

Unlocking Literacy with iPad

A teacher research project by Jim Harmon
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A matter of critical literacy

The iPad has been the focus of much excitement in the educational world of late, leading some to insist the device is a death knell for textbook companies. According to the 2011 NMC Horizon Report K-12 Edition, “Competing models, including the HP TouchPad— slated to launch in the summer of 2011 — and Motorola’s Xoom and Samsung’s Galaxy Tab, have not yet enjoyed the success of the iPad, but together, these companies have solidified tablets as the new family of mobiles to watch. Immensely portable, tablets serve as e-readers, video repositories, and web-browsing devices with instant access to thousands of apps — all in one package that easily fits in a book bag, and even replaces the need for the physical books therein.”

Benefits of portable/mobile devices in educational settings show that “(a)ccess in school tends to more fully engage students, and portability extends their learning beyond the school. Experts suggest that these personal devices can increase motivation, organizational skills, independent and active learning, and self-directed learning.” (Fadel & Lemke, 2009) Further, this same meta-study

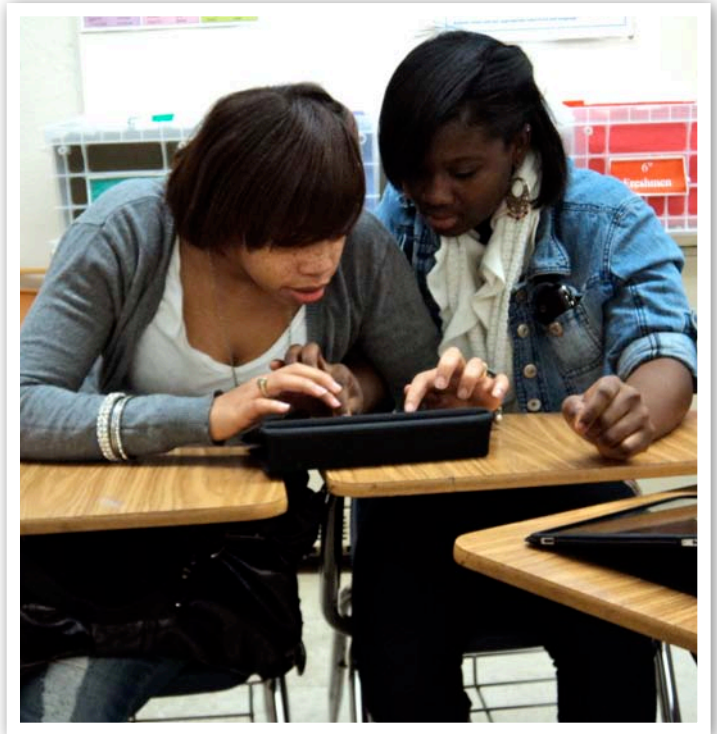
indicated that as of 2009, no research had been located that conducted rigorous studies on the effect of these devices on learning, despite an initial positive response by educators, students and parents.

This iPad device, featuring Apple’s iOS, has become as ubiquitous as the popular iPod, a similar, yet smaller device. Many youths, seemingly regardless of income, race, or other demographic indicators, are aware of these devices, and either own these devices or have used one on a regular device (“Teen gadget ownership,” 2009). While much has been hypothesized about how such a device might impact education, few English/language-arts teachers have conducted their own research into the iPad’s impact on student achievement.

At Euclid High School, where the majority of students receive a free or reduced lunch, and many of their families have been disenfranchised from school for multiple generations, traditional literacy tends to be undervalued, and multiple literacy approaches ignored. Euclid, an inner ring suburb of Cleveland, is a community in transition. While the majority of students at Euclid High School are African-American, as recently as twenty years ago the

majority were white. It would seem that most students, regardless of race, struggle to find reasons for the curriculum to matter in their lives, and their teachers struggle to engage them.

All students in Ohio must pass a standardized test as a requirement for graduation, and two of these tests are considered the responsibility of the English teacher: reading and writing. While some view state mandated testing as an assessment of one’s overall literacy, these state tests are a gateway to one of the most important preliminary life tickets: the high school



diploma. Following the model of TPCK, the author of this article, a sophomore English teacher at Euclid High School, sought to identify a technological tool that would engage his students in literacy instruction in multiple ways that would lead them to achieve at higher levels in reading comprehension, vocabulary acquisition, and writing applications.

Finding a solution that works

For students often described as “at risk” (this author prefers the term “under-served”), the tool would need to maximize instructional time and would ideally make reading and writing more palatable for students, while meeting the diverse developmental needs of the learners.

“With more than 1.2 billion new mobile devices produced each year, the pace of innovation in the mobile markets is unprecedented. Mobiles, especially smart phones and tablets, enable ubiquitous access to information, social networks, tools for learning and productivity, and hundreds of thousands of custom applications.” (Horizon, 2011) After consulting with the district Instructional Technology Coordinator, the author was provided with a single iPad to test for viability. When the author placed the iPad on his desk at the beginning of subsequent class periods, he was swamped by students who simply wanted to touch it.

The iPad featured the same ubiquitous iOS as the iPods students carry in their pockets and backpacks. This meant that the author would have to invest very little instructional time using the iPad for learning. With access to iBooks, students could experience reading some of the classic works of literature in the school’s curriculum in ways they’d never

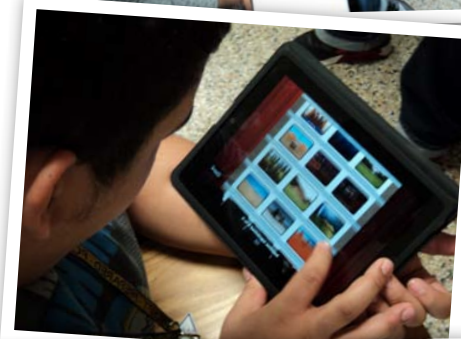
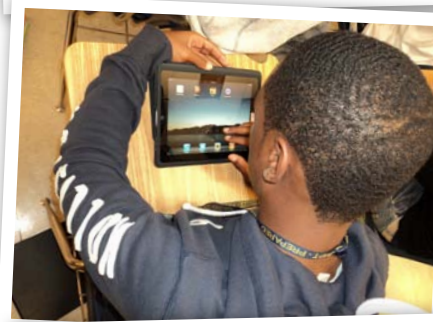
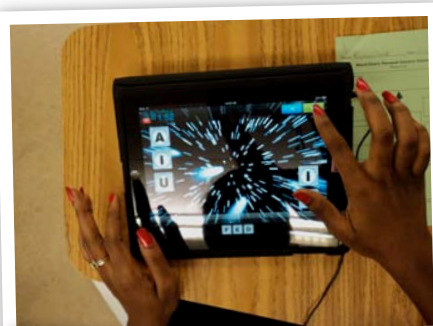
imagined, thanks to context clicking of unfamiliar words within the app.

Finally, the apps available for the iPad allowed for differentiation of instruction. Students had access to vocabulary-intensive apps, such as WordFlick and Words with Friends, access to tools for visualizing literature, such as Puppet Pals and ToonTastic, tools for story retelling, such as Storyrobe and Strip Design, and tools for authoring content such as Keynote and Pages.

Full disclosure: the author was recognized as an Apple Distinguished Educator in 2007 by Apple Computer, Inc. but is not employed by Apple Computer.

Does tablet computing impact literacy?

The Euclid City Schools (ECS) provided the author with a set of 24 iPads which remained in the classroom during the course of the year. Students were unable to take the iPads out of the classroom, however, they became a regular staple of teaching and learning. Students wrote their journal entries on the class Moodle, accessed on the iPads. They took common formative assessments using the iPads. Students collaborated on the retelling of works of drama with apps and then presented them to their peers. They competed with each other and their teacher for the highest vocabulary score using apps like WordFlick. Students focused on meaningful work in ways the author has truly only imagined in his sixteen year career as a teacher. Even moreso, because students journaled on their

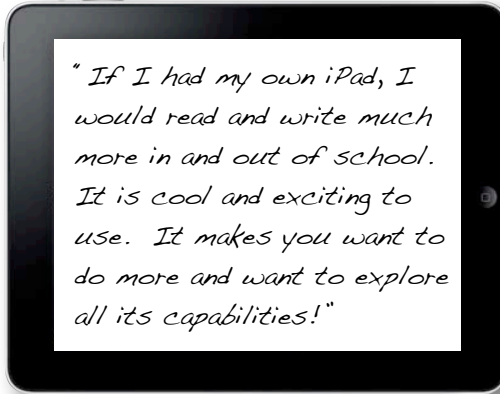


iPads, the instructor avoided a semi-regularly ritual of carting home boxes of spiral notebooks for assessment, and provided opportunities for the teacher to give more frequent and timely feedback on student writing.

The simplicity of the iPad, the uniqueness of its user interface, the familiarity of design all pointed to one thing: excitement for learning. No other pedagogical tool or technique used in the author's career engages students in a way that made learning fun and left students feeling like they were in control of their own learning. More often than not, students may have an initial interest in something "different", just for novelty's sake, but the iPad seemed an open door to a world of self-directed learning that has significant possibility.

The method: connecting multiple data dots

To investigate whether or not increased student achievement tool place, the author examined three sets of data and compared the sophomores with iPads to a control group of sophomores without. All of the sophomores in question were following the same mapped curriculum taught by one of three sophomore English teachers at Euclid High School, of which the author was included, who also collaborated on designing and administering several common formative assessments for their sophomore students throughout the school year. The first data examined was the Ohio Graduation Test results, which all tenth grade students in Ohio are required to take and pass each of five core sections to graduate. English teachers are generally



considered responsible for the curriculum associated with the Reading and Writing tests, so it was data from these tests that was analyzed. The Reading and Writing tests are pencil and paper tests, with a mix of multiple choice, short answer and extended response (essay) questions.

According to data from the State of Ohio Department of Education, 79% of ECS students who took the Reading Test passed, which included students who are on a Section 504 plan or an Individualized Education Plan. ECS students who had access to iPads during the school year prior to the same test passed it at a rate of 85%, which included students who are on a Section 504 plan or an Individualized Education Plan (see Figure 1). This would seem to indicate that students with iPad access had a

6% greater chance of passing the Reading portion of the Ohio Graduation Test.

According to data from the State of Ohio Department of Education, 84% of Euclid City School (ECS) District students who took the Writing Test passed, which includes students who are on a Section 504 plan or an Individualized Education Plan. ECS students who had access to iPads during the school year prior to the same Writing Test passed at a rate of 92%, which includes students who are on a Section 504 plan or an Individualized Education Plan (see Figure 1). This would seem to indicate that students with iPad access had an 8% greater chance of passing the Writing portion of the Ohio Graduation Test.

Benchmark tests as proof of achievement

The next data set analyzed was the Measures of Academic Progress (MAP) tests provided under contract to ECS by Northwestern Evaluation Association (NWEA). Two tests are given to ECS sophomores three times a year: Reading, and Language Usage. These test are administered by computer and are adaptive in nature, meaning the tests adjust to how well the student has performed to that point. Once tests are completed and the data is analyzed, students are assigned a RIT (Rasch Unit) score which provides an accurate picture of student understanding regardless of grade level (NWEA, 2011). For the purposes of this study, only spring 2011 scores in Reading and Language Usage were analyzed to look at comparative end-of-year

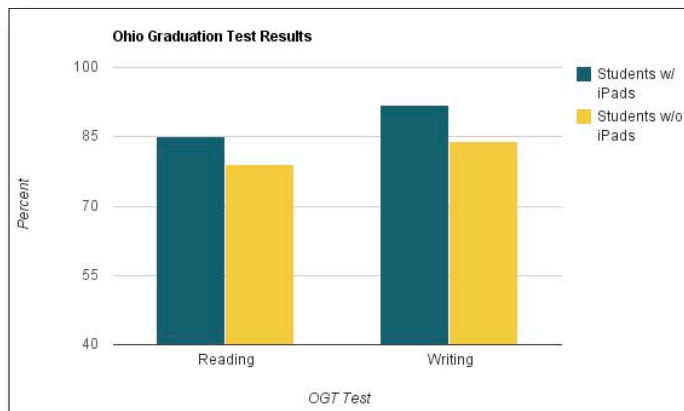


Figure 1: Spring 2011 Ohio Graduation Test passage rates (Reading and Writing tests) for students who had access to iPads (in blue) compared to students who did not (in yellow).

scores between the experiment group (sophomores with access to iPads) and the control group (sophomores without access to iPads).

The Reading MAP Test measures comprehension of fiction, non-fiction, poetry, and other text structures.

Students with access to iPads averaged a reading RIT score of 219.22 (see Figure 2), which, according to

NWEA's 2008 Normative Data Sheet v2 (available at NWEA.org), translates to roughly a beginning-of-year eighth grade reading level. Students without access to iPads averaged a reading RIT score of 214.81, which equates to roughly an end-of-year sixth grade level. This difference represents an advantage of more than a full grade level of reading ability for students who had access to the iPads.

The Language Usage MAP Test measures comprehension of fiction, non-fiction, poetry, and other text structures, as well as grammar and usage. Students with access to iPads averaged a language usage RIT score of 220.53, which, according to NWEA's 2008 Normative Data Sheet v2 (available at NWEA.org), translates to roughly an end-of-year ninth grade language usage level. Students without access to iPads averaged a language usage RIT score of 215.74, which equates to roughly a beginning-of-year seventh grade level. This difference represents an advantage of a more than full grade level of language usage ability for students who had access to the iPads.

What the students saw

The final set of data analysis

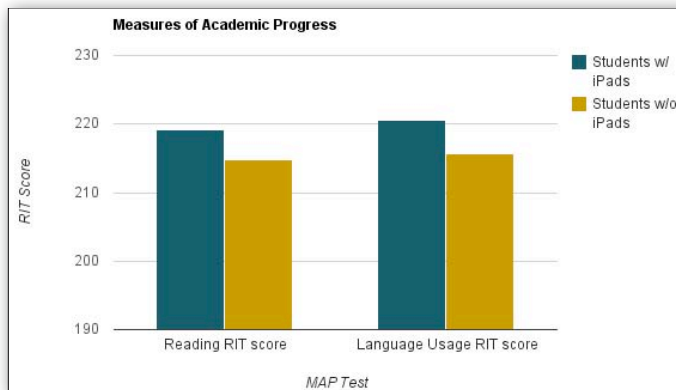
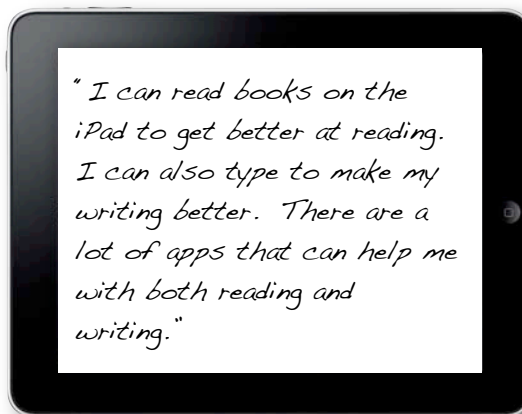


Figure 2: Measures of Academic Progress (MAP) Test results from Spring of 2011 for students who had access to iPads (in blue) compared to students who did not (in yellow).

centered on a pre and post experiment survey in which students in both the experiment and control groups rated themselves in ability to read and write, their motivation to attend English class, and identified the structures which they perceived to help them succeed in English class. For example, students were asked to rate themselves on a four point scale according to the question, "How motivated are you to come to English class and work hard this year?" The choices available to students were: 1) Not at all; 2) It's not my thing; 3) I generally attend class; and, 4) I wouldn't miss it! The author chose to consider a response of 4 (I wouldn't miss it!) as a response indicating an increased likelihood students would attend English class. The sophomore class with access to iPads had an 8% advantage (38%) to their peers



without access (30%). Further, when combining the groups that chose 3) I generally attend class and 4) I wouldn't miss it!, students with access to the iPads still maintained a 4% advantage in attendance (90% to 86%). Of particular note, no student with access to iPads reported an answer of "Not at all," while more than 5% of students without access to iPads indicated they were "Not at all motivated to come to English class and work hard this year".

In addition, students were asked to identify "What one thing best helps you care about learning in English?" Their choices were: Thinking about my future; Technology (laptops, tablets, video cameras, etc...); Interesting topics/books; Teachers that care or make a difference; My family; Seeing other students succeed; My grade; A combination of teachers that care and technology; Nothing; or Other, where students were permitted to identify the factor of their choice.

Students without access to iPads had a fairly even distribution of answers (see Figure 3) and the author believed his sophomore students with access to iPads would identify technology as something that would help them care about learning in English at a rate higher than their peers who had not had access during the school year. Less than 4% of students with access to iPads identified technology as something that helped them learn, as compared to nearly 20% of students who did not have access (see Figure 4). Of additional note was the lack of even distribution of answers for students who had access to the iPads as compared to their peers. While a

significant number (31.7% and the largest subgroup) of students without iPad access identified their future as a reason for caring about learning in English class, students with iPad access identified the same answer at nearly double the rate, and as a majority by far. This seems to indicate that while students without iPads recognized their value in class, students with regular access tended to see past the device and focus on how English class might impact their own future.

Additionally, students were asked to rate their own ability to read and write on a four point scale, from 1) I struggle all the time, to 4) I am an expert. 51.2% of students without access to the iPads reported themselves to be expert readers, while only 35.5% of students who used iPads reported themselves as expert readers. In addition, 39.5% of students without access to the iPads reported themselves to be expert writers, while only 38.7% of students who used iPads reported themselves as expert writers. When considering the analyzed data from Ohio Graduation Test and MAP test results presented earlier in this section, the students without iPads seem to have an over-inflated view of their own literacy skills. One hypothesis for this could be that students with iPads may have more frequent and regular



experience assessing their own literacy skills as compared to their peers.

While the data supports the author's hypothesis that access to the iPad devices for learning in English class provided motivation for students

to attend, there were some interesting, unexpected, and welcome results in the self assessment data collection and analysis.

Conclusion

While this research does not meet the standards of veritable academic research, it does follow in the footsteps of teacher research. According to MacLean and Mohr (1999), "Teacher-researchers raise questions about what they think and observe about their teaching and their students' learning. They collect student work in order to evaluate performance, but they also see student work as data to analyze in order to examine the teaching and learning that produced it."

It is the opinion of the author that the iPad was the right choice for his multi-modal problem for three reasons:

1. It met his learners where they were in ways in which they were already literate. According to a National Council of Teachers of English (NCTE) webpage titled "What Do We Know About Multiple Literacies" (NCTE, 2009), supported engagement with multiple literacies increases student success and motivation, they are embedded in social understandings, and students may need help seeing themselves as readers and writers; and student choice and active participation increases adolescent literacy motivation. These statements were synchronous with what the author observed in this

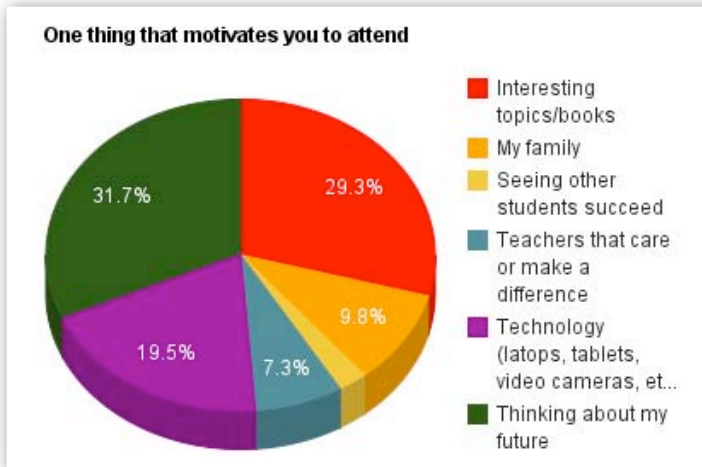


Figure 3: Students without access to iPads in English class



Figure 4: Students with access to iPads in English class

study.

2. The results fell in line with trends and issues previously reported in the 2011 NMC Horizon Report, specifically: the importance of technology based not on school servers, but on cloud computing; technology continues to profoundly affect the way we work, collaborate, communicate and succeed; and people expect to be able to work, learn, and study whenever and wherever they want to. Further, the report addresses critical challenges schools face in teaching, learning and creative inquiry, specifically stating that "(T)he demand for personalized learning is not adequately supported by current technology or practices." This, too, plays into the role the iPad had in individualizing instruction for students with diverse learning styles. The author made note of the fact that students' writing was higher in quality, they wrote more, and the time spent writing on the iPads was significantly less than time spent on traditional paper/pencil writing activities. The author and students also benefitted from journal entries on the iPads as he did not have to transport boxes of spiral notebooks every four and a half weeks in order to grade journals, and his students benefitted from more timely and frequent feedback on their writing.

3. The data from both standardized/benchmark assessments and students' self reporting indicates that iPads played a statistically significant role in increased student achievement in the area of literacy. Further, the finding that students who had access to iPads are able, in greater numbers, to see a connection

between success in English class and their future cannot be understated. In addition, students who used the iPads in English had a more realistic perspective of their own literacy skills as was validated by the standardized/benchmark assessments cited in this study.

While more research is needed into the impact of iPads in multiple grade levels, with teachers who are both more and less comfortable with technology integration models, the device has a place in the classroom of today. Future steps to be considered with iPads in the English classroom (perhaps any content area?) are as follows: More should be done to create apps that address the needs of the disenfranchised or under-served learner. In addition, more significant and measurable gains could be made in a 1:1 model, allowing students to conduct more learning outside of school. Textbooks remain far too traditional for integration on the iPad and it is only a matter of time before teachers themselves, or even their students, will begin to generate their own texts to be used as the course of study. To use a surfing metaphor, textbook publishers must get on a board, paddle out, and catch this wave quickly, lest it crest over their heads and leave them gasping for air in the rumbling aftermath of the surf.



Works Cited

- Fadel, C., & Lemke, C. (2009). Technology in schools: what the research says. Retrieved from http://www.metiri.com/PDFs/2009_technology_in_schools_what_research_says.pdf
- Hambleto, R.K., Swaminathan, H., & Rogers, J. (1991). Fundamentals of Item Response Theory. Newbury Park: Sage.
- Ingebo, G. (1997). Probability in the Measure of Achievement. Chicago: MESA Press
- Johnson, L., Adams, S., and Haywood, K., (2011). The NMC Horizon Report: 2011 K-12 Edition. Austin, Texas: The New Media Consortium.
- MacLean, Marion S. & Mohr, Marian M. (1999). "Teacher- researchers at work." Berkeley, CA: National Writing Project, p. vii-ix.
- NCTE. (2009, August 21). *What do we know about multiple literacies?*. Retrieved from <http://www.ncte.org/policy-research/wwk/livepage.apple.com/multipleliteracies>
- NWEA. (2011). *Map basics overview | northwest evaluation association (nwea)*. Retrieved from <http://www.nwea.org/support/article/1172/map-basics-overview>
- Ohio Department of Education. (2011, March). *Proficiency tests report*. Retrieved from http://webapp1.ode.state.oh.us/proficiency_reports/ogt/csvtoasp.asp?filename=March_2011_OGT_Public_Summaries.csv&county=cuyahoga&Go=Go
- Teen gadget ownership | pew research center's internet & american life project*. (2009, September 24). Retrieved from <http://www.pewinternet.org/Static-Pages/Trend-Data-for-Teens/Teen-Gadget-Ownership.aspx>
- Wright, B.D. & Stone, M. (1979). Best Test Design. Chicago: MESA Press.
- <http://www.nwea.org/support/article/1172/map-basics-overview>

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