Evaluation Matters

Volume 2, Number 3 February 2013 Steven Urdegar, Ph.D, Director

Summer Waves of Learning:
C-Learning Wave (Compensation), 2011-2012

1. What is the purpose of this report?

This report examines the outcomes of the C-Learning Wave, the compensation component of Summer Waves of Learning, a three-pronged initiative developed by the Superintendent to provide access to supplemental instruction for students in need of remediation, compensation, or enrichment. The C-Learning Wave provides Internet based instruction in reading and/or mathematics students at selected school sites, under the supervision of a teacher. Each student's use of the software application provided for a given subject area is based on his or her needs.

2. Which populations are targeted in this report?

The target population in this study was limited to 3rd, 4th, and 5th graders who registered for program courses or used program software during the summer session.

- Participation analyses included all students who registered for program courses during the summer reporting cycle. Usage analyses included all students who used program software during the summer reporting cycle.
- Impact analyses included all students who registered for program courses during the first three days of the summer reporting cycle, remained enrolled for the duration of the cycle, and used program software for greater than a minimum amount of hours. Comparison groups were also defined, by matching non-participating students to the students in the program groups on selected demographic and achievement variables. Students who did not have valid pre- and post- test scores at consecutive grades or who partially participated in any summer program were excluded from the analysis.
- Dose response analyses included all students who used program software during the summer session. Students who did not have valid pre- and post- test scores at consecutive grades were excluded from the analysis.

3. How were the data for this report collected and analyzed?

Participation data were obtained from student course registration data and examined through descriptive statistics. Usage data was obtained from software vendors and examined through descriptive statistics. The effect of the program was examined separately for reading and mathematics and analyzed in two ways:

- An impact analysis was used to determine whether students who completed the program had superior outcomes than comparable students who did not. Statistical procedures, were used to adjust the pretest scores of all students tested to account for the influence of demographic characteristics. Then, comparison groups of non-participating students were identified by matching to each participating student based on their pretest scores and demographic characteristics. Finally, statistical procedures were used to compare the outcomes for students who participated in the program with students who did not, controlling for the influence of initial ability and demographic differences.
- A dose response analysis was used to determine whether increased use of the software was associated with superior outcomes. The impact of each application was analyzed by statistical procedures, which adjusted the test scores of students to remove the influence of initial ability and demographic differences, and then compared the outcomes at different levels of usage.
- The outcome, for each grade and subject, was whether or not students exceeded their expected score on the current (2012) baseline benchmark assessment (i.e., the typical percent correct score obtained by students of similar ability as the participants (i.e., SAT quartile or FCAT achievement level) on the previous (2011) baseline benchmark assessment).

4. Who participated in the program?

Table 1 lists the number and percentage of students who completed the program (Full), registered and withdrew prior to completion (Partial), and registered but did not participate in the program (None), by grade.

Table 1. - Participation in the Web- Based Digital Learning Program

	Participation						
Summer	Full[a]		Partial[b]		None[c]		
Grade	*n*	*%*	*n*	*%*	*N*	*%*	Total
3	133	75.6	13	7.4	30	17.0	176
4	393	66.7	18	3.1	178	30.2	589
5	287	68.7	8	1.9	123	29.4	418
Total	813	68.7	39	3.3	331	28.0	1,183

[a]Students who completed the program. [b] Students who registered and withdrew prior to completion. [c] Students who registered but did not participate in the program.

- Nearly 1,200 students enrolled in the program.
- Over three-quarters of the 3rd graders and over two-thirds of the 4th and 5th graders completed the program.

5. What are the outcomes for the reading program?

The reading software offered to students, MyOn Reader, is a Web-based application that offers students reading materials which are matched to their Lexile levels. Assessment results, administered at intake and upon completion of each such story, are tracked by the software.

- **Usage**. As students could elect to practice reading, mathematics, or both, the amount of time students spent using the software varied. Table 2 compares the hours that a "typical" student (50th percentile of usage) and a "high-usage" student (95th percentile of usage) used the reading program.

Table 2. - MyOn Reader: Total Hours of Usage in Reading

Summer Grade	n	Percentiles 50	95
3	181	1.97	7.80
4	384	3.39	9.07
5	266	4.11	11.34
Total	831	3.38	10.06

  - The reading software was used by over 800 students during the summer with nearly half of those users concentrated in fourth grade.
  - Half the students used the software for less than four hours all summer; 95% of the students used the software for around 10 hours all summer.
  - Usage was highest in 5th grade.

- **Effect**. The effect of the program was gauged in two ways. An impact analysis was used to determine whether students who participated in the program had superior outcomes than comparable students who did not, once their initial ability and demographic characteristics were taken into account. A dose response analysis was used to determine whether increased use of the software was associated with superior outcomes, once students' initial ability and demographic characteristics were taken into account.
  - Fourth graders who were heavy users of the reading software had significantly superior outcomes than fourth graders who were typical users, once their initial ability and demographic characteristics were taken into account. No significant differences were found between high and typical users in grades 3 or 5.
  - Participating students did not have significantly better outcomes than non-participating students, once their initial ability and demographic characteristics were taken into account.

6. What are the outcomes for the mathematics program?

The mathematics software offered to students, Reflex, is a Web-based application that provides students with game-based activities designed to promote computational fluency. Assessment results, administered at intake and upon completion of each activity, are tracked by the software.

- **Usage**. Table 3 compares the hours that a "typical" student (50th percentile of usage) and a "high-usage" student (95th percentile of usage) used the mathematics program.

Table 3. - Reflex: Total Hours of Usage in Mathematics

Summer Grade	n	Percentiles 50	95
3	149	11.00	19.45
4	406	11.07	19.15
5	271	11.85	20.90
Total	826	11.34	20.16

- The mathematics software was used by over 800 students during the summer with nearly half of those users concentrated in fourth grade.
- Reflex, the mathematics program, was used more than twice as much as the reading program, MyOn Reader.
- Half the students used the mathematics software for about 11 hours all summer; 95% of the students used the software for about 20 hours all summer.

- **Effect**. The effect of the program was gauged in two ways. An impact analysis was used to determine whether students who participated in the program had superior outcomes than comparable students who did not, once their initial ability and demographic characteristics were taken into account. A dose response analysis was used to determine whether increased use of the software was associated with superior outcomes, once students' initial ability and demographic characteristics were taken into account.

  - Participating students did not have significantly better outcomes in mathematics than non-participating students, and students who were heavy users of the software did not have significantly better outcomes than students who were typical users, once their initial ability and demographic characteristics were taken into account.

7. What are the principal conclusions of this report?

The results for the inaugural year of the Summer Waves of Learning, C - Learning Wave indicate that the reading program had a beneficial effect on the achievement of fourth grade students who used it, while the mathematics program did not have an impact at any grade level. The significant dose response analysis for MyOn Reader suggests that lack of impact was due in part to insufficient usage. Given the program's instructional focus, the lack of both measures of effect for the mathematics program, Reflex suggests an over-emphasis on computation skills at the expense of the applications skills measured by the Baseline Assessment. Further, the self directed nature of the instruction likely contributed to a wide variation in the amount of instruction students received.