Lexmark™

Top 5 U.S. public school district

Mainstay Company found that the district's investment in Lexmark products, solutions and services has significantly reduced output-related costs, optimized document workflows and improved the productivity of administrators and teachers. From a financial perspective, the district's investment will yield a 180% ROI in the first three years. The district will realize positive net benefits after 19 months and gain benefits totaling $14.4 million over three years.

Financial benefits

▸ $2.6M in total scanner CAPEX avoidance

▸ $1M in annual maintenance savings

▸ $730K annual consumables savings

▸ $1.4M annual consultant cost savings

▸ $552K annual energy cost savings

Operational benefits

▸ 20% reduction in device capital expenditure costs (includes Canon, HP and Lexmark devices)

▸ 35% decrease in the number of output devices

▸ 66% corresponding reduction in output devices per employee

▸ 88% decrease (from 16 to two) in the number of output device vendors

▸ 30-50% reduction in Lexmark toner usage through optimization and cartridge repositioning

"*We were impressed by Lexmark's technical expertise and its vision for transforming our attendance-tracking process in a way that will reduce our costs, give time back to teachers and support student achievement. Lexmark understands printers and the business processes and networking technologies you need to build a state-of-the-district.*"

Field Service Unit Director
Division of Instructional and Information Technology
Top 5 U.S. School District

About this school district

This school district is among the largest systems of public schools in the United States, serving more than 500,000 students in 1,000+ schools. This public school district strives to provide students with an education that gives them the tools to thrive in college, in careers and as active members of their communities.

Annual budget: $15+ billion

Headquarters: Eastern United States

Schools: 1,000+

Students: 500,000+
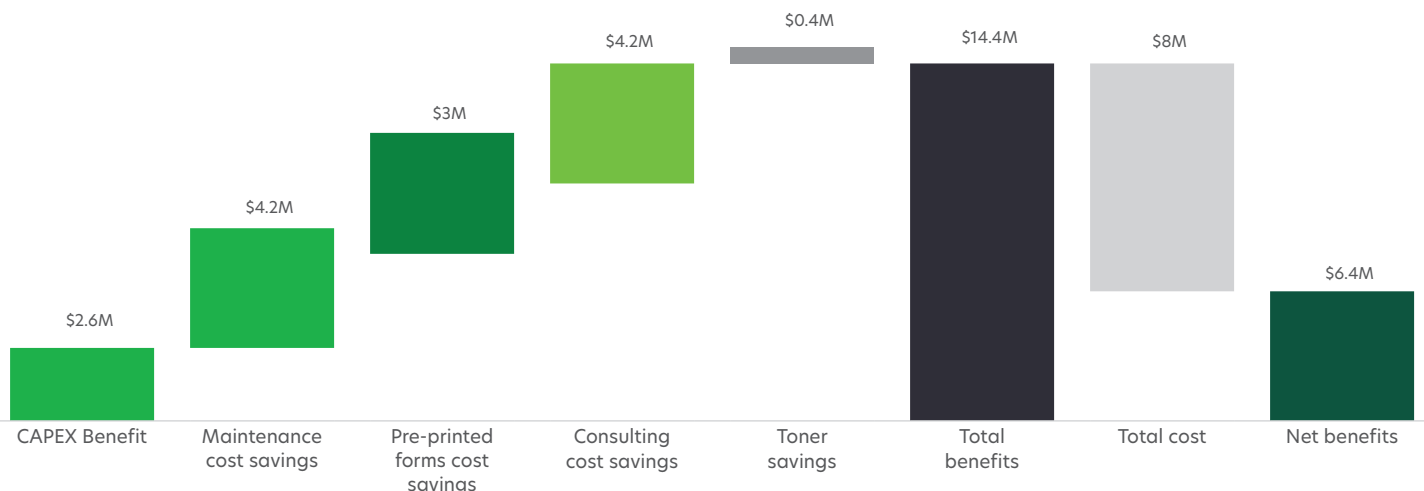
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Executive summary

In a recent initiative designed to improve administrative productivity and cut costs, this top five U.S. public school district invested in a state-of-the-art document-management system that has streamlined the way teachers and administrators create and manage student attendance forms. The investment replaced the department's aging and inefficient form-management system with the Document Form System (DFS), a high-efficiency output and communications platform featuring a fleet of Lexmark multifunction products (MFPs) that combine printing, scanning and communications capabilities in a single device.

Keeping track of student attendance is an essential part of monitoring the performance and behavior of students in this public school system. But with more than 500,000 students attending school every day, the job of taking attendance places a significant burden on the teachers and staff who prepare the attendance forms and report the results. The process is expensive, too, costing the school system millions of dollars each year to maintain the fleet of printers, scanners and communications equipment needed to print out the forms and exchange information with the department's central student database. The process consumes some 11 million sheets of paper every year.

Recently, the system the department used to manage the mountain of attendance forms began reaching the end of its useful life. Administrators had become increasingly frustrated with mechanical glitches—most notably a persistent alignment problem in which the fill-in "bubbles" on preprinted templates didn't match up with the list of students and other class information that was printed separately over the templates. Fixing the issue required hours of technical support each week.

Implemented in late 2008, the new DFS system solved the alignment problem by eliminating pre-printed template forms altogether. Instead, it uses new software to print the bubbles and the variable student information in a single pass through the printer. As a result, schools are saving by eliminating purchases of costly preprinted forms, while administrators and teachers gained more time to focus on educational activities. Moreover, by moving to a fleet of Lexmark MFPs, the school system shrank its device footprint by two-thirds, cutting maintenance and energy costs substantially. Finally, the switch to DFS's modern, standards-based communications software helped save the department millions each year in IT consulting costs.

Figure 1

Total cost and benefits by category ($'M)

(3-year view)

CAPEX Benefit	Maintenance cost savings	Pre-printed forms cost savings	Consulting cost savings	Toner savings	Total benefits	Total cost	Net benefits
$2.6M	$4.2M	$3M	$4.2M	$0.4M	$14.4M	$8M	$6.4M

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Challenge

This is one of the nation's largest public school systems, serving more than 500,000 students in 1,000+ schools. Some 50,000+ teachers and thousands more administrators and staff help the school system meet its commitment to "providing students a solid education so they can go to college, get good jobs, and lead productive, successful lives." Tracking student attendance is a key part of fulfilling the department's educational mission, helping teachers and administrators understand student performance and intervene as needed.

Each day, administrators print out nearly 40,000 attendance forms—one form per class—requiring more than seven million forms per year. In addition, the school system's more than 200 high schools consume another 112,000 forms per week—or about four million per year—to track attendance in individual class periods.

Over the years, the department has progressively streamlined its attendance-tracking procedures, moving from hand-written ledgers to machine-readable "bubble forms" that rapidly tally attendance with the help of scanning equipment. The department also built a central computer system to share student information and help automate manual processes.

When it was introduced 20 years ago, the department of Education's Output Management System (OMS) represented a major advance in attendance administration. OMS's complex software linked the department's mainframe containing student information with computer workstations installed in the schools. For the first time, teachers were able to automate the attendance-taking process—from printing out attendance forms to reporting the results—all through the central data center.

> " *The Lexmark MFPs offered clear efficiency advantages over the old three-piece system. Instead of three machines and three vendors, we have a single device and a single vendor to support attendance-tracking throughout the district."*

Technology Manager
Division of Instructional and Information Technology
Top 5 U.S. Public School District

But the system had several technical drawbacks that cut into teacher productivity and kept costs high. A recurring problem was related to printing the attendance forms. The OMS software allowed teachers to download and print out the attendance forms from the department's mainframe, but it only worked with pre-printed blank forms—a template containing the bubbles and other fixed information. Administrators fed the pre-printed templates into specially configured printers to create class specific attendance forms populated with student and teacher names and other information.

The problem was, the templates and printers frequently fell out of alignment, rendering the forms un-readable because the names didn't line up precisely with the bubbles.

Teachers and administrators spent hours redoing the forms, struggling with printer alignment, and logging support tickets with the department's IT help desk. The scale of the problem was huge: If just 10% of the forms were misaligned, that meant that administrators had to reprint or discard about 1.1 million forms in the course of a year.

The OMS software posed other challenges. Developed by two consultants in 1985, the proprietary application was designed to work with the school's early DOS workstations and had been heavily customized over the years. Increasingly, the application required extensive maintenance and upgrades that was costing the department $1.4 million each year in consulting fees. Despite the ongoing expense, the software couldn't easily accommodate enhancements that would bring the system up to current industry standards.

After teachers finished taking attendance, administrators completed the process by scanning filled-out forms and uploading the data from the school's workstations to the mainframe. All three devices—the printers, scanners and workstations—required ongoing maintenance at a systemwide cost of $1.4 million a year. The machines also needed to be replaced every few years and by late last year almost half of the scanners were reaching the end of their useful life. Buying replacements would have cost the school system more than $2.6 million.

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Approach

Facing escalating costs and the impending replacement of hundreds of scanners, the district decided to take a fresh approach to its attendance-tracking process. Its goal was to replace the OMS system with a streamlined document management platform that was easier to use and less expensive to maintain. Ideally, it would put an end to the chronic printer-alignment issues that distracted administrators and teachers from their educational work and burdened the IT help desk with ongoing service requests. Department administrators also hoped to avoid paying huge annual fees to consultants to keep the OMS software running.

To design a new solution, administrators teamed with the department's managed services partner Dell and with Lexmark, which supplied the printers under the same contract. The team's immediate objective was to resolve the printerform alignment issue. But, beyond solving that initial issue, Lexmark proposed an innovative solution: Print the bubble sheets and the student lists together using the same device on a single sheet of plain paper. Work on a prototype of this printing solution led to the development of the Dynamic Form System (DFS), a complete document and data management platform that administrators positioned as a replacement for OMS. After a beta test of DFS at one high school and a successful pilot in 40 schools, the department rolled out the solution to the entire school system in December 2008. It has since retired the legacy OMS application.

Solution

The department's new DFS solution combines industry leading printing technology with an integrated document and data management system to significantly improve the process of creating student attendance forms and managing the results. The solution encompasses a fleet of approximately 1,500 Lexmark MFPs that replaced the school system's aging mix of printers, scanners and computer workstations. Consolidating the three functions in one unit allowed the department to deploy one-third fewer devices overall and save on capital and operating costs (Figure 4).

The Lexmark MFPs serve as a printing and scanning device as well as a communications hub connecting schools with the department's mainframe computer, which holds student and attendance data for the entire district. The system allows schools to download and print both the student names and the fill-in "bubbles" on a single sheet of plain paper. This all-in-one print process ensured precise alignment between the content and the bubbles and enabled the department to phase out its error-prone method of using pre-printed forms in combination with specially configured printers.

Figure 2

Cumulative net benefits
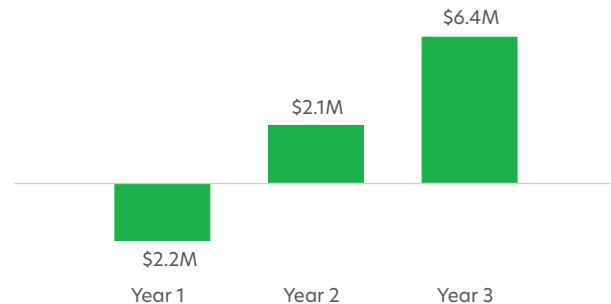
"Solving the alignment problem saved a lot of time and aggravation for teachers and administrators," said field service unit director, division of instructional and information technology. "It gives them more time to focus on what they should be doing—educating our students." The move to DFS also cut down on service requests to the department's help desk, giving service reps more bandwidth to tackle other issues.

The Lexmark-supported DFS platform has generated a host other benefits and cost savings. The new standards-based communications application is significantly easier to maintain, helping the department save on IT consulting costs. And with fewer devices on hand, schools will dramatically reduce maintenance expenses. Finally, schools will save on the cost of pre-printed forms as they switch to the new approach, which prints the bubbles and variable content on plain paper at the same time.

Results

According to a study by Mainstay, the district's investment in Lexmark multifunction printers is expected to contribute net cost savings and operational benefits totaling an estimated $6.4 million over three years. The department will earn a 180% return on its investment in three years and achieve positive net return after about one and a half years (Figure 2).

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Output device cost savings

By replacing more than 4,500 printers, PCs and scanners with Lexmark MFPs, the department put itself on track to dramatically cut device maintenance costs, which had been totaling about $1.4 million a year (Figure 3).

Since the Lexmark MFPs also transmit the completed attendance forms to the central mainframe, the school system was able to retire its outmoded computer workstations. Altogether, schools today are running about two-thirds fewer devices than before, which means that school work areas once cluttered with three machines now contain a single Lexmark MFP.

Lower consulting costs

By retiring the 20-year-old OMS application, the department will save approximately $1.4 million each year in consulting fees, an ongoing expense needed to maintain and troubleshoot the system's heavily customized and proprietary software. Today, the Dynamic Forms System uses reliable, industry-standard technology to connect the Lexmark MFPs to the school system's mainframe (Figure 5).

Energy savings

Shrinking the device fleet by two thirds will help schools trim energy consumption, saving the department an estimated $552K in electricity costs and helping decrease the size of its carbon footprint. Lexmark's MFPs are also among the most energy efficient on the market and come with auto-shutdown and other technologies to reduce energy consumption.

Consumables savings

Using the new DFS application in combination with the Lexmark MFPs, the school system will no longer need to purchase supplies of pre-printed bubble forms for its 1,000+ schools, avoiding approximately $1.0 million a year in costs (Figure 6). Net savings will total an estimated $730K each year, as the school substitutes less-expensive stocks of plain paper for the pre-printed forms. As a result of moving to the Lexmark-based DFS solution, the department will no longer need to replenish the multi-vendor collection of printers, scanners and personal computers. At least 775 of the oldest scanners were on tap for replacement right away, while the rest of the assets, including the printers and computers, were scheduled for replacement in the next few years. Overall, the department will avoid an estimated $2.6 million in capital costs for replenishing these devices.

Under a new maintenance agreement with Lexmark, the department will spend less in three years than it was spending in a single year servicing the old printers and scanners.

Reduced technical support burden

Because of the legacy system's chronic printer-alignment problems, the department's IT technical support staff were routinely burdened by technical support requests, which consumed several hours per week of help desk time. Today, with the alignment issues gone, the number of support requests have dropped by 74%, freeing the help desk to work on other issues and giving teachers and administrators more time to devote to education rather than device troubleshooting. Problems with the aging fleet of scanners in the legacy environment also consumed considerable helpdesk time. Today technicians resolve scanner-related issues in the DFS environment 65% faster than in OMS (Figure 7).

Figure 3
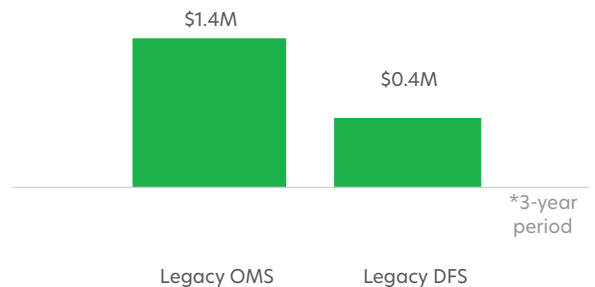
Reduction in maintenance cost ($'M) - annually*

$1.4M — Legacy OMS
$0.4M — Legacy DFS

*3-year period

Figure 4

Reduction in output devices

2008 — 4,500 devices
Currently — 1,600 devices

66%
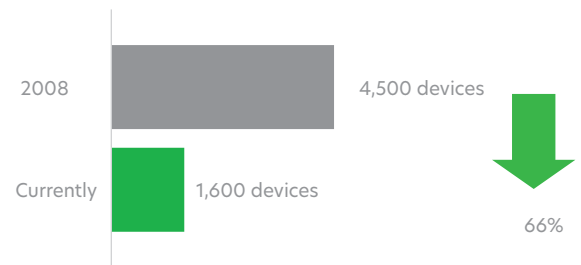
Figure 5

Cumulative net consulting benefits ($'M)

$4.2M

$2.8M

$1.4M

Year 1   Year 2   Year 3
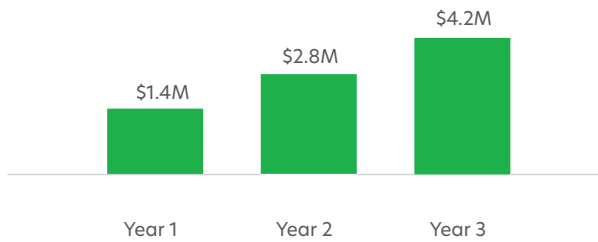
Figure 6

Consumables spent ($'M) - annually*

$1.125M

$0.4M

*3-year period

Legacy OMS   Legacy DFS
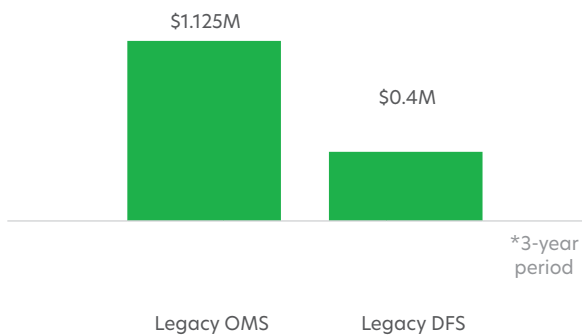
Figure 7

Reduction in help desk calls

Average of reprint and reroute help desk calls

Legacy OMS — 1,638 calls

Currently — 421 calls

74%
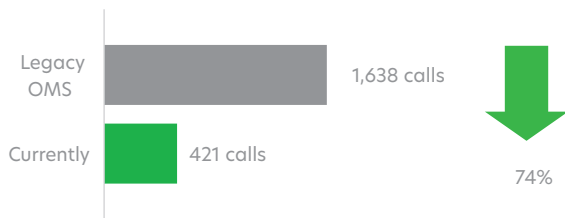
Figure 8

Reduction scanner issue resolution time

Average scanner incident resolution time (days)

Legacy OMS — 2.4 days

Currently — 0.8 day

65%
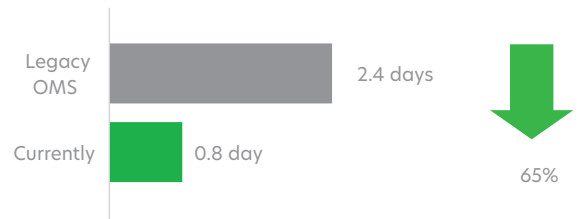
Looking ahead

Special Education Student Information System (SESIS)

With significant results already achieved, this district is continuing to look for ways to leverage its Lexmark MFPs to support its operations and student achievement. Two such projects are underway now, including one that will streamline and facilitate attendance requirements for its special education providers and another that will speed up results data for periodic assessments, which are administered to students six to eight times each year. As part of the district's Special Education Student Information System (SESIS), Lexmark will be automating the required attendance taking of its special education suppliers, such as physical therapists, occupational therapists, speech therapists and others.

Billing and payment to these providers requires proof that both the student and provider were present when the service was provided. This process today is a highly manual and paper-intensive process involving a booklet that is pre-printed, filled out by the providers and then collected and sent to a third party to be input into the district's system for analysis and payment.

With significant results already achieved, this district is continuing to look for ways to leverage its Lexmark MFPs to support its operations and student achievement.

Now, attendance bubble sheets with pre-slugged information will be printed on plain paper using the existing Lexmark MFPs. Providers will fill these out, noting their attendance and then scan the sheets using the touchscreen on the Lexmark MFPs. The information will be automatically populated in the SESIS system for processing and payment. This new approach will save considerable time for the providers and administrators, and will reduce the cost, paper and waste associated with the previous booklet approach.

Periodic assessments

Periodic assessments are administered to students six to eight times each school year. Today, teachers need to order those tests and bubble sheets, have the test sheets delivered and then administer the tests in their classrooms. After the test is given, the teacher collects the sheets and then mails them to an outside provider that grades each test and enters the scores into the student information database. This grading process takes two- to four-weeks to complete. By this time, teachers have already moved on to a new section of the curriculum and have very little ability to go back and review content with the students.

Now, the district will be modifying its periodic assessment process using the Lexmark MFPs. Student information and test criteria will be merged electronically and pre-slugged bubble sheets will be printed on plain paper on site in the teacher's building using the Lexmark MFPs. Teachers will then administer the exams to their students and scan the completed test sheets at the MFP. The scanned tests will be automatically and electronically sent to the grading provider and scores will be uploaded into the student information system within days instead of weeks.

This new approach will give teachers fast access to student scores so that they can review or modify the curriculum based on the student results. The new approach will also save considerable costs previously associated with the pre-printed bubble sheets and shipping charges.

About this ROI and business benefits assessment

Research and analysis for this business impact study was conducted by Mainstay, an independent consulting firm and was based on interviews with officials at this top five U.S. school district and Lexmark and searches of industry literature. ROI calculations use industry-standard assumptions regarding the time value of money.

Mainstay is the leading provider of independent value assessment and IT strategy services. For more information, please visit www.mainstaycompany.com. Information contained in this business impact study has been obtained from sources considered reliable but is not warranted by Mainstay.

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