REL Appalachia Ask A REL Response

April 2019

Question:

How has the concept of disruptive innovation been applied in K–12 education?

Response:

Thank you for your request to our REL Reference Desk regarding evidence-based information about disruptive innovation in K–12 education. Ask A REL is a collaborative reference desk service provided by the 10 Regional Educational Laboratories (RELs) that, by design, functions much in the same way as a technical reference library. Ask A REL provides references, referrals, and brief responses in the form of citations in response to questions about available education research.

Following an established REL Appalachia research protocol, we searched for peer-reviewed articles and other research reports in which the term "disruptive innovation" appears. We focused on identifying resources that specifically addressed the application of the paradigm of disruptive innovation in K–12 education. Our search primarily yielded resources that described online and blended learning as types of disruptive innovation in K–12 education. The sources included ERIC and other federally funded databases and organizations, research institutions, academic research databases, and general Internet search engines. For more details, please see the methods section at the end of this document.

The research team did not evaluate the quality of the resources provided in this response; we offer them only for your reference. Also, the search included the most commonly used research databases and search engines to produce the references presented here, but the references are not necessarily comprehensive, and other relevant references and resources may exist. References are listed in alphabetical order, not necessarily in order of relevance.

References

Basham, J. D., Smith, S. J., Greer, D. L., & Marino, M. T. (2013). The scaled arrival of K–12 online education: Emerging realities and implications for the future of education. *Journal of Education, 193*(2), 51–59. Abstract retrieved from https://eric.ed.gov/?id=EJ1055677; full text available at https://kuscholarworks.ku.edu/bitstream/handle/1808/17900/Basham_JoE_193(2)51.pdf?sequence=1&isAllowed=y

From the abstract: "This article examines the complex array of variables and implementation models that must be accounted for during the pivot from a purely brick-and-mortar educational system to one that makes use of both virtual and blended environments. The authors call for enhanced emphasis on instructional goals and design principles, rather than available technology. They conclude that educational leaders and researchers must play a role in three areas: using technology to enhance the accessibility and usability of curricular materials to meet the needs of different types of learners, advancing the understanding and practices of in-service and pre-service teachers through preparation for online learning, and fostering collaboration between educational researchers and technology innovators and developers to build a research base to inform K–12 online education."

Christensen, C. M., Johnson, C. W., & Horn, M. B. (2008). *Disrupting class: How disruptive innovation will change the way the world learns.* New York, NY: McGraw-Hill.

From the introduction: "The purpose of this book is to dig beneath the sorts of surface explanations summarized above to expose more fundamental root causes for why schools struggle to improve. Upon that basic foundation we then construct a set of recommendations to resolve those problems. Our methods for reaching these conclusions are unique. Most books on the topic of improving schools have reached their conclusions by studying schools. In contrast, our field of scholarship is innovation. Our approach in researching and writing this book has been to stand *outside* the public education industry and put our innovation research on almost like a set of lenses to examine the industry's problems from this different perspective. The ability of these lenses to shed new light on complicated problems has been proven in contexts ranging from national defense to semiconductors; from health care to retailing; and from automobiles to financial services to telecommunications. We hope that this novel approach to the problems of public education will prove to have yielded comparably innovative insights."

Horn, M. B., Gu, A., & Evans, M. (2014). *Knocking down barriers: How California superintendents are implementing blended learning.* Redwood City, CA: Clayton Christensen Institute for Disruptive Innovation. Retrieved from https://eric.ed.gov/?id=ED561273

From the abstract: "School districts across the United States are implementing blended learning to boost student achievement. The authors convened several California school district superintendents to answer the questions: 'What are the barriers, real or perceived, to implementing blended learning in your district?' and 'Have you found solutions to or ways around these barriers?' Given that 93 percent of California's public school students are enrolled in district schools, the answers matter, as superintendents around the state struggle with antiquated regulations and processes that inhibit their ability to innovate and better serve students. The authors hypothesized that for each barrier one superintendent identified, another superintendent in the room would have a solution. This paper summarizes the answers to both of these questions. The barriers the superintendents identified fell into three categories: (1) Redesigning teacher roles given state policy and teachers union contract provisions; (2) Purchasing and managing technology and

infrastructure; and (3) Recognizing online classes as valid for the University of California and California State University systems."

Powell, A., Watson, J., Staley, P., Patrick, S., Horn, M., Fetzer, L., Hibbard, L., Oglesby, J., & Verma, S. (2015). *Blending learning: The evolution of online and face-to-face education from 2008–2015. Promising practices in blended and online learning series*. Vienna, VA: International Association for K–12 Online Learning. Retrieved from https://eric.ed.gov/?id=ED560788

From the abstract: "In 2008, the International Association for K–12 Online Learning (iNACOL) produced a series of papers documenting promising practices identified throughout the field of K–12 online learning. Since then, we have witnessed a tremendous acceleration of transformative policy and practice driving personalized learning in the K–12 education space. State, district, school, and classroom leaders recognize that the ultimate potential for blended and online learning lies in the opportunity to transform the education system and enable higher levels of learning through competency-based approaches. iNACOL's core work adds significant value to the field by providing a powerful practitioner voice in policy advocacy, communications, and in the creation of resources and best practices to enable transformational change in K–12 education. We worked with leaders throughout the field to update these resources for a new generation of pioneers working towards the creation of student-centered learning environments. This refreshed series, Promising Practices in Blended and Online Learning, explores some of the approaches developed by practitioners and policymakers in response to key issues in K–12 education, including: Blended Learning: The Evolution of Online and Face-to-Face Education from 2008–2015; Using Blended and Online Learning for Credit Recovery and At-Risk Students; Oversight and Management of Blended and Online Programs: Ensuring Quality and Accountability; and Funding and Legislation for Blended and Online Education. Personalized learning environments provide the very best educational opportunities and personalized pathways for all students, with highly qualified teachers delivering world-class instruction using innovative digital resources and content. Through this series of white papers, we are pleased to share the promising practices in K–12 blended, online, and competency education transforming teaching and learning today. Additional resources are provided."

Serdyukov, P. (2017). Innovation in education: What works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning, 10*(1), 4–33. Retrieved from https://www.emeraldinsight.com/doi/pdfplus/10.1108/JRIT-10-2016-0007

From the abstract: "Purpose–The purpose of this paper is to present an analytical review of the educational innovation field in the USA. It outlines classification of innovations, discusses the hurdles to innovation, and offers ways to increase the scale and rate of innovation-based transformations in the education system. Design/methodology/approach–The paper is based on a literature survey and author research. Findings–US education badly needs effective innovations of scale that can help produce the needed high-quality learning outcomes across the system. The primary focus of educational innovations should be on teaching and learning theory and practice, as well as on the

learner, parents, community, society, and its culture. Technology applications need a solid theoretical foundation based on purposeful, systemic research, and a sound pedagogy. One of the critical areas of research and innovation can be cost and time efficiency of the learning. Practical implications–Several practical recommendations stem out of this paper: how to create a base for large-scale innovations and their implementation; how to increase effectiveness of technology innovations in education, particularly online learning; how to raise time and cost efficiency of education. Social implications–Innovations in education are regarded, along with the education system, within the context of a societal super system demonstrating their interrelations and interdependencies at all levels. Raising the quality and scale of innovations in education will positively affect education itself and benefit the whole society. Originality/value–Originality is in the systemic approach to education and educational innovations, in offering a comprehensive classification of innovations; in exposing the hurdles to innovations, in new arguments about effectiveness of technology applications, and in time efficiency of education."

Staker, H., & Horn, M. B. (2012). *Classifying K–12 blended learning.* San Mateo, CA: Innosight Institute. Retrieved from https://eric.ed.gov/?id=ED535180

From the abstract: "The growth of online learning in the K–12 sector is occurring both remotely through virtual schools and on campuses through blended learning. In emerging fields, definitions are important because they create a shared language that enables people to talk about the new phenomena. The blended-learning taxonomy and definitions presented in this paper expand upon and refine the authors' previous work in helping to create a shared language for the K–12 blended-learning sector. In their report titled, 'The rise of K–12 blended learning,' the authors observed that there were six main blended-learning models emerging in the sector from the perspective of the student. This paper introduces a number of changes to that taxonomy based on feedback from the field and the need to update the research to keep pace with new innovations that are occurring in blended learning. Most importantly, the paper eliminates two of the six blended-learning models—Face-to-Face Driver and Online Lab—because they appear to duplicate other models and make the categorization scheme too rigid to accommodate the diversity of blended-learning models in practice. By moving from six to four overarching models, they have created more breathing room in the definitions. They hope these new models will better describe the majority of programs so that nearly all blended-learning programs will fit comfortably within one of the four. Notes about how this taxonomy differs from the taxonomy in 'The rise of K–12 blended learning,' January 2011 are appended."

Werth, E., Werth, L., & Kellerer, E. (2013). *Transforming K–12 rural education through blended learning: Barriers and promising practices*. Vienna, VA: International Association for K–12 Online Learning. Retrieved from https://eric.ed.gov/?id=ED561276

From the abstract: "This report describes the implementation of blended learning programs in Idaho, and three key takeaways are apparent: (1) Blended learning has a positive impact on teachers; (2) Self-pacing enables students to take ownership and achieve mastery; and (3) Teachers must prepare with comprehensive teacher training. The authors emphasize the

need for the field to conduct studies to challenge, adapt, and strengthen innovation. Review this report to explore potential barriers and promising practices of K–12 blended learning. An appendix is included: (1) Blended Models from Idaho Digital Learning Academy. [Researchers with Northwest Nazarene University's Doceo Center for Innovation in Teaching and Learning (CITL) partnered with Idaho Digital Learning Academy (IDLA) and the International Association for K–12 Online Learning (iNACOL) on this work.]"

Zuckerman, S. J., Wilcox, K. C., Schiller, K. S., & Durand, F. T. (2018). Absorptive capacity in rural schools: Bending not breaking during disruptive innovation implementation. *Journal of Research in Rural Education, 34*(3), 1–27. Abstract retrieved from https://eric.ed.gov/?id=EJ1172792 ; full text available at http://jrre.psu.edu/wp-content/uploads/2018/03/34-3.pdf

From the abstract: "Rural schools have repeatedly been subjected to standardizing state and federal education policies that seek to minimize variance in instructional systems and increase the number of college- and career-ready graduates. The Race to the Top policy agenda combined standards-based and accountability-based reforms to meet these objectives and once again subjected rural schools to innovations from outside experts. This qualitative study uses four instrumental cases of rural schools to understand: 1) leadership strategies, and 2) mechanisms and processes of alignment, which allowed schools to maintain high levels of student performance in the face of disruptive policy innovations. The findings of the cross-case analysis identify rural school and district leaders' contingent use of adaptive strategies of buffering, bridging, and brokering. Mechanisms and processes of shared goal setting, ongoing curriculum revision, and teacher collaboration that contribute to the development of coherence supported these strategies. Together, leadership strategies and coherence allow leaders and educators to assimilate, transform, and create new knowledge in ways that provide absorptive capacity and allow for selective implementation of disruptive innovations."

Additional Organizations to Consult

Clayton Christensen Institute for Disruptive Innovation: https://www.christenseninstitute.org

From the website: "The Clayton Christensen Institute is a nonprofit, nonpartisan think tank dedicated to improving the world through disruptive innovation. Founded on the theories of Harvard professor Clayton Christensen, the Institute offers a unique framework for understanding many of society's most pressing issues around education, healthcare, and economic prosperity. Our mission is ambitious but clear: work to shape and elevate the conversation surrounding these issues through rigorous research and public outreach. The Institute is redefining the way policymakers, community leaders, and innovators address the problems of our day by distilling and promoting the transformational power of disruptive innovation. The Christensen Institute has offices in the Boston area and Silicon Valley."

- K–12 Education: https://www.christenseninstitute.org/k-12-education/

Methods

Keywords and Search Strings

The following keywords and search strings were used to search the reference databases and other sources:

- "disruptive innovation" AND ("K–12" OR elementary OR secondary) AND (school OR education)

Databases and Resources

We searched ERIC, a free online library of more than 1.6 million citations of education research sponsored by the Institute of Education Sciences (IES), for relevant resources. Additionally, we searched the academic database ProQuest, Google Scholar, and the commercial search engine Google.

Reference Search and Selection Criteria

In reviewing resources, Reference Desk researchers consider—among other things—these four factors:

- Date of the publication: Searches cover information available within the last 10 years, except in the case of nationally known seminal resources.
- Reference sources: IES, nationally funded, and certain other vetted sources known for strict attention to research protocols receive highest priority. Applicable resources must be publicly available online and in English.
- Methodology: The following methodological priorities/considerations guide the review and selection of the references: (a) study types—randomized controlled trials, quasi experiments, surveys, descriptive data analyses, literature reviews, policy briefs, etc., generally in this order; (b) target population, samples (representativeness of the target population, sample size, volunteered or randomly selected), study duration, etc.; (c) limitations, generalizability of the findings and conclusions, etc.
- Existing knowledge base: Vetted resources (e.g., peer-reviewed research journals) are the primary focus, but the research base is occasionally slim or nonexistent. In those cases, the best resources available may include, for example, reports, white papers, guides, reviews in non-peer-reviewed journals, newspaper articles, interviews with content specialists, and organization websites.

Resources included in this document were last accessed on March 26, 2019. URLs, descriptions, and content included here were current at that time.

This memorandum is one in a series of quick-turnaround responses to specific questions posed by education stakeholders in the Appalachia region (Kentucky, Tennessee, Virginia, and West Virginia), which is served by the Regional Educational Laboratory Appalachia (REL AP) at SRI International. This Ask A REL response was developed by REL AP under Contract ED-IES-17-C-0004 from the U.S. Department of Education, Institute of Education Sciences, administered by SRI International. The content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.