Student Impressions of Academic Cell Phone Use in the Classroom

By Jack Tessier

Cell phones have become ubiquitous in society, but they are typically seen as a problem in the classroom. This study was designed to assess the perspective of students regarding the use of cell phones as academic tools in the classroom. I encouraged students to use their cell phones in an environmental issues course to find data and other information, which they then shared with the class. At the end of the semester, students voluntarily completed a survey detailing their perspectives. Students felt that cell phones helped their learning, encouraged their enjoyment of the class, improved their success in the course, marginally increased their attendance, and were not an important distraction. Cell phones can be seen as a tool for learning and explored as a means to help students access and take ownership of knowledge.

During the past few decades, science teachers have been encouraged to implement teaching techniques that require active involvement by students (King, 1993; McNeal & D’Avanzo, 1996; Newton, 1999). These approaches include inquiry-based labs, discussions, debates, and other approaches that require thought, interaction, and activity by students (Phelps Walker, Sampson, Grooms, Anderson, & Zimmerman, 2012; Proulx, 2004; Weimer, 2002). In particular, it is critical to get students in science classes to access, interpret, and share data about the subject of study (American Association for the Advancement of Science, 2009; Kloser, Brownell, Chiariello, & Fulami, 2011; National Research Council, 2003).

Cell phones and other electronic devices provide a means for students to access data within the classroom (Prensky, 2005). The majority of Americans exploits wireless signals for internet access (Rainie, 2010), and cell phones are widely used for their mobile convenience (Leung & Wei, 2000). College-age students, in particular, make heavy use of cell phones to increase feelings of safety, improve time management, and keep in touch with friends and family (Aoki & Downes, 2003). Such familiarity with cell phones makes them a logical choice for accessing data and other information in the classroom (Thornton & Houser, 2005).

Instead of being viewed as a powerful learning tool, however, cell phones are typically seen as a problem and a challenge in the classroom (Gilroy, 2004). In fact, many schools have implemented policies to restrict cell phone use by students and teachers (Obringer & Coffey, 2007). This exclusionary approach to cell phones in the classroom may cause a missed opportunity for educators to relate to students, encourage their participation, and bring up-to-the-minute facts to the classroom activities.

The objective of this study was to document student perceptions about the use of cell phones within the classroom. In particular, I wanted to know if students felt that using the cell phone for academic purposes would promote learning, cause distractions, increase their enjoyment of the class, encourage attendance, and promote student success in the class.

Methods

The State University of New York (SUNY) Institutional Review Board (IRB) approved this research before it began. This study was conducted in BIOL 110 Environmental Issues and Sustainability during the spring 2012 semester. This class met three times per week for 50 minutes without a laboratory component. It is offered each semester, with a typical enrollment of 35 students. The course begins with basic information about ecosystems, moves on to the human population and natural resources, considers a variety of current environmental issues, and ends with a capstone regarding sustainable living—including a project in which students redesign a municipality to make it sustainable.

On most days, students worked in small groups (four to six students) to address questions posed to them. After small-group discussion concluded, the entire class discussed the questions that students were able to answer and those that they could not. Students were encouraged to use their cell phones and other electronic devices (such as tablets and laptops) to find the answers to the questions. In particular, students were urged to find data that helped to address the questions and isolate patterns relevant to the questions. Examples of questions include the following:

1. How many pounds of garbage does the average American produce each year?
2. What is the size of the human population?
3. What is soil and how long does it take to be produced?
4. What is the trend in the concentration of carbon dioxide in the atmosphere?

While students worked, I circulated through the room to lend guidance about internet searches and sources. I also nudged students back onto task if they had strayed to off-topic searches and activities, such as social networking sites. Surprisingly, few students needed these nudges because most were engaged in the content of the course.

At the end of the spring 2012 semester, students completed a voluntary questionnaire regarding their impressions of the cell phone use in the classroom (see the appendix). The survey was delivered during class in paper format and administered by a faculty member who was not involved with the course but who had received training and approval from the SUNY IRB. Students could turn in a blank survey if they chose to opt out. The survey only mentioned cell phones (not laptops, etc.) because only one student used anything other than a cell phone to gather information during the semester. Likert responses were converted to numerical scores with All the Time and Absolutely equaling scores of 4, and Never and No equaling scores of 1. Descriptive statistics were calculated for all responses and graphed in box and whisker plots.

The level of cell phone use by the individual was regressed against the student’s answer to the remaining five questions in the survey. Statistical analyses were conducted in Minitab version 16 (Minitab, Inc., State College, PA).

**Results**

Twenty-five of the 33 enrolled students completed the voluntary survey at the end of the semester. Most groups and students used the cell phone regularly (Figure 1a). The mean response for group cell phone use was nearly All the Time, and the mean response for individual cell phone use was Frequently (Figure 1a). There were four students who never used a cell phone in class.

Students felt that cell phone use helped their learning, was not a distraction, helped them enjoy the class, improved their attendance a little, and promoted their success (Figure 1b). One student felt that cell phone use did not help learning, but the average response was between Yes and Absolutely. Students almost universally responded No that cell...
phone use was not distracting, with six students indicating that cell phone use was *A Little* distracting. One student who did not personally use a cell phone in class did not enjoy using the cell phone, but the average response was nearly *Absolutely*. Attendance was not as highly affected as the other categories, with the average student saying that cell phone use improved their attendance *A Little*. The average student said that *Yes* cell phone use improved their success in the class, with four students responding *No*.

The more students used their cell phones, the greater was their perception of the cell phone use as helping them learn (Figure 2a), being enjoyable (Figure 2c), promoting their attendance (Figure 2d), and helping their success in the course (Figure 2e). The strongest correlation was between individual cell phone use and student learning (Figure 2a), whereas the weakest significant correlation was between individual cell phone use and attendance (Figure 2d). Perceptions of cell phones being distracting were not correlated with personal cell phone use by the student (Figure 2b). Regardless of the level of individual cell phone use, students consistently rated cell phones as *A Little* distracting or *No* not distracting (Figure 2b).

**Discussion**

Students had an overwhelmingly favorable perception of the use of cell phones in the classroom for academic purposes. When given the chance, students regularly used their cell phones in class to find information (Figure 1a), and that use was perceived as highly beneficial to their learning, enjoyment of the class, and success in the class (Figure 1b). Although the overuse of cell phones and the internet is associated with psychological problems (Jenaro, Flores, Gómez-Vela, González-Gil, & Caballo, 2007), meaningful academic use of the cell phone was clearly a positive experience for these students. Even students who did not make regular use of their cell phone indicated that their use improved their attendance *A Little*.

**FIGURE 2**

Regression results comparing a student’s individual level of use of a cell phone in classroom (1 indicates *Never* and 4 indicates *All the Time*) and their perceptions about academic cell phone use in the classroom from the spring 2012 semester of BIOL 110 Environmental Issues and Sustainability at SUNY Delhi; (a) helping students learn, (b) causing a distraction, (c) enjoyment of cell phone use, (d) effect on attendance, and (e) effect on student success. *N* = 25. (Note significant overlap of points.)
phones in the class did not find their use to be significantly distracting (Figure 2b). Distraction caused by cell phone use is what concerns most teachers (Gilroy, 2004; Obringer & Coffey, 2007), but these data show that students do not view cell phones as a distraction problem. If students are using their phones for academic purposes, as done in this study, then cell phones become a learning tool rather than a problem (Prensky, 2005; Thornton & Houser, 2005).

Use of the cell phone in the classroom can be particularly important for science courses because of the central role of data in decision making. As we teach students the scientific method, we ask them to develop questions, hypotheses, and predictions (American Association for the Advancement of Science, 2009; Kloser et al., 2011; McNeal & D’Avanzo, 1996). Students must then generate or access data to test the hypotheses by comparing the data with their predictions. Allowing students to access data via cell phones opens up a world of opportunities for inquiry-based teaching and learning formats in the classroom, complementing their use in laboratory settings (Phelps Walker et al., 2012; Proulx, 2004; Tessier, 2010; Tessier & Penniman, 2006). As shown in this example, students can be given questions to address using data and other information gathered using the cell phones, which is a guided-inquiry model, or students could be asked to come up with a list of questions that interest them about a topic and gather data using the cell phones to address the questions, which is an open-inquiry model (Herron, 1971). The exact nature of this inquiry format would depend on the comfort level of the professor, the skills and past experiences of the students, and the objectives of the course (Fink, 2003, McTighe & Wiggins, 2004). Further, students could move from guided inquiry toward open inquiry as the semester and their skills develop.

As technologies continue to develop, the electronic availability of data and other information will only increase (Rainie, 2010). As educators, it is our role to help students to develop skills in accessing this information and effectively using it for academic and life-long learning purposes (King, 1993). Given that students are comfortable with and eager to use their cell phones (Aoki & Downes, 2003; Leung & Wei, 2000; Figure 1b; Figure 2), it makes sense for science teachers to transition away from a negative attitude about cell phone use in the classroom (Gilroy 2004; Obringer & Coffey, 2007). Instead, educators can shift toward a positive understanding of these ubiquitous tools (Figure 1a), encouraging their use in an active and engaging classroom setting in which students take ownership of the knowledge they acquire (American Association for the Advancement of Science, 2009; National Research Council, 2003; Prensky, 2005; Thornton & Houser, 2005; Weimer, 2002).

Conclusion

This study documented the positive perceptions that students have of using their cell phones in the classroom for academic purposes. Students felt that using cell phones in this way improved their learning, heightened their enjoyment of the class, increased their success, and moderately improved their attendance, while not serving as a significant distraction. The more that individual students used their cell phones, the stronger these perceptions were. It remains to be seen if cell phone use has an actual impact on student learning. I have begun a study to address this topic in a general ecology course of 22 students, and the manuscript is in preparation. Educators should investigate the utility of academic cell phone use in other disciplines and in larger class sizes.

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References


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Appendix
Survey completed voluntarily by students at the end of the spring 2012 semester in BIOL 110 Environmental Issues and Sustainability at SUNY Delhi.

This survey, which should take less than 5 minutes to complete, is designed to assess the effectiveness of using cell phones in the classroom to promote learning. Your completion of this survey is voluntary and will not affect your course grade.

1. Did your group use a cell phone in class for learning purposes during this course (circle one)?
   - All the Time
   - Frequently
   - Sometimes
   - Never

2. Did you use a cell phone in class for learning purposes during this course (circle one)?
   - All the Time
   - Frequently
   - Sometimes
   - Never

3. Do you feel that using the cell phone in class helped you learn (circle one)?
   - Absolutely
   - Yes
   - A Little
   - No

4. Did you find the use of cell phones in the class to be distracting from your learning (circle one)?
   - Absolutely
   - Yes
   - A Little
   - No

5. Did you enjoy using your cell phone in class (circle one)?
   - Absolutely
   - Yes
   - A Little
   - No

6. Did you find that being able to use your cell phone in class encouraged your attendance of class (circle one)?
   - Absolutely
   - Yes
   - A Little
   - No

7. Did you find that being able to use your cell phone in class improved your success in class (earning a C or better) (circle one)?
   - Absolutely
   - Yes
   - A Little
   - No

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