Research and Remote Learning: What do we know? What should we learn?

Learning@Scale 2020 Webinar Series

https://jwel.mit.edu/learningscale-2020-webinar-series
https://learningatscale.acm.org/has2020/

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Mitsui Career Development Professor,
Comparative Media Studies, MIT
MIT Teaching Systems Lab
tsl.mit.edu/covid19
Agenda

• What does research say about remote education and education during emergencies?
• What was supposed to happen?
• What actually happened?
• How should we get ready for fall?
  • Involve Students
  • Involve Families
  • Find Checklists
  • Organize around “Tentpole ideas”
Methods and Timeline

**March 25**- We read the release of the MA Department of Elementary and Secondary Report

**March 26-31**- We read and analyze available guidance from all 50 states

**April 1**- We publish an initial report ([ tsl.mit.edu/covid19](https://tsl.mit.edu/covid19)) and an open dataset [bit.ly/StateEdCOVID](https://bit.ly/StateEdCOVID)

**Ongoing**- Update data upon request
What does relevant research say?
Virtual Schools: Coached Homeschooling

Virtual Schools:
- Assume the presence of a parent/caregiver
  - (full time through primary school and into secondary)
- Provide primarily asynchronous learning materials
- Assume ~2-5 hours a day of family learning time
- (Were not set up in one week during a pandemic)

Virtual School Teachers:
- Disseminate curriculum and provide feedback to students
- In one survey, report ~6 hours per week in synchronous instruction
- Spend time individually reaching out and connecting with the most struggling students, especially those not asking for help


Image Credit: IowaPolitics.com https://www.flickr.com/photos/iowapolitics/albums/72157628929380005
THE NO SIGNIFICANT DIFFERENCE PHENOMENON

This website has been designed to serve as a companion piece to Thomas L. Russell's book, "The No Significant Difference Phenomenon" (2001, IDECC, fifth edition). Mr. Russell's book is a fully indexed, comprehensive research bibliography of 355 research reports, summaries and papers that document no significant differences (NSD) in student outcomes between alternate modes of education delivery, with a foreword by Dr. Richard E. Clark. Previous editions of the book were provided electronically; the fifth edition is the first print edition. This site is intended to function as an ever-growing repository of comparative media studies in education research. Both no significant difference (NSD) and significant difference (SD) are topics of study in education research. This site is a companion piece to Thomas L. Russell's book, "The No Significant Difference Phenomenon."

About the Author

Thomas L. Russell
Emeritus, North Carolina State University

The NSD research was originated and is still edited by Thomas R. Russell.

Read Full Bio

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Student Enrollment Patterns and Achievement in Ohio’s Online Charter Schools

June Ahn¹,* and Andrew McEachin²,*

We utilize state data of nearly 1.7 million students in Ohio to study a specific sector of online education: K–12 schools that deliver most, if not all, education online, lack a brick-and-mortar presence, and enroll students full-time. First, we explore e-school enrollment patterns and how these patterns vary by student subgroups and geography. Second, we evaluate the impact of e-schools on students’ learning, comparing student outcomes in e-schools to outcomes in two other schooling types, traditional charter schools and traditional public schools. Our results show that students and families appear to self-segregate in stark ways where low-income, lower achieving White students are more likely to choose e-schools while low-income, lower achieving minority students are more likely to opt into the traditional charter school sector. Our results also show that students in e-schools are performing worse on standardized assessments than their peers in traditional charter and traditional public schools. We close with policy recommendations and areas for future research.

Keywords: achievement; computers and learning; econometric analysis; educational policy; regression analyses; technology

In the history of educational technology research, it is well established that technology as a delivery mechanism (e.g., whether something is online or face-to-face) has no direct impact on student learning outcomes (Bernard et al., 2004; Clark,
Reconsidering Research on Learning from Media

Richard E. Clark
University of Southern California

ABSTRACT. Recent meta-analyses and other studies of media’s influence on learning are reviewed. Consistent evidence is found for the generalization that there are no learning benefits to be gained from employing any specific medium to deliver instruction. Research showing performance or time-saving gains from one or another medium are shown to be vulnerable to compelling rival hypotheses concerning the uncontrolled effects of instructional method and novelty. Problems with current media attribute and symbol system theories are described and suggestions made for more promising research directions.

However, this article will argue that most current summaries and meta-analyses of media comparison studies clearly suggest that media do not influence learning under any conditions. Even in the few cases where dramatic changes in achievement or ability have followed the introduction of a medium, as was the case with television in El Salvador (Schramm, 1977), it was not the medium that caused the change but rather a curricular reform that accompanied the change. The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition. Basically, the choice of vehicle might influence the cost or extent of distributing instruction, but only the content of the vehicle can influence achievement. While research often shows a slight learning advantage for newer media over more conventional instructional vehicles, this advantage will be

- All media are the same; so just study instructional practices within media
The narrative review of experimental and quasi-experimental studies contrasting different online learning practices found that the majority of available studies suggest the following:

- **Blended and purely online learning conditions implemented within a single study generally result in similar student learning outcomes.** When a study contrasts blended and purely online conditions, student learning is usually comparable across the two conditions.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Effect Size</th>
<th>95 Percent Confidence Interval</th>
<th>Test of Null Hypothesis (2-tail)</th>
<th>Retention Rate (percentage)</th>
<th>Number of Units Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beeckman et al. (2008)</td>
<td>Pressure ulcers: E-learning to improve classification by nurses and nursing students</td>
<td>+0.294</td>
<td>0.097</td>
<td>0.104</td>
<td>0.484</td>
<td>3.03**</td>
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<tr>
<td>Bello et al. (2005)</td>
<td>Online vs. live methods for teaching difficult airway management to anesthesia residents</td>
<td>+0.278</td>
<td>0.265</td>
<td>-0.241</td>
<td>0.797</td>
<td>1.05</td>
</tr>
<tr>
<td>Benjamin et al. (2007)</td>
<td>A randomized controlled trial comparing Web to in-person training for child care health consultants</td>
<td>+0.046</td>
<td>0.340</td>
<td>-0.620</td>
<td>0.713</td>
<td>0.14</td>
</tr>
<tr>
<td>Beyea et al. (2008)</td>
<td>Evaluation of a particle repositioning maneuver Web-based teaching module</td>
<td>+0.790</td>
<td>0.493</td>
<td>-0.176</td>
<td>1.756</td>
<td>1.60</td>
</tr>
<tr>
<td>Caldwell (2006)</td>
<td>A comparative study of traditional, Web-based and online instructional modalities in a computer programming course</td>
<td>+0.132</td>
<td>0.310</td>
<td>-0.476</td>
<td>0.740</td>
<td>0.43</td>
</tr>
<tr>
<td>Cavus, Uzonboylu and Ibrahim (2007)</td>
<td>Assessing the success rate of students using a learning management system together with a collaborative tool in Web-based teaching of programming languages</td>
<td>+0.466</td>
<td>0.335</td>
<td>-0.190</td>
<td>1.122</td>
<td>1.39</td>
</tr>
<tr>
<td>Davis et al. (1999)</td>
<td>Developing online courses: A comparison of Web-based instruction with traditional instruction</td>
<td>-0.379</td>
<td>0.339</td>
<td>-1.042</td>
<td>0.285</td>
<td>-1.12</td>
</tr>
<tr>
<td>Hairston (2007)</td>
<td>Employees’ attitudes toward e-learning: Implications for policy in industry environments</td>
<td>+0.028</td>
<td>0.155</td>
<td>-0.275</td>
<td>0.331</td>
<td>0.18</td>
</tr>
<tr>
<td>Harris et al. (2008)</td>
<td>Educating generalist physicians about chronic pain with live experts and online education</td>
<td>-0.285</td>
<td>0.252</td>
<td>-0.779</td>
<td>0.209</td>
<td>-1.13</td>
</tr>
<tr>
<td>Hugenholtzet al. (2008)</td>
<td>Effectiveness of e-learning in continuing medical education for occupational physicians</td>
<td>+0.106</td>
<td>0.233</td>
<td>-0.351</td>
<td>0.564</td>
<td>0.46</td>
</tr>
<tr>
<td>Jang et al. (2005)</td>
<td>Effects of a Web-based teaching method on undergraduate nursing students' learning of electrocardiography</td>
<td>-0.530</td>
<td>0.197</td>
<td>-0.917</td>
<td>-0.143</td>
<td>-2.69**</td>
</tr>
</tbody>
</table>
In the last decade, a variety of studies suggest that many students do worse in online courses compared to face to face counterparts, and this “online penalty” is most severe for already struggling and vulnerable students.
Interest-Driven Learning Online

While many struggle with the self-regulated learning traits and conditions required for online courses, it is also true that many adolescents, and adults are very successful at interest-driven, peer-connected online learning.

With high intrinsic motivation, online learning can sometimes come naturally.

With low intrinsic motivation, online schooling is often hard.
Education in Emergencies

Research in refugee crises and other emergency situations suggests that schooling can be a protective factor for supporting youth resilience by:

• Creating schedules and routines
• Providing intellectual stimulation
• Connecting youth with peers and trusted adults
What was supposed to happen?
Points of Consensus

- Concern for the physical health and well-being of students
- Equity as central focus
- Encouragement to maintain free and appropriate public education for students with disabilities
- Concerns about digital divides and emphasis on non-digital options
- Policy flexibility and “grace”
Non-Digital Remote Learning

Packets

Public Broadcasting

Family Projects


“Teachers said it's a great time to teach kids to cook or bake, sew or bead or repair a snowmachine, and to reinforce Inupiaq values.”

https://twitter.com/worcesterpublic/status/1242799666628100096?lang=ca
Students Enrolled in High School Credit-Bearing Courses Graduating in 2021 or After

School divisions must award standard credit for high school credit-bearing courses by ensuring that students have completed a majority of required standards, competencies, and objectives, including those that are essential for success in subsequent coursework. This process must be based on revised guidelines provided by the Board of Education (forthcoming) on the alternatives to the 140-clock-hour requirement.

School divisions should focus efforts on:

- identifying the specific required content that had not been taught as of Friday, March 13, 2020; and
- developing learning modules to address the missing content necessary for awarding standard credit with a particular focus on content that is essential for success in subsequent coursework.
  - Learning modules could be delivered to students through various instructional models, including face-to-face, blended, or self-paced under teacher supervision.
  - Learning modules should provide equitable access to all learners, including students with disabilities, English learners, students lacking access to high-speed Internet or devices to access, and students who are economically disadvantaged, among others.

Instructional delivery necessary to award standard credits may include a variety of options such as:

- providing instruction during the extended closure;
  - The provision of instruction should be done with careful consideration of providing equitable access and support for a variety of students.
  - Accessible technology may afford students, including students with disabilities, an opportunity to have access to high-quality instruction.
  - After the extended closure, divisions are responsible for reviewing how the closure impacted the delivery of services to students with disabilities and English learners.

For certain students who were not able to receive instruction during the closure, school divisions may choose offering instruction to those students during the summer of 2020; OR

- providing instruction by adjusting the 2019-2020 or 2020-2021 calendars; OR
- incorporating learning modules into the courses students take during the 2020-2021 school year schedule.

Virginia Guidance on Graduation Requirements, Awards of Credits, and Continuity of Learning.

Enrichment, Skills Review, and Home-Based Learning

- Leveraging the assets of home-based learning, rather than trying to recreate school, can provide meaningful learning experiences that connect to students’ home lives, interests, and identities. Trying to support school-like learning in a home setting may frustrate teachers, students, and families. Educators should consider how to give students agency to pursue learning that is relevant to them via resources that are available at home and with meaningful family engagement as possible.

<table>
<thead>
<tr>
<th>Learning experiences should look more like...</th>
<th>Learning experiences should look less like...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible goals and structures for learning</td>
<td>An attempt to recreate school at home</td>
</tr>
<tr>
<td>- extended time for learning and reflection</td>
<td></td>
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<tr>
<td>- use of commonly available materials</td>
<td>- assuming a strict “school day” schedule</td>
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<tr>
<td>- purposeful selection of learning targets</td>
<td>- requiring special materials (e.g., lab or</td>
</tr>
<tr>
<td>- allowing students to explore their interests materials not commonly found at home)</td>
<td></td>
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<tr>
<td>- meaningful, manageable tasks and projects</td>
<td>- pacing with the planned scope and sequence</td>
</tr>
<tr>
<td>- opportunities to learn without the use of devices or the internet</td>
<td>- assigning readings to stay “caught up”</td>
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<tr>
<td>Purposeful teacher-student interactions</td>
<td>Teacher-centered instruction</td>
</tr>
<tr>
<td>- optional opportunities to connect with teachers and peers</td>
<td>- virtual lectures/classes that all students</td>
</tr>
<tr>
<td>virtually and at a variety of times</td>
<td>synchronously attend</td>
</tr>
<tr>
<td>- teachers providing coaching, feedback, and encouragement</td>
<td>- teachers delivering information and</td>
</tr>
<tr>
<td>- encouraging students to engage in learning and reflection with their families and communities</td>
<td>assignments</td>
</tr>
<tr>
<td>- encouraging self-reflection on what students learn and how they learn it</td>
<td>- teacher instruction and feedback as the primary</td>
</tr>
<tr>
<td>- authentic learning in the home setting</td>
<td>mode of facilitating learning</td>
</tr>
<tr>
<td>- connecting learning to household activities, like cooking, fixing things, or gardening</td>
<td>Assignments to “get through” content</td>
</tr>
<tr>
<td>- asking students to identify relevant problems in their lives and engage in design cycles to address them</td>
<td>- emphasizing memorizing content or “checking off” tasks on lists</td>
</tr>
<tr>
<td>- allowing students to deeply explore learning of interest through investigation to build understanding and practice over time</td>
<td>- asking students to solve contrived or</td>
</tr>
<tr>
<td>- authentic learning in the home setting</td>
<td>hypothetical problems, or complete design</td>
</tr>
<tr>
<td>- connecting learning to household activities, like cooking, fixing things, or gardening</td>
<td>projects that value form over function</td>
</tr>
<tr>
<td>- asking students to identify relevant problems in their lives and engage in design cycles to address them</td>
<td>- trying to cover content through a volume of</td>
</tr>
<tr>
<td>- allowing students to deeply explore learning of interest through investigation to build understanding and practice over time</td>
<td>activities or skipping from topic to topic</td>
</tr>
</tbody>
</table>

New Mexico, Supporting Student Learning During COVID-19 School Closures with Distance Learning
What is the purpose of schooling during a pandemic?
What actually happened?
Everyone is having a different pandemic
Learning academic subject material?
Learning about technology and communication?
Learning about independent learning? Self-regulated learning?
Did remote learning become less effective over time?
Did remote learning become less effective over time?

Q: You said in the survey that when you first started teaching online you felt like it was going pretty well. I think you gave it an eight out of 10 and now it's more like a four out of 10.

A: Right.

Q: Can you tell me, what's gone downhill since the start?

A: Well, so what happened, so March 13 was our last in person class. Right away that first Monday I'm like all right guys, come on. We're onboard. I had them set up with Zoom. We're going and I had the kids checking in, right? Well during that week then our district is like eh, you can't use Zoom anymore. It's not vetted by us anymore. And even though I had used it for years to connect with industry experts and we did cross-buildings Zooms, virtual classes, didn't matter. I got nixed on using Zoom and we have to use WebEx which, whatever. It's not the same. Then we were also told, because that was one week prior to spring break and we were told spring break there was to be a hiatus of communicating with the kids. And then the week after spring break, again it was still supposed to be a hiatus where we were to be planning out how we are going to deliver education. Right? So there was that two-week lag time where the kids weren't being consistent, and that, it just plummeted. You know. I probably lost about 25 kids from that.
“Protective Factors” for Schools with Successful Remote Learning

• Existing in an affluent, connected, well-resourced neighborhood
• Strong school culture and leadership
• Existing commitment to technology
• Strong schoolwide pedagogical model
How should we get ready for fall?
Involve students
Involve families, teachers, and community
Step 1: Ensure You Have a Core and Extended Recovery Team

You'll need a core leadership team to steward the Recovery to Reinvention planning process and make key decisions. This team is ultimately responsible for having a sound Recovery to Reinvention Plan and communicating and implementing it effectively. We recommend this team be composed of roughly 4-7 individuals with the following areas of expertise and orientations, along with any additional areas of expertise or orientations you choose to prioritize:

**Area of Expertise:**
- Mental Health & Wellness Expert
- Learning & Instruction Expert
- Community Engagement / Student Experience Expert
- Operations Expert
- Technologist
- Teacher Association Representative
- 
- 
- 

**Orientation:**
- Ability to connect and build empathy
- Planning + Process Management
- Gets Things Done
- Capacity
- Willingness to offer different perspectives
- 
- 

We also suggest that the team is diverse in ways beyond expertise and orientations, and encourage you to think about the dimensions of diversity that are important to you before developing your teams. Finally, you'll need to think about the capacity of each member of the team in terms of how much time they can allocate to this work.

Use the table below to brainstorm who will be on your Core Recovery Team and to ensure the team meets the key considerations. Before finalizing the Core Recovery Team ask yourself: Does it check all the boxes in the right-hand column below? If not, what are the implications of leaving one or more of these boxes unchecked? Once the team is established, transfer the information into your Planning Hub.

<table>
<thead>
<tr>
<th>Who's on your Core Recovery Leadership Team?</th>
<th>Does the team meet the following considerations?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• The team is 4-7 people</td>
</tr>
<tr>
<td></td>
<td>• The team has representation in the areas of expertise and orientations that are critical to us</td>
</tr>
<tr>
<td></td>
<td>• The team reflects the dimensions of diversity that are critical to us</td>
</tr>
<tr>
<td></td>
<td>• The team members each have the time needed to fully partake in the work</td>
</tr>
</tbody>
</table>

A Blueprint for Back To School

service option or whether this role is best served by another organization in their community.

Transportation. Schools have to organize transportation to conform to physical distancing protocols health officials recommend. For instance, it is likely that schools may be advised to operate buses with a one-student-per-seat rule, creating massive burdens for bus fleets and driver pools. There is an additional set of questions regarding transportation for the millions of students in urban centers who typically rely on mass transit.

- Districts will need to develop contingency plans that anticipate the required numbers of buses and drivers and the budgetary implications. There will be a clear need for federal funding to help address the unanticipated costs.
- Districts will need to coordinate with city transportation officials to maximize the use and safety of existing public resources. In urban centers, that will require working with transit and public health officials to determine what is deemed safe and feasible for mass transit.
- Districts also need to anticipate issues regarding the health and safety of drivers and other transportation staff. Many drivers may be in a population that is vulnerable to COVID-19 or levy of the risks. Districts need to project what their situation will be for available drivers and plan accordingly.

academic years. It is also important, however, to avoid stereotypes or stigmas and assess students as individuals with targeted support accordingly.

SEL Supports. All students need supportive relationships and nurturing learning environments, particularly students facing additional stress. Educating the “whole child” is not a single set of courses, policies, or activities, but rather a mindset that should inform both school reopening plans and the support students receive. Schools should consider a needs assessment to understand the full range of student and faculty needs. Meeting those needs is not the school’s sole responsibility, but rather a shared responsibility among community partners including community health providers, food banks, counseling, and other resource providers.

- Schools will need to adopt SEL practices to better support the wide range of student needs. In particular, this means working with national organizations to provide the expertise and support for schools and systems to do this well.
- Sports and extracurricular activities represent a crucial component of SEL for many students, and there are questions about when these activities can be responsibly resumed. There is a crucial role for private organisations such as state athletic associations, the National Honors Society, and youth and women leagues, and similar organizations are working with states to determine appropriate timelines and explore possible accommodations that might promote an expedited restart.
Organize around Tentpole Ideas
Remote Learning Guidance from State Education Agencies During the COVID-19 Pandemic: A First Look

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Christopher J. Buttimer, Alison Fang, Garron Hillaire, Kelley Hirsch, Laura Larke, Joshua Littenberg-Tobias, Roya Moussapour, Alyssa Napier, Meredith Thompson, Rachel Slama

Massachusetts Institute of Technology
MIT Teaching Systems Lab
tsl.mit.edu/covid19
Last Updated: April 1, 2020

Resources
Teaching Systems Lab
tsl.mit.edu/covid19
TeachLabPodcast.com