

Mobile Learning in the Interaction Age
By Debra Atherton

“Bounded by a Nutshell”: Tiny Screens and the English Classroom

Abstract

Cell phones are the nexus of modern student's lives; instead of being threatened by the loss of control they pose in classrooms, couldn't teachers use them to access and process content? Research indicates cells are a perfect medium for student-centered, collaborative learning, including accessing literature and managing organization. Students used cells to record assignments and access the class learning management system, and to communicate by text, both outside class and in, about classwork. For *Lord of the Flies*, they created collaborative projects on their phones; for *Hamlet*, they took notes by text and interacted by Twitter. Students felt empowered and validated using their own tool for learning, and produced more thoughtful, elaborated, and in-depth work, which enhanced their literary experience.

Introduction: “The times, they are a-changin’”

I became a teacher to change the world. And the most important way I want to change the world is to help my students become better thinkers by becoming better readers. But anybody within three feet of a classroom has noticed that a change is occurring in 21st century learning. These days, it seems most of the reading they do is from the tiny screens of their cell phones! Cell phones are students' favorite way of connecting with each other—and, as mobile technology has evolved from personal communication device to pocket-sized computer, with the world. Is it possible, then, that cell phones can also connect them with literature? Can the social networking skills and the medium that connects them to people and information they know be transferred to connecting them to characters and ideas they don't yet? Can the comfort of familiar and enjoyable technology become a platform for cushioning the discomfort of new and challenging ideas? Both communication device and personal computer, cell phones enable students to take a more powerful role in their own education by allowing them and their teachers to tailor curriculum to the individual's needs.

After twenty years as a high school English teacher, I was frustrated. Demoralized. Literature, I knew, was an avenue to reaching those things inside us that connect us most deeply to our own selves and to others—and yet every year, fewer and fewer kids could be brought to open a book. I'd bring out my

best song-and-dance routines—the ones that had always convinced students to read before—to less and less success, at least in terms of actual pages read by students.

And it was the fault of all this technology!

Years of teaching *Fahrenheit 451* had left their mark. Like Faber, I grew despondent, despairing. People were changing. Society was changing, falling into a pit of slack-jawed receptiveness to anything plastered on an increasingly (Bradbury predicted this, you know) high definition screen. Students sitting on benches in the quad, next to each other, for crying out loud, texted each other instead of speaking! We'd made it to the 21st century, but *1984* was approaching fast.

Ironically, it was something Bradbury said, through that very Faber, that turned my views around. Trying to explain to Montag the richness found in books, he enters this caveat: "The same things [that make books so essential to humanity] COULD be in [the media] today. The same infinite detail and awareness could be projected through the radios and televisors" (Bradbury 1953). Really? You mean if you can't beat 'em, join 'em, and use their own tools to get 'em that way? I enrolled in a—need I say, online—Masters program in Education Media Design and Technology.

The heart of my program has been my Action Research, a project designed to help me improve my actual practices in my actual classroom. After learning that technology has literally changed the way our students process information (Carr 2008), training their brains to respond more effectively to information presented on a screen than on paper, I realized that almost every single student I have brings his or her own personal screen into my classroom daily—in the form of a cell phone. They certainly don't have any trouble reading from those! Perhaps there were ways I could conscript this versatile device in the service of my students' academic achievement. My research proposal: By using cell phone technology to explore a literary work, students will become more engaged with literature, engendering higher levels of learning and thinking.

Six years ago, Marc Prensky (2004) noted that there is a "link between Digital Natives and

technology that has escaped educators” (p.2). Numerous authors, including Matthews (2010), have noted the change in student learning from “transmission models... toward more student-centered pedagogies” (p.87); Fisher and Baird (2006) attributed this revolution in the way students access information and learn, both in the academic and personal realms, to the Internet, and described an “‘on the go’ learning style [that] contrasts with previous generations who were taught to learn what they need to pass a test” (p.9), limited both by resource materials and memory space. And yet, it is still the general practice in American school districts to severely limit students’ access to their cell phones during school hours, if not to ban them altogether (Docksai, 2009; Prenski, 2004). However, in a society driven by test scores, teachers cannot afford to ignore studies that show “a statistically significant positive relationship between gains in scores and the use of ICT [Information Communication Technology] in a number of subjects.” (Granic, Cukusic, & Walker, 2009, p.167) Using ICT’s does not necessarily mean a completely new pedagogy; as Prensky (2004) noted,

There are many different kinds of learning and many processes we use to learn, but among the most frequent, time-tested and effective of these are listening, observing, imitating, questioning, reflecting, trying, estimating, predicting, ‘what-if’-ing and practicing. All of these learning processes can be done through our cell phones. In addition, the phones compliment the short-burst, casual, multi-tasking style of today’s ‘Digital native’ learners. (p.3)

Taking students’ “authentic” and social use of the ICT they use (sometimes hundreds of times) every day and applying it to their academic context “can motivate and persuade users to actively engage in the course content” (Fisher & Baird, 2006, p.8). Therefore, with guided instruction, students can begin to transfer skills that they are using to entertain themselves over into arenas where they can use those skills to be growing and successful adults.

It sounded like I could do this thing.

What happened in the classroom: Developing new pathways

I had two “regular” Senior English classes this year, and they seemed likely subjects. It’s a very diverse group: 80% were first or second generation Americans; over 40% were Armenian, 36% Hispanic,

15% Caucasian/non-Hispanic, 7% Middle-eastern, with one person identifying as Asian. About 12% were in what our district calls the “Transitional” (from the English Language Learner) program and another 30% have “FEP’d out” of Transitional into regular English. The socio-economic status is predominantly middle class, and there were 33 females and 28 males.

The research was structured into two cycles. Cycle 1 was comprised of two activities using cell phones to complete assignments, and due to different ways of approaching the assignments, the results from the two varied dramatically.

The first assignment put students in groups of four, and each of the students was designated to take the role of one of the four main characters in the William Golding novel *Lord of the Flies*. The first week, each student, as their character, texted all three of the other characters, responding to the events in daily chapters of the novel. Students were assigned groups to include different cultures and levels of English language proficiency, and to make sure at least half of the group members had smart phones. My instructions were to try to demonstrate the characters’ actions and feelings in order to more effectively discern the themes in the novel. Then, students were assigned to email their texts to themselves and copy/paste their texts into a word document.

This was not a success.

First, I depended on the novelty of using cell phones for school work to ensure student participation and didn’t check at any time during the first week whether students actually did their assignment. After 20 years teaching high school, I should have known better. Barely half of the students turned in their assignment on time, and I suspect a significant number of those were simply typed on the Word document and not texted at all. Second, instructions were far too nebulous. Students who did do the assignment sent one-line texts that pretty much said the same thing to all of the other three students, and while they usually addressed something that was going on in the chapter, it was almost always a factual statement, not an exploration of ideas.

As a result, my research journal records an initial openness to this new technological quirk of Mrs. Atherton's, which turned over the week into confusion and then, inevitably, apathy.

The second week, more structure led to more success—but not much more. This time each student's character was assigned to text one specified character (Ralph texted Piggy, who texted Simon, who texted Jack, who texted Ralph), but to compose a text of several sentences that demonstrated understanding of the characters' feelings and interactions. The next day, each responded to the character who had sent the previous day's text; the following day they sent an initial text to a different character; the fourth day was another response, possibly from heaven, as two of the four characters are by then dead.

While students grew less restive and more accepting of the assignment as the week went on, the number of assignments turned in—approximately 60% of the class—and the superficial quality of the work again indicated a lack of student engagement. Furthermore, much classtime was expended on who, with all the texts going back and forth, was supposed to turn in what.

An additional activity, however, did engage the students and indicate that confusion and lack of participation was partly responsible for some of the lack of engagement. At the beginning of the last chapter in the book, the main character, Ralph, is alone and being hunted by the others; for the daily warm-up activity that day, I asked students to get out their cell phones and text what Ralph, if he had had a cell phone, might have texted at that moment. While a third of the students, in spite of being directed not to, had Ralph begging to be rescued, the majority delved into Ralph's mind to reflect on his situation and how he got there, and about 20% actually had him reflecting on themes in the novel. This activity took much time to get started, but that was because students were genuinely trying to understand what they should do; and once they started, their focused silence—as well as the printed copies of their texts that they turned in—indicated engagement both in the energy they expended and in the higher cognitive strategies demonstrated in their product.

The final analysis students completed included three specific questions with the following results:

1. What did you think of the assignment? Positive: 34/56 (61%); Negative: 22/56 (39%)

(with 3 registering Very Positive and 2 registering Very Negative)

2. Did it help you understand the novel? Yes: 30/53 (57%); No: 23/53 (43%)

(Interestingly, 5 students who didn't like the assignment still found it helped them understand the novel.)

3. Did it make the novel more interesting to you? Yes: 31/55 (56%); No: 24/55 (44%)

(Discrepancies in the number of responses are a result of some students not answering every question.)

In terms of the final objective exam students took at this point, these students (English 12) scored largely the same (69.7%) as students in my College Prep classes (69.1%) and as students from last year (English 12: 68.9%; College Prep 70.2%). However, as indicated by involvement in class discussions, the English 12 students were much more involved and interested in the novel.

The second assignment, after we came back from Christmas break, took place after students had written the first draft of their essay on one of the symbols in *Lord of the Flies*. To help them understand the symbol, they worked with a partner to create visuals exploring the meaning of the symbol. To do this, they composed on their cell phones messages defining the symbol and what it symbolized, and its significance in the novel, in the universe, and in their own lives.

This time, the directions were very clear, very precise, and technologically enhanced—a slide presentation (of which they were given copies), a flash presentation, and a garageband presentation on how to get texts from cell to email to Word document. And this was preceded by the movie “They’re Just Playing Around,” demonstrating why it’s essential to train students how to use cell phones to achieve their educational (and therefore occupational) goals, which made the goals of this research clear to all of the students, especially those who had responded negatively above.

This time, results were more conclusive: out of 45 students responding, 3 did not like the assignment (one of whom doesn't have a cell phone for financial reasons), and 2 were half & half (one of

whom doesn't like collaboration because she doesn't like anyone else having an impact on her grade).

The other 40 were very enthusiastic; the following comments were representative:

"We used the text that we do on a daily basis to educational purposes." (Kajair)

"[It] helped me keep things organized. ... It took less time than I thought. ... I sent it to my partner and we could see what we could improve." (Nancy)

"Made it feel like not homework. ... Easier than writing on paper, more fun [and] helped us understand better." (Zareh)

"The texting feature allowed me to write shorter yet more in-depth statements." (Paulina)

"It helped me to communicate with my partner. I was able to communicate from home."
(Daissy)

"If a thought popped into my head, I could just text it to myself." (Katie)

"I always had my phone." (Brian)

"I was able to do it when I had free time at home or at school." (Chris)

"Getting the pictures and posting them on Facebook so my partner could get them." (Lucia)

"I actually understood better the story. ... I started thinking more as literary thinking." (Anna)

"It let me do my own thing, also it gave me more ideas." (Vanessa)

"I didn't get lazy." (Edmund)

"Discovering apps... I understood more clearly and I still remember what I wrote." (Leticia)

"The slide notes were put together really well."

"You very clearly identified and specified what is needed for it to be done." (Anna)

"Teenagers need to realize ... that some people are millionaires by being smart with their phone... and get more smart how to use their phone in a right way." (Davit)

"In the near future, cell phones will make our everyday things so much easier to us so it is not a hassle to complete." (Arthur)

Throughout the interim between Cycle 1 and Cycle 2, students continued to use their cell phones for administrative tasks, like recording assignments and due dates, and for collaborative communication, as well as tasks like composing first drafts and accessing instant online information. But using the devices to actually take class notes on a literary experience—“reading” the Zephirelli *Hamlet*—at first intimidated a majority of students. Day 1 of Cycle 2 saw about 25% of each class emailing me their notes from their phones (a task that even the simpler, unconnected phones can accomplish, though possibly only 160 characters at a time), which I then printed up for them. By the end of Day 5, over 50% of students were using their cell phones. Not only were the emailed notes more extensive and critically in-depth as compared to both each student’s previous handwritten notes as well as non-texting students’ notes, but observation journals record much more engagement with the film in students who were using their cells.

The Zephirelli *Hamlet*, being a more accessible, easier “read” than the Olivier *Hamlet*, started out the unit—we get about 40% through in the first eight days. Then we switch over to the black and white film, and the more challenging film is when we began utilizing Twitter to engage more interactively. Students were not really interested in setting up Twitter accounts until I offered extra credit, Twitter being now passé! But while Twitter has lost some popularity as a published personal diary, its use as a group interaction tool, educational as well as social, is waxing apace.

Tweeting wasn’t as successful in terms of number of participants as note-taking; about 30% of each class participated, while the remaining students sat in “Tweet Groups” and passed around a paper on which they wrote tweet-style comments. Students enjoyed the activity, but initially the paper groups were more interactive; it seemed easier to actually read other students’ responses as they wrote on paper, while cell tweeters’ responses indicated they were having more fun, and interacting with the film in more depth, but not interacting with each other as effectively. Most phone tweets were comments on a character’s actions or summaries of the action, rather than building on each other’s ideas and responses.

Then, on Day 9 of the film (about 2/3 through), I found a blog posting of “The 7 Golden Rules of

Tweeting” (<http://coolcatteacher.blogspot.com/>), and assigned a discussion posting on the class Learning Management System, My Big Campus. The focus of the Rules was not just politeness and consideration, but meaning: tweeting should be a meaningful sharing of ideas, responses, and opinions. The entire class demonstrated a shift in attitude after the discussion assignment, and both groups evidenced more depth in both film and interpersonal responses, but cell tweeters still lagged behind paper tweeters.

This is the reverse of results with note-taking, and several possible explanations for this present themselves. First, students evidenced more distraction when tweeting than when taking notes. Possibly this reflects the older film’s lower engagement factor, as opposed to the more up-to-date “Mel Gibson version;” possibly the “old-school” reading guide--although this was emphasized not as an assignment but as a study aid--added to watching the film and tweeting took multi-tasking beyond its limits; or possibly the sociability and/or novelty of the interactive element required more structure to work effectively. Certainly, Twitter is not as familiar to students--or their instructor!--as texting. In addition, approaching the end of the school year added some time-pressure to an activity that, for all of the above reasons, might have been more productive at a slower pace.

Regardless, nearly four times as many students who participated in cell tweeting and took the post-survey indicated that they found it helped them engage with the film as those who didn’t.

At last, we finished with Olivier’s film and returned to Zepphirelli’s, and students were anxious to resume taking notes on their cells. To expedite turning those notes in, I opened a google.voice account, which gives me an avenue for students to text directly to me without giving out my personal number. This has been much easier for students with less “advanced” phones. Additionally, google.voice enables me to make phone calls from home through that system instead of registering my number on the recipient’s caller i.d.

Both note-taking and Twitter turned out to be much less cumbersome than students expected, and using this familiar tool to write increasingly academic/professional communication is a skill that survey

responses indicated significantly transcended the few weeks they had left in high school.

Conclusions: Applications to my practice

An important idea from my research was that teachers can't just throw cell phones into their classroom—that they need a plan based on established pedagogies. The part of my cycle that was planned carefully went well for me and well for my students. The part that wasn't, didn't. When I was organized, students got exactly what I had hoped they would get from this research: a window into the very near future, and an understanding of how cell technology will be a valuable tool to them in achieving their personal goals. When I taught them how to use it in that way, it did engage them in their own education.

Cycle 1 left me with the perception that a cell phone is just another tool. Kids didn't get all excited just to be allowed to use them on campus—well, maybe a little bit, but just at first. Many of them clearly nailed the issue with the first assignment—it would have been easier just to do it by email. Tools need to be used because they get the job done best, not just because they're new and shiny.

However, the students' comments after the second assignment relieved my fears that this was just going to be a fad. Several students echoed Davit and Arthur's comments that the phone will be a central element in their work lives and success.

During the second cycle, students presented me with a shock: they really do multi-task.

Teachers mistrust cell phones in their classrooms because they think students are going to use them to text their friends when they're supposed to be working. And they do. But so do adults. The question is, can they professionally handle intermixing the two, or will the personal realm overshadow the professional/academic one?

I expected that students would jump at the chance to have their cells usable during a film, with the lights off. Initially, 75% didn't. I expected that their attention would be divided. It wasn't. In fact, I was shocked to observe that the students who were texting notes were actually far *more* attentive to and

interested in the film than those who weren't. Students emphatically validated my observations; those who were texting stating that it was faster, easier, more comfortable, more "interesting," and yes, they *did* pay more attention to the film; those who were not texting stating that they were amazed, but their texting friends were NOT "cheating" and were really staying on task—and that they wished they had texted too.

Why is this surprising? When is a young person ever *just* texting? Where I have to put the DVD on pause to respond to a text message, kids concurrently reply, track the show, and carry on a coherent conversation with no gaps in any of them. In fact, many insist they operate *more* effectively doing more than one operation. Adults don't believe them, because we weren't, but here are indications that they're right.

Finally, the discovery I found most significant was how productive cell phones made some of my least academic students. Some of my colleagues have been convinced that the license these students have been able to handle quite responsibly as seniors would turn quickly to licentiousness (figuratively speaking) in, say, a bunch of 9th graders. My rebuttal is two of my special ed students. A boy and a girl, these two did not come to *Hamlet* with very open minds, and they began the first film turning in notes for a half-class of film that ran three bullets long. When we switched over to cells the second day, they grabbed the opportunity--and each emailed me a full page of notes. Later, about the same time we switched over to Olivier and the study packet, the young man, a basketball player, had to have surgery on his arm (so it would heal before college basketball season). Right hand is out of commission; how to do work? Can he text with his left hand? Of course! When this special ed student had been writing answers by hand, they were two or three words; when he texted, left-handed, they were two or three sentences. When my ADHD son comes to my school as a freshman in the fall, I plan to see if we can integrate his cell phone as part of his IEP.

At the conclusion of Cycle 1, I concluded that cell phones couldn't actually facilitate student engagement with literature—rather, good lessons facilitate engagement, and while cell phones were a

great tool to use with good lessons, they couldn't intrinsically facilitate engagement just by being mobile communication devices. After Cycle 2, I revised that assessment. Under the old learning paradigm, a student read, then understood, then thought, then read again, then understood more, then thought deeper, in a Blooming (so to speak) spiral of cognition. Today's paradigm is recursive rather than cyclical; rather than a basically uni-directional progression, learning is interactive and multi-directional, more absorbed and intuited and experienced than plotted down the bullets of a syllabus. Hi-def surround-sound audio-visual experience as opposed to reading a book. What could be more suited to that personalized communicative experience than today's cell phone? Only tomorrow's.

Though our initial venture into the oceans of Twitter didn't produce the interactive results I had hoped, I have done other learning activities that began tentatively and grew to amazingness only with tweaking and experience. Student survey responses suggest strongly that tapping into a Twitter feed will exploit learning recursiveness in a way reading and writing on paper cannot. The multi-directional interaction made the literature one element—though central—of a powerful learning dynamic with the potential to shift mindsets and change lives.

I am suspecting now that the assignment that didn't work in Cycle 1—the role-playing texts—didn't work partly because seniors are too old for it. They're looking for *meaningful* work to do—work that puts them on track to move into the adult world, and pretending to be a character in a book texting to another character just doesn't do it for them any more. But when I asked them to relate to one character's situation, or to apply truths they learned from the book in their own lives, they were all over that.

Despite the dire predictions, high school students are reading and writing more than ever. On their cell phones. Interacting. Creating meaning. And this research suggests they will also interact thereby with literature.

While it has long been imagined that every human will be carrying around his or her own

personal computer, few people realized it would be so soon—or so small. But that’s what cell phones have become. For most of the world, mobile “phones” are people’s only means of Internet access. To shut them out of our classrooms instead of capitalizing not only on instant personal access to the infinity of the Internet but on the opportunity to teach students how to use such an effective tool professionally is to ban paper because some kids will make airplanes out of them. Hmmm... How long will it be before cell phones enable us to do just that?

I became a teacher to change the world. That’s hard to do when the world is changing, and I am not. My classroom was the dyke holding back the flood of texting and attention-span-destroying Internet sites and all that other technological stuff that threatened to wash away civilization! But why did I think that holding my finger in the dyke was changing the world? I didn’t anticipate those aggravating cell phones would be the surfboard I’d ride the wave on when I took my finger out and the dyke burst. But getting the cell phones out from the underbelly of my surreptitiously texting students’ desks and into the warm academic light on top of them has been a revolution. This year I (re-)learned that learners want to learn, not jump through hoops or play with toys; given meaningful tasks to learn meaningful content, they grasp at it eagerly, and even more so if they can transform a beloved toy into a tool to do it.

STOP HERE! DON’T READ ANY MORE!!!

Abstract

Cell phones are the nexus of modern student’s lives; instead of being threatened by the loss of control they pose in classrooms, couldn’t teachers use them to access and process content? Research indicates cells are a perfect medium for student-centered, collaborative learning, including accessing literature and managing organization. Students used cells to record assignments and access the class learning management system, and to communicate by text, both outside class and in, about classwork. For *Lord of the Flies*, they created collaborative projects on their phones; for *Hamlet*, they took notes by

text and interacted by Twitter. Students felt empowered and validated using their own tool for learning, and produced more thoughtful, elaborated, and in-depth work, which enhanced their literary experience.

- Intro

I became a teacher to change the world. And the most important way I want to change the world is to help my students become better thinkers by becoming better readers. But these days, it seems most of the reading they do is from the tiny screens of their cell phones! Cell phones are students' favorite way of connecting with each other--and, as mobile technology has evolved from personal communication device to pocket-sized computer, with the world. Is it possible, then, that cell phones can also connect them with literature? Can the social networking skills and the medium that connects them to people and information they know be transferred to connecting them to characters and ideas they don't yet? Can the comfort of familiar and enjoyable technology become a platform for cushioning the discomfort of new and challenging ideas?

I hope to change the world by using cell phones to help students engage in another form of conversation: the ongoing conversation between writers and readers throughout time.

Literature Review

A change is occurring in 21st century pedagogy, a change symbolized by the mobile phone: the classroom doesn't bring it to the student; the student brings it to the classroom—and then takes it back out into the real world. Both communication device and personal computer, cell phones enable students to take a more powerful role in their own education by allowing them and their teachers to tailor curriculum to the individual's needs.

Six years ago, Marc Prensky (2004) noted that there is a “link between Digital Natives and technology that has escaped educators” (p.2). Numerous authors, including Matthews (2010), have noted the change in student learning from “transmission models... toward more student-centered pedagogies” (p.87); Fisher and Baird (2006) attributed this revolution in the way students access information and learn, both in the academic and personal realms, to the Internet, and described an “‘on the go’ learning style [that] contrasts with previous generations who were taught to learn what they need to pass a test” (p.9), limited both by resource materials and memory space. And yet, it is still the general practice in American school districts to severely limit students' access to their cell phones during school hours, if not to ban them altogether (Docksai, 2009; Prenski, 2004). However, in a society driven by test scores, teachers cannot afford to

ignore studies that show “a statistically significant positive relationship between gains in scores and the use of ICT [Information Communication Technology] in a number of subjects.” (Granic, Cukusic, & Walker, 2009, p.167) Using ICT’s does not necessarily mean a completely new pedagogy; as Prensky (2004) noted,

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Taking students’ “authentic” and social use of the ICT they use (sometimes hundreds of times) every day and applying it to their academic context “can motivate and persuade users to actively engage in the course content” (Fisher & Baird, 2006, p.8). Therefore, with guided instruction, students can begin to transfer skills that they are using to entertain themselves over into arenas where they can use those skills to be growing and successful adults.

Methodology

The target audience consists of 59 twelfth-grade students from a comprehensive high school in a suburb of Los Angeles. 45% of the students are 17 years old and 55% are 18 years old; 33 are females and 28 are males. The socio-economic status is predominantly middle class, with just over 50% identifying their family as “comfortable,” 30% “very comfortable,” and just under 20% “challenging sometimes;” however, around 40% identified themselves as qualifying for the “free/reduced lunch” program. There is also a wide range of ethnic backgrounds. 80% are first or second generation Americans; over 40% are Armenian, 36% Hispanic, 15% Caucasian/non-Hispanic, 7% Middle-eastern, with one person identifying as Asian. 12% are in what our district calls the “Transitional” (from the English Language Learner) program and another 30% have “FEP’d out” of Transitional into regular English. One class has an officially designated “Transitional Pocket,” which makes the number of first/second generation students slightly higher than the general population of the high school and the number of Caucasians a bit lower; about 50% of the school’s Caucasian students are in Advanced Placement classes. Six students are on IEP’s, and there is an aide who works primarily with those six, but is available for all students, who is present in the first period class daily.

The most pertinent data collected during Cycle 1 and Cycle 2 was self-provided subjective data as

gathered in reflective journals written by the students themselves, in the middle and conclusion of the project. This strategy provided not just summative but also formative evaluation. Comparing quiz and examination results of the target audience with classes not participating in the research in Cycle 1 proved inconclusive; scores on “objective” tests measuring reading comprehension were not measurably different between the two groups. However, comparison of critical writing projects completed after the conclusion of the cycle demonstrated more cognitive and intellectual engagement in the target audience, as evidenced by more revising after their first drafts and by longer and more developed commentary. While the mechanics of writing were not as developed in this group as they were in the control group, three “College Prep English” classes which focus on expository reading and writing rather than literature, the target audience’s enjoyment of their thinking processes and commitment to their ideas was strongly more pronounced. During Cycle 2, both quantity and quality of notes taken as well as student engagement with the studied literature, two films of the play Hamlet, were measurably increased.

Results

Cycle 1 was comprised of two activities using cell phones to complete assignments. Data was collected by a research journal consisting of a daily form that recorded the learning task and five measures of engagement: a) they invested emotional and mental energy in the learning task; b) they actively respond to tasks with relevant questions, discussions, and problem-solving; c) They persist when tasks get difficult, expending mental effort; d) they choose to use “deeper” cognitive strategies; and e) they produce work reflecting higher cognitive and metacognitive strategies. In addition, students wrote a summary of their experience after both activities, analyzing the assignments and recording their responses to them. Due to different ways of approaching the assignments, the results from the two varied dramatically.

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First, I depended on the novelty of using cell phones for school work to ensure student participation and didn't check at any time during the first week whether students actually did their assignment. After 20 years teaching high school, I should have known better. Barely half of the students turned in their assignment on time, and I suspect a significant number of those were simply typed on the Word document and not texted at all. Second, instructions were far too nebulous. Students who did do the assignment sent one-line texts that pretty much said the same thing to all of the other three students, and while they usually addressed something that was going on in the chapter, it was almost always a factual statement, not an exploration of ideas.

As a result, my research journal records an initial openness to this new technological quirk of Mrs. Atherton's, which turned over the week into confusion and then, inevitably, apathy.

The second week, more structure led to more success—but not much more. This time each student's character was assigned to text one specified character (Ralph texted Piggy, who texted Simon, who texted Jack, who texted Ralph), but to compose a text of several sentences that demonstrated understanding of the characters' feelings and interactions. The next day, each responded to the character who had sent the previous day's text; the following day they sent an initial text to a different character; the fourth day was another response, possibly from heaven, as two of the four characters are by then dead.

While students grew less restive and more accepting of the assignment as the week went on, the number of assignments turned in—approximately 60% of the class—and the superficial quality of the work again indicated a lack of student engagement. Furthermore, much classtime was expended on who, with all the texts going back and forth, was supposed to turn in what.

An additional activity, however, did engage the students and indicate that confusion and lack of participation was partly responsible for some of the lack of engagement. At the beginning of the last chapter in the book, the main character, Ralph, is alone and being hunted by the others; for the daily warm-up activity that day, I asked students to get out their cell phones and text what Ralph, if he had had a cell phone, might have texted at that moment. While a third of the students, in spite of being directed not to, had Ralph begging to be rescued, the majority delved into Ralph's mind to reflect on his situation and how he got there, and about 20% actually had him reflecting on themes in the novel. This activity took much time to get started, but that was because students were genuinely trying to understand what they should do; and once they started, their focused silence—as well as the printed copies of their texts that they turned in—indicated engagement both in the energy they expended and in the higher cognitive strategies demonstrated in their product.

The final analysis students completed included three specific questions with the following results:

What did you think of the assignment? Positive: 34/56 (61%); Negative: 22/56 (39%)

(with 3 registering Very Positive and 2 registering Very Negative)

Did it help you understand the novel? Yes: 30/53 (57%); No: 23/53 (43%)

(Interestingly, 5 students who didn't like the assignment still found it helped them understand the novel.)

Did it make the novel more interesting to you? Yes: 31/55 (56%); No: 24/55 (44%)

(Discrepancies in the number of responses is a result of some students not answering every question.)

In terms of the final objective exam students took at this point, these students (English 12) scored largely the same (69.7%) as students in my College Prep classes (69.1%) and as students from last year (English 12: 68.9%; College Prep 70.2%). However, as indicated by involvement in class discussions, the English 12 students were much more involved and interested in the novel.

The second assignment, after we came back from Christmas break, took place after students had written the first draft of their essay on one of the symbols in *Lord of the Flies*. To help them understand the symbol, they worked with a partner to create visuals exploring the meaning of the symbol. To do this, they composed on their cell phones message defining the symbol and what it symbolized, its significance in the novel, in the universe, and in their own lives.

This time, the directions were very clear, very precise, and technologically enhanced—a slide presentation (of which they were given copies), a flash presentation, and a garageband presentation on how to get texts from cell to email to Word document. And this was preceded by the movie “They’re Just Playing Around,” demonstrating why it’s essential to train students how to use cell phones to achieve their educational (and therefore occupational) goals, which made the goals of this research clear to all of the students, especially those who had responded negatively above.

This time, results were more conclusive: out of 45 students responding, 3 did not like the assignment (one of whom doesn’t have a cell phone for financial reasons), and 2 were half & half (one of whom doesn’t like collaboration because she doesn’t like anyone else having an impact on her grade). The other 40 were very enthusiastic; the following comments were representative:

“We used the text that we do on a daily basis to educational purposes.” (Kajair)
“[It] helped me keep things organized. ... It took less time than I thought. ... I sent it to my partner and we could see what we could improve.” (Nancy)

“Made it feel like not homework. ... Easier than writing on paper, more fun [and] helped us understand better.” (Zareh)

“The texting feature allowed me to write shorter yet more in-depth statements.” (Paulina)

“It helped me to communicate with my partner. I was able to communicate from home.”
(Daissy)

“If a thought popped into my head, I could just text it to myself.” (Katie)

“I always had my phone.” (Brian)

“I was able to do it when I had free time at home or at school.” (Chris)

“Getting the pictures and posting them on Facebook so my partner could get them.”

(Lucia)

“I actually understood better the story. ... I started thinking more as literary thinking.”

(Anna)

“It let me do my own thing, also it gave me more ideas.” (Vanessa)

“I didn’t get lazy.” (Edmund)

“Discovering apps... I understood more clearly and I still remember what I wrote.”

(Leticia)

“The slide notes were put together really well.”

“You very clearly identified and specified what is needed for it to be done.” (Anna)

“Teenagers need to realize ... that some people are millionaires by being smart with their phone... and get more smart how to use their phone in a right way.” (Davit)

“In the near future, cell phones will make our everyday things so much easier to us so it is not a hassle to complete.” (Arthur)

Students have continued to use their cell phones for administrative tasks, like recording assignments and due dates, and for collaborative communication throughout the interim between Cycle 1 and Cycle 2, as well as tasks like composing first drafts and accessing instant online information. But using the devices to actually take class notes on a literary experience—“reading” the Zephirelli *Hamlet*—at first intimidated a majority of students. Day 1 saw about 25% of each class emailing me their notes from their phones (a task that even the simpler, unconnected phones can accomplish, though possibly only 160 characters at a time), which I then printed up for them. By the end of Day 5, over 50% of students were using their cell phones. Not only were the emailed notes more extensive and critically in-depth as compared to both each student’s previous handwritten notes as well as non-texting students’ notes, but observation journals record much more engagement with the film in students who were using their cells.

The Zephirelli *Hamlet*, being a more accessible, easier “read” than the Olivier *Hamlet*, started out the unit—we get about 40% through in the first eight days. Then we switch over to the black and white film, and the more challenging film is when we began utilizing Twitter to engage more interactively. Students were not really interested in setting up Twitter accounts until I offered extra credit, Twitter being now passe! But while Twitter has lost some popularity as a published personal diary, its use as a group interaction tool, educational as well as social, is waxing apace.

Tweeting wasn’t as successful in terms of number of participants as note-taking; about 30% of each class participated, while the remaining students sat in “Tweet Groups” and passed around a paper on which they wrote tweet-style comments. Students enjoyed the activity, but initially the paper groups were more interactive; it seemed easier to actually read other students’ responses as they wrote on paper, while cell tweeters’ responses indicated they were having more fun, and interacting with the film in more depth, but not interacting with each other as effectively. Most phone tweets were comments on a character’s actions or summaries of the action, rather than building on each other’s ideas and responses.

Then, on Day 9 the film (about 2/3 through), I found a blog posting of “The 7 Golden Rules of Tweeting” (<http://coolcatteacher.blogspot.com/>), and assigned a discussion posting on the class LMS, My Big Campus. The focus of the Rules was not just politeness and consideration, but meaning: tweeting should be a meaningful sharing of ideas, responses, and opinions. The entire class demonstrated a shift in attitude after the discussion assignment, and both groups evidenced more depth in both film and interpersonal responses, but cell tweeters still lagged behind paper tweeters.

This is the reverse of results with note-taking, and several possible explanations for this present themselves. First, students evidenced more distraction when tweeting than when taking notes. Possibly this reflects the older film’s lower engagement factor, as opposed to the more up-to-date “Mel Gibson version;” possibly the “old-school” reading guide--although this was emphasized not as an assignment but as a study aid--added to watching the film and tweeting took

multi-tasking beyond its limits; or possibly the sociability and/or novelty of the interactive element required more structure to work effectively. Certainly, Twitter is not as familiar to students--or their instructor!--as texting. In addition, approaching the end of the school year added some time-pressure to an activity that, for all of the above reasons, might have been more productive at a slower pace.

Regardless, nearly four times as many students who participated in cell tweeting and took the post-survey indicated that they found it helped them engage with the film than those who didn't.

At last, we finished with Olivier's film and returned to Zepphirelli's, and students were anxious to resume taking notes on their cells. To expedite turning those notes in, I opened a google.voice account, which gives me an avenue for students to text directly to me without giving out my personal number. This has been much easier for students with less "advanced" phones.

Finally, some of my critical friends have been convinced that the license these students have been able to handle quite responsibly as seniors would turn quickly to licentiousness (figuratively speaking) in, say, a bunch of 9th graders. My rebuttal is two of my special ed students. A boy and a girl, these two did not come to *Hamlet* with very open minds, and they began the first film turning in notes for a half-class of film that ran three bullets long. When we switched over to cells the second day, they grabbed the opportunity--and each emailed me a full page of notes. Later, about the same time we switched over to Olivier and the study packet, the young man, a basketball player, had to have surgery on his arm (so it would heal before college basketball season). Right hand is out of commission; how to do work? Can he text with his left hand? Of course! When this special ed student had been writing answers by hand, they were two or three words; when he texted, left-handed, they were two or three sentences. When my ADHD son comes to my school as a freshman in the fall, I plan to see if we can integrate his cell phone as part of his IEP.

As my critical friend Anne predicted, I did, as usual, over-plan, and these activities turned out to be quite enough to undertake in this cycle. However, we have less formally using cell phones in ways that students found both helpful and fun.

Both note-taking and Twitter have turned out to be much less cumbersome than students expected, and using this familiar tool to write increasingly academic/professional communication is a skill that survey responses indicated significantly transcended the few weeks they had left in high school.

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Finally, some of my critical friends have been convinced that the license these students have been able to handle quite responsibly as seniors would turn quickly to licentiousness (figuratively speaking) in, say, a bunch of 9th graders. My rebuttal is two of my special ed students. A boy and a girl, these two did not come to *Hamlet* with very open minds, and they began the first film turning in notes for a half-class of film that ran three bullets long. When we switched over to cells the second day, they grabbed the opportunity--and each emailed me a full page of notes. Later, about the same time we switched over to Olivier and the study packet, the young man, a basketball player, had to have surgery on his arm (so it would heal before college basketball season). Right hand is out of commission; how to do work? Can he text with his left hand? Of course! When this special ed student had been writing answers by hand, they were two or three words; when he texted, left-handed, they were two or three sentences. When my ADHD son comes to my school as a freshman in the fall, I plan to see if we can integrate his cell phone as part of his IEP.

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Conclusion

An important idea from my research was that teachers can't just throw cell phones into their classroom—that they need a plan based on established pedagogies. The part of my cycle that was planned carefully went well for me and well for my students. The part that wasn't, didn't.

When I was organized, students got exactly what I had hoped they would get from this research: a window into the very near future, and an understanding of how cell technology will be a valuable tool to them in achieving their personal goals. When I taught them how to use it in that way, it did engage them in their own education.

However, if it engaged them more with literature—and there are indications that it did—it's not clear to me how that effect happened. More planning is definitely needed.

The biggest surprise was that a cell phone is just another tool. Kids didn't get all excited just to be allowed to use them on campus—well, maybe a little bit, but just at first. Many of them clearly nailed the issue with the first assignment—it would have been easier just to do it by email. Tools need to be used because they get the job done best, not just because they're new and shiny.

However, the students' comments after the second assignment relieved my fears that this was just going to be a fad. Several students echoed Davit and Arthur's comments that the phone will be a central element in their work lives and success.

During the second cycle, students presented me with a shock: they really do multi-task.

Teachers mistrust cell phones in their classrooms because they think students are going to use

them to text their friends when they're supposed to be working. And they do. But so do adults. The question is, can they professionally handle intermixing the two, or will the personal realm overshadow the professional/academic one?

I expected that students would jump at the chance to have their cells usable during a film, with the lights off. Initially, 75% didn't. I expected that their attention would be divided. It wasn't. In fact, I was shocked to observe that the students who were texting notes were actually far *more* attentive to and interested in the film than those who weren't. Students emphatically validated my observations; those who were texting stating that it was faster, easier, more comfortable, more "interesting," and yes, they *did* pay more attention to the film; those who were not texting stating that they were amazed, but their texting friends were NOT "cheating" but really staying on task--and that they wished they had texted too.

Why is this surprising? When is a young person ever *just* texting? Where I have to put the DVD on pause to respond to a text message, kids concurrently reply, track the show, and carry on a coherent conversation with no gaps in any of them. In fact, many insist they operate *more* effectively doing more than one operation.

At the conclusion of Cycle 1, I concluded that cell phones couldn't actually facilitate student engagement with literature—rather, good lessons facilitate engagement, and while cell phones were a great tool to use with good lessons, they couldn't intrinsically facilitate engagement just by being mobile communication devices. Now I'm revising that assessment. Under the old learning paradigm, a student read, then understood, then thought, then read again, then understood more, then thought deeper, in a Blooming (so to speak) spiral of cognition. Today's paradigm is recursive rather than cyclical; rather than a basically uni-directional progression, learning is interactive and multi-directional, more absorbed and intuited and experienced than plotted down the bullets of a syllabus. Hi-def surround-sound audio-visual experience as opposed to reading a book. What could be more suited to that personalized communicative experience than today's cell phone? Only tomorrow's.

Though our initial venture into the oceans of Twitter didn't produce the interactive results I had hoped, I have done other learning activities that began tentatively and grew to amazement only with tweaking and experience. Student survey responses suggest strongly that tapping into a Twitter feed will exploit learning recursiveness in a way reading and writing on paper cannot. The multi-directional interaction made the literature one element—though central—of a powerful learning dynamic with the potential to shift mindsets and change lives.

I am suspecting now that the assignment that didn't work in Cycle 1—the role-playing texts—didn't work partly because seniors are too old for it. They're looking for *meaningful* work to do—work that puts them on track to move into the adult world, and pretending to be a character in a book texting to another character just doesn't do it for them any more. But when I asked them to relate to one character's situation, or to apply truths they learned from the book in their own lives, they were all over that.

Despite the dire predictions, high school students are reading and writing more than ever. On their cell phones. Interacting. Creating meaning. And this research suggests they will also interact thereby with literature.

The next step is a direct connection between their cell phones and their learning management system. When literature is presented as interactive material on a screen, will they be more inclined toward it? I have embedded links for both Olivier's and Mel's versions of *Hamlet* in my LMS, as well as links to online written versions. Should I embed an online version of *Lord of the Flies* as well? That seems a logical next step.

While it has long been imagined that every human will be carrying around his or her own personal computer, few people realized it would be so soon—or so small. But that's what cell phones have become. For most of the world, mobile “phones” are people's only means of Internet access. To shut them out of our classrooms instead of capitalizing not only on instant

personal access to the infinity of the Internet but on the opportunity to teach students how to use such an effective tool professionally is to ban paper because some kids will make airplanes out of them. Hmmm... How long will it be before cell phones enable us to do just that?

A Reflective Summary

I became a teacher to change the world. That's hard to do when the world is changing, and I am not. My classroom was the dyke holding back the flood of texting and attention-span-destroying Internet sites and all that other technological stuff that threatened to wash away civilization! Epiphany: Why did I think that holding my finger in the dyke was changing the world? I didn't anticipate those aggravating cell phones would be the surfboard I'd ride the wave on when I took my finger out and the dyke burst. But getting the cell phones out from the underbelly of my surreptitiously texting students' desks and into the warm academic light on top of them has been a revolution.

My initial research indicated that cell phones were an excellent medium for furthering the transformation to student-centered classroom, empowering students to take a more active role in their education. Just allowing my students to have their digital lifeline out on their desks validated their perceptions of themselves and their needs, and encouraged them to push themselves farther and to be both creative and critically problem-solving. Researchers wrote of the value of the Internet as a crucial element in modern learning, and that cell phones are a perfect medium for students to independently access it in the classroom, and though we didn't have a formal activity designed for that, surveyed students spoke highly of doing so informally.

Another repeated concept was that student-centered classrooms should focus on learning that is truly meaningful to the learner. That is a huge challenge in high school English today, as students tend to view books as outdated, and literary books as useless and archaic as lace handkerchiefs. So my original question was whether using cell phones academically could enhance students' connection with literature.

Meaningful learning turned out to be the key to doing so.

In Cycle one, the first activity wasn't. Students were supposed to role-play, texting each other as characters in *Lord of the Flies*. Though they enjoyed the book, they didn't enjoy this activity. The second activity, however—using their phones to create, in small groups, visuals of important objects that symbolized concepts in the book that were meaningful to them—created not only downright excitement but very thoughtful connections between the book and concepts relevant to their own lives. Moreover, nearly all students were astonished to find that cells were handy devices for creating things that lead to academic success: organization, efficient and easily retrievable idea and document storage, and easy-to-use channels for communication and collaboration.

Cycle 2 reinforced this discovery by allowing students to take film notes for *Hamlet* on their phones instead of paper. Students who were comfortable with this—about 50%—found this “worked!” Easier than writing and more accessible for studying, texting also allowed these digital multi-taskers to pay more attention to the film. Later, students also used Twitter, during class, to actively interact with the film and each other. Another theme in the research literature was the need to develop valid pedagogy for using this versatile tool, and I think this would have helped me make tweeting more effective academically. My students did enjoy it, and felt it made *Hamlet* more “interesting” (engaging) and understandable. But I think the activity could have been exponentially more valuable with more developed pedagogy behind it.

In fact, pedagogy is another key concept in the literature. Many assume that, if it's technology, it'll interest the kids; I wish I'd heeded the research that said it wasn't so. The challenge, then, is putting meaningful tools with meaningful literature. Students are hungry for learning they can USE; assignments like the concept visuals remind them that literature's purpose is to tell communal stories that fall into that category. The cell phones that record the communality of their lives have given them more access to those stories. Another avenue that I

hope to directly open up more through cell phones is our learning management system. Already some students with smartphones are accessing our LMS right in class, joining two powerful tools to re-energize their learning.

This year I (re-)learned that learners want to learn, not jump through hoops or play with toys; given meaningful tasks to learn meaningful content, they grasp at it eagerly, and even more so if they can transform a beloved toy into a tool to do it.