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Voices from the Field

***Smartphone Apps in Education: Students Create Videos to Teach  
Smartphone Use as Tool for Learning***

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**Abstract**

Smartphones are regular classroom accessories. Educators should work with children to understand the capacity of smartphones for learning and civic engagement, rather than being a classroom distraction. This research supports a collaborative project the authors engaged in with students in two states to discover what the perception of smartphone use was by students and teachers. One element of this project included students producing YouTube style tutorials on the educational use of mobile apps. The authors explored smartphone use in the classroom. Student created products correlated to technology trends in K-12 education and their relationship with state by state demographic data.

*Keywords: digital literacy, mobile apps, 1:1, collaboration, smartphones in education, project-based learning, technology, hands-on learning, cross-curricular lesson, lesson design*

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Although the smartphone has become a constant fixture in American schools, it is seldom used for learning purposes. Since nearly 88% of high school students ages 13-17 have access to a mobile phone, schools are shifting their mobile phone use policies to adapt to today's learners (Horrigan 2015). Students bring their smartphones to school in order to socialize with their peers outside of the classroom. But digital devices can be a powerful resource for learning. How can educators leverage this technology in order to maximize learning?

Today nearly 70% of schools who had banned the use of cellphones are now overturning these policies (Kiema 2015). Are schools accepting the use of cellphones in classrooms because of the high volume of users, or are educators

seeing that devices could change the educational landscape for the better? Some would argue that these mobile devices are the modern day version of doodling; an opportunity for students to disengage with the social process of learning (Tysowski 2014, 13). Others see these devices as opportunities to connect socioculturally with their students (Johnson, Adams & Cummins, 2012).

Our research began by looking simply at the numbers. Since 2009, students have increased their access and use of mobile phones. In a Pew Research Survey conducted in the fall of 2014, students ages 13-17 were asked about their access to mobile phones, smartphones, tablets, and the use of these devices for internet access and social media connections (Lenhart 2015). The results showed some disparity with how these devices were accessed and used categorized by race, gender, socioeconomic status, and parent education level.

Results showed that overall, 88% of today's students have access to a basic mobile phone or a smartphone. Of that number, 73% have access to a smartphone, with African American students showing large scale access at 85% compared to hispanic and white counterparts at 71% (Horrigan 2015, 33). Hand in hand with the rise of the smartphone, comes the use of the device to access the internet. For many low income and minority populations, access to tablets, laptops, desktops, and at home internet is unlikely: Many need to share devices with multiple family members. Additionally, if they do have Internet access, the quality varies widely and is often quite slow. The smartphone provides an opportunity for these groups to level the playing field and gain access to the internet. In New York City, which had a mobile phone ban in place since 2009, the hardest hit students of the ban were schools with metal detectors, typically schools that served students from low income, racially diverse neighborhoods (Kiema 2015). The mobile phone, especially the smartphone, if allowed into classrooms, can help bridge this digital divide. Students in impoverished schools should be allowed to have their smartphones available to them so they have access to a mini computer for educational purposes. The New York City public schools, reaching almost 1.1 million students, has lifted the cellphone ban and is taking a step closer to leveling the playing field for access.

Numbers show that a large percentage of students surveyed, use their smartphone for internet access daily, many consistently throughout the day. If this is the only digital device for students to access, and if the push by education leaders nationwide is to incorporate technology into the classroom, the smartphone can serve as a partner with teachers to create engaging lessons that create global digital citizens. Results state that 24% of students access the Internet "almost constantly" throughout the day via their smartphone, while 91% accessed the internet "occasionally" throughout the day (Lenhart 2015). In 2010, student use of the smartphone for internet access, especially in underrepresented populations, was about 45%. In only five years, that number more than doubled, with Pew Research showing that 100% of African American teens 13-17 who had phones used them as the access point to the internet. While white, economically advantaged students have access to laptops (91%) when they return home from school at the end of the day, African American are limited to these devices, which leaves their opportunity for tech for learning to the smartphone (Lenhart 2015).

### **Context for our Work**

In this paper, we report on a collaborative project we designed and implemented in two American high schools where students were engaged in first analyzing evidence from students and faculty regarding the use of smartphones for learning and then in producing short instructional videos concerning the appropriate use of specific digital tools and apps.

We have different professional backgrounds in education. Kara Clayton is a media and digital literacy educator who teaches media production classes at Thurston High School in suburban Detroit, Michigan. Her students classes take place in a TV studio with editing facilities. Amanda Murphy teaches social studies courses at Westerly High School in southern Rhode Island. She was able to co-teach this particular lesson with support from the video production teacher at her school for this project.

In terms of demographics, both high schools have approximately 1,000 students. However they are quite different racially and socioeconomically. Thurston High School is in a high poverty area and more than 56% of its students participate in free or reduced lunch. This is 13% above state average. Additionally, Thurston's ethnic makeup is 66% African American and 25% White. Westerly High School, on the other hand, is located in a middle class area. 25% of students participate in free or reduced lunch while state average is 43%. Ethnic makeup is 85% White, 2% African American. (National Center for Educational Statistics, 2013). Though neither instructor offers a high school digital literacy course per se, both instructors support English Language Arts and Social Studies literacy initiatives through the types of composition and research that takes place in their classrooms.

We met through a collaborative professional development program at the University of Rhode Island, as we were both involved in completing the Graduate Certificate in Digital Literacy. As part of our graduate coursework in Digital Authorship with Professor Renee Hobbs, we were interested in how collaboration between technology teachers and teachers of English, Social Studies, Math and Science might take place in order to provide a richer educational experience for their students. We wondered how we and our students might collaborate with each other in a way that would be mutually beneficial.

Although many schools encourage the use of mobile technology in classrooms, there are varying degrees to which school leadership supports teacher implementation for purposeful use of these devices with students (Tysowski 2014, 14). Through our work, we wanted to find out answers to some of the following questions: How are students using their mobile phone/smartphone in the classroom? How can schools provide support for teachers and parents to engage students with these devices in order to maximize their capacity for educational use, rather than the device being a distraction in an educational setting? What applications do high school students think are valuable for their peers to know how to use? How will students in video production based courses feel about providing a teaching tool for their peers through the creation of instructional videos?

### Instructional Design

Before beginning this curriculum, we needed to understand the data on how students were accessing and using mobile phones. First we reviewed the scholarly research literature to help guide the development of both the survey and the instructional plan. Then, we created and distributed two surveys, the first with a focus on teacher interaction with smartphones in the classroom and the second a focus on student interaction with smartphones for educational purposes. The surveys, conducted over a series of two weeks, helped us to create a qualitative case study of the two different high school populations to identify the specific needs for each community. The teacher survey was distributed online at both high schools, receiving a total of 53 respondents from both schools across all disciplines. Next, the student survey was distributed digitally to the students at both high schools, with 184 respondents participating. Survey data helped provide context to personalize the curriculum for the unit on smartphone use in the classroom to help meet the needs of teachers and students within each school.

Using the survey as the basis of the curricular unit, we then developed a digital authorship classroom activity where high school students generated a list of topics of instruction and planned and produced video tutorials on a variety of smartphone activities and applications which might be useful in a high school setting. Students viewed the completed videos from their partner school and offered warm and cool feedback to support the editing and revision process. Figure 1 shows a sample of student storyboards creating during the pre-production process. Figure 2 shows a sample of student scripts.

Production on the collaborative video projects took place over the course of two weeks and included students enrolled in Thurston's two introductory media production courses and students enrolled in the Westerly HS Video Production II course. These classes are taken, primarily, by juniors and seniors. However, there are a few sophomores who were enrolled in the media production classes at Thurston High School.

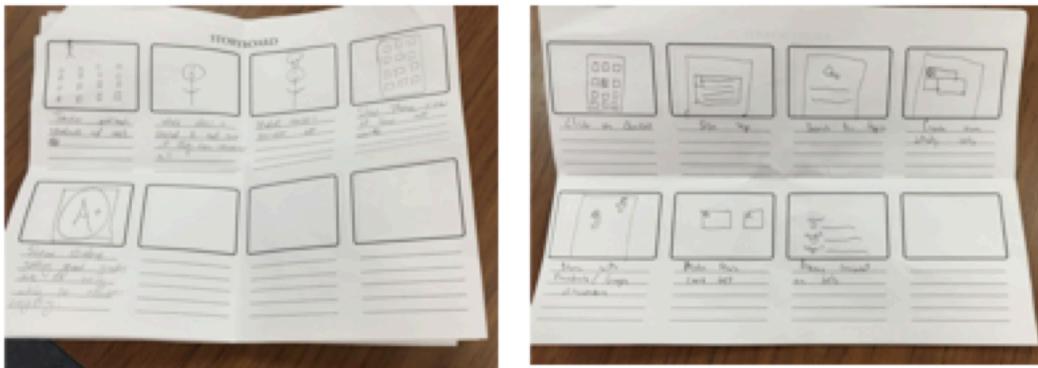


Figure 1  
*Storyboards for Instructional Videos on Smartphone Apps*

We both have similar teaching philosophies in that we encourage student collaboration for classroom assignments. Additionally, we both allow mobile phones in our classrooms. However, we noticed how infrequently students (and their parents/guardians) use their phones for more than social reasons. For instance, we noticed that many students don't know how to record and download a voice memo of a class lecture to use as a study resource at home, or to share with a friend who was absent from class. They don't know how to set calendar reminders, keep up-to-date on their progress reports, or access helpful tutorials for math and foreign language.

Thus, our research led us to perceive a need to help students to use their cellphones to support their academic work. We decided to have students create video content that could be used by their peers and accessed via YouTube and both school's websites. With more than 58 students from both schools participating in collaborative, peer-to-peer education, 18 short instructional videos were produced at the end of a two-week period that targeted student and parent audiences at both high schools. A sample of topics is shown in Table 1.

Video	Voice Over
Title Screen	Ever wanted to check your grades wherever?
Yes Screen	Well do you know how to access your student connect?
Medium shot of phone screen	It only takes a few steps
video of accessing phone**	First, Open your mobile browser
	Then type in southredford.org
	Next, click on students and then click on the student connect option
	Once thats open, use your given Student ID and password.
	If you <u>don't</u> have your password go to the front office
	Next click on assignments and you will be able to see your current grades and assignments that the teacher has entered in.

Teacher Comment: [Add the Show All Feature](#)

Figure 2  
*Sample Student Script*

Finally, in order to continue the philosophy of collaboration, we encouraged students to view each other's videos to provide positive and constructive feedback. Students completed feedback using a shared Google Doc to offer feedback to each other's work. We capitalized on the interconnectedness of our world by sharing video products of the collaborating school and leading classroom discussions around quality and purpose of each video within each own school setting.

Table 1  
Sample of Student-Produced Instructional Videos on Smartphones for Learning

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Setting Reminders	Google Classroom
Siri and Google Voice	Student Connect 2
DuoLingo	Ref Me
Recording a Voice Memo	MyScript Calculator
Khan Academy	Scanbot

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As we implemented this lesson, we observed three noteworthy features of the instructional design including student ownership, literacy applications, and authentic peer-to-peer audience feedback. We review each of these features below.

**Student Ownership**

One aspect of instruction that the authors know to be true is that students who have the opportunity to teach others are more likely to be invested in learning and tend to take more ownership in the learning process as well as any culminating activity. For this particular class assignment, students were given free reign to create an instructional video on any mobile app they thought could be used in an educational setting.

Students spent a great deal of time determining which app would be best for their high school student and/or parent audience. Both of us spent part of a class period watching and discussing the form and content of various YouTube instructional videos. These videos were evaluated in a qualitative, discussion based forum on tone of the message, quality of the camera work and the pace of the editing. In Kara Clayton’s class, students talked about apps they already used and apps they had heard about that might be helpful in an educational setting. From there, students worked in groups of two or three to write, produce, record and edit instructional videos. Students quickly became instructors by carefully thinking through the necessary steps so that a learner could follow their instructions with ease.

Amanda Murphy hosted a whole class discussion focused on the smartphone utilized by Westerly High School teachers in the classroom setting of the school’s 1-to-1 laptop initiative. Students dissected various apps and considered their purpose, affordances, and limitations. This became the frame of reference for students as they moved to the next phase of the process, which then mirrored Kara Clayton’s approach to small group video production.

**Literacy Applications**

It’s important to note that at the start of the project, students were not overly excited to produce these videos. Although researchers note, “YouTube is increasingly being used by educators as a pedagogic resource for everything from newsworthy events from around the world to “slice-of-life” videos used to teach students within an ESL (English as a Second Language) course (Duffy, 2008,

124), our high school students did not see the genre as very appealing. For them, the instructional genre was not viewed with positive affect in comparison to the typical public service announcement, news story, or school promotion genre that students were more familiar with producing. However, once students realized that the videos had informational value to others, and after they viewed what others had produced and posted to YouTube, student engagement was high.

At both schools, students began by participating in a full class brainstorming session with both instructors in order to develop their ideas for a script. It was important for students to treat this video project like any other. It needed to have purpose and structure. Here they developed a list of mobile applications that would be useful for students to know how to use. Students then separated into small groups of two to three people where they worked collaboratively to write scripts, practice voice-over recording, record and edit short, 30 second to two minute instructional videos.

Instructors in both classes thought the quality of the videos were just as good as the examples viewed on YouTube. For example in one student-produced video called, "Recording a Voice Memo" (<http://bit.ly/1JCRs5N>), the narration explicitly addresses some very real needs that a student in a high school class might have, such as having trouble keeping up with the teacher when taking notes, or having the responsibility of helping out a friend who is absent by sharing the notes.

Another student-produced video explains how to use the app called, Scanbot which is used to create high quality scans with an iPhone, iPad or Android device. First, students provide a very real scenario at the beginning of the video on why downloading Scanbot might be a good idea. The voice over script was written in such a way that it clearly articulated each step on how to use the application while providing clear visuals to support the voice over explanation.

Samples of Westerly student-produced instructional videos as are available <http://bit.ly/2iALGfM> and samples of Thurston student-produced instructional videos are available here: <http://bit.ly/2ip0v5I>.

### **Authentic Peer-to-Peer Audience Feedback**

Students knew that once their videos were completed, they would be sharing their work with their peers at the other school to offer warm and cool feedback. As Appendix 3 shows, students in Michigan and Rhode Island provided useful feedback to each other on both the quality of the production techniques as well as the quality of the video script. For example, after viewing the Voice Memo video produced by Thurston students, Westerly

students commented on how engaging the video was because "it used multiple angles, fade ins and outs, different perspectives." After viewing Westerly's video on the Scanbot App, Thurston students commented that since the video was "clear and to the point (they) would love parents to have it as well if I forget my homework." Figure 3 shows a sample of the Google Doc students used to offer their feedback, with the first column indicating the name and topic of the student-created instructional video, the second column a place for students to offer warm, supportive feedback, and the third column a place for students to

offer constructive “cool” feedback to improve the productions. Thurston students’ feedback is shown in black type while Westerly students is shown in blue type.

THS - Student Connect	Humorous voice-over Nice graphics	None
THS - Student Connect 2	Female voice-over is very professional Images are easy to see	Too much time without anything on the screen. Male voice over is too low and recorded differently at different times.
WHS - iPhone Calendar/Reminders	Good narrative Purpose of tool clear	Limited instruction, unclear of the “how-to” of tool  Background music too loud
WHS - <del>MyScript</del> Calculator App	Good overview of app, its uses Good application for math class Liked music bed	“Now you try” volume too low Need name of app more frequently. Reshoot scene where text message is visible.
WHS - <del>Scanbot</del> App	Good script & narrative  Clear view of screen  Good description of multiple uses for the app and its capabilities  Clear and to the point Would love parents to have it as well if I forget my homework.	None  Music bed needed Test at the bottom to indicate the step and the button to press would be helpful

Figure 3  
*Warm and Cool Peer Feedback on Student Videos Using Google Docs*

Students also knew that once revisions of their videos were complete, their videos would eventually be posted on each school’s website as genuine teaching tools for others to use. Knowing they had an authentic audience to view their finished products provided an incentive for students in both schools to produce their best work. In reflecting on their work for this assignment, one student wrote, “It was a great feeling to know that the smartphone video I did with my group would be shown and critiqued by others. Also, it was helpful to be the instructor instead of the student so it could be done how we envisioned it to be.”

### **Implications for Education**

In an era where using a smartphone to take selfies, text message, and post on Instagram can easily monopolize a teenager’s day, it is important for educators to emphasize the educational value of a smartphone in the classroom. High school

students have been given a very powerful tool, but have never been given formal instruction on how to leverage the tool in an educational setting. Once students created short video tutorials on smartphone apps, they realized just how beneficial a smartphone can be in education. In fact, upon viewing the other school's videos, one student immediately downloaded an app to use in their math class!

As students brainstormed ideas for apps, they began to see the value in creating tutorials that would improve their educational experience. The Scanbot app tutorial, for example, provided specific insight into how using the app could save a student the frustration of school technology that was off limits or not functioning. Student producers had to wear two hats when planning the YouTube tutorials; student and teacher. They created videos with teaching and learning in mind, considering the ease of use and functionality of the app for a teacher, but also the value of using the app to make the student experience more effective and efficient.

While students lean toward the entertainment value of mobile devices, educators are often fearful of them and find them to be a distraction. "With the ability to create and upload coursework using graphics and animation, new opportunities exist for teachers and trainers to expand their teaching methodologies while catering to a variety of learning styles" (Fralinger & Owens 2009, 15). Having students create these videos will show teachers and administrators that smartphones are effective tools for a classroom setting when guidelines for their use are explicitly defined. Even though we both allow cellphones in their classrooms, we have also created and reinforced substantial and clear expectations about the appropriate time, place and manner of use. As more and more schools move to wireless Internet, it will be less likely that teachers will need to physically move their classes to a computer lab to work because most students already have access to a mobile device. For those few students who do not have a smartphone, a few, inexpensive tablets could ensure that all students have equal access.

Additionally, when teachers shift to a more open-minded approach toward smartphone use in the classroom, video tutorials such as the ones created in this lesson, may assist both teachers and students in this shift. Teachers who may be hesitant to try various smartphone apps in the classroom may view the tutorials to gain familiarity and comfort with new apps. Likewise, to improve efficiency and save time during class, teachers may want to share the tutorials and have students view them independently prior to classroom use. The videos give students access to instructions at anytime and they can replay videos if they missed how to use a specific feature. Using instructional videos may help them become more literate with the educational application of new technology.

Educators will find it valuable to make no assumptions about student and teacher cellphone use and begin, as we did, by gathering data using surveys of students, faculty, and, if appropriate, parents. We gathered data from surveys to learn more about how teachers in our two schools used mobile phones to support student learning. Student survey questions provided information about their experience with mobile phones, including how they use their phones while in school. Gathering the data informed us of the specific areas of need and desired

content teachers and students were seeking in relation to smartphones for educational purposes.

Once data is collected to inform the content, educators must be open to present their findings to students and allow opportunities for brainstorming. While many YouTube instructional videos exist, student perspective of these videos was not overwhelmingly positive. Allowing students time to discuss potential technologies, view and critique sample works, and work independently to produce their own unique video requires a hands-off approach from the teacher. While teachers act as “guide on the side,” feedback and questioning throughout the process will help students continue to reflect and edit.

Not all teachers are trained or comfortable with guiding students through media production. It is important to seek out the experts in the building for their expertise, guidance, and assistance. Amanda Murphy is a social studies teacher with a strong background in digital literacy, however for her, media production was not a daily practice. To make the project most effective, she enlisted the help of the school’s video production teacher who guided students in appropriate camera techniques and editing, while Kara Clayton worked with students to improve the narrative of the each video and help them tell the story of how the specific app could be used in the classroom setting.

This media production project provides an opportunity for students to create their own authentic video interpretations in instructing others on how and why to use a specific app. Teachers considering a project like this should brainstorm the positive benefits of these instructional videos within a typical classroom. By offering the completed student videos as resources for students, parents, or colleagues to view in advance, time spent on in-class instruction is significantly shorter. Also, having an authentic audience puts more responsibility on the students to produce an engaging and informative product. Connecting students from two schools using peer-to-peer feedback also improved the quality of student work while providing a greater level of engagement by students to view the videos.

### **Conclusion**

While smartphones are a device that the majority of students have access to, educators need to get up to speed on how these devices can be used in a positive and productive way in classrooms. Cellphones in the classroom may help students take more responsibility for their own learning. As Kiema (2015, 1) explained, “Many teachers have a zero-tolerance policy when it comes to phones out during class, since they assume—most of the time correctly—that their students are using them to text friends or update their various social media sites. But there’s a simple way to ensure that students use devices for educational purposes: change the classroom dynamic from lecturing at the front of the room to having no traditional front of the classroom at all.”

However, if teachers encourage use of the smartphone in their classroom through “engaging instruction and the continued teaching of digital responsibility, they can move students from being digital natives to digital learners” (Amling 2015, 1). School district personnel need to lower their protectionist guard when it comes to the introduction of new technology. Many years ago, pagers were

banned in schools because they were linked to drug deals. People realized this wasn't the case for most pager users. Instead, they were a communication device that parents utilized to keep track of their children. The smartphone has a similar black cloud hanging over it with educators and parents expressing concern that it increases cyberbullying and provides additional classroom distractions. However, if relevant professional development was provided to educators on how to leverage the smartphone in a similar way that textbooks, pencils, paper, and word processing devices have been used to improve education, the smartphone could quickly become an incredible classroom resource that is seen more as a tool than a toy.

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