

# A KINDLE IN EVERY BACKPACK

## A PROPOSAL FOR eTEXTBOOKS IN AMERICAN SCHOOLS

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## INTRODUCTION

Amid the important and often heated debate over education reforms such as merit-based teacher pay and charter schools, the nation is missing an obvious opportunity to use new technology to improve dramatically the education our children receive. The new thinking should start with the heavy, often outdated textbooks students carry in their backpacks and read at school or home. We shouldn't wait a decade or two to begin to achieve what is inevitable—an education system where each American schoolchild has an eTextbook, like Amazon's Kindle, loaded with the most up-to-date and interactive teaching materials and texts available. The "Kindle in every backpack" concept isn't just an educational gimmick—it could improve education quality and save money.

This policy paper suggests we consider an innovative plan to spread eTextbooks around the country, rapidly scaling up employment of the technology so that we can learn, adapt, and perfect its use quickly. It describes the case for an eTextbook system in three parts. In Part One, it discusses the multiple reasons why eTextbooks are a much better approach for our nation's students. The reasons they are superior include the ability to update eBooks relatively cheaply and easily, environmental and health benefits (such as reducing loads on young backs and shoulders), and the enormous opportunity to make texts more exciting and interactive—like the other tools children use today and that compete for their attention. In Part Two, this paper discusses the economics of this approach. Cost estimates in the education world are notoriously sketchy and often self-serving, but it seems clear that over time an investment in these tools would produce big savings. Finally, in Part Three, this paper outlines how we could implement such a plan, and why there could be broad-based support for it.

As with any innovation, there are missteps to avoid in this process and there is much to learn, especially from professional educators. This proposal is just a concept, an idea to be refined and improved with more dialogue and input. It suggests, however, the time is now for an urgent conversation on bringing this new technology to the support of our schools and students so American education can once again lead the world.

## A BETTER TOOL FOR LEARNING

The most important benefit of eTextbooks is their ability to improve educational attainment. For less money than is spent on conventional textbooks, eTextbooks, over time, could deliver a regularly updated, interactive, and 21st-century education to our children. There are multiple reasons the technology offers an improved educational experience.

First, eTextbooks can be updated instantly and universally, with little lead time. In contrast, traditional textbooks are slow to change. Once a new textbook has been written, the actual books must be purchased on a district-by-district basis and are sometimes only available when they are most profitable to publish.

Our world is too fast-paced for the current process. America's 21st-century students need educational materials that will help them meet the need for speed that the Internet age demands, as opposed to a print textbook system that is, in the words of a high school teacher recently quoted on the Colbert Report, "ancient history."<sup>2</sup> An eTextbook can be updated across the country as soon as the new text is written. And students don't always have to wait for a new edition—textbook authors and publishers can update specific parts of texts without having to undertake a whole new print run. Instead, those select portions of eTextbooks can be automatically updated when necessary.

Second, eTextbooks provide the kind of flexibility we know is critical to educational success. When we were children, the curricula came down from on high, with little flexibility to adjust to the needs of a particular school or classroom. This model doesn't work well for everyone. We should provide teachers with more power and flexibility so they can design and modify curricula to improve outcomes, testing what works empirically.

A digital textbook system allows districts, schools, and individual teachers to pick and choose the best materials for their students. Every literature class could read a different classic without having to worry about ordering too many or too few books.

Third, eTextbooks are powerful because they help integrate classroom learning. Textbooks shouldn't compete with the teacher—they should empower them. With an eTextbook, teachers can insert discussion questions, quizzes, and other materials that help integrate classroom materials and lessons into a more coherent educational plan. By allowing teachers some input, eTextbooks extend the reach of the classroom and ensure that instruction continues even when a child is studying at home. And these devices also make it easier for teachers to borrow the best material from other educators and provide it to their own students.

Finally, eTextbooks can deliver a critical resource to struggling schools. It's a sad reality that economically deprived schools and districts generally lag in educational success. Some school districts simply don't have the materials to provide their students with first-rate opportunities. This isn't just a problem of equity, it's a problem of adequacy. We're only going to be the best educated country in the world when we provide an adequate education to every child, and that means a plan that puts eTextbooks in everyone's hands. If there is no coherent plan to share this new technology, wealthier school districts will, once again, reap most of the immediate benefits

An eTextbook system can improve the quality of education in struggling districts without costing more money. While we need a more comprehensive solution to improve America's worst-off schools, eTextbooks are a direct way to improve the quality of instruction by giving children texts that are more accessible and up-to-date.

It's worth noting another potential benefit of replacing traditional paper textbooks with an eTextbook device: easing the burden on the backs of our children—literally. Although most research has been confined to college students, studies suggest that heavy backpacks laden with textbooks can cause back pain and other health problems. Boston University researchers found back pain or discomfort afflicts an overwhelming 85 percent of college students using backpacks.<sup>3</sup> And according to a 2007 survey administered by the National College Health Assessment, students at Minnesota State reported back pain as the most widespread health problem.<sup>4</sup>

There are 56 million K-12 school children,<sup>5</sup> and the environmental benefits of ending the era of giant paper textbooks and reducing the burden on students' backs makes a technological fix all the more overdue.

Traditional textbooks are learning tools whose time is passing; they are ready for replacement. We have a 21st-century technology that can help our children learn and drive a key industry, and it should be driving our innovation in school.

## A GOOD DEAL FOR STUDENTS, EDUCATORS, AND TAXPAYERS

Textbooks are too expensive. Current estimates show we spend \$109 dollars per student for traditional textbooks<sup>6</sup> and a total of over \$6 billion dollars annually on textbooks across the education system.<sup>7</sup> By 2016, the total spent on textbooks is expected to rise to almost \$6.5 billion dollars annually<sup>8</sup> and to an accumulated total of \$56 billion dollars.<sup>9</sup>

For the money we're spending, we should expect a top-notch product. Instead, we send students off to school with woefully out-of-date materials. In New York State, for example, the average cost of a school library book is about \$21 for an elementary school book and about \$23 for a secondary school book, and the average publication date is 1986 — more than two decades ago.<sup>10</sup>

Amazon's Kindle, and other eBook devices, demonstrate the potential of new technology to help readers carry easy-to-read mini-libraries with them everywhere. And the costs per book have dropped. A bestseller on Kindle costs the reader only \$10.<sup>11</sup> Right now, the average eTextbook price is \$50,<sup>12</sup> but the forecast is for that to drop about \$10 dollars a year to a level price of \$20 from 2012 onward.<sup>13</sup>

While the upfront hardware cost of providing a Kindle-like device to every child would necessitate a high front-end investment, costs for eTextbooks themselves would quickly produce a savings compared with print textbooks. While the total cost per student for paper textbooks is expected to rise, from \$109 now to \$115 in 2016,<sup>14</sup> the per-student cost of eTextbook materials would be about \$200 initially<sup>15</sup> and then could dive to about \$80 by 2012.<sup>16</sup>

Costs could decrease even faster as more companies promote Kindle-like products in the market. This process is already underway—competitive devices are currently being released with price tags \$110 less than the Kindle.<sup>17</sup>

Over time, this could provide enormous savings. Over the first four or so years of an eTextbook system, we would spend about \$9 billion more—in total—than the traditional textbook scheme. Yet by the last year of that initial period, we could have already supplied Kindles, or the digital equivalent, to 100 percent of our students. At that point, the savings would kick in, beginning at over \$700 million in the fifth year before holding steady at around \$500 million annually in the years immediately following.<sup>18</sup>

The savings only increase as more students switch to an eTextbook system. From the fourth year on, every student could have a Kindle in his or her backpack and the program would become increasingly more efficient than print textbooks.

Reining in school costs is an important concern in our quest to improve education in this country. According to the Department of Education, our school districts spent \$476.8 billion in 2007<sup>19</sup>—more than half of the recent economic recovery package for the entire nation. If we can create savings in one category, the funds can be reassigned to others, like improving teacher pay.

It is common knowledge that spending per student has skyrocketed each decade. Average spending per K-12 student in 2007 was \$9,683. After inflation, that's 29 percent higher than 1995 and an eye-opening 55.7 percent higher than 1985.<sup>20</sup>

Unfortunately, per-pupil costs have been rising during a time when states have fewer resources for education. Before school stabilization funding was included in the recent stimulus bill, state edu-

cation funds were predicted to drop by 18.5 percent by Fiscal Year 2011, or \$54 billion less than originally budgeted for the next two years.<sup>21</sup>

The stimulus bill passed in February will hedge against this sharp decline in the immediate future, but that's not a long-term solution to school spending woes. Kindle-like devices alone can't solve the problem, but they can be an integral part of the overall solution. If our schools are going to be better, then we need to provide cost-effective instructional materials that reduce pressure on budgets and improve the tools our children use to learn.

## HOW WE CAN PUT A KINDLE IN EVERY BACKPACK

A smart plan to implement an eTextbook strategy would phase in the new technology to ensure it's adapted and developed to be of maximum use to students, and to build real public and political support. In addition, we must promote competition in the development of the technology and provide ample time for educational professionals to learn about, and effectively integrate, this tool into their classrooms. Once the decision to move forward is made, we could potentially complete this transition in less than a decade.

As we scale up and develop the technology, we should pay close attention to what students say they want in the new eTextbooks. A study of student preferences found that 29 percent of students in middle and high schools already use an online textbook or curriculum and they have some clear ideas of what a useful eTextbook system would look like.<sup>22</sup>

Students also have some good ideas for features of an eTextbook. In a sampling of 6th through 12th graders, almost two-thirds of students want to be able to add highlights and notes to their books as they study. Almost two-thirds also want to be able to take tests on their own to see how they're doing in class, while almost half want access to tutorials where they control the lesson's pace and progress. About half of students want access to real-time data like Google Earth. Finally, about one-third want access to academic content outside school materials, including links to videoconferences and podcasts from subject experts.<sup>23</sup> Many of these features could potentially be accommodated in an eTextbook, or coordinated with evolving eTextbook curricula.

It should be possible to build political support for this innovative effort. According to a nationwide survey, only 5 percent of parents dislike the concept of online textbooks.<sup>24</sup> Students are already using this new technology in their daily lives. Parents understand that print textbooks tend to be expensive, quickly fall out of date in key areas like history and government, and, because they are heavy and bulky, can be tough for kids to transport to school and carry around from class to class. eTextbooks can be cheaper, offer more timely and wide-ranging material, and be more convenient for kids. Teachers too will be able to use more up-to-date material, with more applications and tools available to them. Overall, the innovation has potential to unite sometimes warring constituencies—teachers, parents, and the business community—as well.

A logical phase-in would scale up a “Kindle in a backpack” plan, testing first to see how it performed in a large group of diverse student communities, but with a clear plan for expansion that could bring the effort to a scale that could quickly be cost effective. One approach would begin with a set of pilot programs in the first year with under 400,000 students—about half a percent of all K-12 students nationwide—and two times that number in the second year, providing a substantial base of early data, and the ability for leaders to learn as well as develop and improve a new eTextbooks program as it goes truly national.

By generating a massive increase in demand through the scale up, the initiative would also generate increased competition from eTextbook developers and eventually better products and lower prices. If the effort followed this approach, one could see an increase in the number of students using eTextbooks from half a percent to half of all students after just three years, during which time the per student cost of eTextbooks would become less than that of regular textbooks.

A rapid scale up plan—with a very aggressive pursuit of the “Kindle in every backpack” concept—could reach 100 percent of students within four years, and within five years eTextbooks would cost a fraction per student as much as print textbooks. By then, the program would have put over 56 million eTextbooks in our schools and saved hundreds of millions annually.

Such an effort would be ambitious (alternative approaches could be slower, or faster, and pilot efforts may suggest how aggressively we should develop this plan). But we should aim to be ambitious in this effort. We need to try big ideas in the education world. We need to put the best technology in our students’ hands, and changing the landscape of textbooks over the coming decades is a mission worthy of our country and our nation’s goals for the future.

## CONCLUSION

Our educational system is at a crossroads. Educating our children has become increasingly expensive while the performance of our K-12 students lags behind other industrialized nations. So far, the debate has centered on teaching quality and subject matter. Putting great teachers in classrooms is essential, as is focusing on the science and mathematics skills that will make our students competitive in a technology-driven 21st century.

We fail our students when we ask them to learn advanced skills with dated, inflexible textbooks. Instead of sending our children to school every day with the textbook equivalent of an abacus, we need to provide them with the up-to-date tools already available to American consumers.

Putting a Kindle-like tool in every backpack will improve education while lowering its cost. This tool will ensure that our children receive the most up-to-date education, and enhance our efforts to improve instruction through interactivity and adaptability of curriculum.

This initiative will also do more than just save on the cost of education materials. It will lessen the toll on our natural environment, help accelerate our nation’s technological development, and improve the health of our students.

This is an idea that deserves serious discussion, further research, public commitment, and, ultimately, a smart, pragmatic plan for implementation.

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## END NOTES

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<sup>2</sup>Colbert, Stephen. "DonorsChoose.org Classroom Projects." *The Colbert Report*. May 20, 2009. <http://www.colbertnation.com/the-colbert-report-videos/228299/may-20-2009/donorschoose-org-classroom-projects>

<sup>3</sup>American Occupational Therapy Association, Inc. "Study: Most University Students Self-Report Discomfort, Pain Due to Backpack Usage." September 3, 2008. [http://www.aota.org/Archive/PrArchive/2008Releases/Backpack08\\_2.aspx](http://www.aota.org/Archive/PrArchive/2008Releases/Backpack08_2.aspx)

<sup>4</sup>American College Health Association-National College Health Assessment. "Minnesota State University Mankato." Spring 2007. <http://www.katoparty411.com/documents/NCHASPRING2007MINNESOTATSTATEUNIVERSITY-MANKATOESDATAREPORT.pdf>

<sup>5</sup>National Center for Education Statistics. "Enrollment in educational institutions, by level and control of institution: Selected years, 1869-70 through fall 2016," from the *Digest of Education Statistics: 2007*. August, 2007. [http://www.nces.ed.gov/programs/digest/d07/tables/dt07\\_003.asp](http://www.nces.ed.gov/programs/digest/d07/tables/dt07_003.asp)

<sup>6</sup>This is based on dividing the annual K-12 textbook sales (Association of American Publishers. *2008 S1 Report: Estimated Book Publishing Industry Net Sales 2002-2008*. March 31, 2009. <http://www.publishers.org/documents/S12008Final.pdf>) by total students enrolled (National Center for Education Statistics. "Enrollment in educational institutions").

<sup>7</sup>Association of American Publishers. *2008 S1 Report*

<sup>8</sup>This is based on an extrapolation from Association of American Publishers *2008 S1 Report* data using a compound annual growth rate of .8% (which they found to reflect 2002-2008 K-12 book sales).

<sup>9</sup>Accumulated total using extrapolated Association of American Publishers. *2008 S1 Report* data

<sup>10</sup>New York Library Association. "The World Has Changed But Not Our Books: New York Library Association Unveils Eye-Opening Report Showing Public School Library Books Are Over 20 Years Old on Average." March 6, 2008. [http://www.nyla.org/index.php?page\\_id=1520](http://www.nyla.org/index.php?page_id=1520)

<sup>11</sup>Pogue, David. "Don't Quit That Kindle Just Yet." *The New York Times*. May 27, 2009. <http://www.nytimes.com/2009/05/28/technology/personaltech/28pogue.html?scp=4&sq=kindle&st=cse>

<sup>12</sup>Based on an informal review of eTextbooks listed on Amazon.com. Given that most listed books

were college texts, this estimate may exaggerate the actual cost of K-12 eTextbooks.

<sup>13</sup>This is a conservative estimate based on college eTextbook prices. eTextbook prices vary widely, and will likely be much lower for K-12 students. We projected the decrease in eTextbook costs according to preliminary predictions regarding the pricing of paper college textbooks (Conneally, Tim. "Report: Amazon looks to substitute textbooks with Kindle." Betanews. August 26, 2008. <http://www.betanews.com/article/Report-Amazon-looks-to-substitute-textbooks-with-Kindle/1219706068>), which suggest about half of a given textbook's price has to do with paper printing (and associated shipping costs).

<sup>14</sup>This is based on an extrapolation from Association of American Publishers 2008 S1 Report data using a compound annual growth rate of .7% (which they found to reflect the growth in textbook costs per student, based on enrollment data, from 2002-2008).

<sup>15</sup>This is based on the estimated \$50 cost per eTextbook and multiplied by a conservative estimate of three textbooks per student, with one update/replacement per year.

<sup>16</sup>This estimate multiplies the estimated three textbooks per student with one update/replacement by the estimated 2012 eTextbook cost of \$20 (Conneally, Tim. "Report: Amazon looks to substitute textbooks).

<sup>17</sup>Pogue, David. "Don't Quit That Kindle"

<sup>18</sup>A comparison between the estimated four-year aggregate costs of supplying students with traditional textbooks and the estimated four-year aggregate costs of an eTextbook program. Aggregate costs of an eTextbook program are an aggregate of yearly total costs of eTextbook hardware and texts. Estimated cost per unit of hardware is based on industry data and forecasts of Kindle prices as well Apple iPod price trends derived from accumulated Apple sales data.

<sup>19</sup>National Center for Education Statistics. Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2006-07 (Fiscal Year 2007). February, 2009. <http://nces.ed.gov/pubs2009/2009337.pdf>

<sup>20</sup>Roza, Marguerite. "Projections of State Budget Shortfalls on K-12 Public Education Spending and Job Loss." February 9, 2009. Center on Reinventing Public Education. [http://www.crpe.org/cs/crpe/download/csr\\_files/rr\\_crpe\\_shortfall\\_feb09.pdf](http://www.crpe.org/cs/crpe/download/csr_files/rr_crpe_shortfall_feb09.pdf)

<sup>21</sup>Roza, Marguerite. "Projections of State Budget Shortfalls"

<sup>22</sup>Project Tomorrow. Speak Up 2008 for Students, Teachers, Parents and Administrators: Selected National Findings. March 24, 2009. [http://www.tomorrow.org/speakup/pdfs/SU08\\_findings\\_final\\_mar24.pdf](http://www.tomorrow.org/speakup/pdfs/SU08_findings_final_mar24.pdf)

<sup>23</sup>Project Tomorrow: Speak Up 2008

<sup>24</sup>Project Tomorrow: Speak Up 2008

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