

Online Education

Executive Summary

Online education, from K-12 to higher education settings, includes many forms of teaching that can supplement or substitute in-person classes. Online education may offer opportunities not feasible for in-person education (massive classes, distance learning). Generally, online learning outcome assessments are similar or slightly reduced compared to in-person learning. Taken together, online education has the potential to improve accessibility of education but may also reduce education quality, particularly for less well-regulated institutions.

Highlights

- Online education can take many forms, ranging from blended online and in-person, to massive self-paced courses.
- Fully online courses tend to have some test score reductions relative to in-person.
- Missouri recently revamped the Missouri Course Access and Virtual School Program to offer online education for K- 12 students.

Limitations

- Because online education can take many forms, have institutionalized differences, and rely on students' engagement, it is difficult to generalize comparisons to in-person education.

Online Education and Learning Outcomes

Online education can take many different forms. With the evolution of education technology and internet resources, online education can be blended (mixed with in-person classes) or fully online. Virtual courses can resemble more traditional courses, where students participate in classes at the same time, or can involve classes that do not have a traditional equivalent, such as massive open online courses (MOOCs) where large numbers of students connect at different times, often using message boards. In-person education can also take advantage of online tools, such as using software to tutor students on particular skills and improving communication with parents.¹

Because of varied possibilities in online education, outcomes may differ widely depending on the form of instruction, and the student's resources and ability to engage with online learning. Several studies comparing fully online courses, in-person, and blended courses suggest that fully online courses may have small reductions in test scores relative to in-person or blended classes, although it is difficult to generalize across different institutions.¹⁻³ As with in-person instruction, institutional differences play a role, and effectiveness likely also varies by teacher and among students. For-profit colleges, which have been criticized and investigated for low educational standards and poor earnings for graduates, enroll a disproportionate amount of online students.⁴ One difference with online education is sometimes attributed to student engagement, that students learning in-person are more involved in the class.

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COVID-19 and Learning Outcomes

With the COVID-19 pandemic, educators were forced to rapidly move their courses online and engage in “emergency remote education.” Scholars in the area of online education note that emergency remote classes do not necessarily resemble planned online courses, and lack of training for online teaching may hamper effectiveness.⁵ This may potentially result in education gaps for students navigating new online courses. While many states halted testing in the beginning of the pandemic, early assessments of the COVID-19 pandemic on third through eighth grade students indicate reading scores were maintained, but a 5 to 10 percentile drop in math scores. A major caveat in the study is data missing for the most vulnerable students, who may lack access to technology needed to participate.⁶

Accessibility of Online Learning

Accessing online learning requires internet access, which may be limited for some students. Online tools can also be used within in-person instruction at schools. In 2018, the FCC updated their per-student recommendations for K-12 schools from 0.1Mbps (100kbps) to 1 Mbps (1000kbps) to support the use of online tools in the classroom. Based on data from schools participating in the federal eRate program, the Connect K12 nonprofit reports that 40% of school districts in Missouri have 1 Mbps per student.⁷ For students learning outside of the classroom, bandwidth needs will depend on mode of instruction (for example, video conferencing). Broadband access is disproportionately limited for low-income households relative to higher-income households.⁸ Likewise, low-income households are more limited in availability of desktop or laptop computers.⁹

Online learning has the potential to both help and harm marginalized students. Online learning offers opportunities for students unable or less able to attend classes in-person, including disabled or distance students; likewise, asynchronous classes may open possibilities for nontraditional students who may have full time employment and/or caretaker responsibilities. However, studies have identified online education can have adverse impacts for students lacking training in technology and self-directed learning skills, and may widen inequity.¹⁰ In particular, for-profit colleges target low-income and minoritized students and have shown high levels of student dissatisfaction, sometimes resulting in high student debt lacking the financial benefits traditionally associated with higher education.⁴

Online Education in Missouri and Other States

Missouri offers online education for grades K-12 through Missouri Course Access and Virtual School Program (MOCAP), previously known as Missouri Virtual Instruction Program (MOVIP) which is codified in § 161.670, RSMo and administered by the Missouri Department of Elementary and Secondary Education.¹¹ At least 23 states have some form of virtual schools, which typically offer courses but not diplomas or other school functions.¹² Challenges for these programs include addressing how to allocate funding and how to ensure quality with legitimate accreditation, auditing and assessment.¹³ Currently, MOCAP students are counted in the

attendance of the school districts in which they reside. Proposed legislation could change how state funding is allocated to MOCAP based on the number of students enrolled, and also prevent districts from stopping students from enrolling in MOCAP if seen as not being in their best interests, instead giving final say to parents.

References

1. Escueta, M., Quan, V., Nickow, A. J. & Oreopoulos, P. *Education Technology: An Evidence-Based Review*. <https://www.nber.org/papers/w23744> (2017) doi:10.3386/w23744.
2. Alpert, W. T., Couch, K. A. & Harmon, O. R. A Randomized Assessment of Online Learning. *Am. Econ. Rev.* **106**, 378-382 (2016).
3. Heppen, J. B. *et al.* The Struggle to Pass Algebra: Online vs. Face-to-Face Credit Recovery for At-Risk Urban Students. *J. Res. Educ. Eff.* **10**, 272-296 (2017).
4. Howarth, R. & Stifler, L. The Failings of Online For-profit Colleges: Findings from Student Borrower Focus Groups. (2019).
5. Hodges, C., Moore, S., Lockee, B., Trust, T. & Bond, A. The Difference Between Emergency Remote Teaching and Online Learning. *Educause Review* <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning> (2020).
6. Kuhfield, M., Tarasawa, B., Johnson, A., Ruzek, E. & Lewis, K. Learning during COVID-19: Initial findings on students' reading and math achievement and growth. (2020).
7. Connect K-12. <https://connectk12.org/states/MO>.
8. American Community Survey. Types of Computers and Internet Subscriptions. <https://data.census.gov/cedsci/table?q=broadband%20rural&g=0400000US29&tid=ACST5Y2018.S2801&hidePreview=true> (2018).
9. Anderson, M. & Kumar, M. Digital divide persists even as lower-income Americans make gains in tech adoption. *Pew Research Center* <https://www.pewresearch.org/fact-tank/2019/05/07/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/> (2019).
10. Protosaltis, S. & Baum, S. Does online education live up to its promise? A look at the evidence and implications for federal policy. (2019).
11. MOCAP (formerly MOVIP) Homepage. <https://mocap.mo.gov/>.
12. State virtual schools. *Digital Learning Collaborative* <https://www.digitalllearningcollab.com/state-virtual-schools> (2018).
13. Glass, G. V. The Realities of K-12 Virtual Education. *Boulder Tempe Educ. Public Interest Cent. Educ. Policy Res. Unit* (2009).