

New Online Student Mobility Research: Ramifications for All Schools with Mobile Populations

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Connections Academy Online Schools



Connections Academy virtual schools provide a **full-time online education to students in grades K-12** across the United States.

- The online school program for these schools is provided by Pearson's Online & Blended Learning K-12 group (also known as Connections Education which was founded in 2001).
- In the 2018-19 school year, Connections Academy will support 37 online public schools in 28 states, serving over 70,000 K-12 students with online education.
- Hallmarks of Connections Academy schools include personalized learning, a standards-aligned curriculum, state-based and certified teachers, and flexibility in terms of pace and location of learning.
- Most schools are charter schools, overseen by governing boards, while some operate under contracts with districts or other authorizers.

Who are you?

Pearson Efficacy & Research

Our learners aren't just another stakeholder group for us — they're the very reason why we exist as a company.

That's why, in 2013, we launched our Efficacy program and committed to report publicly and transparently on the impact of our products on learners and we opened our reports up to a third-party in 2018.

Efficacy Product Reports

Our product efficacy reports are being updated to include new research that we've completed over the last year. These reports will be available by March 2018. Please check back!

<https://efficacy.pearson.com/>



Rigor – Academic Peer Review and Audit

To ensure the quality and the rigor of the research, Pearson contracted with SRI International to peer-review the reports and PwC to audit the process.



- Audited the accuracy and appropriate use of all data included in the studies.

- Provided technical assistance to improve the rigor of the efficacy research and implementation research.
- Conducted a third-party academic peer review in the areas of causal research, correlational research, and implementation research grounded in the WWV (What Works Clearinghouse) Standards and Procedures and the ESSA Standards of Evidence.

Examining Program Efficacy

What we know:

- Families with enrolled students express satisfaction with Connections Academy schools, however, general awareness and understanding about how virtual school works, who attends and why, remains riddled with misinformation and misperception.
- Additionally, questions around student performance persist; existing research studies paint an incomplete picture of achievement.
- Critical ingredient missing from existing research - mobility.

As such, Pearson set out to examine Connections Academy virtual schools; conducting research to explore the types of students who attend virtual school and their performance.



Background: Industry Research Findings – Impact of Mobility on Student Performance

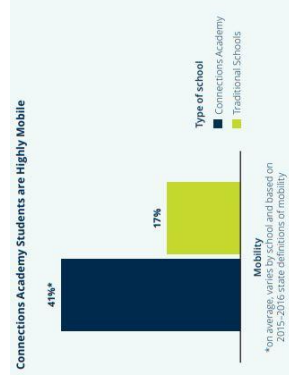
- The more often students moved, the **lower they scored on both the state standardized math test** and on teacher observations of the students' critical thinking.
- Even one non-promotional school move both **reduced elementary school achievement in reading and math and increased high school dropout rates.**
- Most pronounced effects for students who made three or more moves.
- Causes and consequences are varied and complex and so recommendations for addressing the issues must be adaptable and applicable to students' unique circumstances.

Rumberger, Russell W. (2015). Student Mobility: Causes, Consequences, and Solutions. Boulder, CO: National Education Policy Center. Retrieved 10/16/17 from <http://nepc.colorado.edu/publication/student-mobility>.

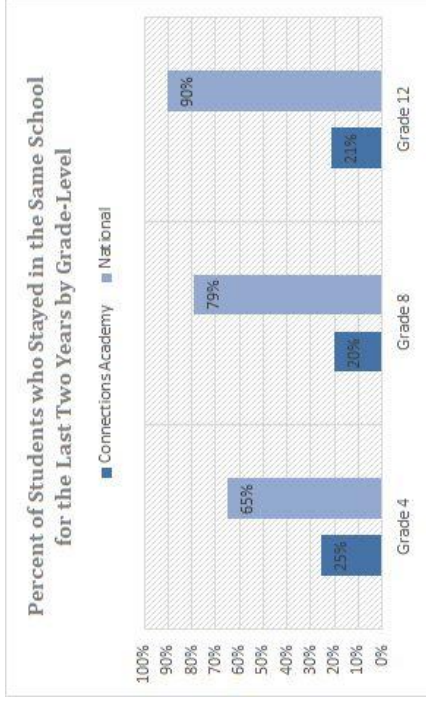
Considering Mobility

Of particular note, virtual school students are extremely mobile (and come to Connections with this characteristic); more than double that of traditional schools.

Unlike existing research on virtual school, this research incorporates student mobility and explores the performance of the unique student body at Connections Academy.



Background: Industry Research Findings – Prevalence of Mobility at Connections Academy Schools vs. National Average



National source data compiled on March 5, 2015 from NAEP Data Explorer website:
<http://nces.ed.gov/nationsreportcard/naepdata/dataset.aspx>

Rumberger, Russell W. (2015). Student Mobility, Causes, Consequences, and Solutions. Boulder, CO: National Education Policy Center.
 Retrieved 10/16/17 from <http://nepc.colorado.edu/publication/student-mobility>.

Mobility and the Efficacy Studies

Knowing that virtual school students are extremely mobile, the efficacy studies were designed, in part, to understand the drivers of mobility and its impact on performance.

What is mobility?

"In K-12 education, student mobility... can include any time a student changes schools for reasons other than grade promotion, but in general it refers to students changing schools during a school year."

(Education Week, August 2016)

How is it defined and measured?

- Measures differ across states with some states have no agreed upon measure
- At Pearson Online & Blended Learning, number of prior schools attended
- There are other ways as well that can and are used in different contexts (e.g. late enrollers, number of new students, during school year withdrawals, etc.)

Note. Mobility was measured using the most appropriate metric for each efficacy study (Number of prior schools was used in Phase One, and state definitions were used for Phase Two).

1st Q&A session

Current Efficacy Research

Study 1: Student Profiles

Study 2: School Comparison

Efficacy Research

Research Questions

1. What are key characteristics of students who enroll at Connections Academy schools, and in what patterns do we see characteristics or profiles “cluster” together? **(Study 1)**
2. How do students who attend Connections Academy schools perform in comparison to brick and mortar schools and non-charter virtual schools with similar characteristics within the same state? **(Study 2)**



Study 1: Student Profile Study

What are key characteristics of students who enroll at Connections Academy schools, and in what patterns do we see characteristics or profiles “cluster” together?

Method: Two-Step Cluster Analysis Process

- Step 1 - Exploratory initial clusters are pulled from a large dataset
- Step 2 - Statistical program determines number of clusters based on “best fit”



Study 1: Cluster Analysis Variables

Students were grouped into “clusters” or profiles based on the following student characteristics and performance outcomes.

<ul style="list-style-type: none"> • SPED • Gender • Ethnicity • ELL Status • FARMS Eligibility • Type of Prior School • Withdrawal Status 15/16 • Withdrawal Status 16/17 • Enrollment Category 15/16 • Consecutive Years Enrolled • Returned 16/17 Year 	<ul style="list-style-type: none"> • Mobility (# prior schools attended) • Reason for attending Connections Academy • State Reading Proficiency Level • State Math Reading Proficiency Level • ELA Course Average • Math Course Average • End of Course Survey Average
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Study 1 Results: Clusters identified in student profile study

Student Profile	# Students in the profile	Reasons for Enrolling in a Connections Academy	% of Students new or returning	% enrolling late or on time	% of mobile students (# prior schools at initial enrollment)
1. <i>Advanced students</i>	3,693, 8%	Student is academically advanced	Equally new late and returning	Equally on time and late	48%
2. <i>Health problems</i>	5,224, 11%	Student has physical or mental health problems	67% new students	54% late	52%
3. <i>New, bullied students</i>	6,164, 13%	Student is experiencing bullying	100% new students	65% late	60%
4. <i>New, enrolled because struggling academically</i>	5,348, 11%	Struggling academically	100% new students	64% late	58%
5. <i>New, enrolled for greater flexibility/virtual school choice</i>	14,812, 31%	Vague reasons (Flexibility and dissatisfaction with local school)	100% new students	Equally late and on time	48%
6. <i>Returning, enrolled for greater flexibility/virtual school choice</i>	7,491, 16%	Vague reasons (Flexibility and dissatisfaction with local school)	100% returning (2 to 3 years)	93% on time	35%
7. <i>Returning, originally enrolled with various challenges</i>	4,981, 11%	50% bullied, 66% struggling academically, 16% health problems	100% returning (2 to 3 years)	90% on time	58%

Study 1 Results

Connections Academy schools serve highly mobile students with complex needs known to impact academic performance. These students' needs include, among others, health concerns, bullying and safety, looking to be challenged, trying to catch up, and flexible scheduling.

These characteristics create a unique student population that differs from traditional bricks- and-mortar schools.



Study 2: School Comparison Study

How do students who attend Connections Academy schools perform in comparison to brick and mortar schools and non-charter virtual schools with similar characteristics within the same state?

Method: An exploratory study that directly compared achievement at a Connections Academy school to a similar brick and mortar school and a non-charter virtual school within the same state.

- Sites were compared at grades 3-8 for Reading and Mathematics
- All analyses were based on publicly available data. .



Study 2: Methods

Schools examined in the following states:

AZ	IA	NV
CA Central	ID	OH
CA Capistrano	IN	OK
CA Ripon	KS	OR
CO	MN	SC
FL	MI	TX
GA	NM	UT

Study 2: Methods (continued)

Two-step Matching Process

Step 1 – Found the 3 closest matching school districts within each state

Step 2 - Selected the single best matching school from within the top 3 districts.

Note: We identified the nearest neighbors using weighted composite matching scores. Matches were made separately by subject within each grade (e.g., 4th grade math students were matched with a bricks-and-mortar school that may have differed from the 3rd grade match).

Study 2: Methods (continued)

Matching Formulas

Districts

$$12(A)^* + 6(B) + 3(C) + D + E + F + G$$

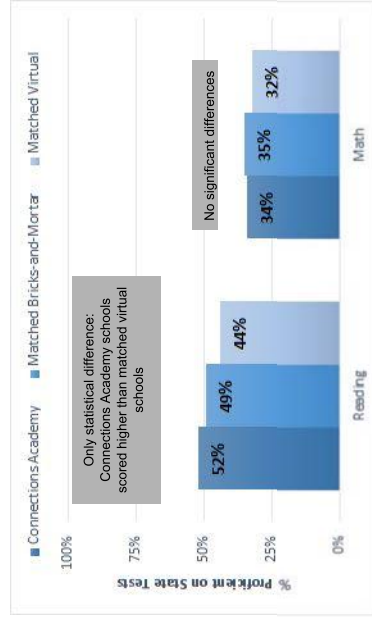
Schools

$$12(B) + 6(C) + 3(G) + D + H + I + J + K$$

A=percent students mobile (State definitions)
 B=percent students proficient at grade level for content
 C=percent students eligible free/reduced priced lunch
 D=percent White students
 E=instructional expenditure per pupil
 F=percent students in individualized education program
 G=enrollment for specific grade level
 H=percent Hispanic students
 I=percent African American students
 J=percent Asian students
 K=percent Multi-racial students

Notes: It was appropriate to weight mobility the highest due to its prominence among virtual students, and prior year achievement is weighted second due to its importance in predicting subsequent year achievement. Only mobility was excluded from the formula that was used to conduct the virtual school comparisons.

Study 2: Results



Conclusion:

The results provide evidence that Connections Academy students can receive the same quality of education as that offered at their local public school, while simultaneously taking advantage of the benefits offered to them by virtual schools; and that students may be better positioned in Connections Academy schools than other virtual schools

Phase Two: School Comparison Study Results

Based on the SRI and PWC review, Pearson is able to make the following comparative statements about the efficacy of Connections Academy schools:

- There was **no statistical difference in percentage scoring proficient in math and reading between student cohorts in Connections Academy schools and cohorts in brick-and-mortar schools** that were matched on prior achievement, and after adjusting for district-mean student mobility and school-mean student Socioeconomic Status (SES) and other demographic factors.
- **Student cohorts in Connections Academy schools statistically outperformed (by 7.9 percentage points) cohorts in other virtual schools** (matched on prior achievement) in terms of the percentage scoring proficient in reading on state assessments.
- There was **no statistical difference in percentage scoring proficient in math between student cohorts in Connections Academy schools and cohorts in other virtual schools** that were matched on prior achievement.

What are we doing next?

- **Mobility & Accountability**
 - Elevating the role of mobility as a critical factor when measuring the success not only of virtual schools but others experiencing high mobility.
- **Ensure we are serving students from all profiles**
 - Working with software development to identify and track students
 - Interdepartmental community of practice surrounding intervention with students experiencing traumatic prior to enrollment.
 - Commissioned literature reviews about best practices in serving students who have been bullied and experiencing mental health issues.
 - Conducting research on each student profile to find those supports and instructional practices that distinguish students who have been more and less successful (e.g., synchronous contacts, supplemental interventions, teacher progress monitoring, social opportunities, counselor role.).
 - Collaborating with academic institutions to increase our bandwidth.

3rd Q&A session

ALWAYS LEARNING

Appendix

References & Resources

Report from the National Education Policy Center

- http://nepc.colorado.edu/files/pb_rumberger-student-mobility.pdf

Nice look at how mobility interacts with other variables to result in dropout from 8500 student sample

- https://www.researchgate.net/profile/Dana-Haynie/publication/236026151_Student_mobility_and_school_dropout/links/542b0a110cf29bbc126a7498.pdf

Overview of how student mobility affects learning

- [Student Mobility: How It Affects Learning](#) (Education Week)

School Comparison Study: Methods

Mobility Data

Students mobility was collected from each state's department of education. This information can be classified into three categories:

- **Step 1:** State defined mobility
- **Step 2:** If the state did not have a definition, DoE provided information to calculate percent mobile (One of the following must be true):
 - Absent 20% or more of the school year
 - Enrolled after the enrollment cutoff date, or
 - Withdrew and did not complete state testing
- **Step 3:** If the state did not have a definition and could not provide information to calculate mobility, truancy was used.

Note that mobility data was only available consistently at the school district level.

SRI International and PwC Methods

SRI

Pearson Education has retained SRI International to provide technical assistance to improve the rigor of the efficacy research and implementation research conducted by Pearson. Toward this end, SRI is: (i) conducting a third-party peer review of recent Pearson research reports in the areas of causal research, correlational research, and implementation research grounded in the WWC (What Works Clearinghouse) Standards and Procedures and the ESSA Standards of Evidence, (ii) advising on how recent Pearson research reports could be strengthened without additional data collection or significant redesign, and (iii) providing formative assistance on how future Pearson research efforts could be improved to provide more accurate and compelling findings. In addition to providing targeted research report feedback, SRI is supporting Pearson in developing its own capacity for conducting internal research reviews.

PwC

PwC provided robust independent assurance over both the process by which Pearson generated its Efficacy Statements and the integrity of the statements themselves. PwC's work was conducted in accordance with the globally recognised audit standard ISAE 3000, by a multi-disciplinary team including educators, statisticians, and audit process experts. Their audit procedures included tests of controls over the design and execution of research studies examining the impact of Pearson's products on learner outcomes, reviews of the data integrity and statistical conclusions within those studies, and assessment of the distillation of those studies into Efficacy Statements. Further details of PwC's work are set out in their independent assurance opinion at the back of each product's Research Report.