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Students' Perceptions of Instructional iPads

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Abstract

The use of iPads as an instructional tool is becoming widespread. However, there is still little literature on what elementary-aged students think of using iPads in school. This study examined elementary students' perceptions of using iPads in one of the first schools in the U.S. to implement such a program. This paper presents the results of our inquiry and the implications as well as suggested areas for further research.

Introduction

For decades, educators have been interested in the potential of computers to improve student learning (Cuban, 2001). In fact, one of the first educational technology initiatives occurred in 1986, almost 30 years ago, when the Apple Classrooms of Tomorrow collected data on "high-access-to-technology classrooms" (Dwyer, Ringstaff, & Sandholtz, 1990, p. 1). One limitation with early classroom technology initiatives like the Apple Classrooms of Tomorrow was technology that could not leave the classroom and at times was limited to a dedicated computer lab. Thus, students lost access to the computers and their purported benefits as soon as they left the classroom. Technological advances have lowered the prices and increased the mobility of computers; these changes have addressed *some* of the issues with previous educational technology initiatives and in turn have helped a growing number of schools and districts implement one-to-one initiatives (i.e., initiatives that put a mobile computing device in the hands of each student). As one-to-one initiatives have increased, researchers have tried to document how giving each student a mobile computing device can improve the educational experience and at times increase student learning. For instance, some research has shown how these devices can increase student engagement (Looi et al., 2011; Milman, Carlson-Bancroft, & Boogart, 2012) and student ability (Lin, Shao, Wong, Li, & Niramitranon, 2011). But to be successfully adopted, and therefore eventually add value to the classroom and ultimately influence student learning, we contend that teachers *and* students must see the educational value and benefit of mobile devices in the classroom. Unfortunately, though, even with millions of tablets being purchased for classrooms (Lytle, 2012; Ogg, 2012), there is still very little research on what students, specifically elementary-aged students, think of using mobile devices to learn (Hwang & Tsai, 2011; Wu et al., 2012). Therefore, we set forth to investigate elementary-aged students' perceptions of using mobile devices, specifically iPads, in the classroom.

Methods

Faced with the increased use of iPads in the elementary classroom and the overall lack of research specifically on elementary students uses of these devices, we set forth to explore students' perceptions of using iPads for educational purposes. The following research question guided our inquiry: What are elementary-aged students' perceptions of using iPads in school? We created a survey to investigate this

question. The participants in this study attended a PK-12 independent college preparatory school in the southeastern United States in 2011. This school was selected because it was one of the first schools in the United States to implement a one-to-one iPad initiative school-wide. iPads were purchased and distributed to all students, administrators, and faculty at the school. All 85 students in the second, third, and fourth grades were invited to respond to the survey; 46 of those students ended up volunteering to participate in the study (54% response rate; see Table 1).

Table 1
Participant Gender by Grade

	<u>Gender</u>		<u>Total</u>
	Female	Male	
Second Grade	6	10	16
Third Grade	7	5	12*
Fourth Grade	8	9	17
Total	21	24	45*

* *Note: one student did not identify gender*

A survey was constructed consisting of 10 questions. The first two questions were demographic in nature; the next seven questions utilized an age appropriate 3-point Likert-scale using a smiling face (positive), neutral face, and frowning face (negative) and focused on students' perceptions of using iPads. The last question was an open-ended question. After students completed the survey, the data were entered into a spreadsheet and imported into SPSS for analysis.

Results

Students' Perceptions of iPads

The majority of students in this study felt good about using iPads in school; in fact, 89.1% felt positive and no students felt negative about using iPads in school (see Table 2). Overall 82.6% of the students reported they thought iPads made learning more fun. However, when asked if iPads helped them learn new things, the students' response was still overall positive (with 78.3%) but the number of neutral responses increased to 19.6%. The overall positive perception of using iPads decreased more when asked how they liked using iPads outside of school (68.2% reporting a positive perception) and even more when asked how iPads helped them with homework, with less than half of students (45.8%) reporting a positive experience.

Table 2
Overview of Results

	Positive / Agree	Neutral	Negative / Disagree	Total
How do you feel about using iPads in School	41 (89.1%)	5 (10.9%)	--	46
Using iPads helps me with my schoolwork	32 (69.6%)	13 (28.3%)	1 (2%)	46
My iPad helps me learn new things	36 (78.3%)	9 (19.6%)	1 (2%)	46
My iPad helps me with my homework	11 (45.8%)	5 (20.8%)	8 (33%)	24
I like to use my iPad outside of school	15 (68.2%)	3 (13.6%)	4 (18%)	22
My iPad makes learning more fun	38 (82.6%)	6 (13%)	2 (4.3%)	46
My iPad helps me understand my school work better	21 (45.7%)	18 (39.1%)	7 (15.2%)	46

Differences of Perceptions Across Gender and Grade Level

Crosstab analyses were used to identify differences in perceptions of iPads by grade or gender. When looking at the question whether iPads helps students understand school work (i.e., *My iPad helps me understand school work better*), there was no difference between gender across grades but there was a difference between grade level. The fourth grade students felt neutral or negative (n=15) more often than the second grade (n=5) and the third grade (n=5) students (see Table 3). Positive and negative responses were very similar across grades between females and males, however there was more variance across gender and grades for those who selected neutral. For instance, while second grade males selected neutral (n=3) more than females (n=1), third grade females (n=3) and fourth grade females (n=6) selected neutral more than third grade males (n=1) and fourth grade males (n=4). The bigger differences, though, were not between gender but between grade. For instance, while the majority of second graders (n=11) and third graders (n=7) responded positively to the question about their iPad helping them understand their schoolwork better, more than half of fourth graders responded neutrally (n=10) or negatively (n=5).

Table 3

Crosstab of Grade and Gender: My iPad helps me understand my school work better

		Female	Male	Total
Positive	Second Grade	5	6	11
	Third Grade	4	3	7*
	Fourth Grade	0	2	2
Neutral	Second Grade	1	3	4
	Third Grade	3	1	4
	Fourth Grade	6	4	10
Negative	Second Grade	0	1	1
	Third Grade	0	1	1
	Fourth Grade	2	3	5

**Note: The one person who did not identify his/her gender is not included in this table*

Then when looking at how students felt about iPads helping them learn new things (i.e., *My iPad helps me learn new things*), we did not find significant differences between gender across grades levels, but there was some disparity between fourth grade females and males (see Table 4). For instance, 7 fourth grade females responded positively to this question compared to only 4 fourth grade males. At the same time, when looking at differences of perceptions across grade level, the fourth graders once again responded neutrally or negatively to this prompt (n=6) more than second graders (n=1) and third graders (n=3).

Table 4

Crosstab of Grade and Gender: My iPad helps me learn new things

		Female	Male	Total
Positive	Second Grade	5	10	15
	Third Grade	5	4	9*
	Fourth Grade	7	4	11
Neutral	Second Grade	1	0	1
	Third Grade	2	1	3
	Fourth Grade	1	4	5
Negative	Second Grade	0	0	0
	Third Grade	0	0	0
	Fourth Grade	0	1	1

**Note: The one person who did not identify his/her gender is not included in this table*

The next two questions focused on using the iPad for homework (i.e., *My iPad helps me with my homework*) and outside of school (i.e., *I like to use my iPad outside of school*). When this survey was administered, the researchers were unaware that the second and third graders were not allowed to take their iPads home; however, some of these students still chose to answer those prompt as if they could (see Table 5).

Table 5

Crosstab of Grade and Gender: My iPad helps me with my homework

		Female	Male	Total
Positive	Second Grade	0	1	1
	Third Grade	1	2	3*
	Fourth Grade	2	4	6
Neutral	Second Grade	0	0	0
	Third Grade	0	0	0
	Fourth Grade	4	1	5
Negative	Second Grade	1	0	1
	Third Grade	0	1	1
	Fourth Grade	2	4	6

**Note: The one person who did not identify his/her gender is not included in this table*

But when focusing on just fourth graders and gender differences on how using iPad helps with homework, more males responded positively (n=4) than females (n=2) but then more females responded neutrally (n=4) than males (n=1). When asked how they liked using iPads out of school, both females (n=7) and males (n=6), for a total of 76.5%, reported positive perceptions (see Table 6).

Table 6

Crosstab of Grade and Gender: I like to use my iPad outside of school

		Female	Male	Total
Positive	Second Grade	0	1	1
	Third Grade	1	0	1
	Fourth Grade	7	6	13
Neutral	Second Grade	0	0	0
	Third Grade	0	0	0
	Fourth Grade	1	2	3
Negative	Second Grade	1	0	1
	Third Grade	0	2	2
	Fourth Grade	0	1	1

The last question was an open-ended question that asked students to share what they used their iPad the most for in school. The responses were collected and coded as being in one of the following categories: communication, games/fun, general, language arts, mathematics, research, science, social studies, and spelling. Frequency for that data distribution is shown in Table 7.

Table 7

Survey Question 10: I use my iPad in school the most for:

Responses	Frequency
Communication	7
Games/Fun	5
General	9
Language Arts	11
Mathematics	28
Research	17
Science	10
Social Studies	8
Spelling	8

Discussion

The results suggest that the elementary-aged students in this study as a whole had positive perceptions of the instructional use of iPads in their classroom. However, the data also suggests that the second and third graders had more positive perceptions and therefore likely a better experience than the fourth graders in this sample. Perhaps the most likely explanation for this difference in perception could be how the iPads were used in each grade. For instance, fourth graders tended to have more homework and a greater focus on academics than the second and third graders. It could be that this teacher simply used the iPads more for academic purposes than the teachers in the other grades.

While the fourth graders were the only students that could take their iPads home (which they reported that they liked), they seemed to be split on how useful iPads were with completing homework; it could be that they did not like having to use the iPad for homework or even that their teacher had not identified useful ways to assign homework tied to the iPad. Another possible explanation could simply be due to age. Fourth graders could already have had prior experience with computers and/or laptops and therefore were not as susceptible to the novelty of this new technology. For instance, Crichton et al. (2012) conducted a study where they found that elementary and middle school students responded better to technology integration than high school students. More specifically, in our study, the second and third grade students (64.3%) felt the iPads helped with schoolwork much more than the fourth grade students (11.8%). Looi et al. (2011) found a similar result with mobile phone use in third grade classrooms. In that study, "around 80% of the students thought that the . . . phone helped their learning in and out of class" (Looi et al., 2011, p. 280). The context of each one-to-one integration is different and situational factors (e.g., how the teachers were trained and in turn integrated the mobile devices into the classroom) likely influence student perceptions of mobile devices. Therefore, additional research needs to be conducted to see how age influences students' perceptions of using mobile devices for instructional purposes.

The fact that the second and third graders were not allowed to take their iPads home makes it difficult to discuss their perceptions of using iPads for certain things such as homework. However, we recognize the risks of sending young students home with devices worth hundreds of dollars and respect any school's decisions for putting restrictions on how mobile devices are used.

An overwhelming majority of the students agreed that the iPads made learning more fun. This might be due to the novelty of the new technology. However, the teachers at the school emphasized that the iPads were seen as another instructional tool with specific purposes. Exploration time at centers was encouraged, and math apps in one classroom were routinely used as one part of the lesson. The teacher was able to track the progress of each student in the math group, making differentiation quick and accurate. But additional research needs to be conducted to identify additional evidence-based practices to guide teachers use of mobile devices in the classroom.

The only notable difference between gender was between third grade females and males when it came to using iPads for homework. As a whole though there were not overall big differences across gender. In fact, female students were as a whole more positive or neutral--or to put it another way, less negative--than male students. Additional research though needs to be conducted to investigate the inconsistencies in grade and gender.

Conclusion

We were not surprised that students overall had positive perceptions of using iPads. However, we question as others have if the technology is aiding in the engagement of students with the instructional material and in turn student learning, or if the newness of the technology is driving the engagement. Longitudinal research is needed that follows students across elementary school to see how their use and perceptions of mobile devices changes as they get older, school gets academically more difficult, and the newness of the devices wears off. The small population of this study limits our ability to generalize the results. However, our intent at this stage was simply to get a sense of what elementary-aged students think of these devices at this one specific school that can then help guide additional faculty development efforts. Additional studies of the use of iPads and other mobile technologies in classroom applications are increasingly necessary if the field of educational technology is to keep pace with the advent of new devices and ways of communicating in our schools.

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