



*Minimizing Electronic Distraction and
Keeping Students on Task in the Computerized Classroom*

As educators integrate technology into their classrooms the importance of minimizing electronic distraction and keeping students on task becomes increasingly important. This paper discusses several instructors' experiences with the use of technology in the classroom and identifies potential problems associated with distractive multitasking on the part of students. Finally, the paper introduces DyKnow Monitor, a software tool that can be used to gauge student progress, focus attention, and minimize electronic distractions.

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2 Background

2.1 Classroom Distractions

Classroom distractions are as old as the paper airplane. Before computers, students whispered, passed notes, and daydreamed during class; however, as pointed out by Hembrooke and Gay, "...mobile devices and wireless access in the classroom have the potential to bring distraction to new heights" (2003). This is reinforced by a 2004 study which notes that while technologies such as laptop computers facilitate note-taking, they can also enable distracting behaviors such as working on off-task assignments, checking e-mail, sending instant messages (IM), playing games, and browsing unrelated websites (Golub).

Faculty concerns about electronic distraction punctuate reports of otherwise successful deployments of instructional technology. For example, some instructors at the United States Military Academy at West Point were so concerned about electronic distraction that they initially resisted allowing students to bring computers to class (Efaw et al, 2004). Other educators have sought to balance the benefits of technology against the potential for distraction by enforcing rigid regulations such as marking students absent if they engage in unauthorized electronic communication or entertainment during class (Campbell & Pargas 2003; Schwartz 2003). In a third study, a survey of faculty and students who used computers in class on a daily basis reported generally positive outcomes tempered only by the problem of electronic distraction. In particular, 90% of the 10 faculty (and 95% of the 81 students) reported that the use of technology during class enhanced student understanding of material. On the other hand,

when asked if “electronic distractions during class are problematic,” 70% of the faculty and 36% of the students agreed. Additionally, 16% of the students reported being distracted in class because other students use their computer to browse the web or engage in non-course related activities (Berque 2005).

2.2 Problems with Student Multitasking

Many students claim to be able to multitask effectively; they do it often and they believe they do it well. However, despite these claims, several studies indicate that the human ability to multitask, or engage in simultaneous tasks, is limited (Fisch, 2000; Lang, 2001). Additional studies show decreases in productivity when multitasking occurs (Rubinstein 2001). In one relevant study Hembrooke and Gay explored the effects of using computers to multitask in the learning environment. Students in this study were encouraged to use their laptops during class to supplement the teacher’s presentation, for example, by looking up background information. During the study the students were given the responsibility to monitor their own computing activities. Researchers found that “while students... explore[d] lecture topics in greater detail ...they were also engaging in other forms of computing.” The study found that students who had an open laptop during the class were more likely to multitask and “perform[ed] significantly poorer” than those who closed their laptop during the class session. In fact, the average score of the students who were able to engage in unrelated multitasking with their laptops was approximately ten points lower than those who kept the laptops closed (2003).

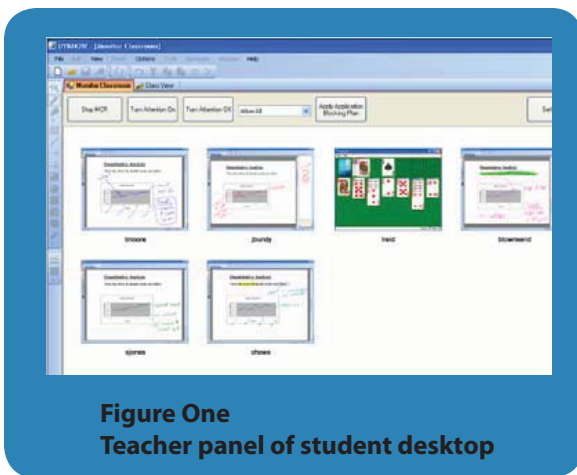


Figure One
Teacher panel of student desktop

3 Using DyKnow Monitor Technology to Minimize Electronic Classroom Distractions and Track Student Progress

DyKnow Monitor is a software solution that provides several features to help teachers address the problems outlined in the previous sections of this paper. For example, the technology gives instructors a birds-eye view of all student desktops (See Figure One). Instructors are able to block applications, allow only a specified group of applications, disable workstations, and send messages to students. DyKnow Monitor can be used in virtually any setting: classrooms, computer labs, and mobile environments. As long as classroom computers are connected to the Internet, DyKnow Monitor can be used. Based on personal philosophy and school policy, the software can either be configured so that the instructor can monitor computers without student consent, or so that students must agree to the monitoring.

3.1 Minimizing Electronic Distractions

Students and teachers agree that electronic distractions can be detrimental to learning while working with computers in the classroom. DyKnow Monitor

combats this issue with three functions designed to keep students focused. First, the software gives instructors the ability to focus attention by limiting the applications students can access during class. For example, an instructor may allow students to run all applications except those on a teacher-specified list. Using this feature a teacher may disallow the use of Internet Explorer and IM software while the students are taking a test. Conversely the teacher can block all applications except for those on a teacher-specified list (see sidebar, Scenario One). If students are learning how to design a web page, for example, the instructor can allow the students to only run Macromedia Dreamweaver and Adobe Photoshop.

A second key feature of the software allows instructors to send messages to students, individually or in groups. The selected students will see the teacher's message displayed on an otherwise blank screen. Instructors can send any message to students, including "Attention Please" (See Figure Two). The message "Time's Up!" could signal the end of a quiz.

A third key feature of DyKnow Monitor allows the teacher to disable one or more workstations by locking their keyboards and mice. This can be used to prevent the students from interacting with their computers while still allowing them to see the content on their displays.

3.2 Tracking Student Progress

The previous section showed how DyKnow Monitor can be used to minimize electronic distractions. The system can also be used to help instructors track and record student progress during a class

Scenario One

Using DyKnow Monitor

Mr. Lewis teaches fifth grade and uses DyKnow Monitor to ensure that his students stay focused and on task. The students are unaware that Mr. Lewis is monitoring them, but they know that they are supposed to work only in MS Word, since they are learning word processing.

Before class starts, Mr. Lewis enables Monitor in the computer lab and displays the message, "Eyes to the front." As the students enter the lab and prepare for the lesson, they are unable to access any applications on the computer. Mr. Lewis gives the assignment to the class and enables their workstations. As the class works on typing exercises, Mr. Lewis notices that Susan's thumbnail displays a solitaire game. Quickly, he blanks her screen, disables her mouse and keyboard, and displays a message asking her to stop playing solitaire. With DyKnow Monitor, Mr. Lewis is able to do this without disrupting the rest of the class.

Fifteen minutes later, Mr. Lewis notices that another student, John, is browsing web pages that are not related to the class. Realizing that Susan and John both need more help in remaining on task, Mr. Lewis decides to block all applications (except for Microsoft Word) for these students. Now Mr. Lewis knows that these students cannot use unrelated software applications during his class.



Figure Two
Blank Student Desktop with
Attention Message

Scenario Two Using DyKnow Monitor

Ms. Lawson, a college accounting instructor, has asked her accounting students to create a general ledger in MS Excel to demonstrate their knowledge of spreadsheets. She has allocated 20 minutes to this exercise and, with DyKnow Monitor she is able to see each student's screen and watch his/her progression.

Ms. Lawson notices that two students are having difficulty creating formulas, but, due to time, she is unable to individually assist each student. Ms. Lawson creates a DyKnow notebook with the images of these student's displays. She then sends a message to their monitor screen asking them to see her at the end of class.

The two students approach Ms. Lawson at the end of class. Using the images that Ms. Lawson saved in her DyKnow notebook as a resource, she is able to provide individual feedback and guidance as she explains the process of creating formulas in an Excel spreadsheet.

period or throughout the entire course. During class an instructor can view a panel of thumbnails that detail each student's screen. Based on these images the instructor can see if a student is on track and can determine precisely how he or she is progressing. Additionally, each thumbnail can be enlarged and pasted into a DyKnow notebook where it can be annotated, saved, and optionally distributed. This is particularly useful when tracking a student's progress throughout the course and when providing individual instruction during or after class (see sidebar, Scenario Two).

4 Conclusion

Technology is an essential part of the modern classroom. According to survey by CDW Corporation, "more than seventy percent of teachers believe computers are an important driver of student learning" (McHugh 2005). Clearly, students who use technology learn the most when they are on task and free from electronic distraction. DyKnow Monitor helps students focus on learning by minimizing electronic distractions. At the same time the system helps teachers gauge student progress and deliver effective student centered instruction. Students are willing to work harder when they are challenged or interested in their course material (McHugh 2005). They are also interested in using technology to support learning. DyKnow Monitor helps teachers use technology to provide rich learning experiences in a focused environment.

5 References

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About DyKnow

A leader in interactive education, DyKnow combines sound teaching with intuitive technology to create the most flexible and effective solutions for teaching and learning. DyKnow is committed to helping teachers maximize class time and foster collaboration while also minimizing electronic distraction. By promoting effective studying and gathering student feedback teachers can feel confident in students' academic success.