"It’s a Double-Edged Sword, This Technology Business": Secondary English Teachers’ Perspectives on a Schoolwide Laptop Technology Initiative

EWA MCGRAIL  
Georgia State University

In response to national technology mandates, schools across the United States have committed themselves to laptop technology programs as a way to encourage student-centered learning and critical thinking in collaborative classrooms. Most secondary English teachers in this study did not reject technology per se; rather, they saw some benefits of laptop technology in English instruction. Unfortunately, however, when asked to describe their overall experiences and attitudes toward technology, these teachers revealed a great deal of ambivalence about it in their instruction, especially in the context of a schoolwide laptop technology initiative. Four larger clusters of conflict contributed to this ambivalence: (1) conflicts surrounding institutional control in implementing the laptop program and teacher agency; (2) conflicts surrounding standardized testing’s uncertain relationship with technology mandates; (3) conflicts surrounding technology uses in the general curriculum and technology allocation in specific class types; and (4) conflicts surrounding professional identity and the challenges that both student and teacher technology use brought to this identity. The study concludes that these teachers needed to be given greater agency in planning and implementing the laptop technology initiative and in revising their curriculum to embrace this new technology, and the necessary professional development to prepare them for such an educational innovation.

INTRODUCTION

Schools across the United States have committed themselves to laptop technology programs as a way to encourage information processing and problem solving, student-centered learning, and critical thinking in collaborative classrooms (Getting America’s Students Ready, 1996). In a larger historical context, laptop technology initiatives are the latest in a long line of technological discoveries that enhance the narrative of progressive goals of technology envisioned for education, literacy, and learning (Selfe, 2000). Cuban (1993)
succinctly summarized the impulses underlying that narrative. These include (1) the impulse for being up to date with the computerized job market and daily life routines, (2) the impulse for creating opportunities for active and collaborative problem-based learning through interactive telecommunications-based classrooms, and (3) the impulse for productivity achieved with the latest, fastest, and most economic computerized tools.

The positive goals of technology for education cannot, however, be realized by computers alone; computers are only a part of a complicated scenario of educational change. The key element in the change process is the teacher. As Fulkerth (1992) explained, "the most important component in a change process is not the innovation itself, but the beliefs and practices of the people who are affected by it" (p. 1). Yet, previous research has suggested that teachers are often not part of the leadership that discusses, plans, and makes decisions about educational change (Fullan & Stiegelbauer, 1991; Toll, 2001).

As technology continues to be implemented into school systems in a top-down fashion, policy makers and administrators, who seem to be preoccupied predominantly with the issues surrounding computer availability in American schools, often fail to realize that physical availability of technology is not enough to bring about the change that they advocate (Cuban, 2001). It is how teachers and students use technology and how they envision technology as a part of curriculum and within individual school systems that can make a difference.

Few empirical studies have examined English teachers' perspectives on the complex challenges that information technology brings into English classrooms (Baker, 2001; Barrell, 1999; Karchmer, 2001; Windschitl & Sahl, 2002). There is also little research examining teachers' perspectives on open-ended technology initiatives that might allow for a modicum of freedom, flexibility, and creativity among administrators infusing technology into school systems (Harris, 2001; Putt, Henderson & Patching, 1996; Zhao, 1998).

This study brings secondary English teachers' perspectives into the discussion on technological change in English instruction, recognizing their salient role in this process. It also examines secondary English teachers' perspectives in the context of a schoolwide laptop technology initiative. As such, the study addressed the following research questions: (1) What are secondary English teachers' attitudes toward technology in English instruction in the context of a schoolwide laptop technology initiative? (2) What are the sources and influences that shape these attitudes?

BACKGROUND

The term technology, as it applies in this study, is associated predominantly with computer technology, electronic communication (the Internet, e-mail, chat
rooms), and multimedia design tools (digital audio and video). The definition is inclusive in that it embraces the machine—hardware and its peripherals (printers, scanners, or servers), software (Inspiration, PowerPoint, or Censor [a central monitoring system]), and educational applications (multimedia presentations, online discussions of reading). Even though the teachers in this study tended to use the terms technology and laptop technology interchangeably, we must bear in mind that most of the teachers in this study focused on their experiences with laptop technology rather than desktop technology itself. This is because they were part of a laptop program implemented in their educational settings. Windschitl and Sahl (2002) noted the unique characteristics of laptop computers with regard to both the technology itself (portability, unlimited access at school and home, network connectivity and telecommunications functions, high processing power) and the broader issues accompanying the introduction of laptops into the school system that involve “curricular, administrative, fiscal, and even cultural concerns” (p. 170).

The term English instruction, as understood in this study, is inclusive of learning and teaching theory and pedagogy in the secondary English classroom. Thus, much of the discussion about instruction in this study focuses on how technology influences secondary English teachers’ beliefs about literacy and its teaching, their perceptions of its fit for the high school English curriculum, and its influence on teachers’ perceived roles in the secondary English classroom.

The term educational change, as it applies in this study, refers to change that involves implementation of schoolwide initiatives of either a pedagogical or technological nature, such as the introduction of a new math program or television into school systems. The implementation of a schoolwide wireless laptop program presented in this study is an example of educational change as defined in this study.

Finally, my position in this study was that of an insider who had studied technology application in English education and used a great deal of technology in university teaching and professional presentations. To guard against personal biases and the tendency to speak for my informants, I shared my data analysis and writing with my informants and also with outside readers to verify my interpretation of my informants’ perspectives (Stake, 1995).

LAPTOP PROGRAMS AND TEACHERS

Research on the latest educational initiatives such as laptop technology programs, viewed by their proponents as a lever for change (Getting America’s Students Ready, 1996; No Child Left Behind, 2002; Zehr, 2000), continues to support the tendency among legislators and administrators to exclude
teachers' perspectives. The scant research available (Gottfried & McFeely, 1997–1998; Healey, 1999; Ratnesar, 1998; Wilkes, 2001) tends to focus on access and program implementation issues rather than on teachers' and students' perspectives with regard to a particular technology's influence on their educational experiences. For example, Minkel (2002) reported on Maine's Department of Education initiative to bring laptops into middle schools, focusing on the costs (a $372-million 4-year contract with Apple Computer), technology deployed (Apple iBooks) and the population involved (33,000 students and 3,000 teachers). Zardoya and Fico (2001) also included professional development and repair and maintenance procedures in their published laptop project overview.

Rideout (2002) cited the most common methods of laptop technology implementation in the school system. These included (1) providing wireless laptops to each student and teacher at or outside the school site, (2) providing only the teacher, not the students, with the laptop, and (3) providing wireless laptops in a mobile cart to be used in any area of the school building. Although Rideout's school district started to investigate the three methods in different school settings (middle and high schools), the results from this research are not yet available because as of this writing, the research is still in progress.

Despite a general tendency among legislators and administrators to exclude teachers in the planning and implementation of educational change, there have been some successful attempts to elicit teachers' perspectives on laptop technology and its implementation policy and potential for improving instruction and students' learning. For example, Parr's (1999) study on New Zealand teachers' perspectives on a laptop program implemented in their middle and high school systems noted that providing resources and professional training were not sufficient to ensure a higher percentage of teachers teaching with technology. As she argued, "there still appeared to be a need to connect technological knowledge with pedagogical knowledge" (p. 5). Parr also found that the teachers in her study had little awareness of the possibilities that technology could open up for their instructional practices, and they tended to use technology as "the electronic equivalent of a content-based textbook" (p. 5).

More recently, Windschitl and Sahl (2002), in an ethnographic and interview study on laptop computer use among middle school teachers, found that teachers' decisions about the use of laptop technology in their classrooms were shaped to a great degree by the social context of the settings in which they were teaching. The researchers classified the settings in which teachers interacted into two broad categories: "learning about" settings, and "learning how to" settings (p. 188). In the "learning about" settings, teachers learned about the school's "institutional priorities and performance expectations, and the range of uses for technology that was proper
and possible in that context” (p. 188). In the “learning how to” settings, the teachers focused on “their immediate concerns about using laptops in specific classroom situations” (p. 190). “Learning about” settings were characterized by “institutional voices” (p. 188) and included faculty meetings, parent meetings, and regional laptop “summits” with faculty from other schools. In contrast, “learning how to” settings were characterized by “conversational voices” (p. 190) and included professional development workshops, informal conversations among teacher colleagues, or shared planning periods. Both settings not only exposed the teachers to ideas, trends, and thinking, but also shaped their own use and beliefs about technology in their own classroom practices.

This study continues to examine teachers’ thinking about laptop technology initiatives, uncovering their perspectives on laptop technology in English instruction in the context of a schoolwide laptop technology initiative, the Voluntary Laptop Initiative (VLI). All names of informants, geographical locations, and educational institutions are fictitious.

METHODOLOGY

RESEARCH DESIGN

This study was informed by qualitative research methodology rooted in interpretive symbolic interactionism (Blumer, 1969) and case study design (Creswell, 1998). In using interpretive symbolic interactionism, the researcher was able to seek teachers’ understandings of technology as perceived by the teachers themselves, who, in their capacity as “actors” involved with the laptop program initiative, reflected not only on their belief systems and instructional practices with laptop technology but also on the origin of these beliefs and practices. Using a case study design allowed the researcher to ascertain multiple rather than single interpretations among English teachers participating in the laptop program. The researcher obtained these interpretations in a single high school context during a period of two academic years, from October 2000 to May 2002.

CONTEXT OF THE STUDY: THE VOLUNTARY LAPTOP INITIATIVE

The key agents in promoting the VLI were the superintendent and the community. The program sponsors provided wireless-Internet-connected laptops to students on a lease basis upon entrance into the program. The area Educational Services Board sponsored 60% of the VLI. Students’ parents covered the rest of the cost, which amounted to $25 per month for 3
years. A school district foundation offered support to students who needed financial assistance to join the program. The standard technology that both teachers and students had access to through the VLI included carts with access to power units; projectors with wide screens; Censor and Blackboard (the central monitoring system for teachers to monitor individual students' screens and to post announcements to all students simultaneously); access to software programs such as Microsoft Word, Excel, PowerPoint, and Inspiration; and a wireless Internet network system. The school offered intensive laptop technology training to teachers during summer institutes and throughout the academic year. In addition, the school hired technical support and technology teacher specialists to assist both teachers and students in troubleshooting technical problems and in integrating technology into their learning and teaching.

PARTICIPANTS

The informants for this study were a group of 6 secondary English teachers who joined the schoolwide wireless laptop initiative and who volunteered to participate in this study. Reflecting the racial makeup of the English department, they were all Caucasians; they varied in age, gender, teaching experience, technological background, and significantly, in attitudes toward technology. Detailed teacher profiles are presented in Table 1 below.

DATA COLLECTION

Interviewing was the primary source of data collection. Interviews were conducted with an open-ended protocol and asked teachers how they felt about laptop technology implementation and the professional support that they received from the administration, and how they perceived laptop technology as affecting their professional identities and beliefs about literacy and the English curriculum. The protocol questions were supplemented with follow-up questions that asked the teachers either to elaborate on what they were saying or to clarify what was confusing to the researcher in teachers' interpretations. The researcher also interviewed laptop program administrators and curriculum and staff development coordinators to learn about the program's evolution and to juxtapose teachers' perspectives with administrators' thinking and their programmatic agendas.

The secondary sources of data collection in this study were classroom observations supplemented by teachers' classroom artifacts. The purpose of the secondary sources was to corroborate and clarify emerging interpretations from the interviews and to generate probes for future interviews (Creswell, 1998). The secondary sources also allowed the researcher to
Table 1. Teacher profiles

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Gender</th>
<th>Age</th>
<th>Class</th>
<th>Ethnicity</th>
<th>Education</th>
<th>Years</th>
<th>Teaching Experience</th>
<th>Technology</th>
<th>Instruction with Laptop Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colin</td>
<td>M</td>
<td>35</td>
<td>M* Middle (M), Working (W), Upper-Middle (UM)</td>
<td>C* Caucasian</td>
<td>MA English</td>
<td>5</td>
<td>AP, AE</td>
<td>YES</td>
<td>4* 2nd-year grades 11AEx2, 10AE x2</td>
</tr>
<tr>
<td>Mark</td>
<td>M</td>
<td>54</td>
<td>W</td>
<td>C</td>
<td>MA English</td>
<td>33</td>
<td>AP, ELA</td>
<td>NO</td>
<td>1 1st-year grade 10 AEx2, 11APx1</td>
</tr>
<tr>
<td>Jewel</td>
<td>F</td>
<td>40</td>
<td>M</td>
<td>C</td>
<td>MA English</td>
<td>2</td>
<td>AE</td>
<td>YES</td>
<td>4 1 1st-year grade 10AEx3</td>
</tr>
<tr>
<td>Pam</td>
<td>F</td>
<td>52</td>
<td>M</td>
<td>C</td>
<td>MA English</td>
<td>16</td>
<td>AP, AE</td>
<td>NO</td>
<td>1 1 1st-year grade 11APx1</td>
</tr>
<tr>
<td>Claire</td>
<td>F</td>
<td>54</td>
<td>M</td>
<td>C</td>
<td>MA English</td>
<td>31</td>
<td>ELA</td>
<td>NO</td>
<td>1 1 1st-year grade 11AEx2</td>
</tr>
<tr>
<td>Joan</td>
<td>F</td>
<td>47</td>
<td>UM</td>
<td>C</td>
<td>MA English</td>
<td>25</td>
<td>AE</td>
<td>YES</td>
<td>2 2 2nd-year grades 10AE x4, 11AEx1</td>
</tr>
</tbody>
</table>

Note: Skills level and degree figures are based on the value as specified by the teacher completing the survey. Teachers also provided definitions of class.
juxtapose teachers' beliefs about technology with their actual technology applications in their classroom practices.

DATA ANALYSIS

Interview transcripts and observation field notes were annotated with in-text commentary such as questions, preliminary interpretations, and coding systems, as well as cross references to other teachers' thinking and relevant theory. To extract coding categories, the researcher relied on two methods: open and axial coding (Strauss & Corbin, 1998) and clustering (Bogdan & Biklen, 1992). The first method allowed the researcher to identify general coding patterns (open coding) and to compare and contrast these patterns for an individual teacher and across different teachers (axial coding). For instance, within the teachers' conflicting views of technology open coding, some of the axial coding categories referred to print-based vs. multiple literacies views of technology, traditional vs. transformative views of the English curriculum, benefits vs. drawbacks from the instructional point of view, and in support vs. against the teacher's roles.

The second method helped the researcher to cluster smaller coding patterns into bigger coding categories. For instance, within the perspectives codes cluster, the researcher included some of the following categories: attitudes/feelings, personal conflicts, administration/teacher visions, classroom challenges, and curricular and instructional dilemmas. The bigger coding clusters constituted subsequently emerging themes (Miles & Huberman, 1994), which were then inductively analyzed in light of the major research questions. For example, the bigger theme, teachers' perspectives on the laptop program implementation, embraced two subthemes: teacher attitudes toward implementation and factors influencing teacher attitudes. Ambivalent, resistant, and enthusiastic coding categories described the teacher attitudes toward implementation subtheme, whereas professional development, resources, and teacher recommendations for the program improvement coding categories unfolded the factors influencing teacher attitudes subtheme. Major themes from this study are discussed in the Findings section.

FINDINGS

Most secondary English teachers in this study did not reject technology per se; rather, they saw the benefits of laptop technology in addressing individual students' learning needs, raising their self-esteem, improving certain language and study skills, and supporting constructivist pedagogy. Unfortunately, however, when asked to describe their overall experiences and attitudes toward laptop technology, these teachers answered this question
by describing numerous conflicts and dilemmas that technology posed to them in their daily classroom practices. As a result of these multiple dilemmas, the teachers in this study revealed a great deal of ambivalence about technology in English instruction in the context of a schoolwide laptop initiative, often oscillating between resistance and acceptance. The discussion on the findings in this article focuses on an explication of this ambivalence in light of four larger clusters of conflict that contributed to it: (1) institutional control in implementing the laptop program and teacher agency, (2) standardized testing’s uncertain relationship with technology mandates, (3) technology uses in the general curriculum and technology allocation in specific class types, and (4) professional identity and the challenges that both student and teacher technology use brought to this identity. Teacher perspectives on the benefits of technology for English instruction are discussed in detail in McGrail (2004).

INSTITUTIONAL CONTROL AND TEACHER AGENCY: “IT WAS PRETTY TOP DOWN.”

On an institutional level, teachers experienced confusion regarding the manner in which the laptop technology initiative was implemented. Even though the laptop program was purported to be voluntary for both the teachers and the students, in practice, many teachers reported that they had little control over the decision to join the laptop program. Mark related, “I was, [told] that if I didn’t, I might not be able to teach the advanced placement (AP) upper level students that I’ve taught for some time, and I didn’t want to jeopardize that.” Pam reported a similar situation: “I was told that the 11 AP class would be a laptop class and I had to be trained.” Thus, as Pam commented, the laptop technology initiative was “pretty top down . . . . They proposed the program, and then it was approved by the board, and then we were told that people needed to get on board.” As Claire observed, the question, “What do you think of this—should we do this?” was never asked. To a certain degree, Mark, too, felt that the administration’s decisions about the program were based predominantly on the community’s input. School administrators failed to consult the teachers, the people who were going to be most directly affected by the technology innovation. Mark explained,

We were on the sidelines both from the planning and implementation . . . . It was essentially a community question, “Is my student going to be a laptop student or is he or she not?” We were really out of the mix. This is something the superintendent was going to do and he did it. He had to modify it slightly, but none of the modifications came from us. They were imposed by the community.
As a result, Mark noted that the teachers resigned themselves to the fact "that there does not seem to be any alternative" to this tendency of administrators to "think it up" and "tell us" as they implement innovations into school systems.

Thus, the comments by the teachers in this study strongly corroborate earlier research that reported that a top-down model in the implementation of educational change was a common practice among legislators and administrators (Cuban, 2001; Fullan & Stiegelbauer, 1991; Popkiewicz, 2000).

Interestingly, the administrators believed that the teachers were sufficiently involved in the planning and implementation of the program. A program supervisor remarked, "With the committee, especially in staff development and curriculum, we had several teachers from an elementary level and from high school." It is worth noting, however, that staff development decisions came after the community and the administration had already approved the program. Whatever the actual case, the teachers claimed that they were not part of this group of stakeholders and decision makers.

The difference in perspectives between the teachers and administrators in this study can be attributed to what Fullan and Stiegelbauer (1991) referred to as administrators' "naïve" assumption that "teachers were involved because teachers were on major committees or project teams" (p. 127). Fullan and Stiegelbauer felt that such assumptions constituted "one of the great mistakes" (p. 127) over the past 30 years in the implementation of educational initiatives. According to these researchers, administrators, in relying on such assumptions, revealed that they seek teachers' "acceptance" and "facilitation" (p. 127) in the implementation of the innovation rather than their involvement in the planning and decision making about the innovation. Fullan and Stiegelbauer's argument seems to hold true for this study as well, for although the teachers were involved in the final stages of the program implementation, they were excluded from the earlier process of planning and decision making.

In making recommendations about the way the laptop program should have been implemented so that the teachers did not feel deprived of control on an institutional level, Joan commented succinctly on two critical conditions. The first referred to the degree of communication:

One word would be more communication. There were board members, principals, some of the administrators, who went off to San Francisco, Seattle . . . . They went to a conference and looked at programs. To my recollection, they never came back and reported to us what they found, shared it. If they did, it was just bits and pieces.

Including teachers was Joan's second condition. She argued, "There was a team of administrators, people working to put the program together that
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weren't teachers. I'd like to see the teachers more involved from the start, right from the planning stage.” Mark agreed with Joan: “I'm sure as a group, I'm sure we, teachers, would like to have input” [instead of being] left out of the loop.”

POLITICAL PRESSURES: “THE SCHOOL DISTRICT . . . WANTS . . . KIDS TO DO WELL ON AN ENGLISH REGENT’S.”

Additionally, on an institutional level, the teachers felt conflict about the expectations imposed on them with regard to both national and state curriculum goals and technology integration mandates. On the one hand, they experienced political pressure to prepare students for standardized testing, for which they were held accountable. As Pam commented, “The school district . . . wants to make sure that we're preparing kids to do well on an English Regent’s because our scores are sent out to people in the community.” The pressure for standardized testing, the teachers reported, was accompanied by institutional pressure for technology integration in their classroom practices. Joan spoke of the latter type of pressure: “The curriculum and technology . . . . The district gets into these things and they're pushing us and saying, ‘This is what the kids are going to be facing in college or even in a business. So they need to know how to use all these things.’”

The teachers, on the other hand, were not sure if, as Pam observed, there was time “for exploring computer literacy” amid “all kinds of demand to have kids write and be able to pass the Regents and write the four tasks and there's demands that they have to cover certain amount of books.” What was even more disconcerting to the teachers was the fact that Regent exams did not allow for technology use during the actual examination at all, for, as Pam explained, “Regent's exams are not written [on the computer]. It's all in paper.”

Colin found the controversy over computer use on the exam problematic in his own teaching as well. He believed composing on the computer and composing with a pen and paper were “two different ways to produce.” He even claimed that they “go against each other.” In his elaboration on the nature of this conflict, he recalled his own experiences of composing with a computer and pen and paper. He explained, “I draft and write a lot on the computer. [When] I sit down and I start doing it on a piece of paper, I get very nervous and I can’t think.” The problem that he confronted was due to the fact that he could not, as he put it, “go back and change it or move this paragraph or start over again.” Similarly, he felt that he was sending conflicting messages to the students in his classroom when he taught his students academic writing using the computer, and, at the same time, asked them to compose with pen and paper for the exam. As a result, he felt that
his writing instruction was not only confusing to the student but also counterproductive in terms of his overall curriculum goals. He elaborated further on this conflict:

[In the classroom,] you're asking students to sit down and write an essay that they can't necessarily block and move and restart or do any of those kinds of things. So, it becomes somewhat counterproductive in the sense that you're conditioning them for certain type of thinking and then when they go to write their essays on paper during their exams, they almost have to do their thinking ahead of time, which is not entirely what happens with the laptops. A lot of times I will encourage them to write and then go back and change.

Colin reported that the students demanded an explanation when confronted with conflicting instruction: “Why are we doing this? I have this laptop. Why do I have a laptop if I have to write this thing out?” In response to such inquiries, he referred students to the Regent’s exam booklet, which required students to create handwritten exam essays.

Teachers’ concerns in this study about the conflicting expectations regarding technology use and standardized testing in their instructional practices have been brought to attention by scholars in previous research. In a qualitative study in several high schools in San Francisco, Peck, Cuban, and Kirkpatrick (2002) found that teachers were reluctant to use technology in their classrooms because they perceived technology integration as a secondary, rather than primary, goal in their instruction; they had more pressing priorities and concerns, such as producing higher graduation performance rates and improving scores in standardized testing.

Consistent with Peck, Cuban, and Kirkpatrick's (2002) findings were more recent findings from Russell and Abrams's (2004) study on technology use in the context of standardized testing among teachers from 49 U.S. states. The researchers reported a substantial decrease in instructional uses of computers for writing as a result of paper-based state tests, particularly in urban and low-performing schools. Some teachers even noted that their school or district administration strongly discouraged them from teaching writing with computers because of state mandates for handwritten tests. In light of these observations, Russell and Abrams were particularly concerned that students from urban and low-performing settings—who needed the most practice with computers for writing because of the lack of such opportunities at home—were at a further disadvantage when teachers failed to provide them with these opportunities in the classroom. While the teachers in this study, like teachers in previous research, struggled with negotiating conflicting technology and standardized testing agendas, they added another dimension to this conflict. The teachers realized that the format for
state testing worked not only against providing students with opportunities to compose with the computer in the classroom, but also, and more important, it challenged students’ composing processes on a cognitive level; composing on paper, they argued, requires a different mind-set and cognitive processes than composing with a computer. As a result, for the teachers in this study, the conflict surrounding standardized testing posed not only organizational and curriculum dilemmas but also dilemmas of a more portentous nature. That is, computer use brought conflicting perspectives into their understandings of the theory and pedagogy of composition. Additionally, the teachers had to deal with students’ inquiries about these conflicting agendas in their teaching.

INSTITUTIONAL PRESSURE: “USE IT ALL THE TIME OR MOST OF THE TIME.”

The teachers in this study were also sometimes conflicted about the way technology was implemented in their individual practices on an institutional level. In Mark’s words, the teachers resisted the institutional pressure to “use it all the time or most of the time” because they feared that “technology runs the risk of becoming perhaps the be all and end all.” What they wanted, however, as Mark commented, was for technology to “settle into its rightful place among the other bags of tricks that we, teachers, use with our students.” Along the line of this argument, Pam felt that the community’s pressure for universal technology integration conflicted with her perception about the degree of its use in the classroom. She believed that the community’s perspective was influenced substantially by the district’s push for technology integration. Pam explained the nature of this conflict: “Parents are buying into [thinking that technology is the only way to go]. They buy into it... and the expectation for it far exceeds what technology’s going to accomplish in a classroom in the way that we use it now.” In effect, Pam emphasized that the teachers in this study were not buying into the agenda that the district and the community were trying to sell to them. Claire addressed the same issue: “I’m also not entirely sold on having them in the classroom every day either.” She believed that the technology, as an educational innovation, did not bring about any pedagogical change in her classroom, while other educational reforms, such as cooperative learning (Keyser, 2000) or whole language (Moorman, Blanton, & McLaughlin, 1994) instructional approaches, did. She elaborated, “Other reforms were more pedagogical. This is not a different way of thinking; to me, it isn’t anyway, or a different way of delivering information. It’s just faster and has some possibility that you wouldn’t have otherwise in a classroom.”

On still another level, Pam was also concerned that the way technology was implemented took teachers’ attention away from “bigger” and more
important issues surrounding technology use in the classroom, such as ethical and curriculum issues. She elaborated on this problem:

We get bogged down in, “You can send your paper to the mail drop box,” “Kids don’t have to hand out their papers to you, they can send it to someplace else and you can get it on your computer.” The big issues are still out there, floating around, visual literacy with computers, [or] ethical issues with computers . . . We’re not addressing them because we are stuck in minutiae . . . we’re just railing around.

She saw these efforts of technology implementation as misdirected and described them as focusing on the wrong outcome: “It’s like [analyzing] paper and pencil rather than ideas that you can produce with it.”

CURRICULAR AND CONTENT CONFLICTS: “WE PRIVILEGE IN A CLASSROOM A DIFFERENT TYPE OF LITERACY”

Some teachers also were not sure if technology fits in at all into the school curriculum. Pam argued, “We are very narrow in our ideas of literacy” and “We privilege in a classroom a different type of literacy,” which she described as “traditional literacies, reading, writing.” Mark grounded this type of conflict in a larger sociocultural change in which, he believed, modern technology played a significant role. As he put it,

Reading and writing seems to be extremely important right now. The results get published in the newspapers all over the state for different schools who test their kids in reading and writing and yet the popular culture seems to be going in a completely different direction. It’s all oral and acoustic.

He worried about the resulting disjunction between the literacy practiced by the students in their real lives and the literacy required from them in the school. He was also unhappy to discover that for many students, academic reading and writing “becomes a school thing” and that such literacy “doesn’t have anything to do with real life.” As Mark commented, “the only time they do this is in school.” King and O’Brien (2002) argued that such a dichotomy places students in “a literacy Catch 22” (p. 1) situation. On the one hand, they live in the world of information technology and popular culture; on the other, because schools tend to privilege a print-based literacy tradition in instruction and its assessment (Bruce & Levin, 2003; Traubitz, 1998), students are either discouraged or prohibited from drawing on literacy experiences from their lives outside school.
The teachers in this study were also confused about certain curriculum requirements regarding technology use in the English classroom. For example, Colin explained that according to the 10th- and 11th-grade curricula, "the teachers have to know how to use a scanner and they have to incorporate it in something." Joan elaborated a bit on that expectation: "In the 10th-grade curriculum, from the state it says, ‘must have experience with the computer and scanner and manipulating text and a picture together.’" However, for the teachers in this study, as she argued, the use of the scanner was not "something that we would have been doing as a natural course with technology in the classroom." They would rather focus on "things like research online or [electronic] communication with book authors, but because it was in the state curriculum, we made sure ... that everybody has scanned something and done something with it." Thus, the conflict described here pointed to the difference in need perceptions between the administrator and the teacher. It also showed the tendency among policy makers and teacher educators not to consult the teachers with regard to the curriculum design and technology integration.

The teachers were also ambivalent on a conceptual level about whether technology fit with the English curriculum. Jewel, for example, argued that technology "is more applicable in the English content area than in math"; she commented, "We’re writing more; we should be reading more often than some of the other content areas. And all that fits into the technology, which gives access to all this information." Mark, however, was of the opposite opinion. He believed that technology "lends itself more" with what "the math teacher next door was doing." As he put it,

I am dealing with words, the meaning of words, the subtleties of words and so forth. Students have textbooks and novels and poems and where she is having them do calculations and other kinds of things, it just seems that it lends itself more .... Language arts deals in skills.

He also felt that the content areas that rely heavily on information, such as social studies or biology, lend themselves more to technology use as compared with language and literacy skills, which he taught.

Some teachers were not sure if technology fits with certain class types. Pam, the teacher with the strongest feelings about this conflict, believed that technology did not seem to fit the AP class at all, which she considered a "very traditional English class" in which the focus was supposed to be primarily on helping students develop the academic literacies required in high-stakes exams. She was conflicted about how to prepare AP students to take high-stakes exams and, at the same time, integrate technology into "a tight curriculum" in which "they read probably more books than other kids .... They are writing papers all the time, and there is the issue of discussion..."
that is very important.” Pam chose to abandon technology for instruction in
an AP classroom. As she explained, “I am not willing to sacrifice right now
how kids are doing on the AP exam because it is a high-stakes exam. I am not
going to sacrifice that for technology.” She admitted, however, that she was
not opposing technology per se (“I’m not opposing it”). She only disagreed
with the administrators’ decisions as to which classes should become part of
the laptop technology program. As she explained, their decisions conflicted
with her needs: “The class where the technology is available, it seems irre-
levant to me, except in terms of greater communication and including more
people and all that. And the classes that I don’t have the technology available
to me, something always occurs to me about how to use it.”

Pam’s experience pointed to the differences between the administrators
and the teachers in their visions of technology fit with a particular type of
class. Perhaps the conflict could have been avoided if the administrators had
sought teachers’ input in making decisions about which classes could benefit
most from technology availability for their instruction.

A conceptual disagreement among individual teachers in this study can
be attributed to their differing “images of ‘what counted’ as learning ac-
tivities in specific content areas” (Windschitl & Sahl, 2002, p. 198) and the
roles that they envisioned for technology in facilitating such learning ac-
tivities. As discussed earlier, individual teachers’ views about what technol-
ogy to use in which context and how to implement it varied across teachers,
grade level, class profile, and philosophical orientation.

Analogously, the teachers and administrators in this study differed in their
visions, expectations, and needs perceptions with regard to laptop technol-
ogy integration in the curriculum and individual classrooms. The teachers
wanted laptop technology to be introduced to their classrooms gradually and
based on their own judgment or perceived needs. They needed time to
experiment with it and to learn how to build it into their existing curricula,
and release time from other responsibilities to facilitate this learning process.
They also wanted agency to make decisions regarding when, where, and to
what extent to use laptop technology in their individual practices.

The administrators, on the other hand, who saw laptop technology
as a means to achieve progressive goals, pushed for its use almost anywhere
and anytime. The pressure from the administration for the teachers to
use this technology universally, however, proved to be counterproductive;
teachers admitted that they often felt obliged to use laptops even though
they might not have felt a real need for them. At other times, this pressure
forced the teachers to use laptop technology in an instrumental way,
which in practice meant merely using a new tool, such as the laptop, to
replace old tools in carrying out traditional tasks. As many teachers in
this study came to realize, there was not much instructional value in such
technology uses.
Teachers in this study were ambivalent about technology not only because of the conflicts that they experienced on an institutional level but also because of a number of dilemmas they faced on a personal level. Many sources of these dilemmas focused on teachers' perceptions of their professional identities and the challenges that either student or teacher technology use brought to these identities. Jewel, for example, was conflicted about how to "follow the curriculum" and integrate technology at the same time. She found achieving both goals difficult in her classroom: "The amount of curriculum that I was supposed to cover this year is too much when I start incorporating the laptops." She also learned that technology did not always help her to achieve the curriculum goals. She recalled many situations in which technology proved to be inefficient or even counterproductive. She noted, "It would almost backfire and it didn't function like I'd thought." Joan also felt that technology and content sometimes "clashed," especially when she could not "think of a way to implement the laptop with [the] content"; she commented, "There really isn't any purpose." Even though she admitted, "I haven't been at a point where there is no purpose to it, if nothing more than taking notes, or using it to keep track of information," she was not pleased when the computer was used in this way in her classroom; she felt that technology hadn't "really been totally integrated." In many situations, she had to admit, "We could use pen and paper." Other teachers confronted the same dilemma. Claire realized that a lot of her technology uses in instruction were a replication of what she had been doing before in her nonlaptop classes. As she put it, "A lot of the things I did on the machine are things I would have done on a ditto before or on the board. It's just that it's sitting in front of them instead of on the board or on an overhead or whatever that I used before."

In her explanation for choosing technology over her old instructional practices, Claire stated that she "was just trying to get the kids to use their laptops every day"; she felt the need to do so because they were in the laptop program. She admitted, however, that she "didn't see any value of doing it that way instead of on a piece of paper except for maybe saving the piece of paper." Mark also admitted that he was often skeptical about whether technology was better than more traditional methods that he used in his own teaching. He argued, "Anytime I use it, I'm not sure that it was worth it because I can still see ways that I could have gotten done what I got done more quickly, more effectively, more efficiently than with this." Pam also felt that using technology for writing was "still replicating a process that one can do with a pencil and paper." This conflicted with Colin's argument about composing on the computer being different than composing using pen and paper.
A possible reason for teachers’ conceptual ambivalence on a personal level, and thus, their limited use of technology in this study, was their struggle to envision the possibilities presaged in previous research that ex- tolled technology as a tool for lesson preparation and instructional practices (Bruce, 1997; Leu, 2002; Parr, 1999). But as reported earlier, teachers’ instrumental uses of technology tended to parallel the more traditional tasks in which they had previously engaged their students, such as note taking or filling in outlines. Jonassen, Moore, Howland, and Marra (2003) referred to such a limited technology use as “learning ‘from’ technology,” as opposed to learning “‘with’ technology” (pp. 10–11).

In the latter view, students are engaged in real-world tasks, such as exploring, analyzing, and interpreting information, solving complex problems, and communicating effectively with others. Again, the teachers in this study admitted that they were dissatisfied with their use of technology for “learning from” but also noted that they were still unclear about how to use it for “learning with” in their English classrooms.

At other times, the teachers felt ambivalent about technology when it went against what they were trying to accomplish in their instruction. Mark, for example, despaired when he realized that his students “tend to not capitalize because [of] Internet chat rooms and e-mail. In the interest of speed of reply, they don’t hit the shift key anymore”; he argued, “It flies in the face of what I’m trying to achieve,” which was helping students with “reading, writing, speaking, and listening, and doing them as effectively as possible in their native language.” Jewel was also disappointed to realize that her encouragement to use the Internet for research assignments brought about unprofessional PowerPoint presentations. The presentations were shallow in interpretation and critical analysis of the presented data because students were “just grabbing the information off the Internet. Throwing it on their PowerPoint . . . and called that a presentation.” This contrasted with her expectations of them: “I want there to be more interpretation of the information on their part.” Additionally, she felt that the presentations lacked serious thought about the influence of the medium on the message. She said, “I want them to take more responsibility for what they’re doing. And really think about why am I putting this sound on? Why am I using this document or using this text?”

A lack of technology expertise contributed to a great deal of ambivalence among teachers regarding technology in their own practices. Pam, for example, felt very uncomfortable about being expected to guide students in their learning with the help of technology when she herself was not familiar with it. She reported that she experienced this type of dilemma when she asked students to access information on the Internet for one of her class assignments. She compared that type of experience with “sending 14-year-olds into the Wild West without any adult guidance.” She was confused
about this situation because she believed that the teacher should assume the role of the guide: "We need to see ourselves as guides," and yet, as she acknowledged, "that's very difficult when you haven't been there yourself." Mark described this conflict from his own perspective: "It is like using the wrong size wrench or the wrong tool for some job." And he was conflicted about his lack of technology expertise because "not having the proper tool often makes the job harder to do than if you have no tool at all." Claire too was conflicted about her technology expertise: "I don't like feeling like I don't know what I'm doing"; [at the same time, I'm] feeling "more empowered by it all because I'm able to learn it." Similarly, Joan experienced an emotional roller coaster regarding technology, for it also sparked in her the feelings of excitement about "new possibilities" and "anxiety"; "[there was] rethinking [of] the way I had done things for many, many years."

Finally, the teachers in this study experienced feelings of professional ambivalence about technology when it posed moral dilemmas for them. Jewel, for example, struggled emotionally when technology forced her to perform a role she did not think she should be doing. Thus, she resisted "policing" what the students were doing to "make sure they're doing this right and not doing this," because "it's taking what we think we're supposed to be doing, teaching, in a classroom." She was also conflicted about the use of Censor as an aid in policing. She said that even though she was able to "freeze their screens" and stop them from doing what kept them off task, she found this solution problematic: "It defeats the purpose. Now they're not doing the English work and they're not using their laptop. I can't let them sit there and do other things either." Pam found policing problematic for another reason: She believed that monitoring with Censor—or, to use her words, "playing 21st-century detectives"—kept teachers' "focus away from the real issue of student integrity [and] academic honesty." She also worried about the degree of monitoring that some teachers exercised in their classrooms. Pam explained, "Some of us have become equally fascinated with their ability to catch them via the computer... you highlight this and click that and you can find out how long it took them to write the paper." Pam considered such an attitude problematic because it got teachers "trapped with small issues rather than focusing on the big issues such as ownership [or] freedom of speech."

The sources of moral dilemmas for Claire and Mark were grounded in certain institutional decisions. Claire indicated that the administrators had made promises to students that "textbooks would be on CD...", that they wouldn't have to use paper anymore, that they wouldn't need a printer, that they could just send everything to the teacher on the server." The teachers who knew that such practice "doesn't always work" had to deal with the students' disappointment about these promises in their classrooms.
The difficulties with time management, curriculum coverage, and lack of technology expertise as experienced by the teachers in this study are what Snoeyink and Ertmer (2001–2002) called “first-order barriers” (p. 87) to computer use in the classroom. In enlisting these concerns, according to Snoeyink and Ertmer, teachers tend to voice more serious concerns, called “second-order barriers,” regarding their professional competence, ability to learn new technologies, and ability to see technology use in support of their pedagogical goals. The second-order barriers in this study were additionally augmented by what the teachers perceived as technology’s negative influence on students’ learning and literacy practices, and the new roles that technology implementation forced teachers to perform, such as policing to make sure that students stay on task and don’t violate privacy and copyright laws.

As a result of all these personal conflicts and dilemmas, the teachers in this study felt that their professional identity was compromised. Moreover, as individuals, the teachers experienced curricular and personal conflicts in different ways. Thus, they needed personalized professional development to help them embrace these individual differences and needs. Unfortunately, what professional development the teachers were exposed to had not yet developed an individual focus amid the administration’s more pressing desire to provide access to technology, financial support, basic technology training, and an organizational framework for implementation.

DISCUSSION AND IMPLICATIONS FOR POLICY AND PRACTICE

A key problem that this study identified was teachers’ lack of agency (Sarason, 1996). Laptops were introduced into the classroom in a top-down manner by a variety of stakeholders who pointedly omitted teachers. Teachers found themselves on the receiving end of an innovation that they did not initiate. An alternative model to the laptop technology initiative in this study would ideally blend top-down and bottom-up strategies of educational change that are, singly, less effective (Fullan, 1993). Within such a model, policy makers and administrators give teachers agency in both the planning and implementation of an innovation. An example of the top-down and bottom-up model is a site-based-managed schools framework (Dee, Henkin, & Pell, 2002), which depends primarily on teachers to introduce and implement educational innovations. Within site-based-managed schools, management teams composed of administrators, teachers, and community members make decisions collaboratively about all aspects of innovation implementation from budget through curriculum to goal setting.
The teachers in this study, when confronted with a top-down style of educational management, responded with angst and resignation. Locked out of meaningful participation in decision making, they saw a decrease in both their emotional and professional competence. What the teachers needed was more open communication and collaboration on the administrators’ part. This might have helped both parties to identify and then work around the differences in perceived needs and expectations of technology’s role in instruction across different class profiles. Such communication would have prevented teachers’ disillusionment with the laptop technology implementation policy and, consequently, their ambivalence about the program’s value in the English curriculum on institutional and classroom levels.

The general implementation of laptops in classrooms has created other, more specific problems. As King and O’Brien (2002) found, students, far from being Luddites, evinced a natural interest in technology in general and computers specifically. However, they expressed a desire to use computers to incorporate materials into the classroom from the wider world of popular culture. This placed them in a position that was both consonant with and at odds with today’s educational ethos; their enthusiasm for computers is a “good thing” but is not allowed in the standardized testing room. Analogously, their desire to draw upon content from popular culture is not in accord with the privileging of print materials in today’s English curriculum.

To avoid a situation in which technology that is encouraged in the classrooms is not supported in standardized examination, administrators, policy makers, and teacher educators need to work toward eliminating inconsistency in requirements for standardized testing and technology mandates. As many teachers in this study noted, such an inconsistency sends conflicting messages about the value of technology in the English curriculum to teachers and students alike. Similarly, these same groups will need to work toward eliminating the dichotomy between in-school and outside-of-school literacies by bringing more from outside literacies—such as those from popular culture—into the school system, the very goal that they envision technology has the potential to accomplish.

This study also showed that teachers need to be given an opportunity to discuss collaboratively the “what” of the English curriculum. As new literacies in computer composition and communication for different class profiles (AP and general English, for example) and different grade levels emerge, teachers should review their particular teaching contexts and keep in mind the needs of students within these contexts. Ideally, such conversations will result in identifying areas of the English curriculum in which technology will not only enrich the content but also become a part of it, such as in analysis of issues regarding online research, authorship, and meaning
representation in multiple formats (audio, visual, text). These conversations might also help secondary English teachers themselves to resolve some of the conceptual conflicts surrounding whether technology fits within their own disciplines by identifying areas in which it most closely fits and those in which the fit is less ideal. Of course, on an institutional and national level, administrators, policy makers, and teacher educators will need to be actively involved in these conversations in support of the design of such curricula.

Even if teachers were actively involved in classroom laptop implementation, it would not completely clear the path to a fully digital classroom. The teachers studied here varied widely in their expertise with computer technology, both from the perspective of competence in the use of the relevant software and that of the laptop's usefulness as a classroom tool in English education. No laptop came with a manual that provided useful information about how it could best be implemented in the English classroom. Thus, a multiplicity of issues were raised by teachers. One is that a traditional teacher's competence tends not to include well-developed computer skills. Such a teacher will probably fail to implement the computer effectively because of a lack of knowledge about the fundamentals of its use. The second is that even if a teacher is computer literate, he or she may not be successful in finding the best way to implement the computer in the English classroom.

Indeed, teachers may even challenge the notion that such an implementation is necessary or desirable. For example, some teachers found that the computer actually exacerbated typical student literacy problems, such as poor spelling, superficial research skills, and an excessively “cut-and-paste” approach to composition. However, some of the problems in laptop implementation lay in the realm of unintended consequences. Teachers had awakened in a brave new world of aggressive copyright protection and expanded copyright laws. The Internet in particular meant that the outside world, for good or ill, lay on their students' laptops. The private, personally administered world of the educator had been forever transformed. They found that their own understanding of their vocation was in conflict with their new role in policing students to make sure they stayed on task and didn't violate privacy and copyright laws.

This study suggests that individualized professional development, combined with discipline-specific training as suggested by teachers themselves and relevant to teachers' individual contexts, must accompany any technology integration throughout the entire implementation process. Teachers must feel empowered to use or not use technology in the way that best suits their temperament, goals, and skill sets. Thus, a one-size-fits-all approach to computer instruction for teachers will not succeed. Teachers will continue to require customized approaches to computer instruction in their professional development. For the near future, this means that significant variance will
exist in the overall level of use of computers by teachers. I do not believe that this will result in inherent differences in instructional excellence.

The introduction of a transformative technology into the classroom will be and should be evolutionary. Particular emphasis should be laid on innovative, individualized computer instruction for teachers. Absent this, lack of focus and support is likely to result. Teacher ambivalence about technology, and consequently, its continued ill-suited use in the English classroom, will continue.

It is likely that schools will continue to bring more technology into English classrooms. As English teachers continue to embrace new conceptions of literacy by integrating more technology into their curricula, researchers, educators, and policy makers need to turn to teachers, as this study did, to learn about the conflicts that such technology brings into their practices. Such insight will inform practice, policy, and research pertaining to the educational, organizational, financial, and emotional support that English teachers need to move from traditional to technology-enhanced English curriculum and instruction. Along the way, many instructional decisions will require a technological judgment call. Mark described succinctly the nature of such a call:

It's going to be very gradual. So much of it is up to the individual instructor as well. Teachers, through trial and error and taking very cautious first steps, find things that work and retain them and use them. And they will find things that don't work and they will abandon them . . . . And that's as much as I can speculate about the future.

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EWA MCGRAIL is an assistant professor of Language and Literacy at Georgia State University. Her interests are vested in four broad areas: literacy and technology, the sociocultural theory of learning, preservice teacher education, and in-service professional teacher development.