EXCELSIOR SOFTWARE

White Paper

Administrative Efficiency in the Classroom Comes of Age

"Excelsior's Gradebook2 is not simply an 'electronic' grade book. It is a powerful instructional management tool that finally replaces my 'number 2 pencil' with a modern tool that ***enables me to make effective instructional decisions—using data about student performance and instructional standards—without losing valuable class time."***

Stephanie King, Florida Teacher of the Year (2000)

Productivity in a New Generation

Some veteran teachers from the 1970s and 1980s may recall their first encounter with technology designed to improve "efficiency and productivity" in the classroom—the scanning machine. For those too young—or simply not fortunate enough—to have encountered the machine, it is an electronic scanning device about the size of a four-slice toaster, and it "reads" those ubiquitous "bubble sheets" upon which students record answers to test questions. As each sheet is fed into the left side of the scanner, the number of correct answers is tallied and then printed on the bottom of each sheet as it is ejected from the right side.

Imagine a high school teacher using the scanning machine one day each week (to score, say, a "weekly" test) during the school year. A high school teacher might collect test scores from 150 students, which might include two different tests reflecting two content area preparations. The total time to grade 150 tests with the scanning machine? About five minutes. Without the machine, grading 150 exams—even multiple choice exams—could take in excess of two hours.

So, clearly, the technology "saved" teachers time. But what does that mean? Were teachers using the scanning machines more productive, or "efficient," than teachers today? Perhaps. But chances are it simply meant that the teachers who used the scanners had less work to take home at the end of the day. Although the scanning machine made test grading easier and faster, it still remained at the periphery of classroom instruction.

In 2005, however, it's a whole new world.

Since the early 1990s, state governments have been developing and refining education policies designed to accomplish two things: increase student achievement and hold schools to higher standards of accountability for student performance. The reform momentum eventually led to federal involvement in 2001 with the passage of the *No Child Left Behind Act*. As a result of these local and national

policy trends, the stakes in public schools—for students AND for teachers—have never been higher. Given the scrutiny and elevated expectations that public schools now confront, teachers face a growing challenge: How to find time in a finite school day to individualize instruction so that each child can perform at his or her potential?

Fortunately, during the past few decades, the technology available to assist classroom teachers in managing and allocating their time efficiently has evolved far beyond the scanning machine. Among the most promising new technologies is the electronic gradebook, which is a software system designed to build databases of student performance by collecting and recording information about student attendance, performance, and progress. With several gradebook-type software systems emerging in recent years, a reasonable question to ask is: Do these systems work, and do they impact teacher efficiency and productivity?

Promising Research

In 2002 a small-scale pilot study of the Pinnacle System Gradebook from Excelsior Software was conducted in the Miami-Dade County Public School District[1]. Excelsior's Pinnacle System is a suite of software products designed to manage, collect and distribute information to and from classroom teachers via an electronic gradebook and then formulate and distribute that information as needed to administrators, principals, students, and parents. The study sought to address several questions, including:

- To what degree have teachers implemented the Gradebook?
- How has use of the Gradebook impacted teacher administrative and instructional routines?
- What are the strengths and weaknesses of the Gradebook, both at the teacher (classroom) level and at the school (administrative) level?
- What critical factors, at the school-level and the district-level, are present/absent which impact implementation of the Gradebook?
- What potential role does the Gradebook play in school efforts to implement a vision for the use of educational technologies in general?

The study sought to answer the research questions through the gathering of data at six schools: two elementary, two middle, and two high schools all of which displayed some degree of variation in size and student demographic profile. Data were gathered through the distribution of teacher surveys and on-site visits, which included interviews with selected teachers, administra-tors, school technicians, and other personnel. The study also sought to characterize the environment for "technology-based school reform" by gathering information about the efforts of individual schools and the district to transform low- or no-tech schools into high-tech schools. This was considered a critical aspect of the research, since the implementation of a "change agent" like the Pinnacle Gradebook occurs in a dynamic school environment that is characterized by political forces and shifting fiscal priorities.

Several interesting and provocative findings emerged from the study. Researchers found that teachers had implemented the Pinnacle Gradebook in varying degrees, depending on several factors, including:

- The degree of school administration support and encouragement,
- Access to sufficient training in use of the Gradebook and all of its features
- Perceptions of administrative commitment to long-term use of the Gradebook
- The degree of teacher confidence in technology not to "lose" the data through network or hard drive crashes.

Interestingly, none of the limiting factors in adopting the technology were directly related to the Pinnacle Gradebook itself, but rather to external support factors "beyond the reach" of the application. For example, in schools where there was a clear "technology leader" among the administrative staff, and that person's long-term commitment to technology use was evident, teachers were universal in their praise of using more technology in general, and the Gradebook specifically. In contrast, teachers from schools with less internal support for technology expressed some reservation about making a complete commitment to technology-based grade reporting and classroom management based on their lack of confidence that school administration—and the district—shared that commitment.

Regarding teacher "administrative routines" (tasks that are either required by the district, such as recording attendance, communicating with the central office, preparing progress reports, etc., or tasks that support instructional activities, such as recording daily and weekly grades or calculating grades), the most frequent uses of the Pinnacle Gradebook included keeping track of student attendance (90% of teachers reported this

use), keeping track of student grades on individual assignments and tests (91%), calculating student grades (92%), and preparing student progress reports (83%). Teachers who were familiar with and were actively using the Gradebook offered comments that were consistently and universally positive statements—"couldn't live without it," "fantastic," and "wonderful," were commonplace.

At the administrative level, comments from both school administrators and school technical support personnel were universally positive. Both server and client software were often described as "trouble-free," "robust," and "requiring little time or maintenance."

In its conclusions, the study reported that the successful adoption of educational technologies at the school-level is highly contingent upon a technology "leader" or "cheerleader" who not only displays high levels of personal competence in technology use, but who also espouses a "philosophy" about the importance and potential role of technology in schools. The study also concluded that, quite often, the major obstacles to school reform in general—and technology adoption in particular—are political and not necessarily related to qualities inherent in the technology itself. The obstacles are political because they are often personnel-related: values and beliefs about the importance of technology, the appropriate role of technology, and the future of technology all shape the organizational culture which either facilitates or prohibits the transition.

Looking Ahead

Studies like the Pinnacle System Gradebook research project offer enough provocative findings to suggest further avenues of research. Though they hint at the potential time-saving qualities of administrative software, we still know little about how they redefine the instructional routines of teachers. For example, if a teacher is "saving" two hours each week, how is that time being reallocated? Thus, the next step in thinking about how to define research in this arena is to develop models that will quantify the actual amount of time saved, and then observe and record exactly how teachers use that time. Once the "new" uses of that time are recorded, it would then be logical to measure whether those uses have a positive impact on student achievement.

The first step in developing a model might include a grid of teacher tasks and a comparison of the time required to complete these tasks both with and without use of technology. Using several assumptions about the length of the school year and the time required to complete administrative tasks, one could develop a model that reflects the assignment of hypothetical values for a "typical" classroom teacher.

The model presented below (Fig. A) includes several assumptions:

- The school semester is 90 days or 18 weeks; there are two semesters per school year. A school day is based on six contact-hours.
- The time required to record grades and daily attendance is the same, regardless of method.
- Time saving occurs largely at the end of the semester when final grades are calculated. [Additional time savings would occur if homework/tests were scored electronically—i.e., with a "bubble" sheet and a scanning device—and then those scores were automatically entered into the electronic gradebook]
- If grades are tallied and reported more than once per semester, additional time savings would be realized.
- "Communication" assumes that a teacher spends 45 minutes/week discussing grades and achievement progress with students; at the secondary level, this assumes approximately 1.5 minutes per class daily. It also assumes that a teacher spends about an hour a week calling parents to discuss issues related to

Administrative Task	*Completed using traditional methods (minutes)*	*Completed electronically (minutes)*
Setting up gradebook at start of semester *(90 days; 18 weeks)*	*160*	*0*
Attendance		
daily attendance	*3*	*3*
end-of-semester attendance	*60*	*5*
Grades		
daily homework grades	*10*	*10*
weekly exam grades	*15*	*15*
unit exam grades	*20*	*20*
end-of-semester grades	*360*	*10*
Communication		
keeping students informed of daily/weekly progress	*45*	*0*
keeping parents informed of daily/weekly progress	*50*	*15*

Figure A: Prototype of a framework for assessing the impact of administrative software in the classroom.

Estimated Time Savings per Semester

Attendance	*55*
Grades	*350*
Communication	*1,440*
Total Minutes	*1,845*
Total Hours	*30.75*
Total Days	*5.125*

Estimated Time Savings per School Year

Total Minutes	*3,690*
Total Hours	*61.5*
Total Days	*10.25*

student achievement; this assumes approximately 10 minutes daily.

Again, it should be emphasized that the long-term goal of such an exercise is not to measure efficiency by minutes saved, but rather to determine how saved time might be used to improve the achievement of all students.

In today's educational climate, technology innovations must go beyond helping teachers manage and allocate their time effectively; they must also translate time saved into increasing achievement and meeting federal accountability requirements. If initial projections estimate a time savings of more than ten days for each "typical" classroom teacher using the Pinnacle Gradebook, then what might the cumulative effect be on a school-wide level?

From an administrator perspective, using Excelsior's Gradebook means not only providing teachers with a technology tool to increase their productivity, but also a way to instantly access a school's performance, progress, and attendance data. With the ability to automatically generate performance information that can be used in the classroom on a day-to-day basis and can be reported to parents, suddenly the accountability requirements of *No Child Left Behind* seem much less daunting.

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[1] Tetreault, D. (2002). *An Evaluation of the Excelsior Pinnacle System Electronic Gradebook in Miami-Dade County Public Schools*. Columbia, S.C. Author. The current version (5.12) of the "Pinnacle System Electronic Gradebook" referenced by Dr. Tetreault is Gradebook2, part of the Pinnacle System assessment management suite of products available from Excelsior Software, Inc. *www.excelsiorsoftware.com*.

for more information

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