Closing the STEM Achievement Gap Through Teacher Training on Mobile Technology Integration:

VERIZON INNOVATIVE LEARNING SCHOOLS (VILS) PROGRAM IMPACT

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VILS
EXPANDED INTO
24 SCHOOLS
NOW REACHING
200 TEACHERS
11,000 STUDENTS

OVERVIEW

- Introduction
- Methodology
- Key Findings
- Limitations

INTRODUCTION

The Verizon Innovative Learning Schools (VILS) program was designed to support teachers as they increase the use of mobile technology in today's classrooms in ways that align with The International Society for Technology Education (ISTE) Standards, the country's most commonly-used technology standards describing digital-age learning experiences. In supporting effective classroom integration of mobile technology, the program also hopes to increase student interest and improve student performance in science, technology, engineering, and math (STEM). The VILS program partners with administrators and teachers in 24 underserved schools across the U.S and provides them with a comprehensive, two year sequence of onsite and online professional development around leveraging mobile technology for teaching and learning.

Twelve elementary, middle and high schools participated in the program launch during the 2012-2013 academic year and VILS expanded into an additional 12 schools in 2013-2014, now reaching more than 200 teachers and 11,000 students. Three-fifths (69 %) of students in VILS schools are enrolled in free/reduced lunch programs.

VILS is a comprehensive, ongoing teacher training program focused on integrating mobile technology into classroom instruction.

ISTE provides the VILS professional development training and mentorship to educators and a designated technology coach at each school.

This summary covers ISTE's evaluation of all 24 VILS schools during the 2013-2014 school year.

Teacher training model includes:

- Initial three-day, hands-on workshop on effective tools and strategies for mobile learning and the ISTE Standards for digital-age learning
- Ongoing support from an ISTE Instructional Consultant (IC)
- Webinars throughout the year
- Online access to a project community and professional development and classroom resources
- A day-long, virtual conference including participant presentations of VILS-developed lessons and projects.

ISTE continually evaluates the program to measure teacher and student proficiency with technology, student engagement, interest in STEM and academic achievement.

This summary covers ISTE's evaluation of all 24 VILS schools during the 2013-2014 school year.

Situation Analysis: Changing the way teachers teach and students learn

IN 2013, JUST
34%
OF U.S. 8TH-GRADERS WERE RATED PROFICIENT OR HIGHER IN A NATIONAL MATH ASSESSMENT, AND MORE THAN
1 in 4
SCORED BELOW THE BASIC LEVEL

- While many classrooms across the country have mobile technology, few teachers are effectively trained on how to integrate it in a meaningful way.
- In 2013, just 34% of U.S. 8th graders were rated proficient or higher in a national math assessment, and more than one in four scored below the basic level.
- There is limited research available directly linking the use of mobile devices in the classroom to academic achievement in STEM.
- **The ISTE VILS evaluation indicates teacher training to integrate mobile technology in the classroom may have positive impact on students' standardized math test scores. In addition, the VILS program also reported gains in teacher and student proficiency with mobile devices and teachers reported student interest and engagement in STEM.**

METHODOLOGY

ISTE's multi-method evaluation included multiple teacher surveys, classroom observations, on-site interviews and school visits, student surveys of STEM engagement, and analysis of student standardized test scores

Waves of data collection:

- March 2014: 211 VILS teachers and instructional coaches, including teachers from all 24 schools, completed a survey on changes in teaching and changes in student technology use, engagement, and learning.
- May 2014: 12 VILS schools and 12 comparison schools participated in site visits conducted by ISTE. Data were gathered about program implementation, including classroom observations assessing technology integration and interviews with teachers, tech coaches, and administrators.
- June 2014: 6,186 participating students (VILS and comparison*) completed a survey about STEM interest and technology use.

*Efforts were made to identify comparable schools based on similar demographics – i.e. similar percentage of free and reduced price lunch students and English Language Learners.

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Measuring academic achievement

ISTE examined whether VILS students improved their performance on standardized tests in mathematics and science

- Nine VILS schools were selected based on online resource engagement, recommendations by the school's assigned Instructional Coach, and internal consultation with the ISTE project management team. Selections were also made to reflect a diversity of geography and grade levels
- Nine comparison schools - Efforts were made to identify comparable schools based on similar demographics – i.e. similar percentage of free and reduced price lunch students, English Language Learners, etc.
  - All comparison sites were schools from the same districts as the VILS schools.

ISTE acquired pre (2013)- and post (2014) -scores on standardized mathematics and science assessments for students at VILS sites and comparison schools, including 5,647 student records.

DURING THE 2013-2014 SCHOOL YEAR VILS SCHOOLS PERFORMED MORE THAN

2.50%

BETTER THAN NON-VILS SCHOOLS

KEY FINDINGS

Students at VILS schools showed stronger gains in mathematics than did students from schools not involved with the VILS program

- In general, students in VILS schools performed better on standardized mathematics tests than did students from comparison schools.
- In 2013, students of teachers who participated in the VILS 2012 – 2013 program saw an average increase of 4.63% in their math achievement scores.
- In 2014, a different cohort of students who participated in the 2013 - 2014 program had a gain of 6.97%. Though the VILS program cannot be directly attributed to the increase in scores, VILS schools experienced gains year over year.
- During the 2012-2013 school year, the difference between VILS and comparison schools' student math achievement scores was almost 9% in favor of VILS (4.63% vs. -4.18%).
- During the 2013-2014 school year, the gap between VILS and comparison schools narrowed, though VILS schools performed more than 2.5% better than the non-VILS schools (6.97% vs. 4.23%).**

In contrast to teachers from comparison schools, VILS teachers were observed to spend more time coaching and less time lecturing to their students. VILS teachers also provided their students more digital-age learning opportunities (as measured by the ISTE Standards for Students) than did comparison teachers, who largely used technology for their own presentations.

- On the 2013-2014 survey, nearly 100% (98.6%) of VILS teachers reported positive impacts on either student engagement or learning.

** Students of teachers who participated in VILS had higher math achievement scores than the comparison group in the 2013-2014 however the difference in performance was not statistically significant.

VILS students spent more time conducting research, analyzing information, and writing about their learning than did comparison students.

Teachers in the VILS program and their students demonstrated more effective learning strategies

Classrooms that implemented VILS resources and training were observably different from classrooms that did not implement VILS resources and had measureable differences in the frequency and quality of student technology implementation.

- While comparison teachers favored whole class and small groups instruction, VILS teachers worked with individual students more.
- VILS students reported more frequent use of various technology tools, including computers, mobile phones, and tablets.
- VILS students spent more time conducting research, analyzing information, and writing about their learning than did comparison students, who spent more time receiving presentations from teachers.

Teacher training on mobile technology integration into the classroom continues to demonstrate important and positive results for teachers and students

99%
OF TEACHERS REPORTED POSITIVE IMPACTS ON EITHER STUDENT ENGAGEMENT OR LEARNING

The impacts teachers reported on classroom technology use, changes in teaching, and student engagement and learning have remained consistent as the program expands.

Teachers reported that more than one in three (37%) of their students showed increased academic achievement (or, higher scores on assessments), 35% showed increased engagement, and 60% demonstrated increased proficiency with technology.

- 99% of teachers reported positive impacts on either student engagement or learning
- 34% of students are more likely to extend learning beyond the classroom
- 60% of teachers are individualizing instruction more
- 47% of teachers are spending less time lecturing to the entire class
- 42% of students exhibited more sophisticated projects or products
- 39% of students are completing work more promptly