

# Project RED Key Findings

REVOLUTIONIZING **ED**UCATION

[www.projectred.org](http://www.projectred.org)



# The Project RED Team

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# The Project RED Mission

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**Research three major issues related to U.S. education:**

- **Improving student achievement.**

Unlike other segments, public education has seen only isolated benefits attributable to technology. Project RED seeks to define technology models that lead to improved student achievement.

- **Evaluating the financial impact of technology on budgets.**

Little work has been done to show the positive financial impact of educational technology. Project RED identifies cost savings, cost avoidance, and revenue enhancements.

- **Assessing the impact of continuous access to a computing device by every student.**

Does Continuous access increase education outcomes? What conditions are necessary to lead to increased academic achievement and financial benefits? What are best practices regarding technology?

# Unprecedented Scope

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## Unique scope, breadth, and depth:

- 997 schools, representative of the U.S. school universe
- 11 diverse Education Success Measures (ESMs)
- 136 independent variables in 22 categories
- Comparison of findings by student/computer ratios (1:1, 2:1, 3:1, 4:1, or more)
- Comprehensive demographic data correlated to survey results

## What are the outcomes we wish to improve?

### All Schools

1. *Fewer* disciplinary actions
2. *Lower* dropout rates
3. *Less* paperwork
4. *Lower* paper and copying expenses
5. *Higher* teacher attendance
6. *Higher* test scores

### High Schools

7. *Higher* AP course enrollment
8. *Higher* college attendance plans
9. *Higher* course completion rates
10. *Higher* dual/joint enrollment in college
11. *Higher* graduation rates

# Key Implementation Factors (KIFs)

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## Which technology practices improve learning the most? (rank order of predictive strength)

1. *Intervention classes:* Technology is integrated into every intervention class.
2. *Change management leadership by principal:* Leaders provide time for teacher professional learning and collaboration at least monthly.
3. *Online collaboration:* Students use technology daily for online collaboration (games/simulations and social media.)
4. *Core subjects:* Technology is integrated into core curriculum weekly or more frequently.
5. *Online formative assessments:* Assessments are done at least weekly.
6. *Student/computer ratio:* Lower ratios improve outcomes.
7. *Virtual field trips:* With more frequent use, virtual trips are more powerful. The best schools do these at least monthly.
8. *Search engines:* Students use daily.
9. *Principal training:* Principals are trained in teacher buy-in, best practices, and technology-transformed learning.

# Key Finding 1

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## **Nine key implementation factors are linked most strongly to education success.**

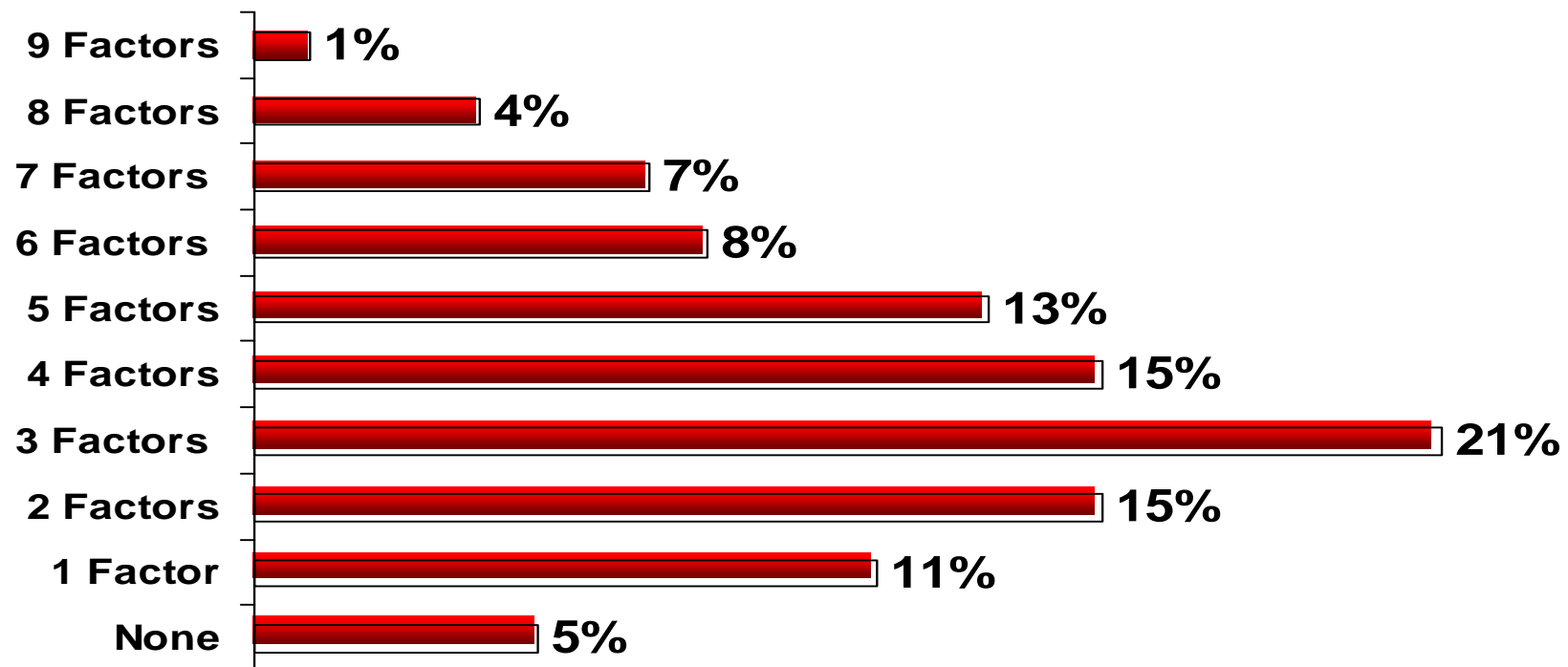
**Schools are in a technology implementation crisis. While education technology best practices have a significant positive impact, they are not widely and consistently practiced.**

- Very few schools implement technology properly despite knowing that technology improves learning only when deployed frequently in appropriate learning environments.
- Very few schools implement most of the key implementation factors (KIFs) despite previous large investments in infrastructure and hardware.

# Key Implementation Factors Few Schools Deploy Many

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Pct. of Respondents



Number of KIFs in Use



# Key Finding 2

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## **Properly implemented technology saves money.**

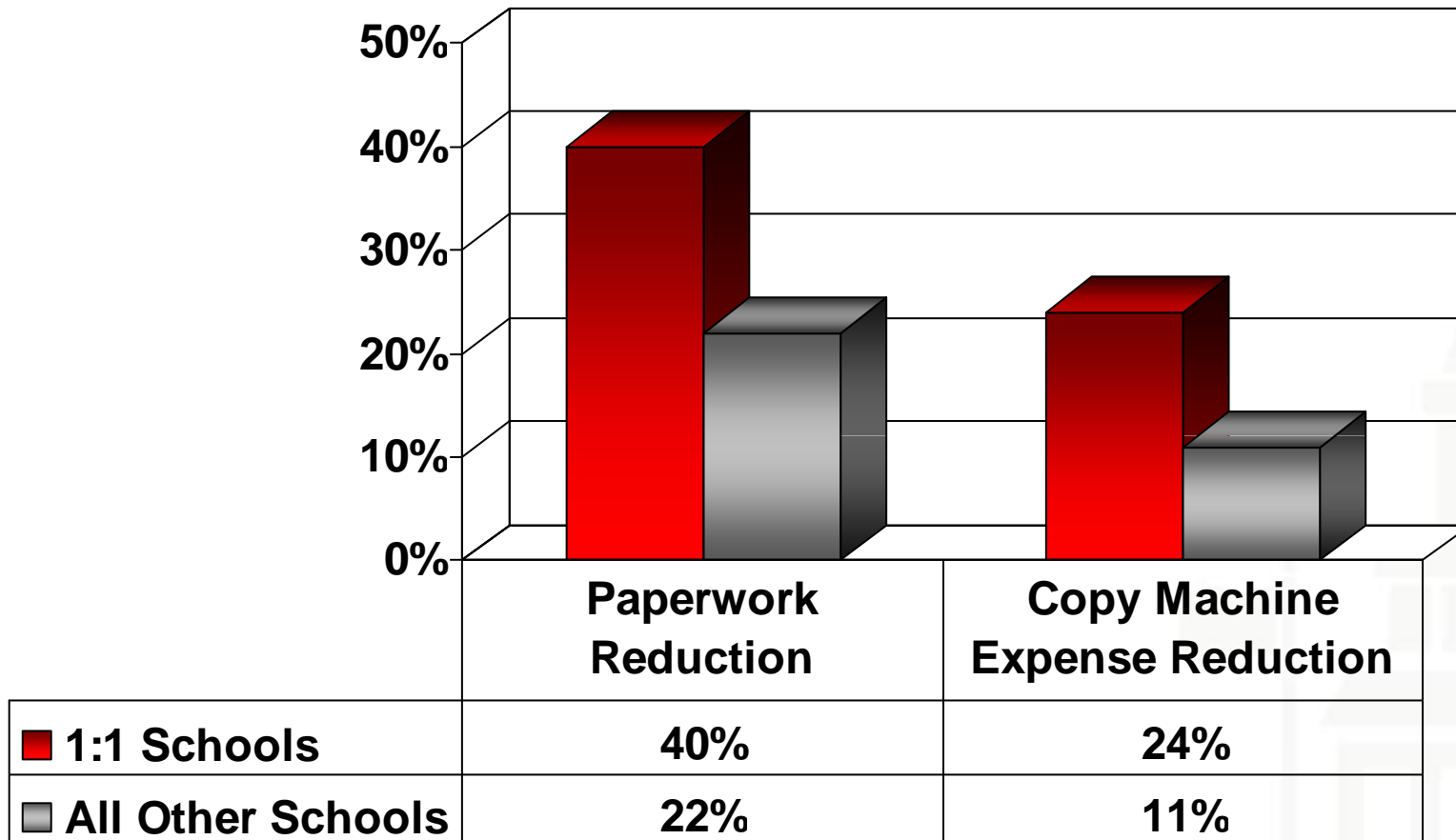
- Most discussions focus on the high costs of technology, not the potential for savings.
- Project RED shows that properly implemented technology can provide immediate short-term savings at all levels.
- For example, LMS features can reduce copy machine and bubble sheet expenses (through the switch to online formative assessment).
- To the extent that school systems are willing to change practices and states are willing to change policy, the savings can grow substantially over time.
- For example, longer-term state-level savings can come from reduced dropouts and dual/joint enrollment.

**The projected savings in 13 areas average \$448/student/year.**

# 1:1 Schools Have Greater Savings

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Pct. of Respondents



# Key Finding 3

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## **1:1 schools employing key implementation factors outperform all schools and all 1:1 schools.**

A 1:1 student/computer ratio has a higher impact on student outcomes and financial benefits than other ratios, and the key implementation factors (KIFs) increase both benefits.

- In general, schools with a 1:1 student/computer ratio outperform non-1:1 schools on both academic and financial measures. The lower the student/computer ratio, the better the student outcomes.
- Performance of all schools can be improved by adherence to known best practices. The chart on the next slide illustrates the positive impact of the Top Four of our key technology implementation factors:

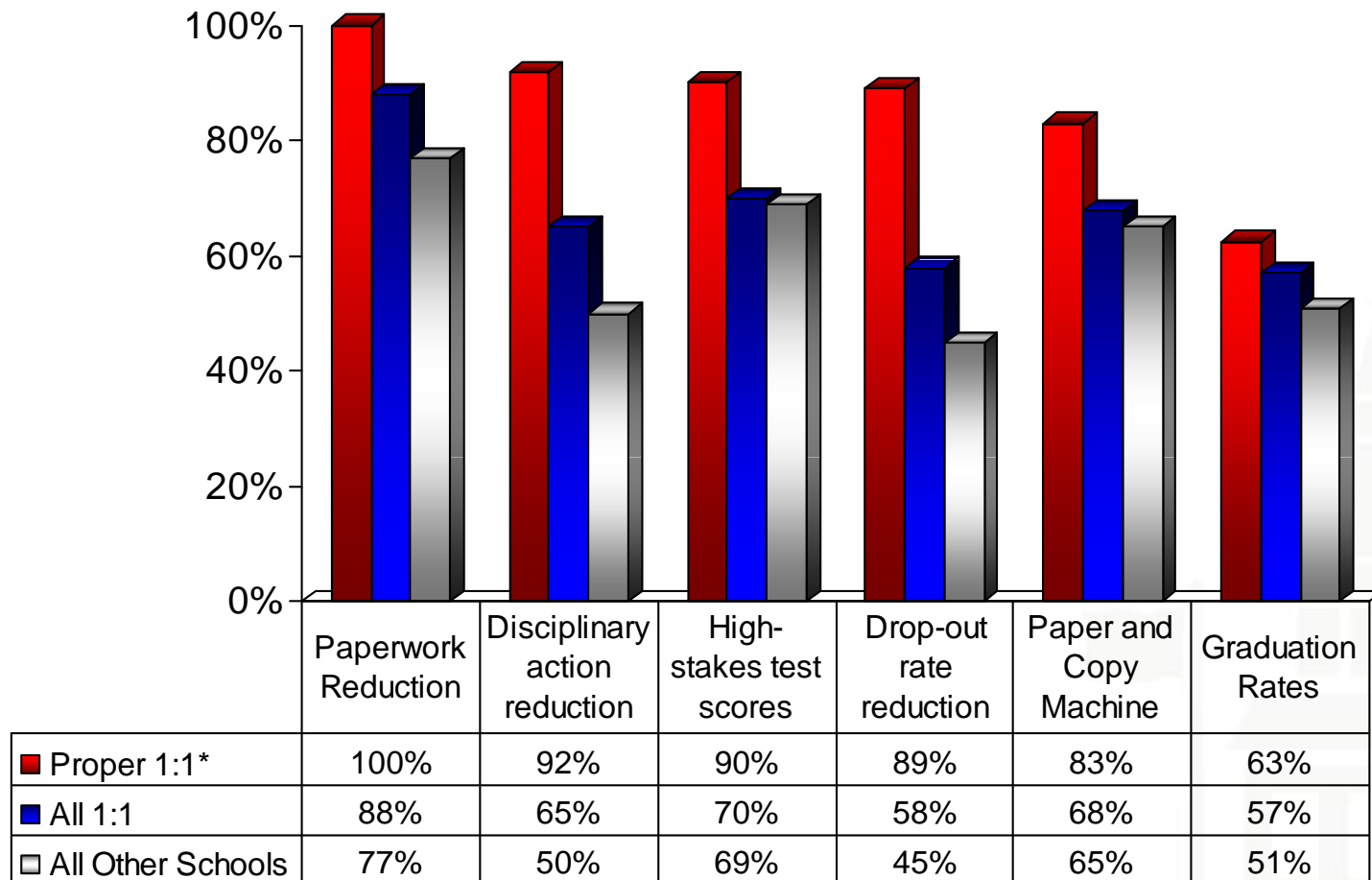
Technology is deployed:

- Intervention Classes Every Period
- Principal Leads Change management
- Online collaboration Daily
- Core Curriculum weekly

# 1:1 Works When Properly Implemented

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Pct. of Respondents Reporting Improvement



•Proper 1:1: Those schools practicing the top 4 Key Implementation Factors (13 schools) Rev. Intervention Classes Every Period, Principal Leads Change management, Online collaboration Daily, Core Curriculum weekly

# Key Finding 4

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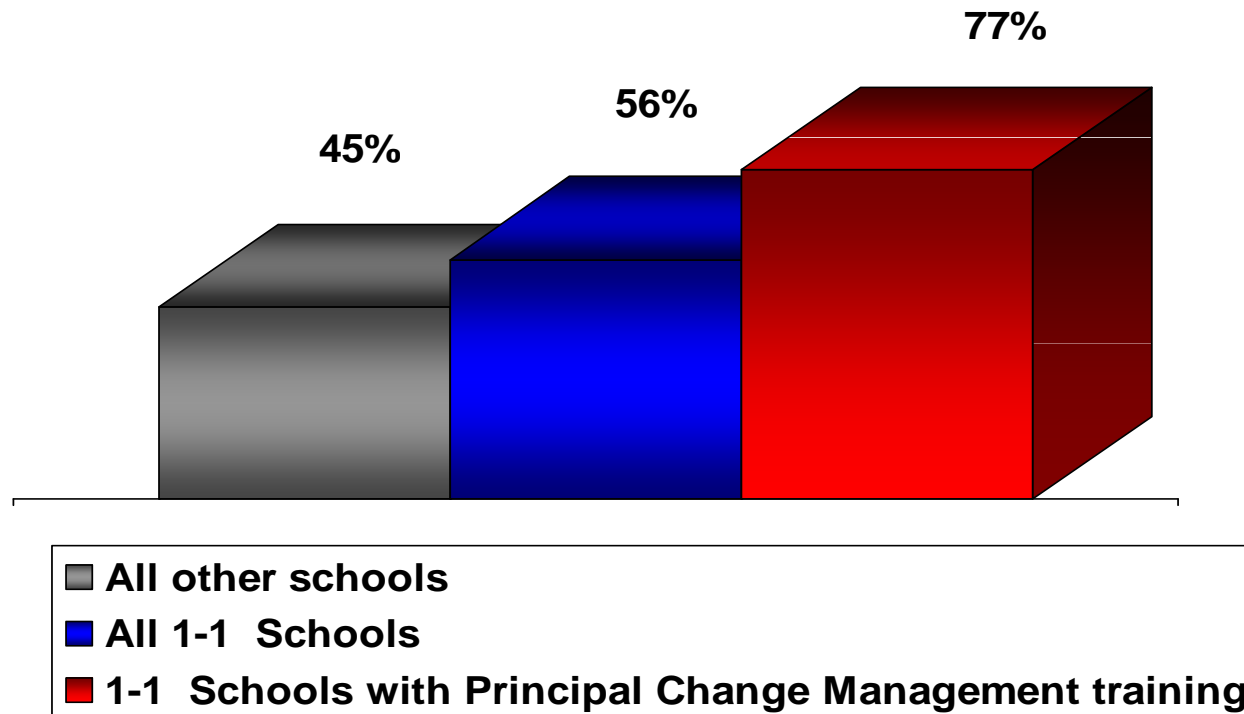
## **The principal's ability to lead change is critical.**

- The impact of a good principal has been widely documented. Project RED shows that the principal is the single most important variable across many of the 11 ESMs.
- Change management training for principals involved in large-scale technology implementations is of paramount importance.
- All schools benefit from technology, with more benefits in 1:1 schools.
- When principals receive specialized training and technology is properly implemented, the benefits increase even more.
- The goal is systemic change, not dependent on an individual, so collaboration at all levels from supt. and school board to classrooms is key.

# Reduction in Disciplinary Actions

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Pct. of Respondents

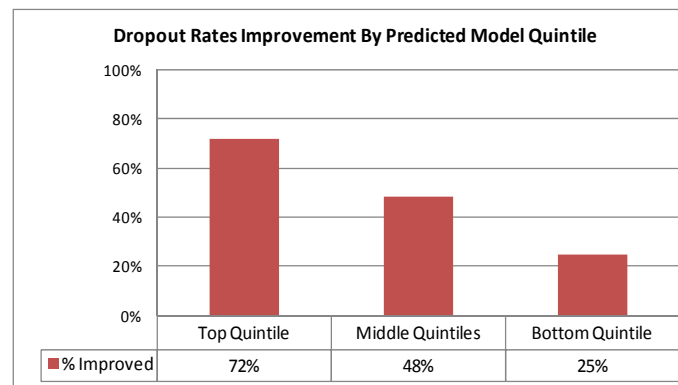


# Improving Dropout Rates

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## Key Model Predictors

Factor	Description	Relative Importance
13	Intervention classes - Technology integrated into every class period	29.4
9	Principal enabling Professional Learning, Collaboration and leading Change Management	23.4
5	Core Subjects: Technology integrated into curriculum at least weekly	17.2
17	Virtual Field Trips Occur (and effect strengthens with frequency)	15.0
Ratio	1:1 Student to Computing Device ratio	8.4
6	Principal trained in Teacher Buy-in, Best Practices and Technology-transformed Classroom	6.8



# Key Finding 5

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## Technology-transformed Intervention improves learning.

- Technology-transformed interventions (ELL, Title I, special ed and reading intervention) are the top-model predictor of improved high stakes test scores, dropout rate reduction, and improved discipline.
- The only other top-model predictor for more than one ESM is the student/computer ratio, with lower ratios (1:1) being preferable.
- A student-centric approach enabled by technology allows students to work at their own pace and teachers to spend more time with individual students and small groups.

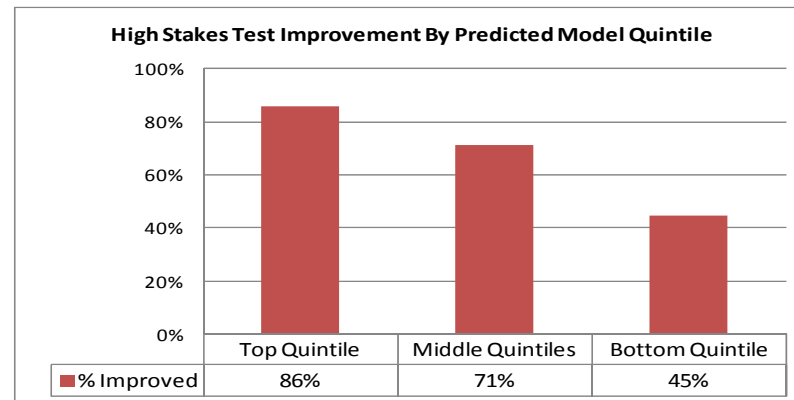


# Improving Test Scores

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## Key Model Predictors

Factor	Description	Relative Importance
13	Intervention classes - Technology integrated into every class period Principal enabling Professional Learning, Collaboration and leading	28.0
9	Change Management	21.9
19	Online Formative and Summative Assessment frequency	19.2
5	Core Subjects: Technology integrated into curriculum at least weekly	12.8
18	Online Collaboration (Games/Simulations and Social Media) – Students utilizing technology daily	11.2
Ratio	1:1 Student to Computing Device ratio	7.0



# Key Finding 6

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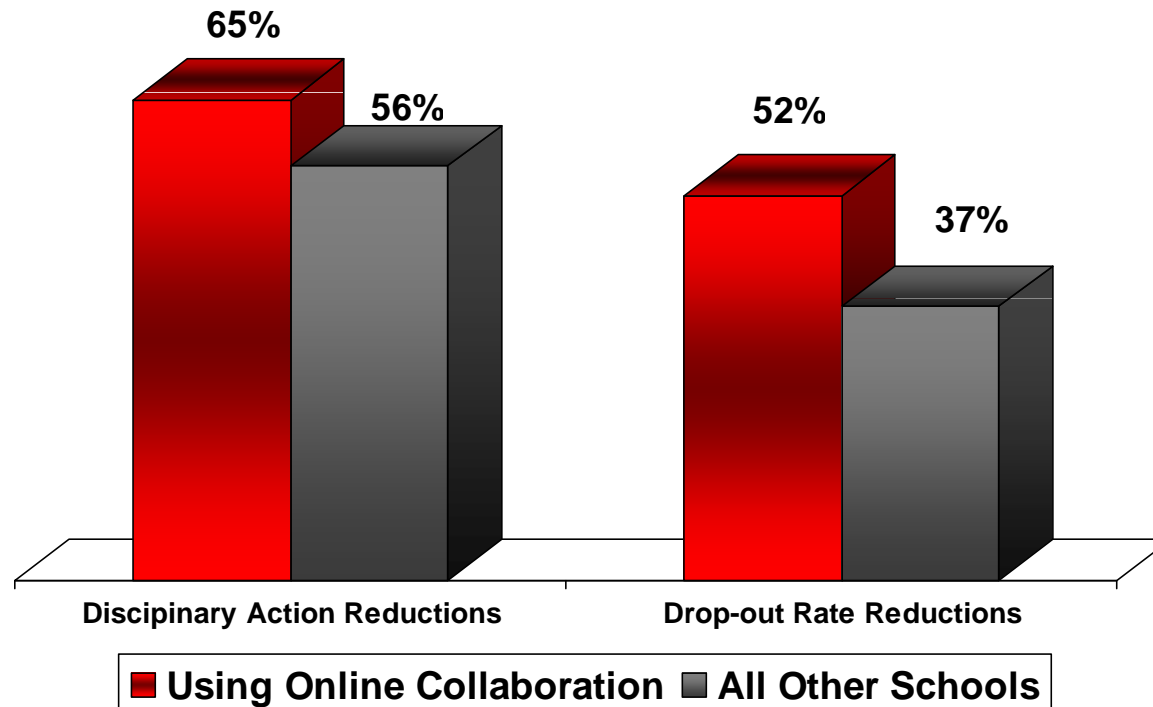
## **Online collaboration increases learning productivity and student engagement.**

- Web 2.0 social media substantially enhance collaboration productivity, erasing the barriers of time, distance, and money.
- Collaboration can now extend beyond the immediate circle of friends to include mentors, tutors, and experts worldwide.
- Real-time collaboration increases student engagement, one of the critical factors for student success.
- One result of increased engagement and buy-in is a reduction in disciplinary actions.
- Online discussion boards and tutoring programs can extend the school day and connectivity among learners and teachers.

# Schools Using Online Collaboration

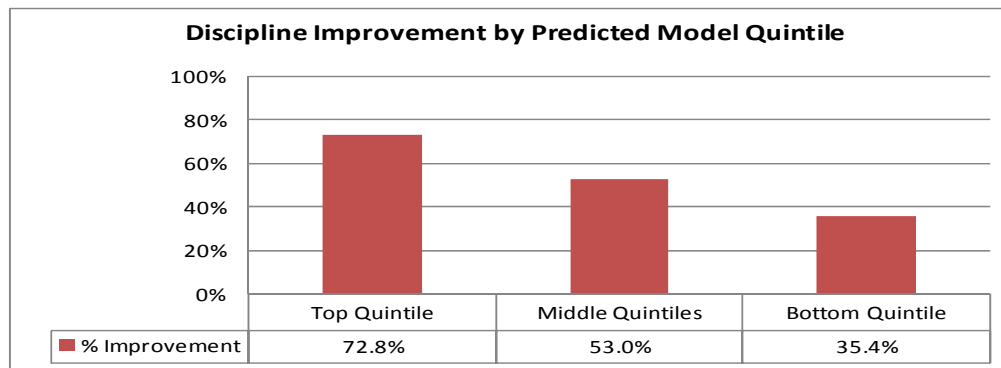
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Pct. of Respondents



## Key Model Predictors

Factor	Description	Relative Importance
18	Online Collaboration (Games/Simulations and Social Media) - Students utilizing technology daily	35.2
13	Intervention classes - Technology integrated into every class period	24.8
19	Online Formative and Summative Assessment frequency	14.1
9	Principal enabling Teacher Professional Learning, Collaboration and leading Change Management	13.5
Ratio	1:1 Student to Computing Device ratio	12.3



# Key Finding 7

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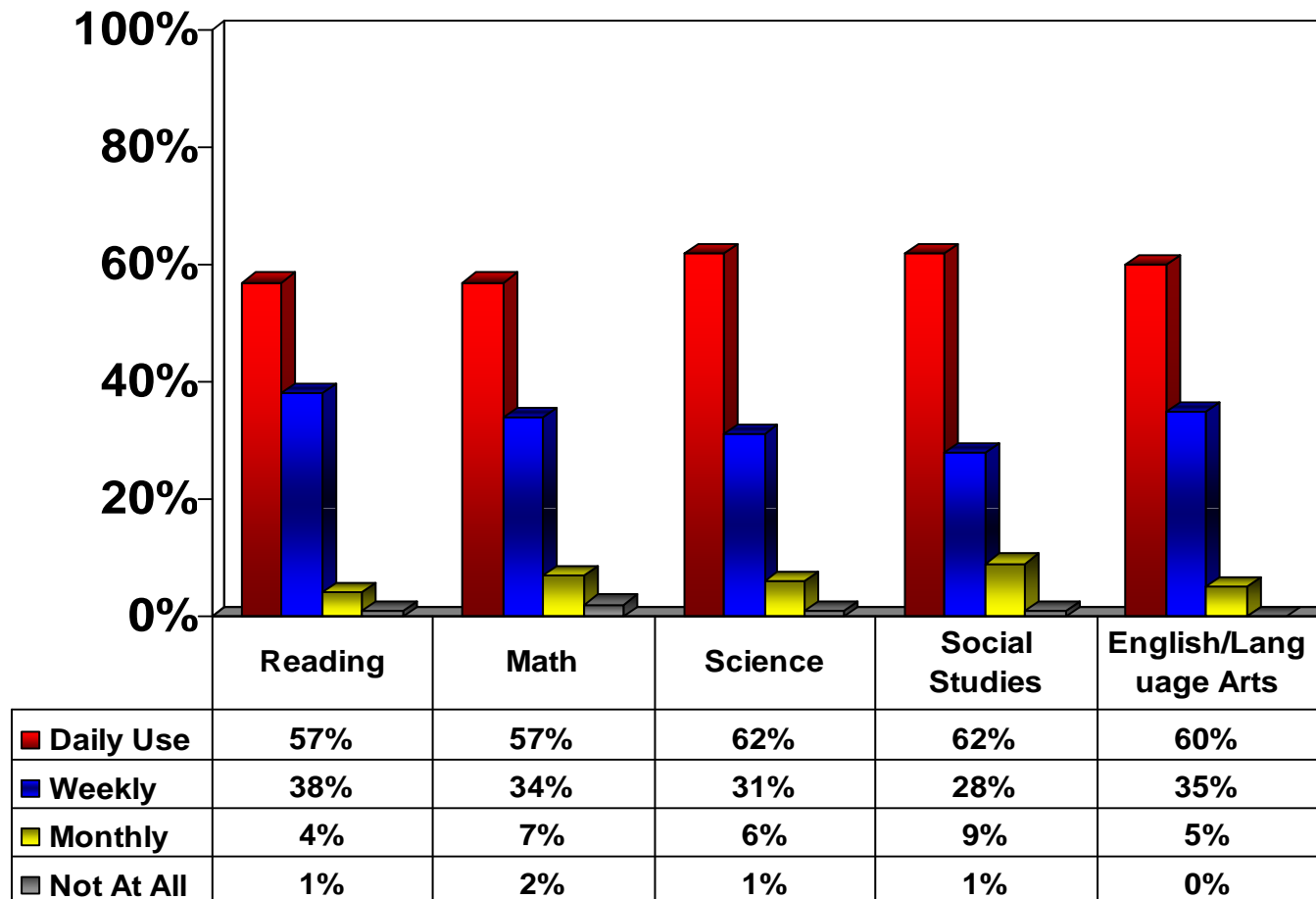
## **Daily use of technology delivers the best return on investment (ROI).**

- The daily use of technology in core classes correlates highly to the ESMS.
- Daily technology use is one of the top five indicators of better discipline, better attendance, and increased college attendance.
- In 1:1 schools, daily use in core curriculum classes ranges from 57% to 62%.
- Unfortunately, many schools report using technology only weekly or less frequently for many classes.

# Use of Digital Content in 1:1 Schools

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Pct. of 1:1 Respondents

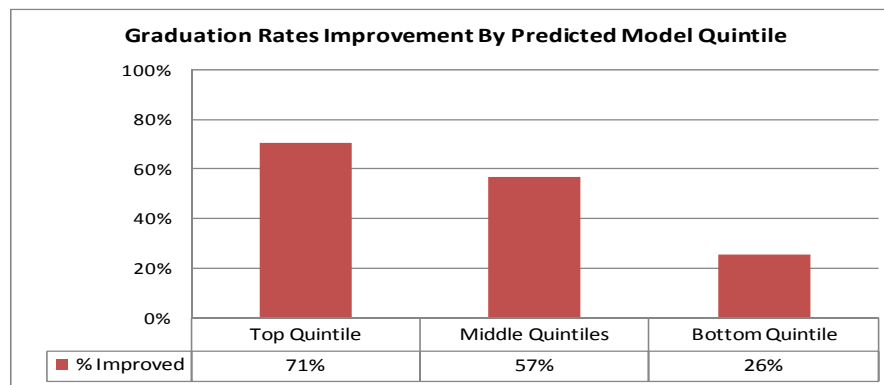


# Improving Graduation Rates

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## Key Model Predictors

Factor	Description	Relative Importance
13	Intervention classes – Technology integrated into every class period	25.7
5	Core Subjects: Technology integrated into curriculum at least weekly	22.2
9	Principal enabling Professional Learning, Collaboration and leading Change Management	15.4
19	Online Formative and Summative Assessment frequency	14.3
32	Search Engines: Students using daily	13.4
18	Online Collaboration (Games/Simulations and Social Media) - Students utilizing technology daily	10.9
Ratio	1:1 Student to Computing Device ratio	6.9



# Savings due to Technology

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Improving our children's learning is essential.

Figuring out how to pay for it is the challenge.



# Financial Impact Per Year - \$25B

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<b>Category</b>	<b>National Impact</b>	<b>Per Student</b>
Student Data Mapping	\$605,000,000	\$11
Online Professional Learning	\$654,000,000	\$12
Teacher attendance increase	\$718,200,000	\$13
Power savings	\$861,666,667	\$16
Digital core curriculum savings	\$935,000,000	\$17
Disciplinary action reduction	\$1,100,000,000	\$20
Post-secondary remedial education	\$1,660,000,000	\$30
Digital supplemental materials vs. print	\$1,700,000,000	\$31
Copy machine cost calculations	\$2,200,000,000	\$40
Online assessment savings	\$2,392,500,000	\$44
Dual/joint/AP course enrollment	\$3,180,343,000	\$58
Paperwork reduction	\$3,300,000,000	\$60
End of course failure	\$5,865,200,000	\$107
<b>Total Per Student excluding Dropout Savings</b>	<b>\$25,171,909,667</b>	<b>\$448</b>

# Cost of Dropouts

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- Nationally, 25% of all students drop out, roughly a million students a year,<sup>[1]</sup> and the average dropout fails at least six classes before dropping out.<sup>[2]</sup> Given an average cost per class of \$1,333, the direct avoidable cost is approximately \$8,000.
- The human cost is incalculable and can span generations.

<sup>[1]</sup> NCES, Public School Graduates and Dropouts, 2010

<sup>[2]</sup> Project RED estimate

# Dropout Reduction Benefits

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- The number of Project RED schools reporting a reduction in dropouts due to technology jumps to 89% when key implementation factors (KIFs) are employed.
- A student who graduates from high school could generate \$166,000 to \$353,000 in increased tax revenues compared with a dropout.
- A dropout who would have gone on to college could have generated \$448,000 to \$874,000 in tax revenue over a career of 40 years.

# The Biggest Financial Impact...

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## Dropout Rate Reduction: \$3.121 Trillion

- Dropouts have the highest financial impact of any of the variables discussed in this report.
- Students who complete high school and go on to college have substantially increased earning power and consequently pay more taxes.
- The increased tax payments continue throughout their careers.



# Thanks to Supporters & Sponsors

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