

Elementary School Uses Technology to Improve Math Scores



Program Profile

Implementation: Scotch Elementary, Grades 2–5
Evaluation Period: 2005–2007
Target Population Highlighted in Report: Grades 3–5; Grades 4–6
Model: Enterprise, 800 licenses — Lab and Classroom Model
Curriculum: CompassLearning Odyssey® Math

Executive Summary

From 2005 to 2007, Scotch Elementary students' Michigan Educational Assessment Program (MEAP) mathematics scores showed improvement. Additionally, scores were higher for those students with a 75% or greater average Odyssey activity mastery score compared to those with less than a 75% average. Scotch Elementary MEAP mathematics achievement data from 2005 (third- and fourth-graders) to 2007 (fifth- and sixth-graders) was analyzed along with CompassLearning Odyssey mathematics data. Students used Odyssey in conjunction with the *Everyday Mathematics* curriculum for thirty minutes twice a week.

School Demographics

Scotch Elementary has an enrollment of approximately 687 students, grades 2–5. Approximately 6.2% of the students participate in the free and reduced lunch program. The student-to-teacher ratio is 24:1. Scotch Elementary staff includes one full-time administrator, 30 classroom teachers, seven special resource teachers, two paraprofessionals, and one part-time paraprofessional.

Ethnic Breakdown of Scotch Elementary

Caucasian	79.20%	American Indian	0.45%
African American	10.80%	Pacific Islander	0.30%
Asian	8.30%	Other	0.45%
Hispanic	1.02%		

Program Summary/Goals

The CompassLearning Odyssey program was first implemented during the 2001–2002 academic year to improve the mathematics skills of students at Scotch Elementary and to strive to maintain and increase MEAP mathematics mastery score levels. Principal Jeremy Whan selected CompassLearning Odyssey to help meet this goal after evaluating software options based on cost, training, and implementation needs such as whether the software provided information and data to guide future decision making.

Implementation

Overview

Scotch Elementary identifies itself as a Professional Learning Community, emphasizing collaborative learning and student accountability. Educators work as a team, sharing decision making and communicating ideas to one another with the goal of increasing student learning. Since 2005, Scotch Elementary teachers have collaborated to align classroom curriculum with CompassLearning Odyssey activities to facilitate student learning. They have set aside time to meet in grade-level teams to discuss curriculum, assessment, and intervention strategies that address student needs efficiently and effectively.

The keys to Scotch Elementary School's successful CompassLearning Odyssey implementation included the creation of a leadership team, the alignment of Odyssey activities with in-class curriculum content, and a strong teacher training program. Initial staff training included how to generate reports and create custom assessments in Odyssey. Also important to the implementation strategy was Scotch's more recent designation of a CompassLearning Odyssey lab. The school created a leadership team of key, "Go-To" staff that other teachers could use as a resource. Classroom activities and teaching were aligned with Odyssey units to provide a check-and-balance system of pretest, tutoring, remediation, and posttest by the teachers.

Go-To Leadership Team

A major factor in the program’s success, the Go-To leadership team at Scotch Elementary helped with Odyssey implementation and provided ongoing program support to other teachers. The Go-To team developed the format for the systematic use of the CompassLearning lab to enhance and support mathematics instruction. Using the Test Builder, Item Bank, and Objective Builder tools, the Go-To team created online assessments in CompassLearning Odyssey for each unit in *Everyday Mathematics*, the school’s textbook mathematics curriculum. These assessments were administered at the beginning of each *Everyday Mathematics* unit as pretests, with the option to conduct posttest assessments¹. Each objective measured on the pretest was attached to a learning path within Odyssey. Students who did not achieve mastery on an objective were assigned the corresponding learning path in Odyssey.

Curriculum Alignment

CompassLearning Odyssey was utilized alongside *Everyday Mathematics*. Odyssey pretest, posttest, and learning activities were aligned to textbook lessons to provide teachers with data to monitor and adjust the teaching process for every student. This enabled teachers to develop differentiated learning paths within Odyssey for personalized instruction aligned with each student’s learning objectives. In addition, grade-level teams met to discuss curriculum, assessment, and intervention strategies to address student needs. Teaching staff reviewed CompassLearning Odyssey reports weekly to make instructional decisions, and the principal reviewed data monthly to monitor student progress.

Twice a week for 30 minutes each session, students worked in the specially designated CompassLearning lab, where they completed learning path assignments or enrichment assignments. They also worked in small groups or individually with the teacher. Teachers used the “Test Summary by Objective Report” weekly to differentiate instruction. Teachers who used posttest assessments referred to the “Objective-Based Test Results Report” to gauge individual student improvement on an objective over time.

Training and Professional Development

Contributing to the success of the program at Scotch Elementary is the school’s strong commitment to professional development. School staff received 54 days of professional development training. Training consisted of nine basic implementation bundles that each included three foundation days, three immersion days, and training site and readiness service.

The model was “train the trainer.” Any time training was offered to the district, Scotch Elementary teachers often volunteered to take what they learned and teach others in the district, in effect acting as trainers themselves.

They were a dynamic group who would not only talk theory, but put it into practice. They often took the initiative to build on the concepts introduced in professional development sessions. For example, during the sessions, if the focus was data and writing across the curriculum, Scotch Elementary teachers would then implement the discussions into their teaching.

With the guidance and feedback of professional development, the teachers at Scotch Elementary had the idea to create their own customized assessments to incorporate into Odyssey based on their *Everyday Mathematics* curriculum. The entire district eventually adopted this adopted this assessment format.

Results

To understand how students who used Odyssey performed, an analyst reviewed student MEAP mathematics scores and Odyssey results over the three-year period from 2005–2007. Overall, the percentage of students scoring “Exceeds MI Standards” on the MEAP in mathematics improved from 2005 to 2007. Further, MEAP math scores for those with higher average CompassLearning Odyssey math activity mastery scores were, on average, higher than the MEAP math scores for those students with lower Odyssey math activity mastery scores. The following graphs illustrate these results in greater detail.

The data illustrated by **Figures A and B** indicates that the percentage of students who exceeded state standards on the MEAP test for mathematics from 2005 to 2007 increased. Over the three-year time period, the percentage of third- and fourth-graders who exceeded state standards improved by 2.1% and 10.6%, respectively.

Figure A In 2007, 86.8% of fifth-graders exceeded MI standards, an increase of 2.1% from 84.7%, their 2005 third-grade class results (N=144).

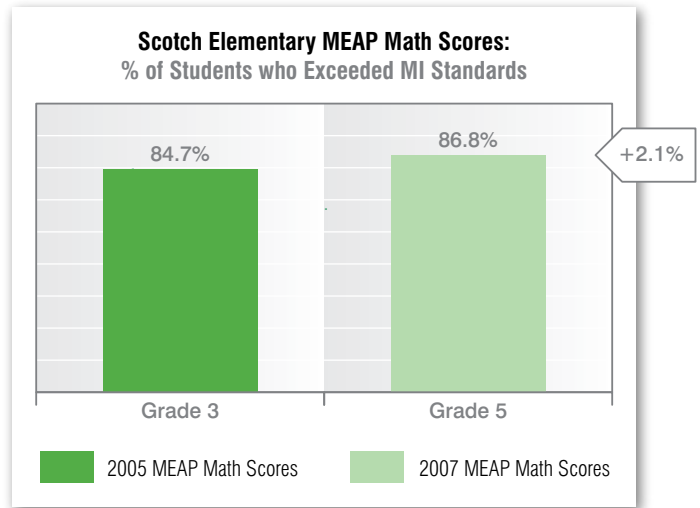
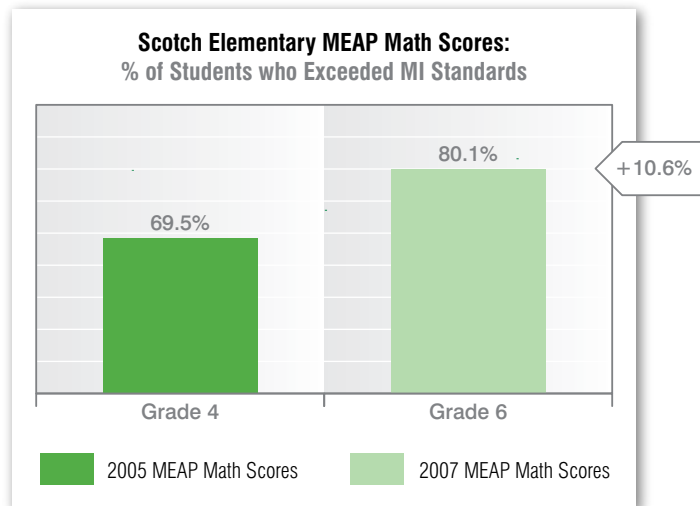


Figure B In 2007, 80.1% of sixth-graders exceeded MI standards, an increase of 10.6% from 69.5%, their 2005 fourth-grade class results (N=151).



¹ *Everyday Math* Unit (EDM) Tests with learning paths and EDM posttest became available for use district wide, grades 2–5.

**Scotch Elementary 5th Grade 2007 MEAP Math Score:
by Average Odyssey Math Activity Mastery Score**

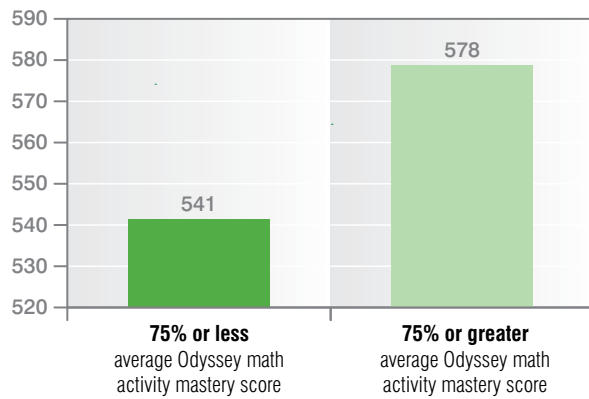


Figure C

- 2007 fifth-grade students with a 75% or greater average Odyssey math activity mastery score had an average MEAP math score of 578 (N=93), approximately 37 points higher than those with an average Odyssey math activity mastery score of less than 75% (N=51).
- Scores for those with 75% or greater average Odyssey math activity mastery score range from 497 to 658, with a standard deviation of 30.5, a median of 574 and a mode of 586².
- Scores for those with less than 75% Odyssey math activity mastery score range from 493 to 606, with a standard deviation of 26.1, a median of 536, and a mode of 519.
- “Met MI standards” 2007 MEAP cutoff score for fifth-grade mathematics=500.

**Abbott Middle School 6th Grade 2007 MEAP Math Score:
by Average Odyssey Math Activity Mastery Score**

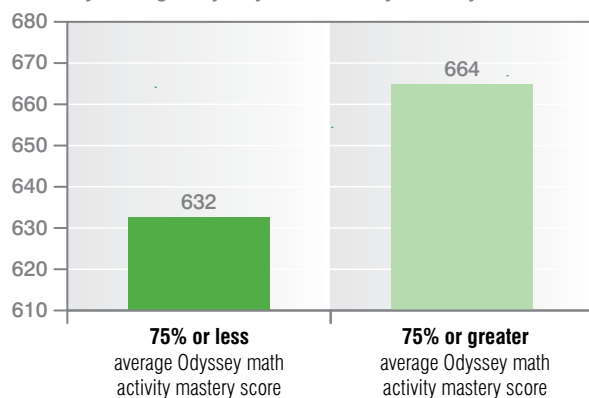


Figure D

Note: Analysis follows the fifth-graders from Scotch Elementary who continued on to attend Abbott Middle School for sixth grade.

- 2007 sixth-grade students with a 75% or greater average Odyssey math activity mastery score had an average MEAP math score of 664 (N=95), approximately 32 points higher than those with an average Odyssey activity mastery score of less than 75% (N=56).
- Scores for those with 75% or greater average Odyssey math activity mastery score range from 586 to 746, with a standard deviation of 32.9, a median of 662, and a mode of 686.
- Scores for those with less than 75% Odyssey math activity mastery score range from 582 to 686, with a standard deviation of 26.1, a median of 631, and a mode of 610.
- “Met MI standards” 2007 MEAP cutoff score for sixth-grade mathematics=600.

**Scotch Elementary vs. Statewide 2007 MEAP Math Scores:
% of Students who Exceeded MI Standards**

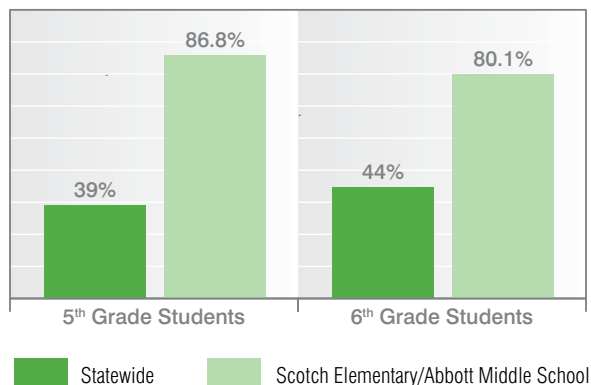


Figure E

- 2007 Scotch Elementary School fifth-graders/Abbott Middle School sixth-graders outperformed fifth- and sixth-graders statewide.
- 86.8% of Scotch Elementary School fifth-graders exceeded MI standards for the 2007 MEAP in math, compared to 39% of fifth-graders statewide, a difference of 47.8%.
- 80.1% of Abbott Middle School sixth-graders exceeded MI standards for the 2007 MEAP in math, compared to 44% of sixth-graders statewide, a difference of 36.1%.

² For each distribution, more than one mode exists. All modes reported reflect the smallest mode.

Conclusion

Scotch Elementary implemented CompassLearning Odyssey as part of the educational curriculum to help increase and maintain MEAP mathematics mastery score levels. They created a Go-To leadership team, worked to integrate the program into the curriculum, and participated in a professional development program designed to facilitate the process. When 2007 MEAP mathematics scores for those students who use Odyssey are evaluated, scores improved for both third-graders and fourth-graders from their score in 2005 to their fifth- and sixth-grade scores in 2007.

In their words...

“CompassLearning Odyssey continues to be an integral component of our elementary math program. Through the use of pre- and post-assessments and carefully constructed learning paths for each unit, teachers have the tools they require to ensure that all students meet and exceed the State of Michigan Grade-Level Expectations for mathematics.”

—Dr. Joseph Hoffman
Director of Science, Mathematics, and Technology
West Bloomfield School District



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