Finding What Works

Results from the LEAP Innovations Pilot Network

2014-2015

LEAPinnovations™

INTRODUCTION

Finding What Works: The LEAP Innovations Approach

LEAP Innovations was founded on the premise that our outdated, one-size-fits-all education system isn't working. Instead, LEAP is driving toward a new paradigm, one that harnesses innovation – new teaching and learning approaches, along with technologies – to create a system that is tailored around each individual learner.

The need for this work is great. Right now, just 25 percent of high school students are graduating with the skills needed to succeed academically in college.[1] Here in Chicago, only 11 percent of Chicago Public Schools students test "college ready" as measured by the ACT.[2] Simply put, continuing to tweak a 19th century system will not be enough to prepare students for a 21st century world. Just 50 million Americans will be qualified for 123 million high-skilled jobs by 2020.[3]

Meanwhile, edtech is a rapidly growing, $8 billion industry.[4] And educator demand for innovation in the classroom is high: a recent study from the Bill & Melinda Gates Foundation found that 93 percent of teachers use some sort of digital tool to help guide instruction. However, the same study found that 67 percent of these teachers are not fully satisfied with the data and tools available to them.[5] Other pilot programs across the country focus on teacher and student satisfaction with products. However, given the depth and breadth of the edtech market and the explosive rate at which it's grown, there isn't enough empirical data yet on what is actually having the biggest positive impact on student success.

The LEAP Innovations Pilot Network was created to help address this lack of data. By identifying the most promising innovations, piloting these innovations with educators and students in the classroom, and evaluating the results, LEAP aims to share findings and scale what's working best.

In this brief, you will find LEAP's results and learnings from the 2014-2015 school year. LEAP's first round of pilots launched in the fall of 2014, focusing on literacy edtech tools with 15 schools across Chicago. The goal? To determine the best way to find, implement, and evaluate edtech tools and innovative teaching practices with schools, and to begin to understand which of these tools and practices have the potential to make the biggest difference in student achievement.

What was learned? A great deal, starting with how to best focus and evolve the LEAP piloting process, and how to inform the processes of other educators, organizations, and districts piloting around the country.

Pilot results also clearly show the potential positive impact of innovation in the classroom. **For Pilot Network students in grades 3-8 who qualified for free or reduced price lunch, an approximate measure for poverty, the size of the impact on a leading national assessment equated to a 45 percent reduction in the achievement gap.** This finding alone provides strong evidence for continuing LEAP's work alongside innovative educators and promising edtech companies.

MAKING A MATCH

School and Company Selection

Company Selection and Support

In spring 2014, LEAP issued its first call to action for innovative tech solutions to address literacy challenges facing students in kindergarten through grade 8. Following widespread recruitment, LEAP received 29 total product applications from edtech companies around the country.

LEAP first reviewed applications internally, selecting for companies that clearly personalized the learning experience for students in literacy, as well as demonstrated a record of prior success. An external curation panel of learning scientists, educators, and other subject-matter experts was then assembled to further evaluate the applicants and decide which would be made available to schools for selection. Their criteria included the potential for student impact; company strength and stability; alignment to learning science and Common Core standards; augmentation of teacher capacity; and functionality around student feedback and motivation.

The curation panelists chose nine literacy edtech products to move forward and attend our product selection event, known as Match Day. At Match Day, school teams met with a subset of these selected companies that were best suited to their needs. Both schools and companies were prepped by LEAP for these meetings in advance, ensuring they were not generic sales pitches but rather in-depth demos tailored to school needs and targeted for educator concerns. Seven companies ultimately attended Match Day, and six were selected by schools for pilots.

School Selection and Support

For our 2014-2015 pilots, LEAP sought to recruit 15 K-8 Chicago schools ready to pilot literacy innovations. Fifty-four schools and one after-school program ultimately applied, demonstrating great demand for edtech innovation and personalized learning. It is important to note the extraordinary leadership of these principals and teachers, willing to step out of the box and pursue new ways of teaching and learning to benefit their students. Applicants included traditional and gifted/selective Chicago Public Schools, charter schools, and private/Archdiocese schools.

From this pool of applicants, 16 schools were selected to participate. Applications were evaluated based on basic IT infrastructure requirements, school commitment, demonstrated readiness for innovation, and recommendations from district leadership. Fifteen schools ultimately participated in pilots, including five traditional Chicago Public Schools, eight charter schools, and two Archdiocese schools.

Prior to beginning their pilots, schools attended a workshop with LEAP to gain exposure to a working definition of personalized learning and to design implementation plans, including schedules and culture systems, for their year-long pilots. During the pilots, schools received on-site support from LEAP and assistance trouble-shooting product problems with their selected edtech company.

PILOT NETWORK STUDENT DEMOGRAPHICS

2669
Total Students

40%
Black

56%
Hispanic

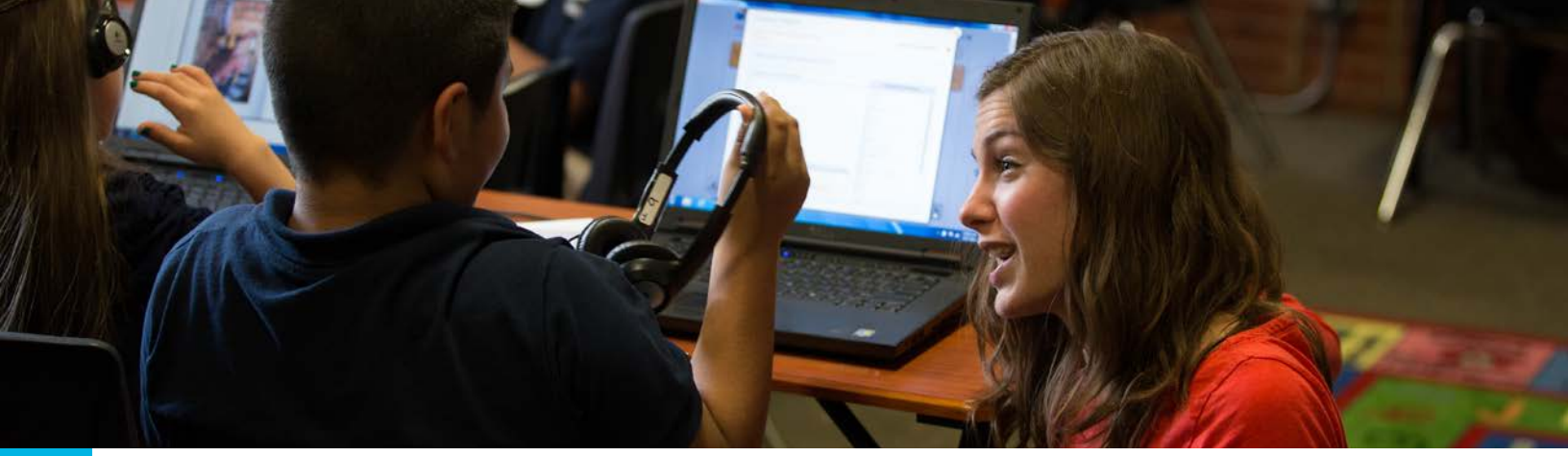
2%
White

96%
Low Income

10%
Diverse Learners

32%
ESL

(includes all students who piloted)



FINDING WHAT WORKS

Our Evaluation

LEAP's primary aim in evaluating the pilots was to determine whether the use of edtech products had an impact on student learning. To do this, both a reliable measure of growth in student learning as well as a control group of similar students not engaged in the Pilot Network for comparison was needed.

LEAP used NWEA MAP in grades 3 – 8 and DIBELS in grades K – 2 as measures of literacy/reading comprehension for students. MAP and DIBELS assessments are used for accountability by Chicago Public Schools and almost all students are required to participate. For this reason, LEAP was able to use data from district-managed and charter Chicago Public Schools as the control group. Both of these assessments are usually administered three times a year. The analysis looked at student growth scores from spring 2014, the spring before the pilots started, to those from spring 2015, the spring the pilots ended.

LEAP used a method known as propensity score matching at the student level to create a control group as equivalent as possible to the Pilot Network students. LEAP then used a series of multilevel models to estimate the impact of participation in our program, the use of particular edtech tools, and the way tech tools were integrated into the classroom.[6] These models controlled for student characteristics such as gender, race, free/reduced price lunch status (an approximate measure of poverty), special education status, English language learner status, and prior test score.

This kind of statistical model is the best way to estimate program impacts in the absence of a completely randomized process for assigning schools, teachers, or students to the Pilot Network program. While randomization is the scientific ideal, the Pilot Network program is not solely a research endeavor. It is first and foremost designed to support teachers and principals who want to innovate in their schools as they develop and implement their own unique vision for their classrooms. It is not feasible to mandate this kind of thoughtful design work. However, one of LEAP's goals for the future is to identify the most promising approaches developed by teachers and principals through the Pilot Network, codify these, and then work with more schools to implement these codified models in a randomized control approach.

For this first round of pilots, we were able to estimate effects for grades 3-8 using NWEA MAP. We were not able to find results for grades K-2 using DIBELS. The results found in this brief include data from 12 of the 15 schools in grades 3-8 only and four of the six products. One of the piloted products is designed only for early childhood grades and therefore their data and that of their piloting school is not included here. The other two schools not included were the Archdiocese schools. The Archdiocese does not require that their students take NWEA, which limited LEAP's ability to evaluate student impact in the context of the other pilots, or in the context of a control group. This also required LEAP to eliminate the product they chose to pilot from the findings as well, as they were the only schools that selected that particular product to pilot.

ADVANCING POTENTIAL

Our Results

For this first round of pilots, the total number of students included in the analysis was 1,613. Analysis showed promising, statistically significant impact. Overall, for grades 3-8, participation in the Pilot Network resulted in a gain of 1.07 additional test-score points above what the control group achieved on NWEA. This is equivalent to closing the achievement gap on NWEA for low-income students by approximately 45 percent, nearly closing the gap for Black students, and more than closing the gap for Hispanic students. As an initial indication of what personalized learning and edtech in the hands of forward-thinking educators can achieve, this result is incredibly encouraging.

As part of LEAP's focus on teaching practice in addition to product impact, data was gathered on the different edtech integration methods used by teachers in the pilot classroom, and their effect on NWEA results. Three types of models were identified: station or center rotation, whole class 1:1 instruction, and supplementary 1:1 instruction.

Results indicated that whole class 1:1 instruction and supplementary 1:1 instruction were the most effective, producing greater gains in achievement than the station rotation model. This is especially interesting as rotation models are rapidly gaining momentum as a popular solution for integrating technology into classrooms. It's important to note that LEAP's classification of models is based on self-report and observations, and that the number of classrooms using models other than station rotation are small. Additionally, the supplementary class 1:1 model comes with built-in extra instructional time, and one can't distinguish the impact of technology from the impact of time.

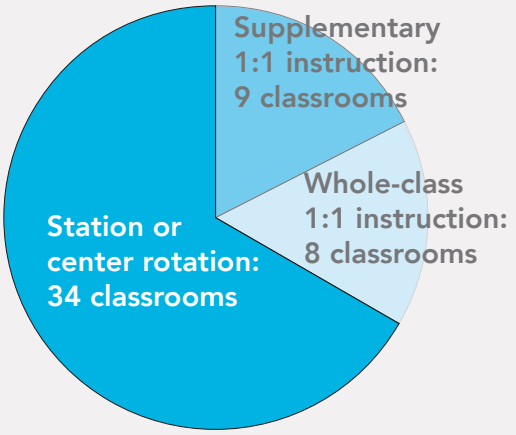
Students in the Pilot Network gained an **additional 1.07 test-score points** above what the control group gained.

This is equivalent to closing the achievement gap by:

45%
for Low-Income Students

78%
for Black Students

129%
for Hispanic Students



Use of Edtech Integration Methods by Classroom

Edtech Integration Methods

Station or center rotation within the classroom involves small groups of students moving between different learning experiences within the classroom. Typically, one of the stations is used to allow independent student use of an edtech tool. Often, one of the other centers or rotations is designated for small-group instruction with the teacher or another adult. This was by far the most popular model.

Whole-class 1:1 instruction denotes teacher-led, whole-class instruction where each student has a device (1:1 ratio of students to devices). Typically, all students are working on the edtech tool at the same time with the teacher guiding instruction.

Supplementary 1:1 instruction occurs when additional time outside of core instruction is set aside to allow students independent time using edtech tools. In some cases, this extra time is framed as time for students to catch up with school work or as time for teachers to work with individual students. In other cases, this model is framed as time for students to decide how to use.

Promising Solutions

While the overall number of students participating in pilots was large, the number of students piloting each individual product was for the most part small. For the reasons noted above, this brief only includes data for four out of the six piloted products. Of those four products, one product's sample size was too small to show significant results, and another product's pilot was affected by significant implementation challenges throughout the academic year, including teacher turnover. However, LEAP did find that two products showed statistically significant impact on student learning: Lexia Reading Core5® and ThinkCERCA™.

Lexia Reading Core5® is an adaptive literacy tool that provides students with personalized learning paths through six key areas, including comprehension, phonics, and vocabulary. Lexia was piloted in 63 classrooms in grades K-5. In grades 3-5 (data used in the analysis), Lexia was piloted by 1,038 students. The use of Lexia resulted in a 1.42 point increase in NWEA reading scores. This translates to closing the achievement gap by more than half for low-income students, completely closing the gap for Black students, and more than closing the gap for Hispanic students.

ThinkCERCA™ is a critical thinking and literacy framework rooted in an online platform, designed to help students form critical thinking skills – fairly unique as an edtech tool. It was piloted by two classrooms in one school with a total of 48 students, and it was the only product we piloted at the 7th and 8th grade levels. Our results showed a statistically significant, very large impact of a 6.29 point gain for those students. This is equivalent to almost an extra year's worth of growth, or closing the gap for low-income students three to four times over.

Lexia Reading Core5®

Students using Lexia CORE5 gained an **additional 1.42 test-score points** above what the control group gained.

This is equivalent to closing the achievement gap by:

60%
for Low-Income Students

103%
for Black Students

169%
for Hispanic Students

ThinkCERCA™

Students using ThinkCERCA™ gained an **additional 6.29 test-score points** above what the control group gained.

This is equivalent to closing the achievement gap by:

264%
for Low-Income Students

456%
for Black Students

749%
for Hispanic Students

NEXT STEPS

What We've Learned

Findings from this first year of piloting clearly show the great possibilities for personalized learning and education technology. There is demonstrable demand among educators in Chicago for innovation, and there is emerging evidence that adaptive edtech tools in the hands of dedicated educators and new edtech integration methods can make a real impact on student achievement. LEAP has also gained valuable knowledge around best practices and key challenges not only for future pilots, but for research on the education innovation space at large.

LEAP's five key takeaways:

1. Buy-in is crucial for pilot success.

For a pilot to be successful, everyone involved – teachers and principals – must have a real stake in its success. At LEAP's Match Day, where school teams and companies meet for the first time to inform product selection, all team members were present – not just school leaders – and decision-making as a team was strongly encouraged. Teams expressed that Match Day was valuable not just as a selection vehicle, but also as a time to come together as a team, outside of the school building, to discuss their vision for innovation at their schools.

2. Teaching and learning practices must come first.

LEAP's approach to piloting has always been rooted in identifying the most pressing instructional needs at participating schools and working to find the most promising tools to meet these needs. Following this first round of pilots, LEAP identified the most critical factor in a pilot's success as the teaching and learning practices that shape it. As such, LEAP has sharpened its focus on working with schools to build pedagogical approaches to better personalize the learning experience for students and help educators use technology as a tool. The edtech tool selected for piloting should work in support of these redesigned approaches.

For LEAP's second round of pilots (2015-2016), schools have had significantly more support, both before and during pilots, in creating learning experiences for students that are learner focused, learner paced, and learner led – the core tenets of LEAP's approach to personalized learning. To better support educators, LEAP has codified this approach into a framework, which defines personalized learning's key components and strategies. LEAP has also developed surveys to measure the use of personalized learning in the classroom. These surveys are being taken by teachers and students across the country for the first time this year.

3. The pilot process must be carefully designed.

Bringing in a new edtech tool, along with new instructional strategies, can be complicated. Both

schools and companies require significant support to ensure that pilots can be implemented smoothly and with fidelity. To this end, LEAP expanded the onboarding process for the second round of pilots (2015-2016). This included a semester-long professional development series for school teams that took place prior to the start of their pilots.

Additionally, while pilots began in the early fall, most weren't operating consistently or efficiently for six to eight weeks. For many pilot programs around the country, six to eight weeks is the entire length of the pilot – some are even shorter. With this knowledge, LEAP confirmed its hypothesis that, to have data meaningful enough to assess impact on student achievement, pilots must continue throughout the academic year.

4. Edtech companies need research support.

One of LEAP's earliest findings was that the majority of companies did not have reliable, research-based recommendations on how much students should use their product or how they should progress through the product. Many of the products we piloted are rooted in learning science, so their approaches and content are sound. However, without credible outcomes research, it is difficult to establish usage and product implementation recommendations. Likewise, it is difficult to conduct classroom-based research without these recommendations. These conversations highlighted the need for further research on product implementation and learning outcomes.

5. The data extracted from edtech products is critical.

For some of the companies that were chosen for pilots, data wasn't always presented or delivered in a way that was useful for teachers to incorporate it as needed in instruction. Additionally, the ability to extract data is a pain point. During the curation process, LEAP found that many of the less-mature companies didn't have the capacity to export data on a regular basis, or that their platform wasn't designed to capture the nuanced data needed for research. Moving forward, establishing standards around what data teachers need to most effectively utilize products and what data is needed to evaluate them will be key.

The promise of personalized learning enabled by technology to transform education is great. But first, the tools and strategies that will be most effective in getting there must be identified. Pilot programs are certainly a promising way to do this – 100 percent of the educators LEAP worked with would recommend the LEAP Pilot Network to other educators, and 86 percent of LEAP school teams adopted the product they piloted.

These results are just a small indication of what's possible. By continuing to expand work here in Chicago and nationally, LEAP has the opportunity to provide insights on innovations that work, bring them to scale, and help all students accelerate their learning potential.

REFERENCES

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[6] The multi-level models used by LEAP: Level 1: $(Post\_Test)_{ij} = \beta_{0j} + \beta_{1j}(Prior\_Test)_{ij} + \beta_{2j}(Prior\_Test^2)_{ij} + \beta_{3j}(Gender)_{ij} + \beta_{4j}(Race: Asian)_{ij} + \beta_{5j}(Race: Black)_{ij} + \beta_{6j}(Race: Hispanic)_{ij} + \beta_{7j}(Special\_Educ)_{ij} + \beta_{8j}(ESL)_{ij} + \beta_{9j}(F/R\ Lunch)_{ij} + \beta_{10j}(Grade)_{ij} + \beta_{11j}(Product/Model)_{ij} + e_{ij}$ (for student i and school j); Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

About LEAP Innovations

LEAP Innovations is a Chicago-based nonprofit organization that connects innovation and education to reinvent our one-size-fits-all education system and transform the way kids learn. We work directly with educators and innovators to discover, pilot and scale personalized learning technologies and innovative practices in the classroom and beyond. LEAP serves as a national hub for a new, collaborative ecosystem of the best and brightest education innovators, digital entrepreneurs, and thought leaders committed to reinventing education in our country.

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