Report of the Task Force on Student Access to Technology

(2012 Senate Bill 95)

Research Memorandum No. 511

Legislative Research Commission
Frankfort, Kentucky

November 2012

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Research Memorandum No. 511

Legislative Research Commission
Frankfort, Kentucky
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Adopted November 27, 2012

Paid for with state funds. Available in alternative format by request.

Foreword

The Task Force on Student Access to Technology was established by the 2012 General Assembly with enactment of Senate Bill 95. The task force was charged with considering strategies for providing 5th- and 6th-grade students with access to computing devices for school and home use and reviewing the statewide availability of broadband technology necessary for using the devices. To achieve the goals of the task force, the members chose to examine what Kentucky schools are already doing in the area of mobile computing devices, national trends, digital curriculum, and access to broadband.

The task force co-chairs wish to thank the task force members, all individuals who attended task force meetings, and those who provided research and testimony: the Kentucky Department of Education, the Office of Broadband Outreach and Development, Digital Learning Now!, Bullitt County School District, Ft. Thomas Independent School District, Hardin County School District, Owensboro Independent School District, and Owsley County School District.

Robert Sherman
Director

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Summary

The Kentucky General Assembly established the Task Force on Student Access to Technology in 2012 to examine 1) providing 5th- and 6th-grade students with access to computing devices for school and home use and 2) the statewide availability of broadband technology necessary for using the devices.

The 10-member task force began meeting in July 2012 and convened five times during the interim. Topics of discussion included what Kentucky schools are already doing in the area of mobile computing devices, national trends, digital curriculum, and access to broadband. The task force adopted the 10 recommendations that follow.

Recommendations

1) In lieu of the Commonwealth implementing a statewide one-to-one (1:1) mobile computing device program for 5th- and 6th-grade students, each school district should determine its best mobile computing device program option based on priorities, resources, infrastructure, broadband capacity, and instructional base.

2) The Kentucky Department of Education should share examples of best practice policies and procedures for schools that want to implement 1:1 or bring-your-own-device programs. The department should provide statewide coordination in training and support for schools implementing such programs.

3) The Kentucky Department of Education should facilitate the sharing of information about mobile computing device programs in schools, including funding sources.

4) Educator preparation programs at universities and colleges should consider incorporating digital learning techniques and offering more digital learning opportunities.

5) The Kentucky Department of Education should facilitate the sharing of digital curriculum and should review the content to assure it meets Kentucky core content standards.

6) The Kentucky Department of Education should consider negotiating new or revised statewide vendor agreements in time frames that would allow schools and districts access to the most up-to-date technology available to implement or maintain 1:1 programs.

7) To enhance Kentucky's competitive situation with surrounding states that have recently updated their telecommunications laws, the General Assembly should consider legislation to ensure broadband access throughout the Commonwealth.

8) The General Assembly should consider budget language authorizing districts to utilize Local District Capital Outlay Funds for the purchase of mobile computing devices or to increase bandwidth capacity for implementing 1:1 programs for grades 5 and 6.

9) The General Assembly should consider budget language that facilitates maximum use of technology in schools.

10) The General Assembly should consider legislation that revises educational funding formulas to account for nontraditional technology-based learning practices.

Task Force on Student Access to Technology

Introduction

Senate Bill 95, passed during the 2012 Regular Session, established the Task Force on Student Access to Technology to focus on 1) providing 5th- and 6th-grade students with access to computing devices for school and home use and 2) the statewide availability of broadband technology necessary for using the devices.

The task force began meeting in July 2012 and convened five times during the interim. The group examined different aspects of the issue including what Kentucky schools are already doing in the area of mobile computing devices, national trends, digital curriculum, and access to broadband. The Kentucky Department of Education, the Office of Broadband Outreach and Development, five school districts, and a national nonprofit digital learning organization provided testimony.

Student Access to Computing Devices

The task force learned that digital initiatives are widespread and varied as schools navigate the best way to use technology in the classroom. Digital learning provides the opportunity for individualized learning, and schools are finding ways to repurpose their funding to take advantage of this innovation. Several Kentucky schools have implemented one-to-one (1:1) or bring-your-own-device (BYOD) mobile computing device programs. In a 1:1 program, each student is provided a standardized personal, portable computer. In a BYOD program, students are allowed to bring their own personal computing devices to school for educational use. Testimony emphasized that this new era of digital learning does not diminish the importance of teachers connecting in relationships with students; rather, technology can be used to build and strengthen those relationships.

Access to Broadband

A representative of the Commonwealth Office of Broadband Outreach and Development (OBOD) provided testimony to the task force regarding broadband availability and adoption. Broadband availability means the ability to access high-speed Internet at home; adoption is acquiring and using broadband at home.

The office was established in October 2010 to identify areas of the state that are unserved and underserved by affordable broadband and to facilitate partnerships that work toward providing all Kentuckians with broadband access. The office's goals are to accelerate the expansion of sustainable broadband access and adoption by determining the characteristics of broadband availability and use in Kentucky and promoting the value of broadband to improve the lives of citizens.

OBOD received federal funds through the American Recovery and Reinvestment Act to develop a broadband mapping initiative and outreach program. The Kentucky Broadband Mapping Initiative is designed as a multiyear, multiagency effort, and the maps of Kentucky will be integrated into a national map of broadband access. Of the 157 providers of broadband service in the state, 129 providers voluntarily participate in the mapping project and assist the office in updating the maps each fall and spring.

According to OBOD, Kentucky ranks 40th nationally in broadband availability, with 91.5 percent of households having access. OBOD reported the percentage is not a true representation of availability because broadband is unaffordable or inadequate for many residents. The majority of broadband access lies in the area between Lexington, Louisville, and Cincinnati, where 55 percent of the state's population lives. Throughout the rest of the state, broadband availability is inconsistent and highly variable, with some areas having reliable access and many other areas going without. Although some households technically have access to broadband, the connection is so slow that it is not considered effective or viable.

Approximately 1.4 million Kentuckians who have access to broadband in their homes do not purchase the service. According to OBOD, the primary reasons cited for underutilization are the lack of perceived value in or need for broadband and the costs associated with it. On a national scale, Kentucky ranks 47th in Internet use, with only 58 percent of Kentuckians choosing to purchase broadband service for their homes. Additionally, 8.5 percent or 400,000 Kentuckians completely lack access to broadband in their homes.

National and statewide discussions on infrastructure are increasingly revolving around broadband access. Several reports cite the central role broadband access plays in economic development, and a number of studies are reporting the importance of broadband in school and student success. According to the Federal Communications Commission, students with broadband access in their homes have a 6 percent to 8 percent higher graduation rate compared to students with similar backgrounds without broadband (Gottheimer). In other studies, broadband access in homes has been linked to higher academic achievement and test scores.

For these reasons, OBOD supports the investment in school and library broadband access and the encouragement of public-private partnerships to study and recommends improved policies and procedures regarding broadband challenges. OBOD recommends establishing a statewide program designed after the federal Universal Service Fund, which is a program funded by telecommunications services providers originally designed to advance universal access to telephone service and is now transitioning to focus on universal access to broadband service. The office also recommends stimulating demand for broadband by creating programs that promote computer ownership and improve digital literacy, which is the ability to effectively use digital technologies; and installing high-speed fiber optic lines whenever a road is repaired or constructed that would increase access to broadband, especially in rural areas.

National Perspective

Digital learning provides personalized education, expands access, and enables new models of learning in home, class, and school. It allows a shift in the time, place, path, and pace of education practice by allowing nontraditional class structures, on-demand learning, interactive and adaptive tools and content, and the ability for students to spend more time with concepts and advance when they have mastered them.

Digital Learning Now! is a national initiative under the Foundation for Excellence in Education, a 501(c)(3) not-for-profit, charitable organization with the goal of advancing state policies that enhance digital learning. The initiative's goal is to help states develop digital learning strategies tailored to their unique needs and situations.

The group evaluated Kentucky's digital learning efforts and noted the state's online courses and virtual schools available to high school students and the state's flexibility that allows funding for instructional materials to be used for digital content. The group did caution the implementation of BYOD programs because of problems with mobile computing device disparity, challenges in maintaining such programs because of the variety of devices, and concerns about security and data management.

State and School Initiatives

KRS 156.670 requires the Council for Education Technology to develop a master plan for education technology that addresses the Commonwealth's 5-year strategies related to purchasing, developing, and using technology in the classroom and in the education profession. The master plan is updated as necessary and submitted to the Kentucky Board of Education and the Legislative Research Commission for approval.

The most recent Kentucky Education Technology System master plan covers the years 2013-2018 and includes information about unmet needs in technology at the state and local levels, education technology products and standards, and policies and laws that affect education technology.

According to the Kentucky Department of Education (KDE), the 2013-2018 master plan illustrates the path that will enable all students, teachers, and administrators to become capable of understanding and leveraging technology and addresses, in part, the following: the migration of the MUNIS financial management system to remote servers to achieve operational efficiency; expanded access to broadband through the Kentucky Education Network; increased access to digital learning tools such as e-books and iTunes U; implementation of the P-20 Data Collaborative to enhance data-driven decision making and accountability; and the core principles of digital citizenship, which guide the appropriate and responsible use of technology.

The master plan does not specifically address standards for implementing 1:1 or BYOD programs. KDE acknowledges that neither 1:1 nor BYOD programs are viable for every school and that districts must determine the best strategy at the local level. KDE recognizes the

proliferation of mobile computing devices and addresses this by providing guidance and infrastructure support to districts as they integrate technology into the classroom.

Key questions that need to be addressed by districts when implementing a mobile computing device program include:

- Does the program make educational sense?
- Does the program make technical sense?
- Can the program be adequately funded?
- Will support staff be sufficient to keep the technology operational and reliable?

These are questions districts must consider so they can develop strong educational policies that integrate mobile computing devices into the classroom. When implemented, equity and ease of access to the technology should enhance the success of the program and the learning experience for students.

According to KDE, schools that have implemented 1:1 programs have reported the following results:

- 92 percent experience a reduction in disciplinary action,
- 90 percent experience an increase in high-stakes test scores,
- 89 percent experience a reduction in dropout rates, and
- 63 percent experience an increase in graduation rates.

Speak Up, a recent national online research project facilitated by Project Tomorrow, a national education nonprofit group, illustrated how students use their mobile computing devices for school.

- 74 percent check grades
- 60 percent take notes
- 35 percent record lectures
- 53 percent collaborate with peers
- 70 percent research on the Internet
- 44 percent communicate via email

KDE also provided key points from its 2012 District Technology Readiness Report as evidence of growth in the use of digital technology and learning in schools.

- There are a total of 339,157 district-owned instructional computing devices in Kentucky schools for a student-to-device ratio of approximately 2.5:1.
- Nearly one-third of district-owned devices are mobile devices such as laptops, tablets, e-readers, and smartphones.
- The number of schools with fiber-like connections to the Internet increased from 67 percent in 2006 to 96 percent in 2011.
- Approximately 82 percent of districts have adopted digital citizenship curriculum or policies for students and staff.
- Approximately 68 percent of districts encourage the use of Web 2.0 tools such as Facebook, Twitter, and YouTube.

- Approximately 60 percent of districts allow students to bring personally owned mobile computing devices to school.

School Districts

While growth in the use of digital technology and learning is occurring in nearly all schools, KDE stated that schoolwide 1:1 initiatives are occurring in approximately 11 districts, mainly in high schools. Woodford County was cited as one school district that has achieved success because of good planning and implementation.

Woodford County implemented a 1:1 program by providing an iPad tablet computer to all 1,250 high school students. The device is available free for use at school and may be used at home if the student pays a $35 insurance fee. Students must also participate in a digital citizenship course, which provides guidelines on the appropriate and responsible use of technology.

To prepare for offering iPads to all high school students, Woodford County first conducted a pilot program involving six classrooms and approximately 400 students. In expanding the program to all high school students, the district provided advanced training for teachers, gave iPads to teachers 5 months in advance, and created an iPad digital instructional team. The district also developed specific use policies in its student handbook, student/parent agreements, and an iPad protection plan that allows students to take the devices home.

Woodford County funded its 1:1 initiative with local district funds, as do approximately 72 percent of districts with technology initiatives. Other major sources of funding come from state and federal grants such as the federal Enhancing Education Through Technology program.

The task force heard directly from three school districts that are in various stages of implementing either 1:1 or BYOD mobile computing programs: Ft. Thomas Independent Schools, Owensboro Independent Schools, and Bullitt County Schools.

Ft. Thomas Independent is a suburban school district with approximately 2,800 students of whom 16 percent receive free or reduced-price lunch, and 7 percent are minority. Ft. Thomas has been ranked first in state assessments for 17 consecutive years and also ranks first in college and career readiness. The district intends any technology initiative to support these levels of academic performance.

Ft. Thomas recently began its Vision 2020 initiative that commits the district to teaching students the skills needed to compete in a global, knowledge-based economy. The initiative seeks to enhance critical and creative teaching and learning by emphasizing engaged learners and energetic classrooms, which allows students to actively participate in their learning by using research, discussion, projects, and technology; real-world applications; problem solving; global citizenship; digital literacy; and innovative uses of technology.

Ft. Thomas is in the first full year of implementing its BYOD program. One of the district's goals for the 2012-2013 school year is to define its vision for technology in the classroom. This

initiative was chosen because of the near ubiquity of mobile technology such as smartphones and due to lack of funding for 1:1 programs. Additionally, the district was concerned about the frequency and magnitude of changes to software and hardware with regard to 1:1 mobile technology initiatives.

To prepare for the BYOD program, the district invested more than $25,000 in network upgrades that will also ensure compliance with the Children's Internet Protection Act, a federal law requiring schools to meet guidelines that restrict access to obscene or harmful content over the Internet. The network has dual parts: one for district-owned devices and a second for personally owned devices with varying bandwidth for different levels of users. There are approximately 1,700 devices connecting to the network on any given day. While the district has not adopted a specific BYOD policy, all students must sign an acceptable use policy to gain access to the network.

With regard to professional development, the district offers training and support classes once a week. District representatives indicated newer teachers are already familiar with using technology in the classroom. Examples of how technology is being used in the classroom include QR, or quick response, codes; Edmodo; and Poll Everywhere.

QR codes are digital codes that can be embedded in a textbook or other instructional material. Students can scan the code with their mobile devices to access interactive content on the Internet. Edmodo is similar to social networking sites but is designed specifically for teachers and students. Teachers can share content and set up user groups, while students can access homework and grades, and can participate in class discussions. Poll Everywhere is a Web application designed to gather live responses that can be used to improve classroom instruction. Some uses include texting questions to teachers and peers, group brainstorming, grading in-class assignments, measuring comprehension, and anonymous polling.

Owensboro Independent Schools has approximately 4,500 students, of whom 75 percent receive free or reduced-price lunch. In the 2011-2012 school year, the district implemented a 1:1 program for grades 5-12 involving 2,400 students.

Part of the impetus for the technology initiative was to emphasize real-world preparedness, technology integration, and student/teacher engagement. The district's goal is for teachers to facilitate higher levels of learning by using technology to better engage students.

The initiative was funded with money from the federal American Recovery and Reinvestment Act, with an additional $500,000 annual appropriation in the district budget to address replacement costs. The district elected to purchase the hardware outright instead of using lease agreements. Additionally, four teachers were hired as digital curriculum developers to design more than 400 digital lessons. Having content ready prior to implementation was cited as a key component to the success of the initiative.

Implementation was not without obstacles. Wireless connection points had to be installed with assistance from the Internet service provider. The district also quickly exhausted its bandwidth allotment through the Kentucky Education Network, which was resolved within 2 months by

working with the Kentucky Department of Education. Going forward, funding may be an issue as the district budget faces increasing competition for resources.

Bullitt County Schools implemented a BYOD program in 2011 and cited affordability as the main reason for this choice because students provide their own devices. The district also cited bandwidth capacity as one of the major obstacles to implementing BYOD or 1:1 programs. There is a wireless access point for every four classrooms, but the district is working on infrastructure upgrades that will achieve an access point in every classroom. The district indicated that while KDE assisted in resolving issues related to bandwidth capacity for its school, state-level funding is needed to provide the high-speed fiber network and bandwidth capacity to adequately support successful BYOD or 1:1 initiatives for all districts.

Some school district representatives noted that funding, bandwidth capacity, and curriculum development may be barriers to success for schools wanting to implement 1:1 or BYOD programs.

Owsley County school district representatives presented information about their participation in the Snowbound Pilot program. House Bill 427, passed by the 2011 General Assembly, allowed KDE to approve up to 10 "nontraditional" days for the 2010-2011 and 2011-2012 academic years for districts that missed an average of 20 or more days in the previous 3 years. This new program allows the district to use alternative methods of instruction on days when it was closed for health or safety reasons.

Owsley County provided online instruction to students during 8 days of the 2010-2011 academic year. Pre- and post-tests given on new learning activities provided through the Snowbound Pilot showed significant statistical data that students were learning while at home. The Snowbound Pilot led Owsley County to develop other innovative learning efforts including offering classes taught by teachers in other schools through video, offering hybrid courses that include in-class and online instruction and resources, and creating an online school library with electronic books that can be accessed by students anytime.

The district said utilizing technology helps schools provide continuous learning, equal access to courses, college and career readiness, and uninterrupted learning. The representatives noted that funding for the Kentucky Education Network is critically important for schools to take advantage of digital learning opportunities.

Digital Curriculum and Textbooks

A KDE representative reported that digital textbooks are beginning to be recognized as cost-saving and effective options by schools and parents for delivering core curriculum. He said that 70 percent of parents believe online textbooks are a good investment, up from 21 percent in 2008. Initiatives such as 1:1 and BYOD provide schools the opportunity and flexibility to explore alternatives to traditional textbooks. For example, Hancock County was able to purchase an electronic math textbook for all students for 1 year for the same cost as purchasing one single

new paper math textbook. Hardin County's technology director stated that using digital textbooks costs about one-fourth of the amount spent on traditional printed teaching materials.

Digital textbooks have not yet gained broad acceptance in all school districts because parents have concerns about students not having paper books. Also, most textbook companies have not yet reacted to this emerging trend by lowering their costs.

There is no state-sponsored authority designated to review, recommend, or coordinate digital learning courses or textbooks. KDE continues to build the Continuous Instructional Improvement Technology System, which is a multiphase project designed to provide educators with up-to-date resources, including multimedia instructional resources such as lesson and unit plans. KDE has also partnered with several entities to provide free download access to state-specific academic content through the Kentucky iTunes U portal. iTunes U is a dedicated area within the iTunes store giving users public access to lectures, videos, books, and podcasts from learning institutions. Other vendors offering digital curriculum include Wireless Generation and the Florida Virtual Global Schools, which provides digital curriculum to the Barren Academy of Virtual and Expanded Learning. The academy is part of the Barren County School District and is a fully accredited, diploma-granting digital learning school for grades 6 through 12.

Some districts and schools are creating their own digital curricula. Hardin County is creating the Kentucky Digital Textbook Project, a statewide repository for digital textbooks. Using Moodle, a free software package for producing Internet-based courses and websites, educators can create and share digital textbooks and courses. Further, Moodle is compatible with various devices, so schools that implement BYOD programs can use the site content.

The project website has a digital learning best practices guidebook for educators that includes how to determine standards, establish format, develop content, and review and implement lessons. Many of the digital textbooks and lessons created by Hardin County educators include a Google translator to help students who are learning English as a second language and an audio feature that will read the lesson aloud to assist students struggling with reading skills. The lessons provide the content at higher or lower grade levels, depending on the individual student. The lessons can be further personalized by each teacher to incorporate local history, environment, or features so students can apply the lessons to their own surroundings and experiences.

The Kentucky Digital Textbook Project is still in its infancy, and Hardin County is encouraging school districts to use its site as a free way to produce and share digital curriculum, provide quality digital instruction, engage students, and save money.

Recommendations

The Task Force on Student Access to Technology adopted the following recommendations:

1) In lieu of the Commonwealth implementing a statewide one-to-one (1:1) mobile computing device program for 5th- and 6th-grade students, each school district should determine its best

mobile computing device program option based on priorities, resources, infrastructure, broadband capacity, and instructional base.

2) The Kentucky Department of Education should share examples of best practice policies and procedures for schools that want to implement 1:1 or bring-your-own-device programs. The department should provide statewide coordination in training and support for schools implementing such programs.

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6) The Kentucky Department of Education should consider negotiating new or revised statewide vendor agreements in time frames that would allow schools and districts access to the most up-to-date technology available to implement or maintain 1:1 programs.

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10) The General Assembly should consider legislation that revises educational funding formulas to account for nontraditional technology-based learning practices.

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