick Valley Middle YR 2 (n = 3)	YR 2 *Mdn* = 88% YR 1 N/A	YR 2 *Mdn* = 90% YR 1 N/A
Blacklick Valley All Grades YR 2 (n = 13)	YR 2 *Mdn* = 88% YR 1 N/A	YR 2 *Mdn* = 90% YR 1 N/A
Central Cambria Elementary YR 1 (n = 9)	YR 2 N/A YR 1 *Mdn* = 93%	YR 2 N/A YR 1 = 100% Pass
Central Cambria Middle YR 2 (n = 17)	YR 2 *Mdn* = 79%	YR 2 *Mdn* = 74%
Central Cambria Middle YR 1 (n = 5)	YR 1 *Mdn* = 87%	YR 1 = 100% Pass
Jackson Elementary (CCSD) YR 2 (n = 5)	YR 2 *Mdn* = 90%	YR 2 *Mdn* = 93%
Jackson Elementary (CCSD) YR 1 (n = 14)	YR 1 = 100% Pass	YR 1 = 100% Pass
Portage Elementary YR 1 (n = 36)	YR 2 N/A YR 1 *Mdn* = 88%	YR 2 N/A YR 1 = 100% Pass
Portage Middle YR 1 (n = 5)	YR 2 N/A YR 1 *Mdn* = 92%	YR 2 N/A YR 1 = 100% Pass
Portage All Grades YR 1 (n = 41)	YR 2 N/A YR 1 *Mdn* = 88%	YR 2 N/A YR 1 = 100% Pass
St. Michael's Elementary YR 2 (n = 11)	YR 2 *Mdn* = 97%	YR 2 *Mdn* = 97%
St. Michael's Elementary YR 1 (n = 22)	YR 1 *Mdn* = 95%	YR 1 = 100% Pass
St. Michael's Middle YR 2 (n = 2)	YR 2 *Mdn* = 78%	YR 2 *Mdn* = 74%
St. Michael's Middle YR 1 (n = 4)	YR 1 *Mdn* = 83%	YR 1 = 100% Pass
St. Michael's All Grades YR 2 (n=13)	YR 2 *Mdn* = 96%	YR 2 *Mdn* = 97%
St. Michael's All Grades YR 1 (n = 26)	YR 1 *Mdn* = 94%	YR 1 = 100% Pass
Cambria Heights Elementary YR 2 (n = 24)	YR 2 *Mdn* = 94%	YR 2 *Mdn* = 94%
Cambria Heights Elementary YR 1 (n = 15-16)	YR 1 *Mdn* = 92%	YR 1 *Mdn* = 92%
Cambria Heights Middle YR 2 (n = 37)	YR 2 *Mdn* = 91%	YR 2 *Mdn* = 90%

School District	Fall (Q1) Reading Grade	Spring (Q4) Reading Grade
Cambria Heights Middle YR 1 (n = 16)	YR 1 *Mdn* = 86%	YR 1 *Mdn* = 91%
Cambria Heights All Grades YR 2 (n = 61)	YR 2 *Mdn* = 92%	YR 2 *Mdn* = 93%
Cambria Heights All Grades YR 1 (n = 31-32)	YR 1 *Mdn* = 89%	YR 1 *Mdn* = 91%
Glendale Elementary YR 2 (n = 1)	YR 2 *Mdn* = 97%	YR 2 *Mdn* = 97%
Glendale Elementary[3] YR 1 (n = 15)	YR 1 *Mdn* = 90%	YR 1 *Mdn* = 92%
Harmony Elementary YR 2 (n = 13)	YR 2 *Mdn* = 76%	YR 2 *Mdn* = 74%
Harmony Elementary YR 1 (n = 10)	YR 1 *Mdn* = 92%	YR 1 *Mdn* = 89%
Harmony Middle YR 2 (n = 1-3)	YR 2 *Mdn* = 87%	YR 2 *Mdn* = 93%
Harmony Middle YR 1 (n = 1)	YR 1 *Mdn* = 92%	YR 1 *Mdn* = 93%
Harmony All Grades YR 2 (n = 14-16)	YR 2 *Mdn* = 88%	YR 2 *Mdn* = 85%
Harmony All Grades[3] YR 1 (n = 11)	YR 1 *Mdn* = 92%	YR 1 *Mdn* = 89%
N. Cambria Elementary YR 2 (n = 4)	YR 2 *Mdn* = 89%	YR 2 *Mdn* = 90%
N. Cambria Elementary YR 1 (n = 37)	YR 1 *Mdn* = 91%	YR 1 *Mdn* = 91%
N. Cambria Middle YR 1 (n = 1)	YR 2 N/A YR 1 *Mdn* = 91%	YR 2 N/A YR 1 No data
N. Cambria All Grades YR 1 (n = 38)	YR 2 N/A YR 1 *Mdn* = 91%	YR 2 N/A YR 1 *Mdn* = 91%

Note 1. Averages are presented as medians (*Mdn* = 50th percentile grade), which are most accurate here given that the fall grade distributions showed mostly A and B grades (i.e., were notably skewed). Year 1 spring reading grades were normally distributed, supporting some COVID backslide. All percentages are rounded to the nearest whole number.

Note 2. Typically, fall vs. spring report card percentage grades within a grant year are reported. In Year 1 (2019/20) the COVID pandemic disrupted normal school and after-school programming operations around March 2020. This resulted in some Cohort 10 school districts comparing Quarter 1 vs. Quarter 4 grades (yellow rows), some comparing Quarter 1 vs. Quarter 3 grades (peach rows), and some comparing Quarter 1/other categories for fall vs. Pass/Fail grades (blue rows) for spring semester. Table 6c has been color-coded to reflect these three different ways of processing spring semester grades in Year 1. The Year 2 grading process returned to normal, by comparing Quarter 1 vs. 4 percentages, so white-colored rows above reflect this return to typical reporting.

Note 3. In Year 2 Blacklick Elementary (n = 3) included a few youth who were graded on a 4-pt. scale, with 4 being the highest grade, instead of the percentage system. Their results were excluded from Table 6c (but see Table 7b, Note 4). Glendale (n=3) and Harmony SD (n = 3) each included a few youth, who were graded using a non-percentage grade system in Year 1, so they were excluded from analysis since the majority of youth in these school districts reflected peach-colored school grading.

Tables 6c-6d verify that the RSG school districts varied quite a bit in whether their reading report card grades improved, stayed the same, or declined during both Years 1 and 2. Table 6d showed no significant average difference in fall semester reading grades between any of the three different ways pandemic-related spring grades were handled during Year 1 and Year 2 (i.e., between yellow, blue, and peach schools). During Year 2 overall fall reading grades on average improved by 1-2%, regardless of how Year 1 reading grades were handled spring semester (see Table 6d).

Table 3 (see also middle column of Table 6f) confirms that even fewer Year 2 RSG youth improved their reading report card grades by 5% or more than those who did so in Year 1. Across all grade levels (K-8th) 25% of RSG youth improved their reading grades by 5% or more in Year 1, and this dropped slightly to 22% improving by the same amount in Year 2. 27% of middle school youth (6th-8th graders) improved their reading grades by 5% or more in Year 2, down from the 29% who did so in Year 1. 17% of elementary youth (K-5th graders) improved their reading grades by 5% or more in Year 2, down from 24% who did so in Year 1. It is unclear from these results if the hybrid format used for the entire Year 2 RSG tutoring format is less well adapted for reading instruction than math or if other influences play a role. Interestingly, a weak negative correlation between degree of improvement in fall to spring reading report card grades and total days of RSG program attendance, r (128) = -.24, p = .005, most likely suggests that students who attend RSG tutoring more frequently over the school year do so for the opportunity to socialize with their peers; this may have the unintended side effect of leaving them less time to focus on improving their reading skills through self-paced reading.

Table 6d. Overall Cohort 10 RSG School *Reading* Report Card Grades over Time. [1,2]

3 Ways Spring Grades Handled in Year 1	**Median Reading Grades Quarter 1**	**Median Reading Grades Quarter 4**
YR 2 Yellow (Q1 vs. Q4) (n = 13)	*Mdn* = 88%; SE_k = .62	*Mdn* = 90%; SE_k = .62
YR 1 Yellow (Q1 vs. Q4 grades) (n = 11) 5/11 (45%) >= 4% ↑ 6th-8th grade: 0 (0%) 2nd-5th grade: 5/11 (45%)	*Mdn* = 90.00%; SE_k = .66	Spring grades stayed same on average as fall grades.
YR 2 Blue (Q1 vs. P/F) (n = 35)	*Mdn* = 87%; SE_k = .40	*Mdn* = 88%; SE_k = .40
YR 1 Blue (Q1 vs. 100% Pass) (n = 81)	*Mdn* = 90.00%; SE_k = .27	100% Pass rate spring
YR 2 Peach (Q1 vs. Q3) (n = 80)	*Mdn* = 91%; SE_k = .27	*Mdn* = 92%; SE_k = .27
YR 1 Peach (Q1 vs. Q3 grades) (n = 96) 26/94 (28%) >= 4% ↑ 6th-8th grade: 7/17 (41%) K-5th grade: 19/77 (25%)	*Mdn* = 90.50%; SE_k = .25	Spring grades varied relative to fall grades.
Overall YR 2 Reading Grades	*Mdn* = 89%; SE_k = .21	*Mdn* = 91%; SE_k = .21

Note 1: A Kruskal-Wallis H test showed no significant difference in average Year 1, Quarter 1 reading report card grades between the three separate ways Cohort 10 schools handled pandemic-related grades spring semester of Year 1, H (2) = .68, p = .712. There were also no significant differences in average Year 2, Quarter 1 reading grades between yellow, blue, and peach schools, which handled pandemic-related grades in Year 1 differently, H (2) = 3.78, p = .151. Finally, the change in Year 2 reading grades from Q1 to Q4 were also not significantly different for yellow, blue, and peach schools, H (2) = .85, p = .653. Overall there was no evidence that pandemic-related changes in grading processes during Year 1 impacted average reading report card grades in Year 2.

Note 2: 73% (8/11) of Year 1 yellow school youth started out in fall semester with reading grades less than 92%, showing need for report card grade improvement. 94% (76/81) of Year 1 blue school youth and 61% (59/96) of Year 1 peach youth did as well. By Year 2 54% (7/13) yellow school youth started out fall with reading grades less than 92%, showing need for report card improvement. 43% (3/7) of those yellow school youth in Year 2 improved their reading grades by 5% or more. In Year 2 69% (24/35) of blue school youth started out fall with reading grades less than 92%, but only 21% (5/24) of Year 2 blue school youth improved reading grades by 5% or more. In Year 2 51% (41/80) of peach school youth started out fall with reading grades less than 92%, and 42% (17/41) of Year 2 peach schools improved reading grades by 5% or more.

Table 6d, Note 2, includes interesting, refined analysis comparing yellow, blue, and peach schools for reading grade improvements. By Year 2 54% (7/13) yellow school youth started out fall with reading grades less than 92%, showing need for report card improvement. 43% (3/7) of those yellow school youth in Year 2 improved their reading grades by 5% or more. In Year 2 69% (24/35) of blue school youth started out fall with reading grades less than 92%, but only 21% (5/24) of Year 2 blue school youth improved reading grades by 5% or more. In Year 2 51% (41/80) of peach school youth started out fall with reading grades less than 92%, and 42% (17/41) of Year 2 peach schools improved reading grades by 5% or more. Overall, this data shows that blue schools (i.e., those assigning pass/fail grades in pandemic Year 1 during spring for reading) started out Year 2 with the highest percentage of RSG youth needing improvement in reading skills, yet by spring of Year 2 showed the lowest percentage (21%) who had actually improved their reading grades by 5% or more. Yellow schools yielded 43% who improved their reading grades by 5% or more, and peach schools similarly yielded 42% of RSG youth who improved their reading grades by 5% or more. This reading data, along with the analogous math data, strongly supports the idea that pass/fail grades used in response to the pandemic academic disruptions may have had the bad side effect of lowering central PA youth motivation to succeed and to persist in overcoming adversity

Since the percentage of RSG youth improving their math grades by 5% or more notably increased overall in Year 2 over Year 1 (see Table 6e), but less RSG youth improved their reading grades by 5% or more overall in Year 2 compared to Year 1 (see Table 6f), clearly other factors than the Year 1 grading process selected for handling the pandemic played a role in Year 2 report card grades. While use of a pass/fail grading system may lower motivation overall to continue to improve in math and reading the following year, use of the hybrid format throughout the entire Year 2 of RSG tutoring may best facilitate math learning rather than reading. Future data is needed, though, to tease apart the influence of tutoring in a hybrid format and specific strengths or areas for improvement unique to specific school districts.

Table 6e. Percentage of RSG participants over time who improved in *math* by half a letter grade[1] before vs. after initial A-student removal.

Performance Indicator	RSG Regular Participants (30+) 5% vs. 4% Fall to Spring Improvement	RSG Regular but Fall A-Grades Out
The percentage of *elementary* 21st CCLC *regular* program **Year 1** participants whose *mathematics grades* improved from fall to spring (GPRA 1.1 **Target = 48.5%)**	≥ 5% **math** improvement YR 2 = 24% (17/70) YR 1 = 14% (12/87) ≥ 4% **math** improvement YR 2 = 27% (19/70) YR 1 = 22% (19/87)	≥ 5% **math** improvement YR 2 = 47% (15/32) YR 1 = 25% (10/40) ≥ 4% **math** improvement YR 2 = 53% (17/32) YR 1 = 35% (14/40)
The percentage of *middle school* 21st CCLC *regular* program **Year 1** participants whose *mathematics grades* improved from fall to spring (GPRA 1.2 **Target = 48.5%)**	≥ 5% **math** improvement YR 2 = 33% (20/60) YR 1 = 11% (2/18) ≥ 4% **math** improvement YR 2 = 33% (20/60) YR 1 = 11% (2/18)	≥ 5% **math** improvement YR 2 = 45% (17/38) YR 1 = 15% (2/13) ≥ 4% **math** improvement YR 2 = 45% (17/38) YR 1 = 15% (2/13)
The percentage of *all* 21st CCLC *regular* program participants whose **Year 1** *mathematics grades* improved from fall to spring (GPRA 1.3 **Target = 48.5%)**	≥ 5% **math** improvement YR 2 = 29% (37/130) YR 1 = 13% (14/105) ≥ 4% **math** improvement YR 2 = 30% (39/130) YR 1 = 20% (21/105)	≥ 5% **math** improvement YR 2 = 46% (32/70) YR 1 = 23% (12/53) ≥ 4% **math** improvement YR 2 = 48.6% (34/70) YR 1 = 30% (16/53)

Note 1. In typical, non-pandemic years grade improvement is calculated by taking spring minus fall semester grades. Also, removal of fall A-grade youth typically means removal of RSG youth who earned ≥ 92% during Quarter 1 of fall, showing little possible room for improvement. For Year 1 (2019/20), the pandemic in March 2020 caused three different ways for reporting spring semester grades (see Tables 6b and 6d above). Given that one of the three pandemic grading processes involved assigning pass/fail grades or some other non-percentage grade during one or both semesters of 2019/20, this made estimating 4-5% improvement within Year 1 impossible for blue-coded schools across all RSG youth and for those with fall A-grades removed. Therefore, blue schools were necessarily excluded from the Year 1 removal of fall A-grade data calculations, which introduces extra bias since about half of RSG youth needing to improve in math report card grades (52/106 = 49%) attended blue-coded schools with pass/fail grading systems. Year 2, despite still involving COVID-19, returned to normal grading using percentages for Q1 vs. Q4 across all schools (with the exception of 3 students graded, excluded above, who were graded on a 4-pt. scale only).

Table 6e verifies that when all RSG youth math report card grades were compared from fall to spring, the target of 48.5% improving by half a letter grade was not met. However, once the A-grades from fall were removed (i.e., 92% or higher already earned in math at the start of the school year), both elementary youth (53%) and youth across all grades (48.6%) DID meet/surpass the 48.5% grant target set by RSG if half a letter grade is defined as improving from fall to spring by 4% or more. Also, middle school youth came very close to the target since 45% improved their math grades from fall to spring in Year 2 by 4%-5% or better (see far right column, Table 6e).

While some math report card grade RSG targets were met in Year 2 after removal of initial fall A-grades, no reading report card targets were met even after removal of fall A-grades (see Table

6f). However, elementary youth in Year 2 came closest, since 42% improved their reading grades from fall to spring by 4% or better once Quarter 1 A-grades were removed (see far right, Table 6f).

Table 6f. Percentage of RSG participants over time who improved in *reading* by half a letter grade[1] before vs. after initial A-student removal.

Performance Indicator	RSG Regular Participants(30+) 5% vs. 4% Fall to Spring Improvement	RSG Regular but Fall A-Grades Out
The percentage of *elementary* 21st CCLC *regular* program **Year 1** participants whose *reading grades* improved from fall to spring (GPRA 1.4 **Target = 48.5%)**	≥ 5% **reading** improvement YR 2 = 17% (12/70) YR 1 = 24% (21/88) ≥ 4% **reading** improvement YR 2 =20% (14/70) YR 1 = 27% (24/88)	≥ 5% **reading** improvement YR 2 = 35% (11/31) YR 1 = 36% (18/50) ≥ 4% **reading** improvement YR 2 =42% (13/31) YR 1 = 42% (21/50)
The percentage of *middle* school 21st CCLC *regular* program **Year 1** participants whose *reading grades* improved from fall to spring (GPRA 1.5 **Target = 48.5%**)	≥ 5% **reading** improvement YR 2 = 27% (16/60) YR 1 = 29% (5/17) ≥ 4% **reading** improvement YR 2 = 33% (20/60) YR 1 = 41% (7/17)	≥ 5% **reading** improvement YR 2 = 34% (14/41) YR 1 = 36% (5/14) ≥ 4% **reading** improvement YR 2 =39% (16/41) YR 1 = 50% (7/14)
The percentage of *all* 21st CCLC *regular* program participants whose **Year 1** *reading grades* improved from fall to spring (GPRA 1.6 **Target = 48.5%)**	≥ 5% **reading** improvement YR 2 = 22% (28/130) YR 1 = 25% (26/105) ≥ 4% **reading** improvement YR 2 = 26% (34/130) YR 1 = 30% (31/105)	≥ 5% **reading** improvement YR 2 = 35% (25/72) YR 1 = 36% (23/64) ≥ 4% **reading** improvement YR 2 =40% (29/72) YR 1 = 44% (28/64)

Note 1. In typical, non-pandemic years grade improvement is calculated by taking spring minus fall semester grades. Also, removal of fall A-grade youth typically means removal of RSG youth who earned ≥ 92% during Quarter 1 of fall, showing little possible room for improvement. For Year 1 (2019/20), the pandemic in March 2020 caused three different ways for reporting spring semester grades (see Tables 6b and 6d above). Given that one of the three pandemic grading processes involved assigning pass/fail grades or some other non-percentage grade during one or both semesters of 2019/20, this made estimating 4-5% improvement within Year 1 impossible for blue-coded schools across all RSG youth and for those with fall A-grades removed. Therefore, blue schools were necessarily excluded from the Year 1 removal of fall A-grade data calculations, which introduces extra bias since a bit over half of RSG youth needing to improve in reading report card grades (76/143 = 53%) attended blue-coded schools with pass/fail grading systems. Year 2, despite still involving COVID-19, returned to normal grading using percentages for Q1 vs. Q4 across all schools (with the exception of 3 students graded, excluded above, who were graded on a 4-pt. scale only).

Overall Performance Measure 1 Results: Report Card Grade Improvements over Time

Overall, the pattern of results here support that despite the small, non-significant overall average increase in math and reading report card grades during RSG Year 2 across all school districts (see Table 7a), motivation to improve by half a letter grade or more during Year 2 was stronger for math (see Table 6e) than for reading (see Table 6f) compared to Year 1. Table 7b verifies

that the Year 1 advantage in fall to spring reading report card grade improvements (minus data from pass/fail schools) reversed in Year 2 so that the learning improvements occurred most clearly in math (including now the pass/fail schools, which were graded normally now using the percentage scale system). Table 7b verifies that what was consistent about Years 1-2, though, was that the Bottom 2/3 of RSG fall-performing youth in math and reading were driving the spring report card grade improvements – NOT the Top 1/3 of fall RSG youth!

Table 7b results could be interpreted to suggest that during the sudden academic chaos of Year 1, as schools and tutoring programs struggled to adapt their processes, RSG youth relied more heavily on reading skills than usual to better navigate their switch to online schooling, in order to keep their grades up. Therefore, Year 1 reading skills most notably improved by 1% or more, especially for the Bottom 2/3 of fall-semester RSG youth. However, during Year 2 with additional time for online skills training and improved online learning practices, schools and after-school tutors may have more effectively utilized online learning tools to facilitate math learning than reading learning. Alternatively, the online format may lend itself better to improving math than reading skills, which makes sense given the increased visual nature of mathematics instruction. Again Year 2 results showed the Bottom 2/3 of fall semester RSG youth were driving much of the Year 2 math grade improvements. During Years 1-2 the Top 1/3 of RSG youth may have taken advantage of lowered expectations, challenges inherent in online teaching, or both to relax their efforts to some degree.

Table 7a. Average Report Card Grades for all RSG Regular Participants (30+ days) from K-8th Grade over Time.[1-3]

Subject Area Median[1] Report Card Grade	**FALL**	**SPRING**
Math Grade **YR 2 Mdn %** (N = 131-132)	89.50%	90.00%
YR 1 Mdn % (N = 106)[2]	91.00%	89.00%***
Reading Grade **YR 2 Mdn %** (N = 128-130)	89.00%	91.00%
YR 1 Mdn % (N = 105-107)[2]	90.00%	91.00%*

Note 1. Medians are best used as averages rather than means here because it is more accurate to report the 50th percentile when grade distributions primarily show high grades that are skewed. Year 2 standard error of skewness values were .21 for both math semesters and for both reading semesters. All Year 1 standard error of skewness values, after removal of all RSG youth with only spring passing grades provided, were .23-.24 for math and reading.
Note 2. N reflects the sample size and the smallest number of students providing data for any a given subject area across both fall and spring is reported above. For Year 1 only any RSG youth for whom only passing spring grades were provided were removed from Table 7a comparisons of fall vs. spring.
Note 3. Asterisks denote only where spring grades were significantly higher than fall grades within the same year and subject area (see Year 1 averages). TR means a near-significant difference, * $p \leq .05$ or 95% confidence level, ** $p \leq .01$ or 99% confidence level, *** $p \leq .001$ or 99.99% confidence level. Wilcoxon signed ranks tests were used to compare fall vs. spring grades each year. Year 2 averages showed no significant differences between fall and spring for either math ($p = .229$) or for reading ($p = .843$).

Table 7b verifies that overall across all grade levels, then, the majority of RSG youth in Year 1 showed math report card grade declines (59%) during the pandemic year 2019/2020 but the majority showed reading grade improvements (57%) that same year. This only partially supports Kuhfeld et al. (2020) projections, though; while reading definitely yielded more positive improvements than math despite the pandemic as projected, it was NOT the top 1/3 of RSG youth who were most responsible for this pattern, as Kuhfeld et al. predicted (see Table 7b below). Instead it was the Bottom 2/3 of RSG youth driving improvements in both math and reading. By Year 2 the majority of RSG youth were improving at both math (50% improved; 41% declined) and reading (48% improved; 46% declined); again the Bottom 2/3 of fall-semester RSG youth drove these report card grade improvements by 1% or more. Therefore, Year 2 data in general (see Tables 3, 6e, 6f, and 7b) supports that math skills "bouncing back" in particular were effectively supported by RSG tutoring efforts, especially for the fall-determined Bottom 2/3 of RSG youth. Further study should be done to determine the degree to which a hybrid format leads tutors to focus more effort than usual helping students who need it the most or instead facilitates students who need the most improvements maintaining their improvement motivation levels better when they are not as easily able to compare the fruits of their efforts with peers who are typically at more advanced levels.

Table 7b. Observed frequencies of Top 1/3 vs. Bottom 2/3 of RSG youth who showed ANY[1] change in fall to spring math and reading report card grades over time.[1-3]

	Top 1/3 of RSG Youth	**Bottom 2/3 of RSG Youth[4]**	**Total RSG Youth**
Math Grade[2]			
YR 2	**YR 2**	**YR 2**	**YR 2**
Decline ≤ -1%	28/46 (61%)	25/84 (30%)	53/130 (41%)
No Change	8/46 (17%)	4/84 (5%)	12/130 (9%)
Improve ≥ +1%	10/46 (22%)	55/84 (65%)	65/130 (50%)
YR 1	**YR 1**	**YR 1**	**YR 1**
Decline ≤ -1%	34/48 (71%)	26/53 (49%)	60/101 (59%)
No Change	5/48 (10%)	2/53 (4%)	7/101 (7%)
Improve ≥ +1%	9/48 (19%)	25/53 (47%)	34/101 (34%)
Reading Grade[3]			
YR 2	**YR 2**	**YR 2**	**YR 2**
Decline ≤ -1%	23/44 (52%)	36/84 (43%)	59/128 (46%)
No Change	4/44 (9%)	3/84 (4%)	7/128 (6%)
Improve ≥ +1%	17/44 (39%)	45/84 (54%)	62/128 (48%)
YR 1	**YR 1**	**YR 1**	**YR 1**
Decline ≤ -1%	18/41 (44%)	14/64 (22%)	32/105 (31%)
No Change	7/41 (17%)	6/64 (9%)	13/105 (12%)
Improve ≥ +1%	16/41 (39%)	44/64 (69%)	60/105 (57%)

Note 1. Unlike Tables 6e-6f, where a half letter grade of ≥ 4-5% improvement was defined as report card grade improvement, this table highlights both improvements and declines in grades within Year 1 by 1% or more in either direction. This allows a more sensitive measure of change in report card grades for comparison over time.

Note 2. For math report card grades, Year 2 breakdown of Top 1/3 vs. Bottom 2/3 of RSG youth further into yellow vs. blue vs. peach schools verified that 50% (1/2) of yellow school Top 1/3 of youth improved, 10% (1/10) of blue

school Top 1/3 youth improved, and 24% (8/34) of peach school Top 1/3 of youth improved. The Bottom 2/3 of RSG youth during Year 2 showed for math grades that 73% (8/11) of yellow school youth improved, 44% (11/25) of blue school youth improved, and 75% (36/48) of peach school youth improved.

Note 3. For reading report card grades, Year 2 breakdown of Top 1/3 vs. Bottom 2/3 of RSG youth further into yellow vs. blue vs. peach schools verified that 0% (0/2) of yellow school Top 1/3 of youth improved, 78% (7/9) blue school Top 1/3 of youth improved, and 30% (10/33) peach school Top 1/3 of youth improved. The Bottom 2/3 of RSG youth during Year 2 showed for reading grades that 45% (5/11) yellow school youth improved, 46% (12/26) blue school youth improved, and 60% (28/47) peach school youth improved.

Note 4. Three RSG kindergarten youth from Blacklick Valley were graded on a 4-pt. scale (4 = highest grade) instead of a percentage scale during Year 2 due to very low fall skill levels in math and/or reading. Of these three youth, who had total RSG attendance of 65-79 days, 100% improved in math (two youth improved from a grade of 1 to a grade of 3; one youth improved from 1 to 2) and 33% improved in reading (one youth improved from a grade of 1 to a grade of 2; the other two youth showed no changes in fall to spring reading grades.

G. RSG Virtual Community Engagement with Saint Francis University (SFU) in Fall 2020

Summary of Common Core PDE Math Standards and Online Games Created and Distributed

Given the need to keep community engagement activities virtual during the pandemic, Cohort 10 Year 2 tutoring activities provided by Saint Francis University PSYC 201 Research Methods and Statistics I students were fully online. The PDE 1^{st}-5^{th} grade math standards 2.1 and 2.4 in the area of measurement and statistics was focused upon, as they best corresponded with the higher education PSYC 201 learning goals (see screenshots of all PDE math standards used on the next two pages of this report).

During Fall 2020 there were two sections of PSYC 201, with 48 total SFU students enrolled across both sections. With 24 students per section, I decided to assign four separate groups of 12 students each to plan out, create, and record online using Zoom their math PDE learning game. Two groups focused on math standards for 1^{st}-3^{rd} grade, while two groups focused on math standards for 3^{rd}-5^{th} grade. After reviewing the 6^{th}-8^{th} grade measurement and statistics learning goals, we decided it was safe to assume that middle school students attending RSG were especially likely to be behind their peers in their math skills; therefore, even 6^{th}-8^{th} grade RSG participants would likely benefit from a review of lower grade math skills. Of the two SFU groups focused on 1^{st}-3^{rd} grade, one group was asked to create an individual-oriented fun math game activity that could be demonstrated in a Zoom recording, whereas one group was asked to create a small-group oriented fun math game activity instead via Zoom recording. The same process was done with the 3^{rd}-5^{th} grade two groups – one focused on individual practice, allowing tutor customizable help, and one focused on small group math practice, allowing RSG youth to also have peer learning.

PDE Common Core Math Standards 2.1 and 2.4 Driving RSG online Games

Grade 1 2.4.1	2.4.2 Grade 2	2.4.3 Grade 3
and support every student to realize his or her maximum potential and to		
CC.2.4.1.A.4 Represent and interpret data using tables/charts.	CC.2.4.2.A.4 Represent and interpret data using line plots, picture graphs, and bar graphs.	CC.2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs. M03.D-M.2.1.1 M03.D-M.2.1.2 M03.D-M.2.1.3 M03.D-M.2.1.4

Grade 1 2.4.1	Grade 2 2.4.2	Grade 3 2.4.3
and support every student to realize his or her maximum potential and to		
CC.2.4.1.A.1 Order lengths and measure them both indirectly and by repeating length units.	CC.2.4.2.A.1 Measure and estimate lengths in standard units using appropriate tools.	CC.2.4.3.A.1 Solve problems involving measurement and estimation of temperature, liquid volume, mass, and length. M03.D-M.1.2.1 M03.D-M.1.2.2 M03.D-M.1.2.3
CC.2.4.1.A.2 Tell and write time to the nearest half hour using both analog and digital clocks.	CC.2.4.2.A.2 Tell and write time to the nearest five minutes using both analog and digital clocks.	CC.2.4.3.A.2 Tell and write time to the nearest minute and solve problems by calculating time intervals. M03.D-M.1.1.1 M03.D-M.1.1.2

ity in repeated reasoning.

Grade 4 2.4.4	Grade 5 2.4.5
acquire the knowledge and skills needed to:	
CC.2.4.4.A.1 Solve problems involving measurement and conversions from a larger unit to a smaller unit. M04.D-M.1.1.1 M04.D-M.1.1.2 M04.D-M.1.1.3 M04.D-M.1.1.4	CC.2.4.5.A.1 Solve problems using conversions within a given measurement system. M05.D-M.1.1.1
CC.2.4.4.A.2 Translate information from one type of data display to another. M04.D-M.2.1.3	CC.2.4.5.A.2 Represent and interpret data using appropriate scale. M05.D-M.2.1.2

Grade 3 2.1.3	Grade 4 2.1.4	Grade 5 2.1.5
aximum potential and to acquire the knowledge and skills needed to:		
CC.2.1.3.C.1 Explore and develop an understanding of fractions as numbers. M03.A-F.1.1.1 M03.A-F.1.1.2 M03.A-F.1.1.3 M03.A-F.1.1.4 M03.A-F.1.1.5	CC.2.1.4.C.1 Extend the understanding of fractions to show equivalence and ordering. M04.A-F.1.1.1 M04.A-F.1.1.2	CC.2.1.5.C.1 Use the understanding of equivalency to add and subtract fractions. M05.A-F.1.1.1
Intentionally Blank	CC.2.1.4.C.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. M04.A-F.2.1.1 M04.A-F.2.1.2 M04.A-F.2.1.3 M04.A-F.2.1.4 M04.A-F.2.1.5 M04.A-F.2.1.6 M04.A-F.2.1.7	CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. M05.A-F.2.1.1 M05.A-F.2.1.2 M05.A-F.2.1.3 M05.A-F.2.1.4
Intentionally Blank	CC.2.1.4.C.3 Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100). M04.A-F.3.1.1 M04.A-F.3.1.2 M04.A-F.3.1.3	*Intentionally Blank*

2.4.3 Grade 3	2.4.4 Grade 4	2.4.5 Grade 5
aximum potential and to acquire the knowledge and skills needed to:		
CC.2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs. M03.D-M.2.1.1 M03.D-M.2.1.2 M03.D-M.2.1.3 M03.D-M.2.1.4	CC.2.4.4.A.4 Represent and interpret data involving fractions using information provided in a line plot. M04.D-M.2.1.1 M04.D-M.2.1.2	CC.2.4.5.A.4 Solve problems involving computation of fractions using information provided in a line plot. M05.D-M.2.1.1

There were 3 phases of assigned RSG math game planning and creation carried out by SFU students in PSYC 201:

Phase 1: Individual student discussion Board posts aimed at brainstorming creative games that RSG youth would both learn PDE math 2.1 and/or 2.4 math standard skills from while also having a lot of fun. Colorful, engaging sample math game materials were also created and posted.

Phase 2: In-class time 12-student planning sessions, supervised by Dr. Moist (PSYC 201 professor) and by Dr. Katherine Remillard. Dr. Remillard was the C10, Year 2 grant-paid consultant based on her professional experiences teaching higher education students in elementary math education. Dr. Moist and Dr. Remillard integrated the best ideas from the Discussion Board phase in creating a class agenda for discussion. Dr. Remillard weighed in as needed to improve the quality of the planned RSG math games, comment on realistic levels of math skills for RSG youth, and suggest ways to simplify/clarify game materials to make them user-friendly. She also proof-read all math game problem answers to edit for accuracy.

Phase 3: Towards the end of the semester, PSYC 201 students were ready to rehearse and then create the final one of 4 Zoom recorded RSG math games so that the links could be sent by RSG out to the participating schools. Along with Zoom links to games being played for instruction purposes, all game material (stimuli, playing pieces, test questions with answer keys) and tutor instruction files were also sent out. Each game consisted of 4 difficulty levels of math problems to solve, so that tutors could customize the games as needed to meet RSG youth skills where they started concerning telling time, conversion of measurement scales, and/or fractions. PSYC 201 students within each of the 4 game videos adopted either the role of game leader/math teacher or simulated RSG youth playing the game at different levels to demonstrate how the game worked. All 201 students were instructed to at times "role model" being confused on relevant math skills, in a respectful way that did not ridicule students having difficulty grasping the material, so that they could demonstrate the importance of asking questions to improve learning. All 4 game videos were created 11/17/20 or 11/19/20 and were soon after e-mailed out with all relevant game and tutor instructions files to Sue Sheehan and Chelsea Brink at RSG for further distribution.

A copy of the e-mail sent to RSG, which outlined the nature of the 4 PDE math standard tutoring games, is provided on the next page. This is also followed by sample screenshots of game materials. RSG verified later in Year 2 that the school districts all received and used the games.

Summary of Virtual Math Games, Tutor Instructions, and Game Materials

E-mail sent to RSG November, 2020 by Dr. Moist

Sue,

Just wanted to touch base and tell you I am quite excited about what my 201 students are doing to prepare the "simulated" Zoom math games. Next Tues. 11/17 and Thurs. 11/19 (last class days) they will be actually making the Zoom recordings of all 4 games planned, so I should be able to send the 4 links to you some time after that. Each game has 2 group leaders running the game and rest of 201 students are "playing the game" - at times confused (respectfully so naturally).

1st-3rd grade
2 Zoom links
Part 1 - Individual focused activity where they count up total Santas (1 Santa = 1 hour) in each X-mas scene and 5-elf clusters (each group of 5 elves = 5 min.) and lone elves (1 min.) to translate that into digital vs. analog clock times.
Part 2 - Small group activity where each small group competes to be the first to complete a clock scavenger hunt worksheet by running around the room to locate hidden large clocks (back of each is envelope with matching times on small clock slips); each small clock is then brought back to team sheet to glue in correct time location. Duplicate clock slips found can be traded with other teams.

4th-6th grade
2 Zoom links
Part 1 - Individual focused activity where a blank 10X10 grid of squares is the amusement park. Easy/medium/Hard difficulty levels made. Color key is given for kids to use to plan their park with what they want in it. Green = grass, red = amusement park rides,etc. Harder levels have more colors and possible objects. Kids have to first color their 100 squares using whatever colors they want to show how much of park consists of each element. Then park questions are answered that require them to create fractions, turn them into decimals and %, and add/subtract fractions. Other questions ask them to do measurement conversions.
Part 2 - small group activity with student-created virtual Board game - world map and Start to Finish spaces for airplanes to zigzag around the world. Groups play "Jeopardy" (calling it Geo-Party) where higher points for correct answers let them move further on game board. Question categories themed by continents and all questions require focus on either fractions to decimals/% or conversions using metric scale for most countries but U.S. customary scale for those that use it.

Cross your fingers all 4 groups are able to effectively collaborate to pull their final materials together and make it work well!

Sample RSG Year 2 (2020/2021) Math Game Materials on Telling Time, Measurement Scale Conversions, and Fractions for K-8th graders

Time with Santa

For this activity you need to find the Santas and the elves in the picture and count the total of them! Throughout the pictures you will see Santas and elves spread across them. Each Santa and each elf represents time.

 **= 1 hour**

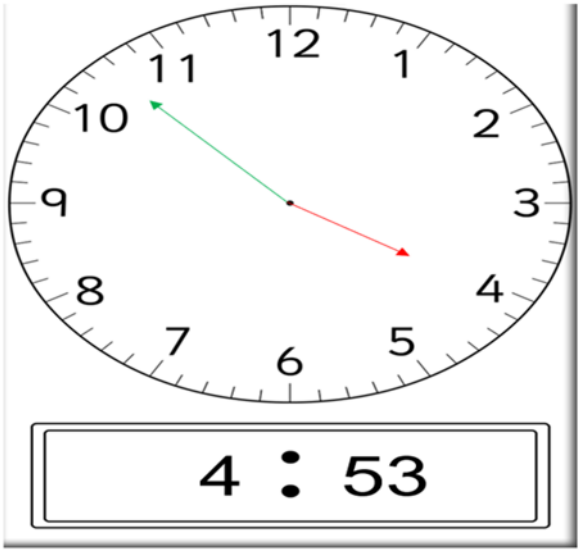
 **= 5 minutes**

 **= 1 minute**

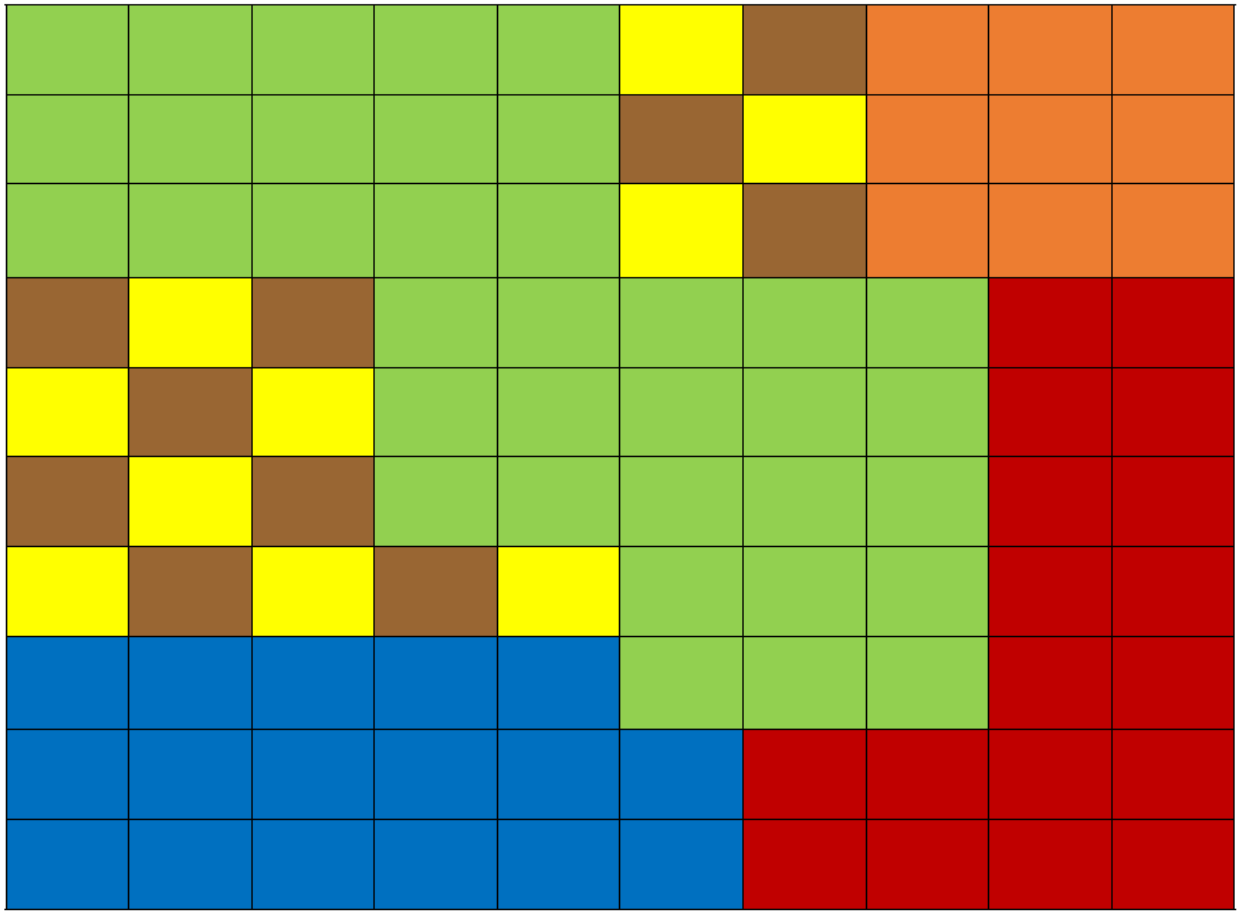
The goal of this activity is to be able to tell the time by adding up the number of Santas and elves!

	Tally	Total
		
		

How many Santas do you see?
How many elves do you see?
What time should be displayed on the clock?



Time In Words	Telling Time Scavenger Hunt: Paste in the times you find! Digital	Analog
Five after One		
		
		
Five 'til nine		



Park Planner Color Key

Green = Grass Brown = Trees

Blue = Water Red = Amusement Park Rides

Yellow = Flowers Orange = Food Stands

4^{th}-6^{th} grade fractions and decimals based on PDE Common Core math standards

Cedar Park has hired you to make some measurements about their 10 X 10 park with 100 sections total and needs your opinion on whether or not the park layout is good.

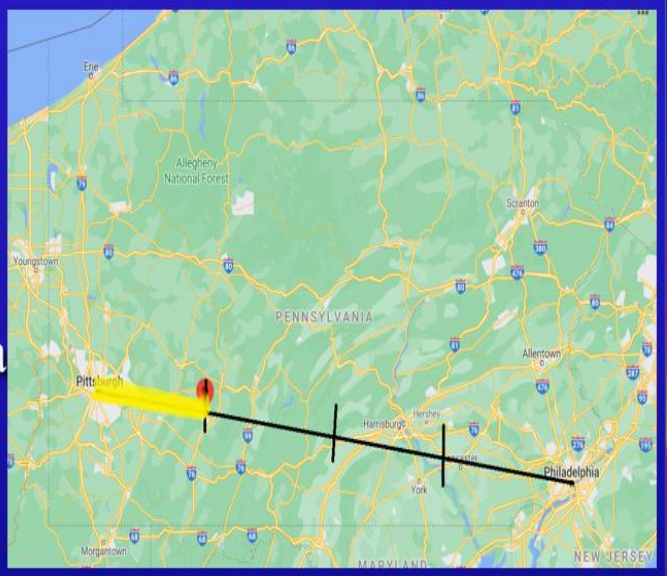
1. What fraction of the entire park is made up of grass? In your opinion, would you rather have more trees or flowers with the grass?

2. What part of the entire park is made up of grass as a decimal? If you could, would you change where all of the grass is placed, and how so?

3. What fraction of the entire park is made up of rides and food stands? What kind of rides do you think would be the most popular? What type of food stands should the park get?

AROUND THE WORLD · 500

Taking a trip from Pittsburgh to Philadelphia, Sidney decides to spend a night in Johnstown. What part of the whole journey remains? Assume all parts are equal and write your answer as a decimal.



ANSWER???

BACK TO PANEL

NORTH AMERICA	SOUTH AMERICA	AFRICA	EUROPE	ASIA	OCEANIA	AROUND THE WORLD
100	100	100	100	100	100	100
200	200	200	200	200	200	200
300	300	300	300	300	300	300
400	400	400	400	400	400	400
500	500	500	500	500	500	500

Jeopardy (GeoParty) Game for 4th-6th Grade Practice at conversions, fractions, and decimals based on PDE Common Core Math Standards

H. RSG Parent Surveys

Table 8a. Parent Responses for Cohort 10, Year 2

RSG School Site	Total Parent Responses (Response rate)[2]
Blacklick Valley	13 (81%)
Cambria Heights	27 (44%)
Glendale[1]	1 (100%)
Harmony	17 (94%)
Jackson Elementary	15 (> 100%)[2]
Northern Cambria Elementary	8 (47%)
St. Michael's	4 (24%)
Total	85/157 (54% overall response rate)

Note 1. Only one Glendale RSG student received regular tutoring for Cohort 10, Year 2, so n = 1 parent from this school was actually a 100% parent response rate.

Note 2. 0/17 parents from Central Cambria Elementary/Middle School or from Portage responded to this survey. Response rate was calculated by taking total parent responses divided by total youth regularly tutored at each school district (see Table 1a). Since the Parent survey responses included those of both regular and non-regular attending RSG youth, the response rate of 54% is a bit misleading, as there is no way to know how many non-regular attendees there were. However, it seems safe to estimate that the majority of parent responses came from those with regularly attending RSG youth. One school district (Jackson Elementary) obviously included ≥ 33% of their respondents who were parents of non-regular youth because 15 Jackson parents responded, with only 10 regular RSG youth grades and teacher survey data reported.

Table 8b. Parent Overall Responses to Questions 1-3

	Please indicate your level of agreement with the following statements by checking one box for each row.	Strongly Agree	Agree	Disagree	Strongly Disagree
1	The program addressed my child's specific needs.	58 (68%)	26 (31%)	1 (1%)	0 (0%)
2	I had opportunities to visit the program.	32 (44%)	32 (44%)	2 (3%)	6 (8%)
3	The program offered my child a variety of academic and enrichment activities.	64 (76%)	20 (24%)	0 (0%)	0 (0%)

Note 1. More than 75% of parents "Strongly Agreed" to *Question 1* from Cambria Heights Elementary, Glendale, Northern Cambria, and St. Michael's. Blacklick, Harmony, and Jackson showed the lowest percentage of "Strongly Agree" responses to Question 1 (39, 59%, and 67% respectively).

Note 2. Only 72 of 85 (85%) responding parents answered *Question 2*, suggesting 15% of parents may have been ambivalent about visiting opportunities (of these 15%, 8/13 "no response" parents were from Harmony). Blacklick and Northern Cambria were the only schools generating 100% of Question 2 "Strongly Disagree/Disagree" responses.

Note 3. Jackson and Harmony showed the lowest percentage of "Strongly Agree" responses to *Question 3* (67-71%, respectively); all other schools surpassed 75% or more for "Strongly Agree".

Table 8a verifies that 85 parents of RSG youth from across 7 central PA school districts responded to the C10 Year 2 Parent Survey. The estimated 54% response rate is fairly common for surveys, so it should be kept in mind that those parents who were the busiest and/or most indifferent about their children's tutoring quality were likely among the other half of parents who did not respond to the parent invitation.

The overwhelming majority of parents spoke very positively about the RSG program. Table 8b shows that 99% of parents strongly agreed/agreed that RSG met their child's specific needs, and 100% strongly agreed/agreed that RSG offered a variety of academic and enrichment activities. Table 8c shows that parents most frequently perceived their children as improving in their math skills (85%), followed closely by 82% of parents agreeing their children improved in reading too. Over ¾ of parents strongly agreed/agreed that their children improved in homework completion over the year, corresponding with the most frequent parent comment later on that the most positive result they saw about RSG was the role it plays in helping youth complete their homework.

Table 8c. Parent Overall Responses to Questions 4-9

Based on your observation of your child, please select the answer that best describes how s/he has changed this year related to each of the following academic items.

	Content Area	Did not need to Improve	Improved	No Change	Declined
4	Reading	10 (12%)	68 (82%)	5 (6%)	0 (0%)
5	Math	7 (8%)	72 (85%)	6 (7%)	0 (0%)
6	Science	19 (23%)	50 (60%)	14 (17%)	0 (0%)
7	Social studies	20 (24%)	46 (55%)	17 (21%)	0 (0%)
8	Use of technology	16 (20%)	49 (61%)	16 (20%)	0 (0%)
9	Homework completion	12 (14%)	64 (76%)	8 (10%)	0 (0%)

Note 1. Jackson had the lowest percentage of parents identifying their children as "Improved" (71%) at *reading*; all other schools had 75% or more who saw reading improvement.

Note 2. All schools had 75% or more of parents report that their children "Improved" at *math*, with St. Michael's and Jackson showing the lowest percentages (75% and 80%, respectively).

Note 3. Most schools had 29-74% of parents (ranging from Jackson to Cambria Heights Elementary) report their children "Improved" at *science*; 100% of St. Michael's parents saw science as "Improved".

Note 4. Most schools had 25-74% of parents (ranging from N. Cambria to Cambria Heights Elementary) report their children "Improved" at *social studies*; 100% of St. Michael's parents saw social studies as "Improved".

Note 5. Most schools had 38-70% of parents (ranging from N. Cambria to Cambria Heights) report their children "Improved" at technology; 100% of St. Michael's and Glendale parents saw *technology* as "Improved".

Note 6. Most schools had 41-93% of parents (ranging from Harmony to Cambria Heights) report their children "Improved" at *homework completion*; 100% of Blacklick and Glendale parents saw homework completion as "Improved".

Since almost as many parents perceived their children as improving at reading in Year 2 as in math, which disagrees with the patterns of change over time in average math vs. reading report card grades (see Table 3; see Figures 1a-1c, 2a-2c), parents may be estimating reading improvement mainly from their own observations of growth during home reading activities. On the other hand, parents may be somewhat unaware that even more reading practice is needed.

The two main areas of improvement suggested by parents was a) only 55% saw improvement in their child's social studies learning (with 60% seeing it in science and 61% in technology), and b) more effort in some school districts could be made to make parents aware of family-oriented activities since 11% of parents disagreed/strongly disagreed they had opportunities to visit the program. This 11% all came from Blacklick and N. Cambria, and there may be higher rates of parents who don't regularly keep up with e-mail invitations sent out by the school or RSG in those areas. Alternatively, these two schools may need to do more to clearly communicate visiting opportunities to parents or to learn unique needs of parents in those communities. Increased efforts to invite parent participation or address unique needs may also be needed at Harmony and Jackson, as these two schools had the next lowest "Strongly Agree" responses to Question 2. Since 56% of parents reported they did not participate in parent activities offered, clearly over half of parents are not interested in greater engagement with the tutoring program.

Table 8d. Parent Responses to Questions 10-13

Based on your observation of your child, please select the answer that best describes how s/he has changed this year related to each of the following behavior items.

	Behavior Element	Did not need to Improve	Improved	No Change	Declined
10	Self confidence	20 (24%)	51 (62%)	11 (13%)	0 (0%)
11	Attitude toward school/learning	12 (16%)	55 (66%)	12 (15%)	1 (1%)
12	Attendance at school	26 (31%)	34 (41%)	23 (28%)	0 (0%)
13	Behavior at school	21 (25%)	41 (49%)	21 (25%)	0 (0%)

Note 1. Most schools had parents rate youth as "Improved" at *self-confidence* by 53-75% (ranging from Harmony to N. Cambria, respectively); 100% of Glendale and St. Michael's parents rated youth as "Improved" at self-confidence.

Note 2. Most schools had parents rate youth as "Improved" at *attitude toward school/learning* by 38-85% (ranging from N. Cambria to Cambria Heights, respectively); 100% of Glendale and St. Michael's parents rated youth as "Improved" at attitude toward school/learning.

Note 3. Most schools had parents rate youth as "Improved" at *attendance at school* by 12-69% (ranging from Harmony to Cambria Heights, respectively); 100% of Glendale and St. Michael's parents rated youth as "Improved" at school attendance.

Note 4. Most schools had parents rate youth as "Improved" at *behavior at school* by 29-69% (ranging from Harmony/Jackson to Cambria Heights, respectively); 100% of Glendale and St. Michael's parents rated youth as "Improved" at school behavior.

While the estimated 54% parent response rate for this survey was calculated based on available total regular attendee counts only, RSG verified that both non-regular and regular participants' parents completed the parent survey. Therefore, it is interesting that only one school district, Jackson Elementary, showed evidence of eliciting ≥ 5 non-regular parent respondents (see Note 2, Table 8a); hence clearly 1/3 of parent respondents from Jackson were those with youth who did not attend the minimum of 30 days during the 2020/21 academic year. Interestingly, only 1 Jackson Elementary parent (1% of all parents) disagreed with Question 1 (see Table 8b), that RSG addressed his/her child's specific needs. A follow-up comment made by this parent to Question 21 verified that the parent had expected a larger % of time be devoted to tutoring in math and reading, suggesting lack of support for recreation time allowed to help children de-compress after a long day at school. Similarly, one N. Cambria parent was unsatisfied with the RSG recreation (see Table 8e), making the follow-up comment that an area for improvement was that RSG could provide more one-on-one time for tutoring. Finally, the only other clear sign of dissatisfaction was from a second Jackson parent, who saw a decline in his/her child's attitude toward learning over Year 2 (see Table 8d).

Overall, since 98% of parents reported being "very satisfied" with the RSG program, 2% were "somewhat satisfied", and 0% were unsatisfied, clearly parents were very happy with the tutoring services provided to their children even using the hybrid format. The 2% of parents who commented that more one-on-one tutoring time was needed with their children suggests that one area for improvement may be RSG tutors making an extra effort early in the fall semester to elicit feedback from parents about concerns on extra help needed by youth especially at-risk in skill level or attitude, or who simply may need extra encouragement to ask for help from tutors.

Table 8e. Parent Response to Questions 14-17

Please rate your satisfaction with each of these program areas by checking one box for each row.

	Program Area	Very Satisfied	Somewhat Satisfied	Unsatisfied
14	Overall Program	81 (98%)	2 (2%)	0 (0%)
15	Communication	74 (91%)	7 (9%)	0 (0%)
16	Academics	78 (98%)	2 (2%)	0 (0%)
17	Recreation	73 (92%)	5 (6%)	1 (1%)

Note 1. The 2 parents reporting being "Somewhat Satisfied" with the overall RSG program and with academics both came from Jackson Elementary. Blacklick, Cambria Heights, and Jackson each included a few parents "Somewhat Satisfied" with communication. 50% of N. Cambria parent responses on recreation included "Somewhat Satisfied" (n=3) or "Unsatisfied" (n = 1).

All open-ended question responses are summarized in the next section below, followed by all individual responses provided by parents. The overwhelming majority of individual parents comments were very positive!

Summary of Parent Item 18-21 Results Across All Schools

Q18: **"The parent activities the program offered (i.e., family night, computer classes, GED classes, etc.) met my needs". 78/85 (92%) of all parents answered Question 18**

Did not participate = 48 (56%)
Yes (activities met needs) = 20 (24%)
No activities offered = 10 (12% - 27% of Jackson; 67% of Northern Cambria; 50% of St. Michael's)
No (activities did not meet my needs) = 0 (0%)

Q19: "In your opinion, what has been the most positive result of your child's participation in the 21st Century program this year?

Homework completion or help	n = 16
Parents very pleased/impressed/thankful	n = 7
Better grades/attitude/study skills	n = 6
Extra support/one on one time	n = 5
Child happy/loves/enjoys going to program	n = 5
Seeing friends/social opportunities	n = 4
Improved self-confidence of child	n = 3
Variety/enjoyed activities	n = 3
Leadership/mentor; taught manners/self-help, anxiety-reduction opportunity	n = 3
Staying after school/safe space for help	n = 2
Tutors very friendly/kind	n = 2

Q20: "In what ways, if any, do you think the program could improve?"

None; N/A	n = 5
More one-on-one time; tutor-specific help	n = 2
Hours differ from my work; 5 days a week better	n = 2

Other individual responses (n=1) included: carry program to 7th grade, transportation, provide snacks, and Great Job.

Q21: "Feel free to share any additional comments"

Virtual was helpful this year n = 2

Most other comments were repetitive to above "most positive" ideas, but 1 Jackson parent suggested offering more opportunities for older kids to mentor younger ones and 1 Jackson parent was dissatisfied that not enough % of program time was spent tutoring for math and reading.

Full Parent Responses to Questions 18-21

Blacklick Valley (n = 13)

Parent Activities Met My Needs	Most Positive Result	Ways to Improve	Other
Yes (met needs)	Happy child loves afterschool		Very happy with child progress
Did not participate	Homework completion, self esteem, friendships		caring staff
Did not participate	variety of activities, liked crafts	carry program to 7th grade	virtual was very helpful with COVID Teachers and staff do a great job
Did not participate	completing homework		
Did not participate	after school care		
Did not participate	Enjoyed staying with staff and friends		
Did not participate		transportation	
Did not participate	homework help		
Yes (met needs)	safe place to do homework	snacks for kids	crafts and homework completed.
Did not participate	Homework completed	Great job	activities and staff
Did not participate	Homework done	different hours from my work	
Yes (met needs)	better grades and attitude		Virtual was helpful this yr
Yes (met needs)			

Total Yes (met needs) = 4
Total Did not participate = 9

Cambria Heights Elementary (n = 27)

Parent Activities Met My Needs	Most Positive Result	Ways to Improve	Other
	completing homework	5 days a week	I love this program

Total Yes (met needs) = 6
Total Did not participate = 19

Glendale (n = 1)

Parent Activities Met My Needs	Most Positive Result	Ways to Improve	Other
			Happy w/ Mrs. Madonna

Harmony (n = 17)

Parent Activities Met My Needs	Most Positive Result	Ways to Improve	Other
Yes (met needs)	Very pleased with program. They liked the help they got		
Yes (met needs)	enjoyed the activities and homework help		
Yes (met needs)	Very pleased with program.		
Yes (met needs)			
Did not participate	Homework completion		Kids enjoyed program
Did not participate			
Did not participate			
Yes (met needs)	Getting help with homework		
Did not participate	completing homework		
Did not participate	completing homework		
Did not participate	Taught manners and self help		
Yes (met needs)	Very pleased with program. They liked the help they got		
Yes (met needs)	enjoyed the activities and homework help		
Yes (met needs)			
Did not participate	Homework completion		

Total Yes (met needs) = 8
Total Did not participate = 7

Jackson (n=15)

Parent Activities Met My Needs	Most Positive Result	Ways to Improve	Other
Did not participate	support for what is being taught in school		This a great program & the facilitators are excellent
Did not participate	Opportunities for leadership & Mentoring		
		Maybe allow more opportunities for mentoring by older students for younger students or peers in need	
No activities offered	n/a		My child was enrolled in hopes of receiving tutoring for a large percentage of the time during RSG in Math and reading. That did not happen, was not the program we needed.
Yes (met needs)			
No activities offered	One on one helped with Math		

Did not participate			
Did not participate			
Did not participate	social skills	None	Kids love the program
Did not participate	extra academic support	more tutor specific help	
Did not participate	his willingness to do his work and the confidence he has in himself to get his work done.		
			I think this program is wonderful and appreciate all the hard work that is put fourth to make it that way
Did not participate			
Did not participate			
Did not participate			
No activities offered	She is an anxious child so her going to RSG was an achievement in itself		
No activities offered	It has given her time to complete homework with help available. It has also been a way for her to boost her confidence with other kids.		

Total Did not participate = 10
Total No activities offered = 4
Total Yes (met needs) = 1

Northern Cambria (n = 8)

Parent Activities Met My Needs	**Most Positive Result**	**Ways to Improve**	**Other**
No activities offered	Staff is very friendly, child excited to go.	One on one with students	N/A
No activities offered	Improvement of grades		
No activities offered			
Did not participate	Extra help	none	
No activities offered	Keeping grades up		
Did not participate	Better study skills and extra help	none	

Total No activities offered = 4
Total Did not participate = 2
Total Yes (met needs) = 0

St. Michael's (n = 4)

Parent Activities Met My Needs	Most Positive Result	Ways to Improve	Other
No activities offered	Social skills with other children her age and one on one time with teachers	none	
Did not participate	This program has done wonders for my child. I cant thank you guys enough!!! This extra help, has helped him and he enjoys! All the teachers are helpful kind, caring and are great. Very thankful for program	N/A	Thank you.
Yes (met needs)	Thanks it's perfect		
No activities offered			

Total No activities offered = 2
Total Did not participate = 1
Total Yes (met needs) = 1