Backgrounder

How Online Learning Is Revolutionizing K–12 Education and Benefiting Students

Dan Lips

Abstract: *Virtual or online learning is revolutionizing American education. It has the potential to dramatically expand the educational opportunities of American students, largely overcoming the geographic and demographic restrictions. Virtual learning also has the potential to improve the quality of instruction, while increasing productivity and lowering costs, ultimately reducing the burden on taxpayers. Local, state, and federal policymakers should reform education policies and funding to facilitate online learning, particularly by allowing funding to follow the students to their learning institutions of choice.*

Historically, American students' learning opportunities have been limited and shaped by factors beyond their control. Geography has been an important factor. Does the child live near a good school? If not, do her parents have the financial means to place her in a quality learning environment? Access to quality instruction has been another factor. Was the child placed in a class with the best teacher? Are the teacher's lessons—designed to instruct a classroom of 16 or more students—tailored to her level, learning style, and interests?

The development and proliferation of online learning and virtual learning options is beginning to break down these barriers. In the future, students will be able to receive customized instruction from teachers anywhere in the United States or even in the world. The best teachers will use technology to reach many more students. Virtual and blended-learning

Talking Points

- Online or virtual learning has the potential to revolutionize K–12 education by expanding access to high quality teachers and providing instruction that is tailored to meet students' specific needs.

- As many as 1 million children (roughly 2 percent of the K–12 student population) are participating in some form of online learning.

- Emerging evidence suggests that online learning programs are effective. A meta-analysis of empirical studies published by the U.S. Department of Education found that students who took all or part of their class online performed better than those taking the same course through traditional face-to-face instruction.

- State and federal policymakers should reform current education policies to facilitate the online education revolution to improve learning opportunities for students.

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programs will enable mass customization in education, allowing students to learn at their own pace in ways that are tailored to their learning styles and interests.

The online learning revolution is already underway in the United States. As many as 1 million children (roughly 2 percent of the K–12 student population) are participating in some form of online

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learning. Today, 27 states offer statewide virtual schools that allow students to take a class online, and 24 states and the District of Columbia offer students the opportunity to attend a virtual school full-time. Growing numbers of school districts are offering virtual learning options that include supplemental instruction or blended-learning programs, which use online learning in combination with face-to-face instruction.[1] Enrollment in online learning programs is expected to grow over the next decade. One analysis has predicted that half of high school classes will be online within a decade.[2]

Students appear to be benefiting from online learning programs. While evidence about the effectiveness of K–12 online learning programs is limited, there is reason to believe that students can learn effectively online. In 2009, the U.S. Depart-

ment of Education published a meta-analysis of evidence-based studies of K–12 and postsecondary online learning programs.[3] The study reported that "students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction."[4] In addition, online learning has the potential to improve productivity and lower the cost of education, reducing the burden on taxpayers.[5]

The available empirical evidence on the effectiveness of online learning programs suggests that federal and state policymakers should enact policies to expand online learning opportunities. State policymakers could enact policies that expand, replace, or supplement the learning opportunities available in traditional schools. Federal policymakers could reform policies to allow states to develop innovative online learning programs and expand students' learning options. Moreover, specific federal agencies—including the Department of Defense, State Department, and the Bureau of Indian Affairs (BIA)—could use online learning to better accomplish their educational missions.

What Is Online or Virtual Learning?

Online learning is quite different from the traditional concept of education, which involves a school building, a classroom with rows of desks, and a teacher standing next to a chalkboard. What does it mean to say that a child is being taught through an online or virtual education program?

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1. John Watson, Butch Gemin, Jennifer Ryan, and Matthew Weeks, *Keeping Pace with K-12 Online Learning: An Annual Review of State-Level Policy and Practice*, Evergreen Education Group, November 2009, at *http://www.kpk12.com/downloads/ KeepingPace09-fullreport.pdf* (November 16, 2009).

2. Clayton M. Christensen and Michael B. Horn, "How Do We Transform Our Schools?" *Education Next*, Vol. 8, No. 3 (Summer 2008), at *http://educationnext.org/how-do-we-transform-our-schools* (November 16, 2009).

3. Barbara Means, Yukie Toyama, Robert Murphy, Marianne Bakia, and Karla Jones, "Evaluation of Evidence-Based Practice in Online Learning: A Meta-Analysis and Review of Online Learning Studies," U.S. Department of Education, May 2009, at *http://www.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf* (November 16, 2009).

4. *Ibid.*, p. xiv.

5. For example, Florida Tax Watch analyzed the fiscal impact of the Florida Virtual School, a model statewide virtual school, and reported that an enrolled student received $1,048 less in government funding than a student attending a traditional public school. This savings estimate does not include the costs for school facilities and maintenance if the student had enrolled in public school. Florida Tax Watch, Center for Educational Performance and Accountability, "Final Report: A Comprehensive Assessment of Florida Virtual School," November 5, 2007, p. 77, at *http://www.floridataxwatch.org/ resources/pdf/110507FinalReportFLVS.pdf* (November 23, 2009).

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How would a child interact with a teacher online, and how would such an online program be funded or governed?

Existing online or virtual learning programs differ from traditional education in a number of significant ways:

- **Scope.** Online programs can be either comprehensive or supplementary to a child's education. Some online learning programs are full-time. The students enrolled in a full-time online learning program do not attend a traditional brick-and-mortar school, but learn almost entirely online. Supplemental programs offer students the opportunity to take individual courses in an online setting to complement their instruction in a traditional school. For example, a student who wishes to take a class that is not offered by his or her school, such as an advanced placement course, could enroll in an online learning program in that subject.

- **Teacher interaction.** Online learning can be delivered in multiple ways. Students can participate in online learning through either synchronous or asynchronous instruction. In synchronous instruction, students and instructors interact in real time. In asynchronous instruction, students learn at their own pace and on their own time schedules. Teachers evaluate their performance and provide feedback, such as grading performance on assignments and answering questions. In both settings, online learning programs generally require regular communication between teachers and students by phone, e-mail, instant messaging, and video conferencing.

- **Physical location.** Some online learning programs allow students to learn exclusively from home, essentially on their own. Other online learning programs are housed in a physical location like a school. In addition, some schools offer "blended learning," which combines online learning with face-to-face instruction.

- **Jurisdiction.** Online learning programs can be funded publicly or privately. Among the public programs, online learning programs can be funded and governed by the state or school district. Many states now offer statewide online learning programs or virtual schools, which allow students to enroll in individual classes. Some states have "cyber schools" or virtual charter schools that students can "attend" full-time. In addition, many school districts and schools offer their own online learning options within the traditional school setting. In these respects, online learning programs can be funded or governed by the levels of government that traditionally oversee American public education: states, school districts, and chartering authorities. However, these jurisdictions, which are largely based on geography, are beginning to change because online learning allows students to receive instruction across district, state, and even national boundaries.

- **Range of students served.** Online learning programs can serve students of all ages and learning backgrounds. Most online learning programs focus on serving older or high school students. A survey of school district administrators about online learning reported that an estimated 64 percent of students participating in fully online programs are in grades 9–12. Elementary students (grades K–5) comprise 21 percent and middle school and junior high school students (grades 6–8) account for the remaining 15 percent.[6] The survey also revealed that online learning programs are serving a diverse range of student needs from advanced coursework to remedial education. For example, a majority of respondents agreed that each of the following were important reasons for online learning: "Offering courses not otherwise available at the school"; "Meeting the needs of specific groups of students"; "Offering Advanced Placement or college-level courses"; and "Permitting students who failed a course to take it again."[7]

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6. Anthony G. Piccianno and Jeff Seaman, "K–12 Online Learning: A 2008 Follow-Up of the Survey of U.S. School District Administrators," Sloan Consortium, Hunter College, and Babson Survey Research Group, January 2009, at *http://www.sloanconsortium.org/publications/survey/pdf/k-12_online_learning_2008.pdf* (December 28, 2009).

The Potential Benefits of Online Learning

Given the many ways that the information revolution and the Internet have already changed and improved the lives of Americans, the potential educational benefits of online learning are very significant. A number of scholars and analysts have examined the potential benefits of online learning. Terry M. Moe and John E. Chubb predicted that virtual education will fundamentally transform K–12 public education in the United States for the better in their 2009 book *Liberating Learning: Technology, Politics, and the Future of American Education*.[8] Clayton Christianson, a professor of business at Harvard University, and his coauthors Curtis Johnson and Michael Horn discussed how online learning will revolutionize learning in *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*.[9] Education experts Elizabeth Kanna, Lisa Gillis, and Christina Culver examined the potential benefits of virtual learning from a parent's perspective in *Virtual Schooling: A Guide to Optimizing Your Child's Education*.[10]

Therefore, it is reasonable to expect virtual education to improve learning opportunities for American students in a number of ways:

- **Increased access to high-quality teachers**. Online learning could address main discrepancies in American education—the disparate access to high-quality teachers and instruction caused by socioeconomic and geographic differences. A child's chances of attending a school with high-quality teachers largely depend on where she lives, which is shaped by her parents' financial means. Online learning could give all students, regardless of where they live, access to the best instructors. It could also address teacher shortages. In some subjects, such as science and mathematics, some schools have difficulty employing skilled teachers and therefore cannot offer students instruction in certain subjects. However, through online learning, a student attending a school without a physics teacher, for example, could learn physics from a teacher in another school district or even in another state.

- **Mass customization and optimization.** Public education in the United States generally treats students in a standardized manner. For example, students are typically grouped by age, rather than by achievement level or learning style. Online learning has the potential to provide all children with customized education. Students can receive instruction at their own pace and in ways tailored to their unique learning styles and interests. Increased customization can make the learning process more enjoyable and productive. Moreover, it will also allow for more accurate feedback on students' progress, enabling parents to monitor their children's progress more closely and to hone accountability.

- **Increased flexibility.** Online learning can provide students with greater flexibility in when and how they learn. Most instruction in American schools occurs each year between fall and spring and on weekdays between 8 am and 4 pm. Virtual learning allows students to learn anytime at their own pace. This allows students and families to use their time more efficiently to pursue other interests and activities. In addition, the flexibility of online learning can particularly benefit students who have specific challenges in their education, such as those who must change schools frequently and those who have fallen behind in their studies.

- **Improved flexibility for teachers.** Online learning will also provide teachers with new career options and increasingly give teachers more freedom to instruct students in more productive ways. This has the potential to expand

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7. *Ibid.*, p. 12.

8. Terry M. Moe and John E. Chubb, *Liberating Learning: Technology, Politics, and the Future of American Education* (San Francisco: Jossey-Bass, 2009).

9. Clayton M. Christianson, Curtis W. Johnson, and Michael B. Horn, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (New York: McGraw-Hill, 2008).

10. Elizabeth Kanna and Lisa Gillis, *Virtual Schooling: A Guide to Optimizing Your Child's Education* (New York: Palgrave MacMillen, 2009).

the talent pool of the teacher workforce and improve teacher quality overall. For example, teachers who are parents could value the flexibility of teaching from home, which allows them to balance their career more easily with their parental responsibilities.

- **Improved productivity and efficiency.** Online learning has the potential to improve productivity and lower the cost of education, thereby reducing the burden on taxpayers. Moe and Chubb made this point in *Liberating Learning*: "Schools can be operated at lower cost, relying more on technology (which is relatively cheap) and less on labor (which is relatively expensive)."[11] They estimate that a school could reduce its teaching staff by approximately one-sixth if elementary school students spent one hour per day learning electronically. The cost savings could be used in a number of ways, such as investing more in teacher training or teacher pay to improve teacher quality and effectiveness.[12]

- **Innovation.** The increasing use of online learning will provide instructors and online learning operators with incentives to innovate and develop new learning tools that could improve students' learning options in ways unimaginable today.

The Empirical Evidence

While there is good reason to anticipate these theoretical or potential benefits, some evidence is already clear. Initial empirical evidence suggests that students can benefit from online learning options. A 2009 report from the U.S. Department of Education presented the findings of a meta-analysis of the evidence-based studies of online-learning programs, including 44 studies involving postsecondary students and seven studies involving K–12 students.[13] The meta-analysis reported that, "students who took all or part of their class online performed better, on average, than those

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taking the same course through traditional face-to-face instruction."[14]

The report included other findings that may help policymakers understand how online learning affects students' learning. For example, the report stated that instruction combining online learning with face-to-face elements produced better results than purely online instruction. Moreover, the researchers reported that students who participated in online learning and who spent more time on task benefited the most.

Many of these studies involved older students, and the researchers suggest caution when interpreting their findings, but the preliminary evidence suggests that online learning can provide a quality educational experience. This should give policymakers the confidence to expand the opportunities for online learning.

Virtual Learning in the United States

A recent estimate found that more than 1 million K–12 students participated in online courses in 2007–2008, an increase of 47 percent over 2005–2006.[15] This amounts to approximately 2 percent of the K–12 student population. The Evergreen Education Group reported in November 2009 that 27 states have state virtual schools and 24 states have full-time, statewide online schools. In all, 45 states and the District of Columbia have a state virtual school or online initiative, full-time online schools, or both. Delaware, New Jersey, New York, Rhode Island, and Vermont are the only states without a statewide virtual school or full-time online schools.[16]

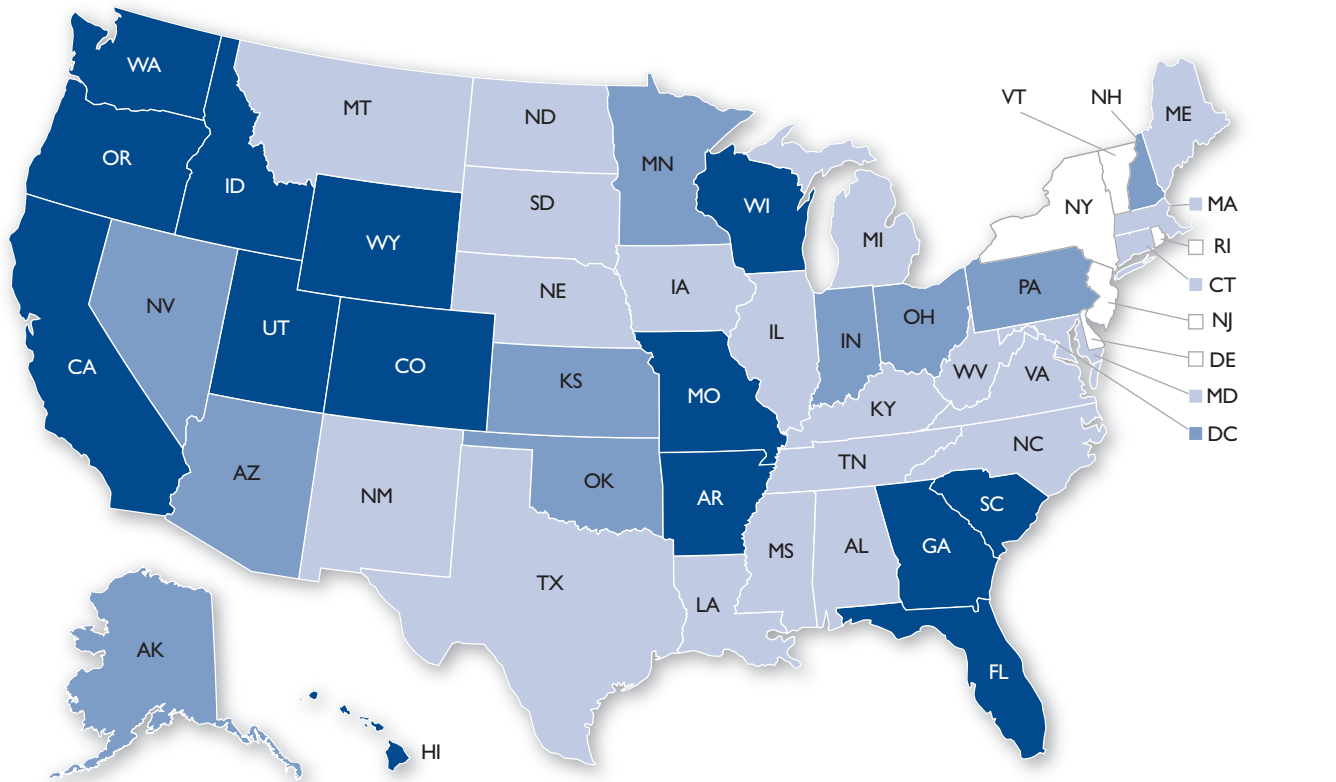11. Moe and Chubb, *Liberating Learning*, p. 7.

12. *Ibid.*, p. 80.

13. Means *et al.*, "Evaluation of Evidence-Based Practice in Online Learning."

14. *Ibid.*, p. xiv.

15. Picciano and Seamon, "K–12 Online Learning."

16. Watson *et al.*, *Keeping Pace with K–12 Online Learning.*

Online Learning Opportunities, by State

Source: John Watson, Butch Gemin, Jennifer Ryan, and Matthew Weeks, *Keeping Pace with K-12 Online Learning: An Annual Review of State-Level Policy and Practice*, Evergreen Education Group, November 2009, p. 8, Figure 3, at *http://www.kpk12.com/downloads/KeepingPace09-fullreport.pdf* (November 16, 2009).

☐ States with a state virtual school and/or state-led online intiative existing or in development

☐ States with full-time statewide online schools

☐ States with both

☐ States with neither

Map 1 • B 2356 ☎ heritage.org

In addition to these statewide or full-time virtual schools, many school districts offer blended or full-time online learning courses. The 2009 Sloan Consortium survey found that 75 percent of districts had one or more students participating in some form of online learning. Moreover, 66 percent of school districts with students participating in online learning expected participation to increase.[17]

Parents and policymakers should note that the availability of online learning programs varies widely from state to state. For example, a student in

Florida has more opportunities to learn online than a student in Maryland. The Florida Virtual School is the largest statewide, supplemental virtual learning program in the country with an enrollment of 154,000 in 2008–2009, compared to only 710 students in the Maryland Virtual School program.[18] These different participation levels are primarily the result of differences in access and funding. The Florida Virtual School is a statewide supplemental program offered to all Florida students and supported by state government funding. In Maryland, students must obtain permission from their school

17. *Ibid.*

18. *Ibid.*

districts before participating in the Maryland Virtual Program.

In addition to these publicly supported virtual learning programs, parents and students also have access to independent online learning programs offered by providers that range from companies, such as K12, and universities, such as Johns Hopkins University.[19] The for-profit education industry accounts for approximately 10 percent of the education sector.[20] As virtual learning becomes more popular, parents should expect to have increased opportunity to purchase online learning services from a diverse range of independent providers.

How to Expand Learning Options Through Online Learning

State and federal policymakers could enact a number of educational reforms that would improve learning options for students.

What State and Local Policymakers Should Do. State and local policymakers are best positioned to reform K–12 education and expand online learning options. If policymakers wish to provide online learning options to students in their state, they will need to transform the current system of education finance and governance, which funds and regulates a system that was largely designed in the 19th and 20th centuries. In general, policymakers need to reform education policies to create a venue for online learning (such as a state virtual school or cyber charter schools), incorporate online learning into the traditional school system, and perhaps most importantly reform funding systems to facilitate greater parental choice, including access to online learning programs.

To expand learning opportunities for students in their communities by reforming education policies that strengthen online education, state and local policymakers should:

- **Enact or expand statewide virtual schools.** Every state could create (or expand) a statewide virtual school program to allow students across the state to participate in a supplementary or full-time online learning program. Today, the Florida Virtual School is a model of a thriving statewide virtual school program. Policymakers also need to reform funding formulas to enable students to choose to enroll in statewide virtual programs without requiring the permission of their schools or school districts.

- **Reform charter school laws to allow virtual charter schools.** Today, 40 states and the District of Columbia have charter school laws that allow the creation of independently managed public schools. However, not all states allow online or virtual charter schools. To expand access to online learning, policymakers should pass charter school laws that allow the creation of online or virtual charter schools.

- **Enact or expand hybrid online learning programs.** In addition to creating new vehicles for online or virtual learning, school districts and public schools can implement online learning programs on their own. By creating hybrid learning programs or enacting online learning programs at the school or district level, they can complement traditional instruction offered in the schools. School districts could partner with existing online learning programs and share best practices with other schools on how best to incorporate online learning into their curricula.

- **Explore opportunities to partner with other states, schools, and online learning providers.** While policymakers and legislators traditionally design education policies within states and district boundaries, states and school districts will have increasing opportunities to partner with other communities and organizations. For example, states could form partnerships or cooperatives to provide regional virtual schools. States could also work with public and private universities to develop online learning programs.

19. For more information on K12 and the Center for Talented Youth, see K12, "Enroll or Buy," Web site, at *http://www.k12.com/enroll-or-buy* (December 28, 2009), and Johns Hopkins University, Center for Talented Youth, Web site, at *http://cty.jhu.edu/ctyonline* (December 28, 2009).

20. Carrie Lips, "Edupreneurs: A Survey of For-Profit Education," Cato Institute *Policy Analysis* No. 386, November 20, 2000, at *http://www.cato.org/pubs/pas/pa386.pdf* (December 28, 2009).

Policymakers interested in expanding online learning opportunities for students in their state or community could develop creative policies to provide the best online learning programs.

- **Allow funds to follow the student.** Whether students have access to online learning options will largely be determined by policymakers' willingness to reform education funding to facilitate greater parental choice. This factor largely explains why the Florida Virtual School enrolls 154,000 students while the Maryland Virtual School enrolls only 710 students. If policymakers want to open the possibilities of online learning to all students, they must reform school funding mechanisms to allow the money to follow the students to their providers of choice. This could include reforming a state's share of per-pupil funding to allow payment of a per-credit amount to a statewide virtual school if the student takes a course online. In other words, if a student takes one-fifth of her courses online, one-fifth of her share of the school's per-student enrollment funding should be redirected to the virtual school. States could also provide scholarships or vouchers directly to parents to purchase online learning services for their children.

What Federal Policymakers Should Do. The federal government's role in public education has traditionally been limited. However, since the 1960s, the federal government has become increasingly involved in funding and regulating public education. As of the 2004–2005 school year, the federal government provided 9.2 percent of the funding for public elementary and secondary schools in the United States.[21]

To improve learning opportunities for students, Congress and the Administration should:

- **Reform U.S. Department of Education programs to allow state flexibility and student-centered funding.** The Elementary and Secondary Education Act of 1965 established the Department of Education's basic approach to funding K–12 education. The current version of that law, No Child Left Behind, will soon be considered for reauthorization. When Congress reauthorizes federal education funding, policymakers should allow states greater flexibility in how they use federal education funding, including funding virtual education programs. In addition, states should have the option to allow Title 1 federal funds to follow disadvantaged students to schools of their choice, including online or virtual learning programs.

- **Reform federal K–12 education programs outside the Department of Education to use online learning.** Beyond the Department of Education, dozens of federal departments and agencies fund K–12 education programs. Federal policymakers should consider using online or virtual learning to improve effectiveness and efficiency of these programs. For example, the **Department of Defense Education Activity** (DODEA) currently educates approximately 85,000 children of military personnel[22] and is developing plans to create an online virtual high school for the 2010–2011 school year.[23] A virtual school for the children of military personnel would likely expand their educational opportunities and minimize disruptions caused by transferring to new schools when their parents are transferred to new assignments.

The mission of the **Bureau of Indian Education** (BIE) is to "to provide quality education opportunities from early childhood through life in accordance with a tribe's needs for cultural and economic well-being, in keeping with the wide diversity of Indian tribes and Alaska Native villages as distinct cultural and governmental entities."[24] The BIE serves 42,000 Indian students in 184 schools on 64 reservations and in 23

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21. U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics: 2008*, Table 173, at *http://www.nces.ed.gov/programs/digest/d08/tables/dt08_173.asp* (November 23, 2009).

22. Department of Defense Education Activity, "DoDEA Facts," at *http://www.dodea.edu/home/about.cfm?cId=facts* (November 23, 2009).

23. Zach Miners, "Military to Debut Virtual School," *U.S. News & World Report*, November 5, 2009, at *http://www.usnews.com/education/articles/2009/11/05/military-to-debut-virtual-school.html* (December 28, 2009).

states. Many of these schools are in remote locations and face some of the same challenges of rural schools, including small teacher pools and limited course offerings. A virtual school for BIE students could expand learning opportunities for Native American students and strengthen their ties with students from other communities. Such a virtual school could be voluntary and structured in a culturally sensitive manner consistent with BIE's mission.

The **State Department** assists the families of personnel serving overseas by providing an allowance to purchase education for their children.[25] According to the State Department, access to quality schooling for their children is an important consideration for Foreign Service officers and others when choosing overseas posts. Like the DODEA, the State Department could create a K–12 virtual school for its personnel or it could expand its "home study" reimbursement program by creating partnerships with virtual schools in the United States.

Through the **Chafee Foster Care Independence Program** (CFCIP), the federal government currently provides funding to states to assist with the education of children in foster care. Since instability is a common problem for foster children,[26] virtual school programs could be particularly beneficial. Congress could reform the CFCIP to allow foster children to use the federally funded education and job training vouchers for virtual learning programs.

Conclusion

Online learning has the potential to revolutionize American education. Today, as many as 1 million children are participating in some form of online learning. Twenty-seven states offer statewide virtual schools that allow students to take classes online, and 24 states and the District of Columbia offer students the opportunity to attend a full-time virtual school. School districts are increasingly offering virtual learning options, such as supplemental instruction or blended-learning programs that combine online learning with face-to-face instruction.[27] Enrollment in online learning programs is expected to grow over the next decade. One analysis estimates that half of high school classes will be online within a decade.[28]

Students appear to be benefiting from online learning programs. A meta-analysis of empirical evidence on online learning programs found that students learn as well or better online as in a traditional school setting. Other potential benefits included expanded access to talented teachers, customized learning, more flexibility for families, and improved school productivity.

Local, state, and federal policymakers would be wise to reform education policies to expand students' learning options by increasing their access to online learning.

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24. U.S. Department of the Interior, "The Bureau of Indian Education (BIE)," updated October 19, 2009, at *http://www.bia.gov/ WhatWeDo/ServiceOverview/IndianEducation/index.htm* (November 23, 2009).

25. U.S. Department of State, *Education Options for Foreign Service Family Members*, chap. 5, at *http://www.state.gov/m/dghr/flo/ c23960.htm* (November 23, 2009).

26. Dan Lips, "Foster Care Children Need Better Educational Opportunities," Heritage Foundation *Backgrounder* No. 2039, June 5, 2007, at *http://www.heritage.org/research/education/bg2039.cfm*.

27. Watson *et al.*, *Keeping Pace with K–12 Online Learning*.

28. Christensen and Horn, "How Do We Transform Our Schools?"