

# EXPLORING THE USE OF THE iPAD FOR LITERACY LEARNING

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*Wondering how iPads measure up as a tool for literacy learning?*

*This fourth-grade teacher explored the use of iPads to help her teach print-based literacy skills while providing students with the opportunity to learn digital literacy skills.*

Although mobile learning in education has been on the horizon for many years (Johnson, Levine, & Smith, 2009), the introduction of the iPad, and other tablets like it, has changed mobile learning possibilities for teachers and students. Traxler (2009) defined mobile learning simply as learning that is supported or delivered by a handheld or mobile device. Such mobile devices encourage ubiquitous learning through their ease of portability and access to information that can allow for learning to occur.

Devices such as the iPad now promote anytime, anywhere learning in schools where the student does not have to be sitting in front of a computer in a laboratory setting (Brand & Kinash, 2010). The iPad

has unique capabilities that were unparalleled prior to its introduction. It has most of the capabilities of a desktop or laptop computer, but with additional unique affordances, such as a multitouch screen and a seemingly endless variety of applications, that promote previously unseen possibilities for mobile learning.

As teachers begin exploring the possibilities of using mobile devices such as the iPad in their classrooms, it will be important to examine how

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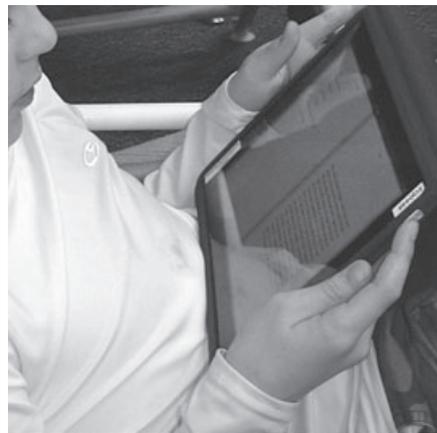
this technology, with its affordances and constraints, can influence student learning. For literacy instruction, this means investigations regarding how such mobile devices can foster successful reading practices.

One way the iPad provides potentially useful opportunities for literacy classrooms is through digital, interactive books. However, it is important to consider that digital texts, as compared with printed texts, offer different affordances that create new modes of reading and writing (Lankshear & Knobel, 2003; Leu, Kinzer, Coiro, & Cammack, 2004; Leu, 2006).

Accordingly, digital texts can require different skills, strategies and dispositions, collectively referred to as *new literacies* (Coiro, Knobel, Lankshear, & Leu, 2008), to read and navigate them. Thus it is important that teachers understand these differences and integrate digital technology into the curriculum to provide students

with opportunities to learn these new literacies (International Reading Association [IRA], 2009; National Council for Teachers of English, 2008).

An added advantage of digital texts, as other scholars have argued, is that they can support individual readers' text comprehension and potentially engage struggling readers (e.g., Leu & Reinking, 1996; Reinking, 1992, 1998, 2001). Consequently, we explore how Mrs. Dill integrated iPads into her curriculum and how her students used this technology in their classroom.



and new literacy skills within a confined curriculum and with limited time (Hutchison & Reinking, 2011).

A theoretical frame that supports the integration of digital technology into literacy and other content areas is the technological pedagogical content knowledge (TPACK) framework (Mishra & Koehler, 2006; Thompson & Mishra, 2007–2008). TPACK emerged as a framework for identifying and understanding the complex interplay of teachers' technological knowledge, pedagogical knowledge, and content knowledge and how these knowledge bases influence how a teacher effectively integrates technology into classroom instruction.

This framework has led to many practical implications for teachers, including Harris and Hofer's (2009) recommendations for curriculum-based technology integration, which served as our guide for integrating the iPads into literacy instruction in the current study. In conducting this study, we used the TPACK framework as a lens for understanding the viability of integrating iPads into literacy instruction.

When instruction is designed with the components of the TPACK framework in mind, the iPad may help teachers meet traditional print-based literacy goals while also providing students with opportunities to learn the new literacies of 21st-century technologies by responding to texts in unique ways. For example, the iPad has numerous downloadable books that allow students to read text with audio support, word-by-word tracking, and

## Integrating Digital Technologies

IRA (2009) issued a position statement asserting that:

to become fully literate in today's world, students must become proficient in the new literacies of 21st-century technologies. IRA believes that literacy educators have a responsibility to integrate information and communication technologies (ICTs) into the curriculum, to prepare students for the futures they deserve. (n.p.)

Thus integrating digital technologies into literacy instruction and equipping students with the new literacy skills needed for reading, writing, and communicating in digital environments is already a priority for many literacy teachers (Hutchison & Reinking, 2011). Yet, many literacy teachers still struggle to efficiently and effectively integrate and teach both traditional literacy skills

## Pause and Ponder

- Think of a prereading or reading response activity that your students have done recently with paper and pencil. What is another way that activity could be done using an iPad? How might this change how the students respond?
- How does the use of an iPad, or similar tablet, as a response tool encourage differentiated instruction? What unique benefits does this have for students?
- What technologies are your students using at home? How could using a mobile device such as an iPad facilitate connections between home and school?

picture animation, with options for the reader to further interact by recording and replaying their own voice with the text. Other features of these books also include the ability to acquire the definition and pronunciation of any word on the screen by simply touching it and to add notes or highlighting to any section of text by tapping the screen.

Additionally, the many forms of electronic books available through the iPad provide an added advantage over printed texts, as they provide further opportunities for students to physically interact with and manipulate texts and to transform texts to meet their needs and interests (Eagleton & Dobler, 2007), making the reading experience more individualized, interactive, and engaging (Larson, 2010).

Further possibilities of the iPad for literacy classrooms include apps that might facilitate responses to text. Apps are applications created for digital devices, such as tablets and smart phones, to serve a single, specific function and can be downloaded wirelessly or by connecting to a computer. Many apps are free to download, and most other apps range in price from \$1–\$5.

Apps that appear promising for literacy purposes are those that allow users to type or write on top of printed text or other backgrounds, to record audio for a response, to add pictures from the photo library, to insert symbols and stamps, and to graphically organize responses in virtually limitless ways. In addition, the iPad's built-in camera provides opportunities for the user to easily capture a photo or video for inclusion in a response. Some apps also facilitate collaboration by enabling users to simultaneously share screens and manipulate drawings, written responses, and more.

*“It is imperative to examine how the tool can help teachers meet curricular goals to engage in what has been termed curricular integration.”*

It is easy to see the possibilities that are inherent to mobile devices such as the iPad for literacy classrooms, but as with any digital technology, it is imperative to examine how the tool can help teachers meet curricular goals to engage in what has been termed *curricular integration* as opposed to technological integration (Hutchison & Reinking, 2011).

Technological integration reflects a stance that views information and communication technologies (ICTs) as separate from, or not fully integrated into, the curriculum, whereas curricular integration reflects a stance that views ICTs as integral to the curriculum. Recent research (Hutchison & Reinking, 2011) indicates that a majority of technology use in literacy classrooms occurs as technological integration rather than curricular integration.

Thus the purpose of this exploratory study was to understand the viability of using iPads to support and enhance literacy instruction. Because iPads and similar tablets have been relatively unexplored as tools for literacy learning, we hope that this work can provide a foundation for teachers and leaders making decisions about whether mobile devices such as these can be useful tools in literacy classrooms.

### **The Teacher and the Context**

Mrs. Dill (all names are pseudonyms), a fourth-grade teacher with 23 students, was identified by the school technology coordinator as a leading

technology-using elementary teacher. Mrs. Dill was selected for the study because she expressed a desire to integrate more digital technology into her instruction and because of her openness to trying new instructional approaches.

Mrs. Dill agreed to integrate iPads into her literacy instruction every day for three weeks and was excited to learn about new ways to integrate digital technology into her literacy instruction. She reported already occasionally using a document camera, purchased with a grant she secured, and a digital camera in her instruction. Mrs. Dill was not familiar with the iPad prior to this study, but quickly developed instruction that used the apps available to her once the project began. She reported that she often has students work in small groups or with partners to complete whole-class prereading activities or reading responses.

### **Developing the Literacy Activities**

Mrs. Dill's goal for using the iPads during this three-week period was to continue to teach the print-based literacy goals that were outlined in her reading curriculum, but to enhance students' learning opportunities with the iPads and provide them with an opportunity to also learn some of the new literacy skills associated with 21st-century technologies. Thus the instructional activities were designed according to Harris and Hofer's (2009) recommendations for curriculum-based technology integration.

Specifically, for each lesson, we first determined the learning goals and made pedagogical decisions to determine the specific parameters of each learning experience. Then, after determining the nature of the activities that would comprise the learning experience, we selected apps that would help us best meet the learning goals (See Figure 1).

For example, during initial conversations with the researchers, Mrs. Dill indicated that one learning goal for her classroom was to focus on the reading comprehension strategy of visualization (Gambrell & Jawitz, 1993; Pressley, 1976). While designing the learning experience to address this literacy goal, Mrs. Dill selected a story

from her basal reading series and then chose the pedagogical approach that would best teach the skill.

Mrs. Dill designed a learning experience where students, while working in pairs, would be given note cards that included different portions of the whole-class text. After reading the text, Mrs. Dill wanted each pair to create a mental picture of its meaning and then illustrate what they were visualizing as they read the excerpt from the story.

With that end goal in mind, the researchers located an iPad app called Doodle Buddy that students could use to draw their illustrations. This app was selected because of its intuitive interface and drawing features that create the effect of using many different drawing tools, such as colored pencils, chalk, paint brushes, glitter, stamps, and so on. The app also allows users to insert photos, undo their last action, and easily alter between multiple tools and colors. Additionally, drawings can be exported through e-mail or saved to the iPad photo album so that the drawing can be viewed later or inserted into a different app.

During Mrs. Dill's lesson, each student pair collaboratively used Doodle Buddy on one iPad to draw an illustration to match the visual images they created when reading their assigned portion of text. As students

finished their drawings, they exported them to the teacher's computer, who created a visual presentation by displaying all of the drawings, using a projector, from the different portions of text that the students were about to read (see Figure 2).

The teacher made the final decision to use the Doodle buddy app because she hoped that it would provide students with better tools to capture their visual images than would be afforded by crayons and paper. She also liked the idea of being able to enlarge and project the images in sequence so that students could see a complete image of their perceptions of the story prior to reading it.

The same process as described for this lesson was used to select appropriate uses of the iPads for the remainder of the teacher's learning goals during this study. During the remainder of the study, Mrs. Dill designed lessons that focused on the reading comprehension strategies of sequencing, cause and effect, retelling, and determining the main idea. A description of the apps used and their corresponding literacy activities can be found in Table 1.

## The Literacy Activities and Outcomes

Brief descriptions of a few of the literacy activities that were conducted with the iPads follow. These descriptions, though

Figure 1 Using the TPACK Framework to Illustrate Curriculum-Based Technology Integration

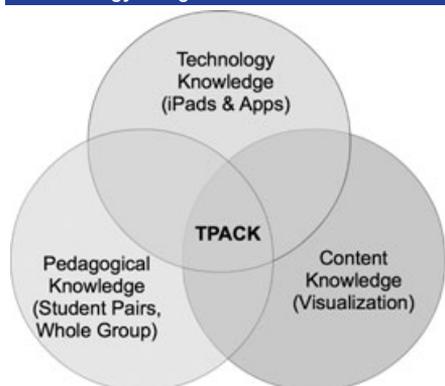


Figure 2 Example of Student Products Resulting From the Visualization Activity



**Table 1** List of iPad Apps Used for Instructional Activities

Reading skill or area addressed	App	App description	Description of literacy activities
Independent reading	iBooks	Tool for downloading and organizing books	Accessed books from the bookshelf of iBooks. Dictionary and note-taking features were available.
Sequencing	Popplet	Mind mapping or brainstorming tool using text and/or images	Worked in small groups to order the events of a short story using words such as <i>first</i> , <i>next</i> , and <i>finally</i> .
Visualization	Doodle Buddy	Drawing and doodling tool with stamps and backgrounds	Small groups read a sentence from a text they were reading and created a picture to illustrate the paragraph. The teacher then displayed all of the pictures together to show the complete story before reading.
Retelling	Strip Designer	Comic strip tool	Drew pictures of the beginning, middle, and end of a story using Doodle Buddy and used them to retell the story in Strip Designer.
Cause and effect	Sundry Notes	Productivity tool used to type text, draw, record audio and more	Drew pictures of a cause and effect from an instructional level text and inserted an audio recording explaining the picture.
Main idea and details	Doodle Buddy	Drawing and doodling tool with stamps and backgrounds	After reading an instructional-level book, students drew a picture to illustrate the main idea and details of a text.

not exhaustive, are representative of the variety and purpose of the literacy activities that took place in Mrs. Dill's class.

### **Learning Experience #1**

"This helped with comprehension, because we picked out main ideas and then we had to put them in order." (Kelsey, student interview)

- Reading focus—Using the reading comprehension strategy of sequencing
- App used—Popplet. A graphic organizer tool that allows the user to add boxes to a blank canvas to organize ideas any way they choose. Users can change the size, color, and order of the boxes to represent their ideas in multiple ways. Images, as well as type-written or hand-written text, can be added to individual boxes.

- Lesson description—The students read a nonfiction article and then worked in small groups to create a visual diagram with Popplet to represent the main events in sequence, connecting them with time-order words. Groups shared their products with the whole class at the end of the lesson. See Figure 3 for an example of student work generated during the lesson.
- What we learned—The teacher and students liked using Popplet (as opposed to completing the activity on a paper version of a graphic organizer)

because students were not confined by any particular layout and were able to add as few or many boxes as they needed to complete the activity. Mrs. Dill noticed this affordance and commented on it as one of the advantages of using the iPad, stating:

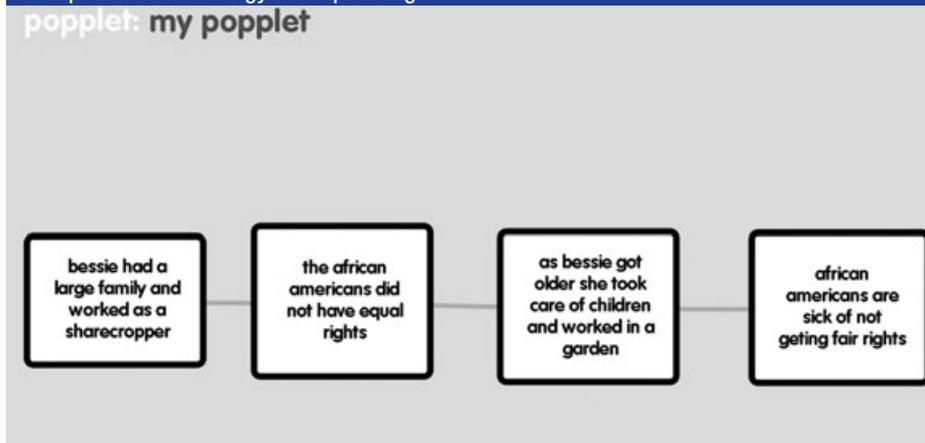
The advantages, especially like with the Popplet application, were just for them to be able to create more boxes as they go along and they didn't feel like there were any limits to them like a worksheet that I would have to give them. That way they could just add and they kept going and I thought that was really cool.

This feature of the app led to creativity in how students presented their ideas, with every group using a different design. One group initially believed that they had completed the assignment incorrectly when they saw that their final product was different from those of the other groups. However, upon reflection, they decided to keep their design because they believed that it better conveyed the ideas they wanted to convey. In a follow-up interview, students in a focus group described how they believed the activity assisted them in understanding the text they read at the conclusion of this activity.

- Digital literacy skills addressed—Students were made aware of how the size and placement of the boxes on the screen helped convey meaning. In this lesson, most groups designed a linear diagram, which was easy to follow. One group designed a web instead. Although the

*"Students learned to digitally communicate with other readers in the class by leaving a virtual sticky note in the book for future readers."*

Figure 3 Student Product Created With Popplet During a Lesson on Using the Reading Comprehension Strategy of Sequencing



group members who designed the web were able to verbally describe their thinking to their class, their peers had difficulty interpreting the web without the verbal description. Through this experience, the students were able to recognize how the visual component of a message must complement the written text.

### Learning Experience #2

“You are so lucky!” (Alyssa, note from student observation)

- Reading focus—Independent reading
- App used—iBooks. Provides a virtual bookshelf for storing books purchased from the iBookstore. Features within each book allow the user to change the text font size, tap any word on the screen to access a definition, add notes, and highlight text.
- Lesson description—As part of The Daily Five approach to teaching literacy (Boushey & Moser, 2006), some students in Mrs. Dill’s class were assigned to independently read books at their independent reading level, whereas other students were involved in different literacy activities.

- What we learned—Two students were observed selecting several books to look at in a short amount of time because they enjoyed the process of selecting and opening books from the virtual book shelf. This action led to them only browsing the books rather than reading them. A few students also selected books that were too easy for them because they had the entire collection of books to choose from rather than only the leveled selection from which they were used to selecting their books. However, the remainder of the students who were observed selected appropriate books and stayed on task during independent reading time.

We learned that it is important for the teacher to carefully consider the selection of books on each iPad and might find it necessary to individualize book selections on each device. Teachers may also find it necessary to develop an accountability system for students because the teacher cannot easily see, from a glance, what students have selected to read in the same way he or she could by glancing at a book jacket.

Through our observations, we learned that students found occasion to spontaneously record notes using the virtual sticky note function within iBooks. The teacher reported that the students typically did not record notes when reading print-based texts. When asked about her use of the sticky note function, one student stated that she liked it because “you have, like, I guess a reason to think about the book instead of just like letting it kind of go over your head and, like, not remembering anything.”

Through the use of iBooks, students also learned how to navigate the differing features of a digital text, including a hyperlinked table of contents, the dictionary feature that provides the user with a definition of any word in the text by tapping the word on the screen, and changing the text size. The students were unanimously excited to read on the iPads, and one student, Alyssa, stated that it was her lucky day when she got to use the iPad during her independent reading time.

- Digital literacy skills addressed—Students learned to digitally communicate with other readers in the class by leaving a virtual sticky note in the book for future readers. Students also learned how

*“Doodle Buddy allowed students to create a picture that more accurately conveyed their meaning.”*

to navigate the differing features of a digital text.

### **Learning Experience #3**

“We could visualize it a lot better!”

(Josh, student interview)

- Reading focus—Using the reading comprehension strategy of visualization
- App used—Doodle Buddy. Allows for the use of multiple colors and special features such as stamps, stencils, glitter, and text to “paint” using your finger on the screen.
- Lesson description—Small groups of students were given a sentence or short paragraph from a text they were going to read. They used Doodle Buddy to create an illustration of the sentence or paragraph. When all the groups were finished, the teacher displayed all of the pictures in the correct order to retell the story. The students were able to see a complete visual representation of the story prior to reading it.
- What we learned—The use of Doodle Buddy encouraged students to reread their text and revise their work many times. Most groups drew multiple pictures, selecting the one that they believed best represented the images that the text created in their minds. Through interviews with students, we learned that they believed that they had read their text selection more carefully than normal as a result of the ease of revising their images using the Doodle Buddy app. Easy revision led them to reread their text for additional clues, make revisions, and reread the text again to determine whether they had captured the meaning in their image.

In some cases, rereading the text led students to delete their drawing

and start again. During interviews, students described how the ease of revision with Doodle Buddy encouraged them to revise more readily. One student stated, “Well if you messed up you could use an eraser; which is so unlike crayons. They’re kind of hard and they leave an after part.” Students also expressed a willingness to experiment with the tool to find the features that would allow them to create the image they desired. During a focus group interview of four students, the students reported that they believed having the visual images to go with the text helped them to better understand what they read.

- Digital literacy skills learned—The drawing tools featured in Doodle Buddy allowed students to create a picture that more accurately conveyed their meaning. One small group of students had a conversation regarding the word *flimsy*. They carefully selected drawing tools that would allow their audience to recognize that the bridge was flimsy.



### **Discussion**

#### ***Achieving Curricular Integration With the iPads***

We found that Mrs. Dill was able to meet her print-based literacy goals while simultaneously introducing some of the new literacy skills associated with 21st-century technologies. For example, during the lesson on sequencing ideas, the students learned how the size and placement of the boxes on the screen helped convey meaning. Similarly, students learned to digitally communicate with other readers in the class by leaving a sticky note, in the digital books they read using the iBooks app, for future readers.

*“Teachers should select appropriate activity types and assessment strategies before making a final selection about which technology tool will be most useful.”*

## TAKE ACTION!

1. Become familiar with the literacy and technology goals for your school or district. Take time to preview available apps that would support your literacy goals and pedagogical approaches (e.g., independent reading, small groups, whole-class instruction). Discuss with school leadership how iPads could facilitate these goals and pedagogical practices. Locate viable funding options for purchasing iPads, iBooks, and apps.
2. Begin to design classroom literacy activities in the areas of comprehension, fluency, vocabulary, and so forth that will utilize the iPad's unique features. Carefully think about the literacy content you will teach and the pedagogical approach that you will use to teach the content, and then determine how the iPad and its affordances will align with your instructional goals. Develop an instructional activity that allows students to design a response to a text that demonstrates comprehension and develops digital literacy skills. Consider how the video and audio recording features of the tool could be used to enhance the response. Expand into other areas of literacy instruction such as fluency and vocabulary development.
3. Allow students time to explore and experiment with the tool while showing them key features (e.g., note-taking, using the dictionary, or selecting a bookmark in iBooks) when introducing the iPad. As students continue to become more familiar with the tool, let students teach each other (i.e., digital technology reciprocal teaching). Continue to introduce new apps that offer unique capabilities to students and that support your instructional goals. Allow sufficient time for students to design their products. Develop a system to manage student work and maintain accountability.

Thus we believe that Mrs. Dill was successful in achieving curricular integration, as described previously, rather than technological integration. Keeping the TPACK framework in mind, we guided Mrs. Dill to think about what she was teaching (i.e., literacy content knowledge), how she could best teach it (i.e., pedagogical knowledge), and how the technology (i.e., technology knowledge—iPad and apps) could be used to support student learning.

Teachers considering using an iPad, or similar tablet, should begin as Harris and Hofer (2009) suggested, and as we did in this study, by first determining their learning goals and making pedagogical decisions to determine the parameters of their learning activity. Teachers should then select appropriate activity types and

assessment strategies before making a final selection about which technology tool will be most useful in helping them meet their instructional goals and in teaching students the new literacies of 21st-century technologies.

### *Considerations for Those Debating Integrating iPads Into Literacy Instruction*

Through our exploration of integrating iPads into literacy instruction, we learned valuable lessons about how iPads can enhance instruction, but we also learned about aspects of literacy for which iPads would not be useful. As a result, we have developed a list of the helpful aspects of iPads for literacy instruction and of the special considerations for integrating iPads or similar tablets (see Table 2). We

**Table 2** Advantages and Considerations of Using iPads for Literacy Instruction

Helpful aspects of iPads for instruction	Special considerations for using iPads in instruction
Students were able to apply their prior knowledge of other digital literacy tools to figure out how to navigate the iPad without a lot of instruction from the teacher.	Manipulation was difficult within some of the apps. For example, it was sometimes difficult to resize text and images.
When they encountered problems, students worked collaboratively to figure out how to navigate the iPad. This collaboration led to increased and improved conversations about the assignments during the learning experiences.	The teacher had to rethink how she wanted students to save and share their work. Although not difficult, the teacher had to adjust to a new way of receiving and reviewing student work.
The availability of many different apps, as well as the many features of each app, made it easy to differentiate assignments for students.	The sensitive touchscreen caused students to engage functions unintentionally. For example, a student accidentally engaged the highlighting function in iBooks when using his finger to track along with the text he was reading.
iPads power on and off quickly, so it was quick and easy to restart iPads when needed without disrupting the learning experience.	As with any digital technology, teachers had to troubleshoot at times. This reality required the teacher to have a willingness to explore the potential causes of problems that arose.
Because individual apps perform specific functions, and because iPads are easily stored in student desks, it was common for the teacher to spontaneously think of ways to integrate the iPads.	Creating word documents is possible, but the apps that make it possible have limited features. For example, there is no app that allows the user to track changes within a document. Many iPad apps do not allow the user to edit work once it has been saved.
The iPad can be programmed to display in many different languages.	

hope that the lessons we learned can assist teachers and leaders in determining when and if iPads or similar tablets might be a useful tool for enhancing literacy instruction and teaching digital literacy skills.

Again, we recommend that teachers and leaders consider whether the tool could be effectively used for curricular integration rather than technological integration. In other words, does the tool enhance literacy instruction and promote progress toward a literacy learning goal, or is it only being used as an add-on to instruction? Table 2 provides a listing of what we found to be the helpful aspects of using iPads for instruction, as well as special considerations for integrating iPads.

## Moving Ahead With iPads

We believe that this study provides literacy teachers with a portrait of the viability of the iPad as a response tool and may be useful in helping teachers make decisions about whether the iPad or a similar tablet may be an appropriate tool for their literacy goals. As literacy teachers begin to select technologies that are viable learning tools for their classrooms, mobile devices such as the iPad and other tablets deserve careful consideration. The idea that students can work anywhere in a classroom, in a school, or at home with this tool makes it a compelling choice for many.

However, in doing so, it is important to remember that digital technology should enhance curricular goals and support student learning in new and transformative ways (Hutchison & Reinking 2011; see also Labbo & Reinking, 1999). We found that using the iPads for literacy instruction not only supported student learning, but students were also highly engaged and able to demonstrate unique and creative

ways of responding to text using a technology tool that offers some unique affordances to users.

## REFERENCES

- Boushey, G., & Mosher, J. (2006). *The daily 5: Fostering literacy independence in the elementary grades*. Portland, ME: Stenhouse.
- Brand, J., & Kinash, S. (2010). *Pad-agogy: A quasiexperimental and ethnographic pilot test of the iPad in a blended mobile learning environment*. Paper presented at the 27th Annual Conference of the Australian Society for Computers in Learning in Tertiary Education (ASCILITE), Sydney, Australia. Retrieved January 5, 2012, from works.bepress.com/jeff\_brand/18
- Coiro, J., Knobel, M., Lankshear, C., & Leu, D. (2008). Central issues in new literacies and new literacies research. In J. Coiro, M. Knobel, C. Lankshear, & D. Leu (Eds.), *Handbook of Research on New Literacies* (pp. 1–21). New York: Erlbaum.
- Eagleton, M.B., & Dobler, E. (2007). *Reading the web: Strategies for Internet inquiry*. New York: Guilford.
- Gambrell, L., & Jawitz, P. (1993). Mental imagery, text illustrations, and children's story comprehension and recall. *Reading Research Quarterly*, 28(3), 265–273. doi:10.2307/747998
- Harris, J., & Hofer, M. (2009). Grounded tech integration. *Learning and Leading With Technology*, 37(2), 22–25.
- Hutchison, A., & Reinking, D. (2011). Teachers' perceptions of integrating information and communication technologies into literacy instruction: A National Survey in the U.S. *Reading Research Quarterly*, 46(4), 308–329.
- International Reading Association. (2009). *New literacies and 21st-century technologies: A position statement of the International Reading Association*. Newark, DE: Author.
- Johnson, L., Levine, A., & Smith, R. (2009). *The 2009 horizon report*. Austin, TX: The New Media Consortium.
- Labbo, L.D., & Reinking, D. (1999). Theory and research into practice: Negotiating the multiple realities of technology in literacy research and instruction. *Reading Research Quarterly*, 34(4), 478–492. doi:10.1598/RRQ.34.4.5
- Lankshear, C. & Knobel, M. (2003). *New literacies: Changing knowledge and classroom practice*. Buckingham, UK: Open University Press.
- Larson, L.C. (2010). Digital readers: The next chapter in e-book reading and response. *The Reading Teacher*, 64(1), 15–22. doi:10.1598/RT.64.1.2.
- Leu, D. (2006). New literacies, reading research, and the challenges of change: A deictic perspective. In J. Hoffman, D. Schallert, M. Fairbanks, J. Worthy, & B. Malloch (Eds.), *55th Yearbook of the National Reading Conference* (pp. 1–20). Oak Creek, WI: National Reading Conference.
- Leu, D., Kinzer, C.K., Coiro, J., & Cammack, D. (2004). Towards a theory of new literacies emerging from the Internet and other information communication technologies. In R.B. Rudell & N. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 1570–1613). Newark, DE: International Reading Association. doi:10.1598/0872075028.54
- Leu, D., & Reinking, D. (1996). Bringing insights from reading research to research on electronic learning environments. In H. von Oostendorp (Ed.), *Cognitive aspects of electronic text processing* (pp. 43–75). Norwood, NJ: Ablex. doi:10.1111/j.1467-9620.2006.00684.x
- Mishra, P., & Koehler, M.J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. doi:10.1111/j.1467-9620.2006.00684.x
- National Council for Teachers of English. (2008). Towards a definition of 21st-century literacies. Retrieved June 30, 2008, from www.ncte.org/about/gov/129117.html
- Pressley, G.M. (1976). Mental imagery helps eight year olds remember what they read. *Journal of Educational Psychology*, 68(3), 355–359. doi:10.1037/0022-0663.68.3.355
- Reinking, D. (1992). Differences between electronic and printed texts: An agenda for research. *Journal of Educational Multimedia and Hypermedia*, 1(1), 11–24.
- Reinking, D. (1998). Synthesizing technological transformations of literacy in a posttypographic world. In D. Reinking, M. McKenna, L.D. Labbo, & R. Kieffer (Eds.), *Handbook of Literacy and Technology* (pp. xi–xxx). Mahwah, NJ: Erlbaum.
- Reinking, D. (2001). Multimedia and engaged reading in a digital world. In L. Verhoeven & C.E. Snow (Eds.), *Literacy and motivation: Reading engagement in individuals and groups* (pp. 195–221). Mahwah, NJ: Erlbaum.
- Thompson, A., & Mishra, P. (2007–2008). Breaking news: TPCK becomes TPACK! *Journal of Computing in Teacher Education*, 24(2), 38, 64.
- Traxler, J. (2009). Learning in a mobile age. *International Journal of Mobile and Blended Learning*, 1(1), 1–12. doi:10.4018/jmbl.2009010101

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- “Digital Storytelling: Extending the Potential for Struggling Writers” by Ruth Sylvester and Wendy-lou Greenidge, *The Reading Teacher*, December 2009
- “iPEd: Pedagogy for Digital Text Production” by Kathy Ann Mills and Amanda Levido, *The Reading Teacher*, September 2011
- “Literacy Instruction With Digital and Media Technologies” by Diane Barone and Todd E. Wright, *The Reading Teacher*, December 2008