



# Esko Public Schools

## Digital Engagement Initiative

Executive Summary

May 2014

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## **Goals and Vision Statement**

The Esko staff and students will implement a 1:1 computing initiative. This initiative will provide an electronic device for each student in grades 4-12. The District will provide appropriate staff with a matching device and training to increase student achievement.

## **Guiding Principals**

The Esko Public School District believes students must be prepared to enter college and the workplace with 21<sup>st</sup> century skills such as critical and analytical thinking, problem solving and evaluation, and collaboration among peers. Students today must learn traditional math, science, and reading skills, but must also acquire a new set of skills to take them into the careers of tomorrow, and to compete in a global society. They will be required to quickly find information, solve real-world problems, and communicate ideas and solutions to people around the world using technology in many facets of their professional and personal life.

In order to prepare students for the demands of the future, the Esko Public Schools will continue to provide an educational experience that will challenge all students at their individual levels. Teachers and administrators will encourage the use of 21<sup>st</sup> century tools and resources that will enhance learning and help students reach their full academic potential. One way to do this will be to maximize the use of technology in all areas of daily teaching and learning.

The Esko Public Schools Digital Engagement Initiative will allow teachers to differentiate instruction and customize curriculum to better address state standards. It will promote collaboration among students and allow learners to fully engage in their own learning by having infinite resources available via the internet at all times. This technology will change the way students learn from the previous teacher-centered form of instruction, to an educational setting in which students choose and direct the course of their own learning in order to meet the complex demands of the 21<sup>st</sup> century.

**Beliefs:** We believe that integrating technology into curriculum and instruction:

- offers educators effective ways to reach different types of learners
- empowers students' intrinsic motivation for learning
- allows for multiple ways of assessing student understanding
- enhances relationships between teachers and students
- enables teachers to become facilitators of learning
- makes learning more meaningful and engaging for students
- is based on local, national, and ISTE standards
- fosters 21st Century Skills
- promotes active student participation
- facilitates frequent interaction and feedback between students and teachers
- establishes connections to real-world experts
- encourages students to think creatively
- prepares students for college and careers
- is most effective when transparent and is driven by curriculum and instruction
- will enhance student engagement

**Key components to a successful Digital Engagement Initiative:**

- 1) Digital Curriculum
- 2) Learning Management System
- 3) Choosing the best device & system upgrade
- 4) Staff Development
- 5) Robust Infrastructure
- 6) Technology Staffing
- 7) Mobile Device Management System
- 8) Financial costs of the Digital Engagement Initiative
- 9) Must Improve Student Learning

## **Summary of the Digital Engagement Initiative**

Digital Curriculum - MPCC (Minnesota Partnership for Collaborative Curriculum)

Learning Management System - Canvas

Devices for staff and students - Staff - MacBook Pro laptops & iPad Air  
Students - iPad 4th Generation

Staff Development - June 10th - 12th, 2014 (will focus on Digital Engagement Initiative)

- Technology Integration Academy
- Teachers participating in the Technology Integration Academy will have one 1/2 day per semester to work on skills to support the initiative
- Early Release Days (focus will be to support the initiative)
- April 20th, 2015 (all day staff inservice)

Infrastructure Upgrade - upgrade bandwidth from 50mbps to 100mbps in July 2014

- new cabling (CAT6)
- upgrade from 18 access points to 83 access points
- two new servers
- two new gigabit switches
- new firewall
- Apple Caching server (cache app updates)
- CACHEbox (aid with streaming video content)
- two new wireless controllers to allow for redundancy
- upgraded to 10GB multi-mode fiber in each closet

Technology Staffing - addition of Technology Help Desk Assistant (25 hrs/week, 176 days student days, possible additional summer days)

- STAT (Student Technology Assistance Team)

Mobile Device Management System - JAMF Casper

Financial Responsibility of the Digital Engagement Initiative - see page 14

## **Digital Curriculum**

### What digital curriculum will the District be implementing next year?

The Esko Public Schools joined the MPCC (Minnesota Partnership for Collaborative Curriculum) in February 2014.

### What is the MPCC?

The Minnesota Partnership for Collaborative Curriculum is a grassroots initiative among school districts to create comprehensive open digital content for all courses in grades 3-12 in the four core content areas.

#### 1. Goal

Establish a full digital curriculum for grades 3-12 in the 4 core content areas of Mathematics, English-Language Arts, Science and Social Studies by September 1, 2015.

#### 2. Deliverables: Curriculum requirements

With sufficient support, 40 courses will be made available with the following criteria:

- digital format
- creative commons license
- aligned to Minnesota academic standards
- include all content and assessments

Digital format: Curriculum resources must be in a system or format that can be reproduced and transferred to other systems and are device agnostic. Moodle and Schoology are the primary platforms for creating the course structure.

Creative Commons licensed: all materials must be openly licensed for sharing, distribution, revision, remixing, and reproduction

Aligned to standards: all materials must be aligned to MN academic standards and contain standard alignment documents within the course.

Assessments: all courses must contain authentic assessments, with clear indicators of what students will be able to do at the completion of each unit, and how achievement will be measured.

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### Is there a cost to join the MPCC?

Yes. Participating districts will contribute \$1.00 per student (ADM) for for one year. Continuation to a second year will be reviewed based on the level of involvement of completion at the end of the first year. In-kind contributions will be considered for support of infrastructure or courses previously developed.

The fee provides for:

- Content development
- Coordination of projects, review process and communications
- Teacher training in use of materials
- Access to updates of content
- Maintenance of access and technical support

### How many schools Districts are involved in the MPCC?

As of May 2014, there are currently over 140 Minnesota school district involved in the MPCC.

### Will the curriculum change to support the Digital Engagement Initiative?

The District recognizes the changing nature of curriculum in a digital world. Whereas curriculum changes previously happened over the course of years, they now can happen rapidly. While the District intends to retain the current 7 year curriculum review cycle, it will review digital curriculum changes on a yearly basis. Teachers will keep all curriculum maps up to date and present changes to building principals yearly. Curricular changes that significantly alter the school board approved course of study in any course or content area will be presented by building principals to the Curriculum Advisory Committee for review.

## **Learning Management System**

### What is a Learning Management System)?

A Learning Management System (LMS) is a software application for the administration, documentation, tracking, reporting and delivery of e-learning education courses or training programs.

### Why is an LMS important to the Digital Engagement Initiative?

- 1) Assignments – Teachers can post assignments for students within the LMS. Students who are absent have instant access to what was learned in class that day. If a teacher is absent for the day they can easily and quickly inform all students to what is expected for the day.
- 2) Calendar – Teachers can add assignments, quizzes, and tests to the course calendar, making it a “one-stop-shop” for students to see exactly when things are due. Coaches can create a calendar to communicate with athletes about practices and games.
- 3) Quizzes and Tests – Teachers can create quizzes and tests within the LMS. The instant feedback will aid the teacher and help them modify teaching and learning activities to improve student attainment.
- 4) Discussion posts – Teachers can post a question or assignments to a discussion board. Students then post links, videos, screen shots, and Google Docs back to the discussion board for their classmates to review, comment on, and learn from.
- 5) Parent co-enrollment – Parents can view grades, upcoming assignments and due dates, missing work, and teacher communication. This will connect parents to students’ courses automatically—giving them the insight to help their students be successful.
- 6) Analytics – Teachers can pinpoint concepts students are not grasping, which assignments they have missed and who needs extra help. It is a proactive / early warning system that zeroes in on individual student problem areas for early intervention.

### Did the District choose a Learning Management System?

Yes. The District chose Canvas as our Learning Management System.



## **Choosing the best device and system upgrade**

What device did the District choose for students and teachers to aid in the Digital Engagement Initiative?

During the spring of 2013, iPads and Chromebooks were purchased and tested by staff. After much consideration the District decided that iPads will be the most beneficial.

Are the teachers getting iPads?

Yes. All teachers will be receiving the 32G iPad Air.

What grades are involved in the Digital Engagement Initiative for the 2014-15 school year?

All grades! Students in grades Kindergarten - 3rd grade will have a group of six iPads in each classroom. All students in grades 4th-12th will be receiving the 4th generation iPad on a 1:1 basis.

Are the teachers getting new computers?

Yes. All teachers will be receiving a 13" MacBook Pro laptop.

Why did the District need to purchase new computers for the teachers?

We have two computer labs (the south lab in the high school and Ms. Salo's lab) that needed to be updated in order to accommodate state and local online testing. We felt it was most cost effective to replace the current teacher PC desktop computers and repurpose them to the labs. Not only will the teachers have an upgraded computer but the two computer labs will have their much needed updating.

### **Program**

The Academy offers teachers technology integration professional development each school year. In the Academy, teachers participate in professional development activities with their peers to integrate specific technology tools into their curriculum and instruction.

The Academy's activities focus on three tiers of proficiency for specific technology tools. The three proficiency tiers address basic skills using the technology tool, applying the technology tool toward student achievement, and integrating the technology tool into curriculum and instruction.

Teachers are awarded a certificate of technology integration proficiency after they demonstrate proficiency using and integrating technology into their curriculum and instruction. Certificates of technology integration indicate teachers are prepared to adjust their curriculum and instruction to include technology with their pedagogy and content knowledge.

### **Tier 1 - Basic Skills Training**

Basic Skills Training involves basic skills training for using technology tools that will be integrated into curriculum and instruction. In Basic Skills Training teachers will develop the skills and confidence using a specific technology tool that they will need to be able to integrate the tool into curriculum and instruction.

- Basic tool skills training
- Moving beyond the basics - tool training
- Skills training is facilitated and supported by the technology integration specialist(s).

### **Tier 2 - Advanced Applications Training**

Advanced Applications Training prepares teachers to apply their knowledge of technology tools toward their curriculum and instruction. In Advanced Applications Training teachers explore best practice strategies and apply the skills they developed in tier one training to create instructional materials using specific technology tools. After completing Advanced Applications Training, teachers will have the basic skills and application knowledge about how specific technology tools can be integrated into curriculum and instruction.

- Theories, research, applications, best practices
- Advanced applications training is delivered by the technology specialist(s).

### **Tier 3 - Practicum**

The practicum provides time and encourages teachers to experiment using specific technology tools in their curriculum and instruction. During the practicum teachers will develop and integrate practical and appropriate instructional materials using specific technology tools. Through the practicum, teachers will demonstrate proficiency using and applying specific technology tools to student learning. After completing the practicum, teachers will be able to include technology along with pedagogy and content knowledge in their curriculum and instruction.

- Practical, authentic experiences using technology with students during instruction.
- Opportunities and time for experimenting integrating technology into instruction, and reflecting on the process and results.

### **Best Practice Showcase**

All teachers who earn certificates of technology integration are encouraged to present their experiences from the Academy with colleagues at the end of the school year. The showcase serves to celebrate teachers' success stories and share best practices about integrating specific technology tools with colleagues, who may be inspired to integrate similar tools and strategies into their own curriculum and instruction.

## **Certificates**

### **Certificates of Technology Integration Proficiency**

Certificates of technology integration proficiency are awarded to teachers when they demonstrate proficiency integrating technology into their curriculum and instruction after participating in professional development and practical experiences over a nine-month time period.

Certificates represent teachers' development of basic technology skills, understanding of technology integration theory and application, and practical and authentic experiences integrating technology into curriculum and instruction. Technology integration proficiency is measured by a teacher's ability to use the tool at basic levels, apply the tool to student learning, and demonstrate the ability and knowledge to use the tool in their instructional practice when it is appropriate and it demonstrates best practice. Professional development activities for each certificate involve technology tool skills training, advanced application training, and peer collaboration and support through their participation in a technology integration focused professional learning community.

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The Academy offers certificates of technology integration proficiency for the following innovative technology:

- 1) Flipped Lessons – Teachers will focus not only on creating the flipped lesson but how to manage your classroom and what your classroom would look like in a flipped environment.
- 2) Learning Management System – Teachers will learn how to utilize the Learning Management system to its full potential and strategies on how to improve your classroom with the use of an LMS.
- 3) Technology Integration – Teachers will learn how to integrate technology into their classrooms, anywhere from using different applications (apps) or several tools available to aid in technology integration.

**Upon the successful completion of a 10 hour technology integration certificate, a teacher will be eligible for a (quarter) lane change credit. Successful completion of three certificates equates to three quarter credits or two semester credits. These credits are eligible for lane change per the teacher master agreement, following the procedures and timelines established in Article VI, Section III.**

**Only one lane change credit per calendar school year will be allowed.**

Will there be staff development for teachers during the 2014-15 school year?

Yes. The District added two additional early release days in September and February for a total of six early release days. Topics during the early release days will be geared toward the implementation of the Digital Engagement Initiative. A full staff inservice day will be held on Monday, April 20th, 2015 which will be geared toward enhancing skills needed to support the Digital Engagement Initiative.

All teachers participating in the Technology Integration Academy will receive one 1/2 day each semester to work on skills to support the initiative. The half-day, however, will not count toward the ten hours required for earning a certificate.

## **Robust Infrastructure**

Will the districts current infrastructure be able to sustain the demands of the Digital Engagement Initiative?

Yes. The infrastructure was upgraded in the spring of 2014. We increased our wireless access points from 18 to 83, allowing for each teaching classroom to have access. We upgraded from CAT5e cabling to CAT6 cabling to each access point, two new servers, gigabit switches, firewall, Apple caching server to cache apps updates, CACHEbox to aid in the streaming of video content, and we purchased two new wireless controllers allowing for redundancy. We also upgraded to a 10GB multi-mode fiber in all seven tech closets.

Will the bandwidth we have be sufficient?

Yes. We are upgrading our bandwidth from 50 mbps to 100mbps in July 2014.

## **Technology Staffing**

Will there be an increase in the technology staffing for next year?

Yes. We will be adding a Technology Help Desk Assistant for 25 hours per week, 176 student days with possible additional summer days if necessary.

Will the students be assisting the Digital Engagement Initiative?

Yes. With the permission of the high school Principal and Counselor, students can enroll in the STAT program. The STAT (Student Technology Assistance Team) program is an approved semester long course (0.5 credits) which can be taken all year long. Students enrolled in this course will be assisting at the Technology Help Desk by helping students and staff with basic level technology needs.

## **Mobile Device Management System**

What is a Mobile Device Management System?

Mobile device management (MDM) software secures, monitors, manages and supports mobile devices deployed across mobile operators, service providers and enterprises. MDM functionality typically includes over-the-air distribution of applications, data and configuration settings for all types of mobile devices.

How will an MDM aid in the Digital Engagement Initiative?

An MDM will allow for the tracking of devices, installing apps, ibooks, and ebooks, and adding restrictions to all enrolled devices such as: privacy controls, restricting iMessage, the App store and other restrictions approved by administration.

Has the District chosen an MDM solution?

Yes, the District will be using the software product from JAMF called, Casper.

## Other Important FAQ's

### Student Access Considerations

#### Will students have internet access on their iPad?

Yes. At school, all students will be able to access the internet via the school wireless system on their iPads. Students will not be able to access the internet with other devices they bring to school, however (unless using 4G via phones). This measure is being taken to improve efficiency of our school network.

From 3:15pm to 10:00 p.m. each day and on weekends, Esko Public Schools wireless access will be open to the public for usage on non-district devices.

#### What controls will students have in place on their devices at school?

Students using our school internet will be subject to the school filtering software. Additionally, students will not be permitted to access the Apple App Store with their devices or make system changes to their devices. The district purchased iPads are learning devices and will be monitored via our mobile device management system.

#### Will the students have access to the App Store to download app of their choice?

No. During the 2014-15 school year, students will not have access to the App Store to download any apps. We understand that students will want to personalize their devices and make it their own but this can be accomplished by creating a custom lock screen and background, creating folders, and organizing their iPad to maximize functionality for each student.

#### What rules will apply to the students and their devices?

All discipline and acceptable use policies will be followed and enforced if there are issues with students and their device.

#### Will students be able to take their devices home?

Yes. And speaking of home, students will be able to access their home wireless networks. Parents must know that school filtering doesn't cover student's home networks. Parents are responsible for monitoring student internet usage while at home. That said, students will still not have permissions on their device that allow them to access the Apple App Store or make system changes while they are at home.

#### Will the students be allowed to take the iPad home over the summer?

No. At this time we are not planning to allow the devices to be taken home over the summer of 2015.

#### Can I have an example of how school and home use on the student devices is different?

If for example a student has a Facebook or Twitter account, she or he will not be permitted to access that at school as social media sites are blocked by our school filter. But, students will be able to access Facebook and Twitter on their devices at home if their parents permit it on their home network.

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### What about families that don't have home internet?

The primary purpose the District is purchasing devices is for academic engagement. Students will be able to access, retrieve, view, read, and create school related material on their devices at home even without internet by downloading homework on their device before leaving school each day. For example, if a student is asked to view a video at home the student will download it prior to leaving school. In this example, which will be a typical scenario for an Esko student, the school-related material will be on the device, not the Web.

### Are the students going to have the same device they returned in the spring returned to them in the fall?

Yes. The students will have the same device they had the previous year. If the students have the same device, there will not be a need for the student to set up all applications and accounts in the fall. We also feel that if the students have the same device they will take better care of it.

### Can students purchase their own cases for the iPad?

No. Students must use the District approved and purchased cases.

## **Teacher Access Considerations**

### Will teachers have access to the internet?

Of course. Both the teacher iPad and MacBook will have access to the school WiFi network. Other (non-4G) devices that are brought from home, however, will not. Again, the purpose of this is to increase efficiency of our district network.

### Will staff have access to the App Store?

Yes. Teachers will be permitted to purchase apps using their iTunes account linked to their personal credit card for personal use. Likewise, teachers will be permitted to download free educational apps to their devices for the purpose of exploring their potential academic use.

If a teacher wishes to purchase an educational application for individual school-related teacher use, she or he may request this purchase via the Technology Coordinator (approved by the building administrator) using her or his instructional supply budget. Such applications will be installed and "pushed out" to the teacher by technology coordinator to the teacher device. This procedure allows the reuse of that application license and allows for a system of financial checks and balances.

Applications that are free or for purchase, requested by teachers to be used with a whole class or group of students, will not be permitted for at least the first semester of the 2014-2015 school year. The vision of the steering committee is that training and integration of devices will focus on the applications that come with each iPad or have been approved (and installed) for broad, across the curriculum use, by the committee (i.e. Notability, Explain Everything, etc.). Exceptions to this will be approved on a case-by-case basis by building administrators.

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### Can teachers bring their devices home?

Yes. Teachers are encouraged to utilize their iPads and MacBooks maximally. Teachers should remember that the devices are school property and our district technology policies for staff mandate appropriate and responsible care and use of the devices.

### Can teachers purchase their own cases for the iPad?

No. Teachers must use the district approved and purchased cases with their iPad.

## **Distribution and Student-Parent Agreements**

### When will students get devices?

Parents will pick up their 4th-12th grader's iPads utilizing an alphabetical process the evenings of August 25-29 in the Esko High School Commons Area (and gymnasium).

### Do parents pay anything?

A \$25 dollar non-refundable insurance fee is required on each device (with a \$50 dollar family maximum deposit). This insurance fee will be accessed one time, per student, per device (again with a \$50 family maximum). The \$25 deposit ensures a student for this breakage. Students/parents must pay another \$25 for second and subsequent breakage charges. Students/parents must pay for a device in full if lost or stolen.

There are 3 options for parents;

- 1) Pay the \$25 non-refundable insurance fee (\$50 family maximum) one time prior to September 2nd, 2014. This is a one-time non-refundable insurance fee, additional fees may apply during the 2018-19 school year.
- 2) Parents choosing to decline the \$25 non-refundable insurance fee may choose to sign a waiver stating they are responsible for any and all costs to repair a device if damaged (all repairs will be conducted though the school district), and they must pay the entire replacement cost if lost or stolen.
- 3) If parents decline options 1 & 2 above, their students may check out a device daily from the Media Center and must be returned at the end of each school day.

Financial hardship waivers are available for families on request prior to the distribution night.

### Why not just distribute the iPads at school?

Distribution of devices requires the following steps that go beyond the scope of what we can accomplish in classrooms during the business day: 1) Review and signed acknowledgement of district policy and user agreements by parents or guardians 2) Collection of breakage deposit(s) 3) Guided (one-time) set up by parents and students (using an Apple ID and enrolling the schools' mobile device management system)



## 1) Would a Digital Engagement Initiative improve student learning?

- A research study, conducted in Auburn, Maine showed that Kindergarten students using iPads scored much higher on literacy tests than students that didn't use the device. *Source: TUAW (Appendix A)*
- University of California Irvine medical school reported iPad equipped medical students scored 23 percent higher on national exams than previous unequipped classes. *Source: MobiHealthNews (Appendix B)*



- According to Pearson Foundation's survey more than six in ten college students and high school seniors agree that tablets help students to study more efficiently (66% and 64%) and help students to perform better in classes (64% and 63%). *Source: Pearson Foundation (Appendix C)*
- A study from KIPP Academy in Houston, TX showed the percentage of students who rated either proficient or advanced (the 'passing' rate) was 49% percent higher in the 'flipped classrooms' using the iPads than in the traditional classrooms with no iPads. *Source: TUAW (Appendix D)*



- A study done by Houghton Mifflin Harcourt in California showed that students using iPads saw their math test scores increase 20% in one year compared to students using traditional textbooks. *Source: CNN Tech (Appendix E)*

- A study at Oklahoma State University concluded that 75% of students agreed that the iPad enhanced their learning experience. *Source: Oklahoma State University News* (Appendix F)



- At Northdale Middle School in Coon Rapids, MN, iPads in the classroom have led to increased engagement among disabled students and have accelerated and improved their learning and comprehension. *Source: Star Tribune* (Appendix G)
- Another study centered on an iPad game, Motion Math, has shown that the iPad can help with fundamental math skills. Fifth graders who regularly played the game for 20 minutes per day over a five-day period increased their test scores by 15 percent on average. *Source: Game Desk* (Appendix H)

# Appendix A

## Study: iPads improve Kindergarten literacy scores

by [Mike Schramm](#) Feb 20th 2012 at 3:00PM



Apple is pushing [for iPad use in education](#), and several schools [have taken up the charge](#). Now, a study of kindergarteners in Auburn, Maine has shown that students who use iPads [score better in every literacy test](#) than those who don't. The study focused on 266 children whose instruction featured the iPad. Those who used the device scored higher on the literacy tests, were more interested in learning and excited to be there.

There are caveats to these results. Many schools don't have the budget to distribute iPads to all of their students (Apple has education programs, however, and third-party programs are getting better all the time). Additionally, the students' excitement could be attributed to access to an iPad. When I was a kid, our school boasted brand new Apple IIs, which fostered a lifetime's worth of interest in computers, technology, and the written word for me. But that's likely because they played Oregon Trail and Prince of Persia.

Still, the iPad can be a powerful tool for learning and comprehension, especially for literacy. Interactivity can make for a very engaging experience, definitely at a young age. It's neat to see these kindergarteners doing better in school no matter what the reason, and hopefully we'll hear more stories of Apple's technology benefiting students.



# Appendix B

## iPad-equipped medical school class scores 23 percent higher on exams

By: [Jonah Comstock](#) | Feb 13, 2013 955 443 34

Tags: [iPad](#) | [iTunes U](#) | [medical school](#) | [medical textbook iPad app](#) | [portable ultrasound device](#) | [University of California Irvine School of Medicine](#) |



In 2011, [MobiHealthNews reported on an increasing number of medical schools instructing students to use mobile devices](#), including the [University of California Irvine's iMedEd program](#), where each of the 104 medical students in the class of 2014 received an iPad from the school when they started in 2010. Now the evidence is starting to come in that tablets as an educational tool really make a difference in the medical setting. [UC Irvine reported](#) this week that the first class to receive the iPads scored an average of 23 percent higher on national exams than previous classes, even though their incoming GPA and MCAT scores were comparable.

Apple has taken notice of the iMedEd program, as well. UC Irvine reported that iMedEd has been named a 2012-2013 [Apple Distinguished Program](#), a distinction the company gives to programs that use Apple technology to “meet criteria for visionary leadership, innovative learning and teaching, ongoing professional learning, compelling evidence of success, and a flexible learning environment,” according to the UC Irvine release.

In the program, an endowed fund pays for fully loaded, newest-generation iPads for each incoming medical class at the school. The iPads contain a full suite of electronic textbooks, as well as podcasts of lectures and class management systems on the iPad's iTunes U software.

The university reports that students have gone beyond those tools, as well, exploring other possibilities for mobile health with their devices. In November, students from the medical school and from UC Irvine's School of Information and Computer Science worked together to create 19 health apps for Apple devices in the school's [first-ever Med AppJam](#). Other students have been [exploring the potential for iPads and portable ultrasounds around the globe](#), traveling to Nicaragua, Australia, Peru, China and Vietnam to teach local physicians how to use the technologies.

“Our students' enthusiasm and willingness to discover new learning modalities is unparalleled, and they are key to the success of iMedEd,” Dr. Warren Wiechmann, faculty director of UC Irvine's Instructional Technologies Group, which oversees iMedEd, said in a statement. “It's extremely gratifying to see our students apply technology in innovative ways because we strongly believe that familiarity and comfort with technology will be essential for them to be skilled physicians in this new digital era of medicine.”

## Appendix D

# iPads seem to raise classroom math scores in charter school study

by [Kelly Hodgkins](#) Aug 14th 2012 at 12:00PM



Earlier this year the folks who created the [YourTeacher math tutoring and test prep system](#) teamed up with [KIPP Academy](#) to gauge how well the iPad performs in the classroom. As [noted by Jim Dalrymple of The Loop](#), [the results](#) are overwhelmingly in favor of the iPad.

Between February 2012 and May 2012, a group of 8th grade math students in Houston used [the YourTeacher Algebra 1 iBooks](#) instead of their hardcover counterparts. The teachers used the iPads to create a flipped classroom in which students spent most of their learning time on the iPad (80 percent) while they were at home. This let teachers use the classroom time for advanced, one-on-one instruction.

When compared to the control group that received traditional classroom instruction, the iPad group showed significant improvement in their math scores. [The summary report on the pilot program](#) says,

Overall, the percentage of students who rated either proficient or advanced (the 'passing' rate) was 49% percent higher in the 'flipped classrooms' using the iPads than in the traditional classrooms with no iPads. The difference was most pronounced in the percentage of students rated as 'advanced,' which was 150% higher in the 'flipped classrooms.'

This may be a small-scale study, but it is one of [many recent results](#) that suggest the iPad could benefit school-aged children [as young as kindergarten](#).



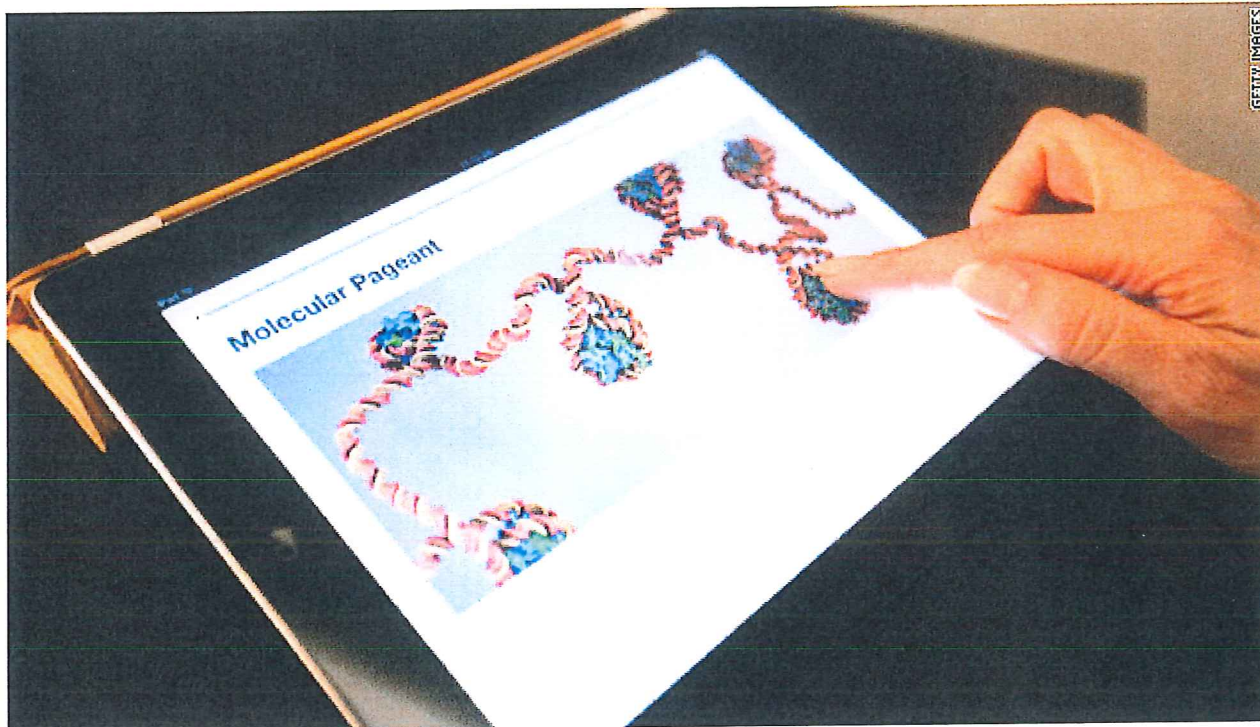
# Appendix E

## iPad a solid education tool, study reports

By Christina Bonnington, WIRED

**WIRED**

updated 9:37 AM EST, Mon January 23, 2012 | Filed under: [Innovations](#)



Apple's new iBooks 2 app is demonstrated for the media at the Guggenheim Museum on January 19.

### STORY HIGHLIGHTS

- Pilot study done by textbook publishers Houghton Mifflin Harcourt and Apple
- Middle school students studied from 2010 to 2011 using HMH's Fuse: Algebra I app
- During study, iPad seemed to help students better connect with the content

**(WIRED)** -- More and more schools are jumping on the digital bandwagon and adopting iPads for daily use in the classroom. Apple's [education-related announcements](#) last week will no doubt bolster the trend, making faculty tools and student textbooks more engaging and accessible.

But today another data point emerged, demonstrating that the iPad can be a valuable asset in education. In a partnership with Apple, textbook publishers Houghton Mifflin Harcourt performed a pilot study using an iPad text for Algebra 1 courses, and found that 20% more students (78% compared to 59%) scored 'Proficient' or 'Advanced' in subject comprehension when using tablets rather than paper textbook counterparts.

The study was conducted at a Riverside, California, middle school from Spring 2010 to Spring 2011 using HMH's Fuse: Algebra I app. Similar pilot courses and iPad programs have cropped up all over the country, primarily in private and boarding schools, and select universities. In the public school sector, more than [600 school districts](#) have adopted a 1:1 iPad program.

The iPad seems to help students better connect with the content at hand.

"Students' interaction with the device was more personal. You could tell students were more engaged," said Coleman Kells, principal of Amelia Earhart Middle School. "Using the iPad was more normal, more understandable for them."

Tablets could be less daunting to students, too. Marita Scarfi, CEO of digital-focused marketing agency Organic, says that moving textbooks to mobile devices will reinvent learning.

"Now you don't know if a book is super huge and formidable," Scarfi says. "Learning can be done in snackable chunks. It could be reoriented."

Another study centered on an iPad game, Motion Math, has shown that the iPad can help with fundamental math skills. Fifth graders who regularly played the game for 20 minutes per day over a five-day period increased their test scores by 15% on average (you can check out more about this study on Wired's [GeekDad](#)).

Digital textbooks haven't enjoyed the same success as app-based learning tools thus far, however. E-textbooks have been a [transitional product](#), Forrester analyst Sarah Rotman Epps wrote in a November 2011 report. They make up less than 3 percent of textbook sales, and don't offer much over their paperbound counterparts.

Apple's new and updated products — iTunes U (an app-based hub for virtual classroom), as well as iBooks 2, the iBookstore and iBooks Author — should help provide solutions for educators looking to provide more engaging experiences than plain, old PDFs, all without the heavy investments required of building apps from scratch.

"With iBooks, learning will be a lot more experiential," Scarfi told Wired in an e-mail. iBooks also have the potential to ease some of the financial burden of schools, as ebooks could save on textbook costs. "Other benefits include more timely and relevant content, and the ability for students to interact and share this content with ease. Textbooks will now become social in a variety of ways."

However, even if e-book prices themselves won't break the bank, iPads are still a \$500-plus investment per tablet. Funding is still a problem, particularly for public schools. Luckily, there are sites like DonorsChoose.org that can help offload the costs from teachers and school districts.

And a program called SA500 Kids is helping to accelerate funding for technology resource requests on the site. Thus far, iPad requests have been fairly low: SA500 Kids has funded 24 iPad-based project requests since Nov. 25. Currently there are 418 iPad-related requests on DonorsChoose, out of the 20,000 projects listed on the site.

When the next iPad debuts, if Apple goes with a similar pricing scheme as it has with the iPhone — [as rumored](#) — then schools will be able to pick up iPads on the cheap and really be able to utilize the company's new education related products.

But regardless, it looks like the iPad is starting to do an impressive job of improving the education space. And now that publishers and instructors have these iBooks tools at their disposal, students can continue to reap the benefits of increased understanding and greater participation.



# Appendix F

IPAD STUDY RELEASED BY OKLAHOMA STATE UNIVERSITY [PDF](#) | [Print](#) |

Tuesday, 03 May 2011 13:17

[View copy of iPad research Executive Summary](#)  
[View copy of iPad research Memorandum](#)

Oklahoma State University has formally released its [internal findings](#) on an iPad pilot conducted during the Fall 2010 semester, showing that the device had a positive impact in an academic environment.

"We put this powerful and creative tool in the hands of faculty and students and the end result reached beyond enhancing the academic experience of our students," said OSU President Burns Hargis. "The [report](#) outlines a possible decrease to student and administrative expenses, increased productivity, and how the iPad crosses between academic and personal barriers."

Bill Handy, visiting assistant professor in the School of Media and Strategic Communications, and Tracy Suter, Ph.D. associate professor of marketing in the Spears School of Business, led the initiative. Each class integrated the iPad differently but both focused on specific measurable outcomes including: expense impact, how the device was used, viability as an E-Reader and overall enhancement to a student's academic experience.

"Consensus is the integration of the iPad can enhance a student's academic experience and have a positive impact for faculty as well," said Handy. "We used the iPad in every aspect of our course. The most important consideration is the device must be truly integrated. Simply distributing the device without evaluation of how the course might be modified for its use limits the impact."

Among the enhancements noticed by both professors was an increase to the pace of the course, reaching traditional benchmarks sometimes weeks in advance.

"The increased pace is likely attributed to the mobile functionality of the device which allowed students to work in any environment, the change to the classroom environment, and the ability of all students to have complete access to the same technology, creating an equal and level playing field," said Suter.

Both professors recommend the university should consider the full deployment of iPads for all students. Deans and department heads were given instructions to evaluate how best to use this and any technology device to enhance their student's involvement.

## Executive Summary

### **Oklahoma State University/Apple iPad Pilot Program**

During the Fall 2010 semester, five sections of two courses across two colleges and two campuses participated in the Apple iPad Pilot Program. Professor Bill Handy, School of Media and Strategic Communications, and Professor Tracy Suter, Ph.D., Spears School of Business led the project. In addition, Professor Bobbi Kay Hooper, Ph.D., School of Media and Strategic Communications, included the pilot in a larger pedagogical study. Below is an overview of the key outcomes.



Did the iPad increase or decrease expenses? While difficult to fully quantify, there is evidence to suggest a **decrease in student expenses** with maximum integration. Electronic versions of student textbooks were less expensive than traditional textbooks. If a student were to purchase e-books, the possible savings could cover the iPad hardware costs in two semesters. The university could also benefit from decreased paper and printing costs while the use of "cloud" computing could reduce future network storage needs.

How was the iPad used among students and faculty? iPad use had professional and personal benefits. Focusing on professional benefits, students were able to use the iPad in ways that outflanked a traditional computer, be it laptop or desktop. The iPad also was used as a substitute for paper and pen. **Faculty were able to explore and recommend course-specific apps** (i.e., software) to enhance the learning environment. Given the size and scope of Apple's App Store, there were thousands of educational software possibilities plus having a built-in Web browser made the Internet more readily available.

Was the integration of an E-Reader an enhancement or detractor to the academic experience? **The responses were mixed.** On the one hand, students liked using the iPad to house their textbooks and suggested it promoted more reading. On the other hand, reactions from the beginning-of-the-semester expectations of planned use to the end-of-the-semester actual use saw e-book reading exhibiting the greatest change, a substantial decrease. Students thought they would use the iPad as an e-reader but did not do so as much as initially planned.

Was the integration of the iPad an enhancement to the academic experience? Self-report responses by pilot students indicated that **75 percent agreed or strongly agree** with the statement, **"I think the iPad enhanced the learning experience of this course."** Upon more detailed review, that number jumps to 92.8 percent among students who owned a Mac and falls to 70.4 percent among students who owned a PC. Survey results also showed only 3 percent of students in one course would opt out of the iPad course for an identical course which didn't include the iPad. From a faculty perspective, the greatest benefit was having uniform hardware and software available across the class. Said differently, faculty knew all students had access to the same learning tools. This was critical when planning assignments and class activities.

In sum, the iPad pilot was a very valuable program for OSU to undertake. The instructional mission of the university is important and continuing to investigate means to enhance the instructional mission positively serves many university constituents. Because of the overall improvements to the academic experience of both faculty and students it is our recommendation the university should consider the full deployment of iPads for all students.

# Appendix G

## iPads improve special education at Coon Rapids school

- Article by: MARIA ELENA BACA , Star Tribune
- Updated: November 20, 2012 - 7:02 AM

Technology has improved achievement and engagement for students with significant disabilities.



Paraprofessionals Perry Graham and Katy Bursaw worked with student Micah Simbeck, center, on the iPad in a class at Northdale Middle School in Coon Rapids.

Photo: **Bruce Bisping**, Star Tribune

The addition of a few iPads to the special education toolbox has raised the achievement bar at Northdale Middle School in Coon Rapids.

In the third year of their use there, the tablet computers have led to increased engagement among some of the most severely disabled students and have accelerated their learning.

Other schools have made use of technology in special education, but Northdale is the "grass roots" of the iPad initiative in Anoka-Hennepin, said teacher Mary Fleegel, who has led the program along with speech language pathologist Kathryn McLachlan.

In Fleegel's classroom for students with developmental and cognitive disabilities, students took turns last week matching pictures on a projector screen and their iPads to vocabulary words about desert biozones as part of a unit on ecosystems. Students used their fingers to tap the correct word, either vocalizing it or letting the computers speak, then touching an arrow to turn the page.

"Rock," murmured eighth-grader Mohamed Omar when a boulder appeared on his screen. The students tapped on words like "cactus," "water," "lizard" and "sun." Each correct answer was greeted by cheers and high-fives.

Fleegel and McLachlan used grant money, school funds and money from the district's technology levy to buy the iPads. They conducted a study of their students with and without the iPads and found the devices generally increased engagement and learning and decreased negative behaviors. They also have noticed that students are able to work independently without constant prompting. Some parents, seeing their children's success in class, have bought iPads for home use, McLachlan said.

Later in the class period, four of the six students took a 20-question quiz on a story Fleegel had read to them, using vocabulary words. The four sat quietly, their eyes fixed on the computer screens, tapping out answers and waiting for the next question to appear. Three of the four made it all the way to the end, a feat that wouldn't have been possible with pencil and paper.

"With paper, some of them will just scrunch the paper," Fleegel said. "The technology has had a lot to do with their engagement and their learning."

Eight-grader Julia Robinson already had participated in a pilot program about the Olympics over the summer. She is basically nonverbal, but she greeted the news of the program's continuation with a big smile, Fleegel said.

"I didn't know what she was learning until we did this," she said.

The program has only a few of the devices, which McLachlan packs up and carries from one classroom to another, taking a few minutes before each class to set up new applications for students of different needs and abilities.

"The iPads are only as valuable as you make them," she said. She added with a laugh, "We feel like we've gotten our money's worth."

# Appendix H

## Overview

Are educational iPad apps valuable for learning? Until recently, no studies had put iPad learning apps to the test. Led by USC Prof. Michelle Riconscente, GameDesk ran a study on Motion Math, an iPad fractions app for elementary school-aged children. The study evaluated whether playing Motion Math led to increases in children's fractions knowledge and attitudes. Among the main findings were that fractions knowledge increased an average of 15%, and participants gained confidence in their fractions ability and reported liking fractions more after playing the game. The study was recently accepted for publication in the peer-reviewed and scholarly Games and Culture Journal, and has earned the 2013 Top Paper Award from the Meaningful Play Journal for the first national study on the effectiveness of mobile educational games in the classroom.

## Research Questions

The overarching question was whether Motion Math holds value for learning fractions and whether children find the game entertaining. Three specific research questions were pursued:

1. Does playing Motion Math lead to increases in children's fractions knowledge?
2. Does playing Motion Math lead to more confidence in and liking of fractions?
3. Do children rate the Motion Math game positively?

## Methods

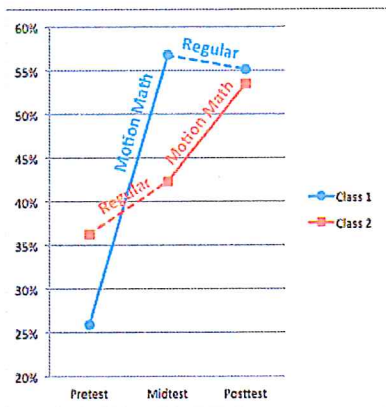
To answer these questions, we conducted a repeated measures crossover design with 122 fifth grade students. This research design makes it possible to attribute the outcomes to Motion Math, and to eliminate alternative explanations for the outcomes. As shown in the table below, all participants first took a pretest. For the next five days, Group 1 served as the treatment group and played Motion Math for 20 minutes daily, while Group 2 served as the control group. After five days, all participants took the test again, and then the groups switched roles. Group 1 became the control group and Group 2 became the treatment group, playing Motion Math for 20 minutes daily over five days. Finally, all participants took the test for a third and last time.

The fractions knowledge test was comprised of questions based on released items from the California Standards Test (CST), the National Assessment of Educational Progress (NAEP), and the Third International Math and Science Study (TIMSS). Test items for the study are included in the full report.

| Group | Day 1   | Days 1-5    | Day 6   | Days 6-10   | Day 10   |
|-------|---------|-------------|---------|-------------|----------|
| 1     |         | Motion Math |         | control     |          |
|       | Pretest |             | Midtest |             | Posttest |
| 2     |         | control     |         | Motion Math |          |

## Results

Several statistical analyses were conducted to compare Motion Math outcomes to the control group outcomes. These analyses and results are described in detail in the [full report](#). Below are key findings from the study.

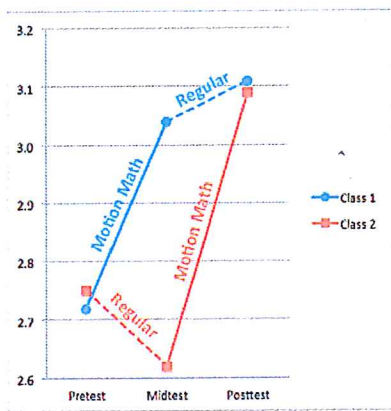


## Significant Increases in Test Scores

The results of the study showed that participants' fractions test scores improved an average of over 15% after playing Motion Math for 20 minutes daily over a five-day period, representing a significant increase compared to a control group.

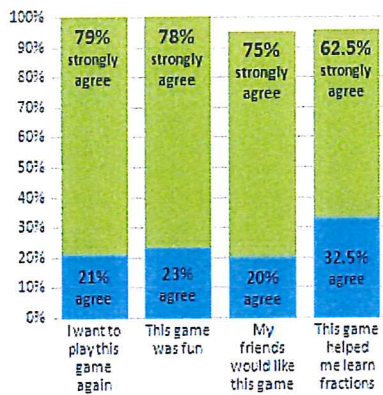
The figure to the right displays Fractions Knowledge gains over time for Group 1 (blue) and Group 2 (red) at one of the two study sites. Solid lines indicate statistically significant within-group gains. Participants were given ten minutes to respond to 20 questions.





### Increased Confidence and Liking

Participants' self-efficacy for fractions, as well as their liking of fractions, each improved an average of 10%, representing a statistically significant increase compared to a control group. The figure to the right shows Fractions Liking gains over time for Group 1 (blue) and Group 2 (red). Solid lines indicate statistically significant within-group gains.



### Positive Game Ratings

All participants rated Motion Math as fun and reported wanting to play it again; nearly all (95%) children in the study reported that their friends would like the game, and that the game helped them learn fractions.

## Conclusion

With hundreds of educational iPad apps on the market, it is important to know whether they help children learn, and whether iPad apps like Motion Math also contribute to children's positive attitudes toward academic subject matter. Though much more research is needed to test

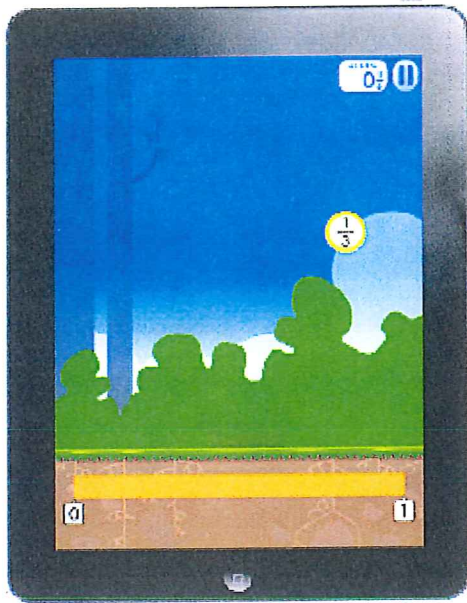
learning apps, and to discover ways to use them most effectively with a broad range of learners, this study marks an important step toward testing educational technologies with stringent research designs.

Schools are charged with teaching children academic subject matter, and doing so in a way that leads to better scores on state and national tests. For teachers and administrators who are in the position of deciding which, if any, educational technologies to use in instruction, this study offers evidence that this particular app is likely to help their students learn fractions and improve test scores.

The results of this study suggest that what children learn through gameplay can help them perform better on the kinds of questions asked on state and national standardized tests. In less than two hours of game play distributed over five days, the app shifted the needle on participants' understanding of a topic that has long eluded most learners. Moreover, results indicated that game play can boost kids' confidence in and enthusiasm for academic subject matter. Although more research is necessary to replicate these findings, and to explore the conditions under which learning apps such as Motion Math are most effective, this study offers valuable insights into the educational potential of mobile apps

## About Motion Math

Created by graduates of Stanford University's Learning, Design, and Technology program, Motion Math was designed to help children strengthen their understanding of the relationship between fractions, proportions, and percentages to the number line. The game plays on iPad, iPhone and iPod devices, leveraging the "accelerometer" feature. In Motion Math, the player tilts the device to direct a falling star to the correct place on the number line at the bottom of the screen. The stars fall one at a time, and each displays either a fraction, percent, decimal, or pie shape. The correct response generates a rewarding audio and visual response; wrong answers trigger increasingly strong instructional hints, starting with an arrow pointing either left or right, moving to hatch marks that break the number line into the appropriate number of parts, and finally labels on the hatch marks.



**Figure 1.** Star falling from top of screen. Player must tilt the device so the star falls at the correct location on the number line.



**Figure 2.** Wrong answers trigger increasingly explicit hints. This screen shows the last hint the player receives before losing the level.



## **Staff Development**

### What is the District planning for staff development for the 2013-14 school year?

Due to the number of snow days in the 2013-14 school year, teachers will have four days of staff development (June 10th - 12th) and one flex day. All staff development will be geared toward implementing the Digital Engagement Initiative.

### How will the District aid teachers in the area of staff development?

We will be implementing a Technology Integration Academy.

### What is the Technology Integration Academy?

The Technology Integration Academy is a professional development initiative designed to assist K-12 teachers as they integrate technology into their curriculum and instruction.

#### **Mission**

- To provide teachers the professional development and support that is necessary to prepare them to effectively integrate technology into their curriculum and instruction.

#### **Vision**

- Our vision is a learning environment where the use of modern technology is routine, transparent, and supports curricular goals.

#### **Staff**

- We are proposing to add the following paid extra duties for the 2014-15 school year. These teachers will be assisting the Technology Integration Academy, with assistance from the Technology Coordinator.
  - Flipped Learning – 1 staff member from the high school and 1 from the elementary
  - Learning Management System – 1 staff member from the high school and 1 from the elementary
  - Technology Integration – 1 staff member from the high school and 1 staff member from the elementary