

PILOT-STAGE

RESEARCH STUDIES

Base Academy of Music
Doors to Explore
K12 Perform
Innovare
inquirED
Words Liive



AUGUST 2018 - NOVEMBER 2018

LEANLAB
EDUCATION

COHORT 5
K12 FELLOWSHIP

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Edwards is a researcher and Kansas City native. She received her B.A. from Clark Atlanta University and M.A. and Ph.D. in Community Psychology from University of Illinois at Chicago. Ebony has spent the last 10 years equipping school district administration, program developers, and policy-makers in multiple cities and states with research, evaluation, and technical assistance to guide decision-making.

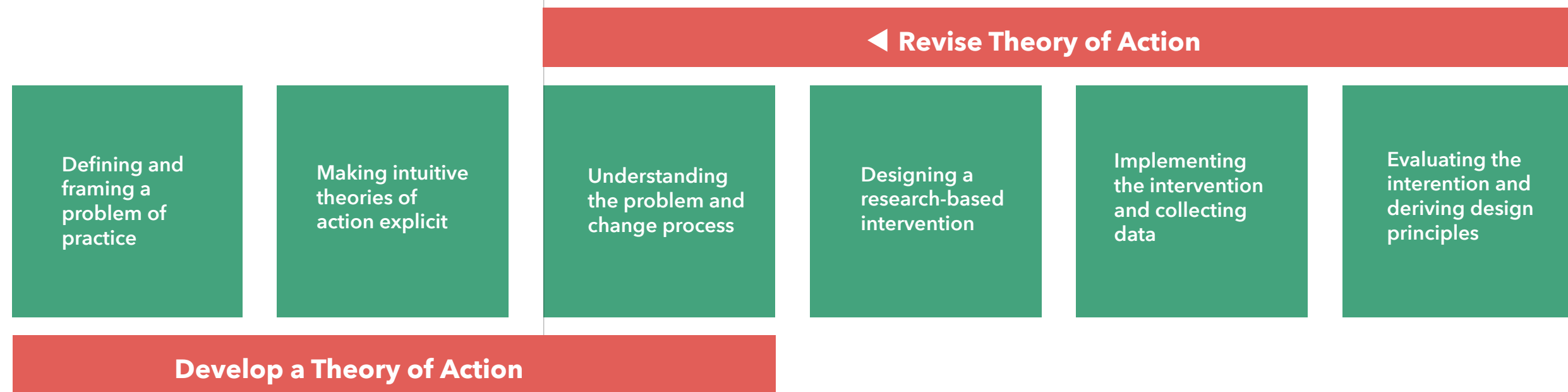
BACKGROUND

Over the course of LEANLAB Education's K12 Fellowship, fellows conducted research at three public schools in Kansas City. This research was undertaken not only to determine the impact of the ventures but also to give students, teachers, and administrators a chance to give feedback and have their input heard early-on in the life-cycle of those products and services. This concept of designing with the community isn't a symbolic gesture; we believe this process of feedback and iteration, ultimately, creates more sustainable products that are directly meeting the demands of the schools that entrepreneurs hope to serve.

It was important that this research process¹ was inclusive, as well as rigorous. Our fellows and the Lead End User at the school site (usually a teacher, instructional coach, or administrator) worked closely to define the objectives of the study. Together, they worked with our Director of Research, Ebony Edwards, Ph.D, to **develop a theory of action, design the test methodology, implement the test, collect and interpret data, and make recommendations for modifications.**

The results of these research studies were fruitful for both the ventures and the schools involved. During the four month studies, the fellows were able to gain insights on what was working and what wasn't through a mixture of qualitative data collected and anecdotal feedback from teachers, administrators, and students that were using the products. All the fellows made modifications to their products based on their research. LEANLAB awarded \$60,000 at the end of our fellowship for inquirED, Base Academy of Music, Innovare, and Doors to Explore to continue the research with their partner schools.

Design Development Logic Model²



1. The LEANLAB Research Model was informed by Rick Mintrop's Design Development Logic Model, a flow for design-based school improvement that has been implemented and tested in the Leadership for Educational Equity Program (LEEP) for several years.

2. Mintrop, Rick. *Design-Based School Improvement: a Practical Guide for Education Leaders*. Harvard Education Press, 2016.

GLOSSARY

Problem of Practice

A problem of practice is an area that a school or school district identifies that focuses on the effect leaders have on practices of service delivery to students and family. It is directly observable, actionable, and connects to a broader strategy of improvement.

Theory of Action

The delivery model of the Theory of Change. It articulates the mechanisms through which the activities are being delivered and following which processes.

Usability

The extent to which the product (or prototype) functions as intended, and the extent to which the intended user understands or can learn to use the product (or prototype) effectively and efficiently, and is physically able to use the product (or prototype).

Feasibility

The extent to which the product can be implemented within the requirements and constraints of an authentic education setting.

Initial Feasibility

After using a prototype, the extent to which the user believes the full product concept could be implemented within the requirements and constraints of an authentic education setting, and the extent to which a user believes the product could have potential for improving user outcomes.

Fidelity of Implementation

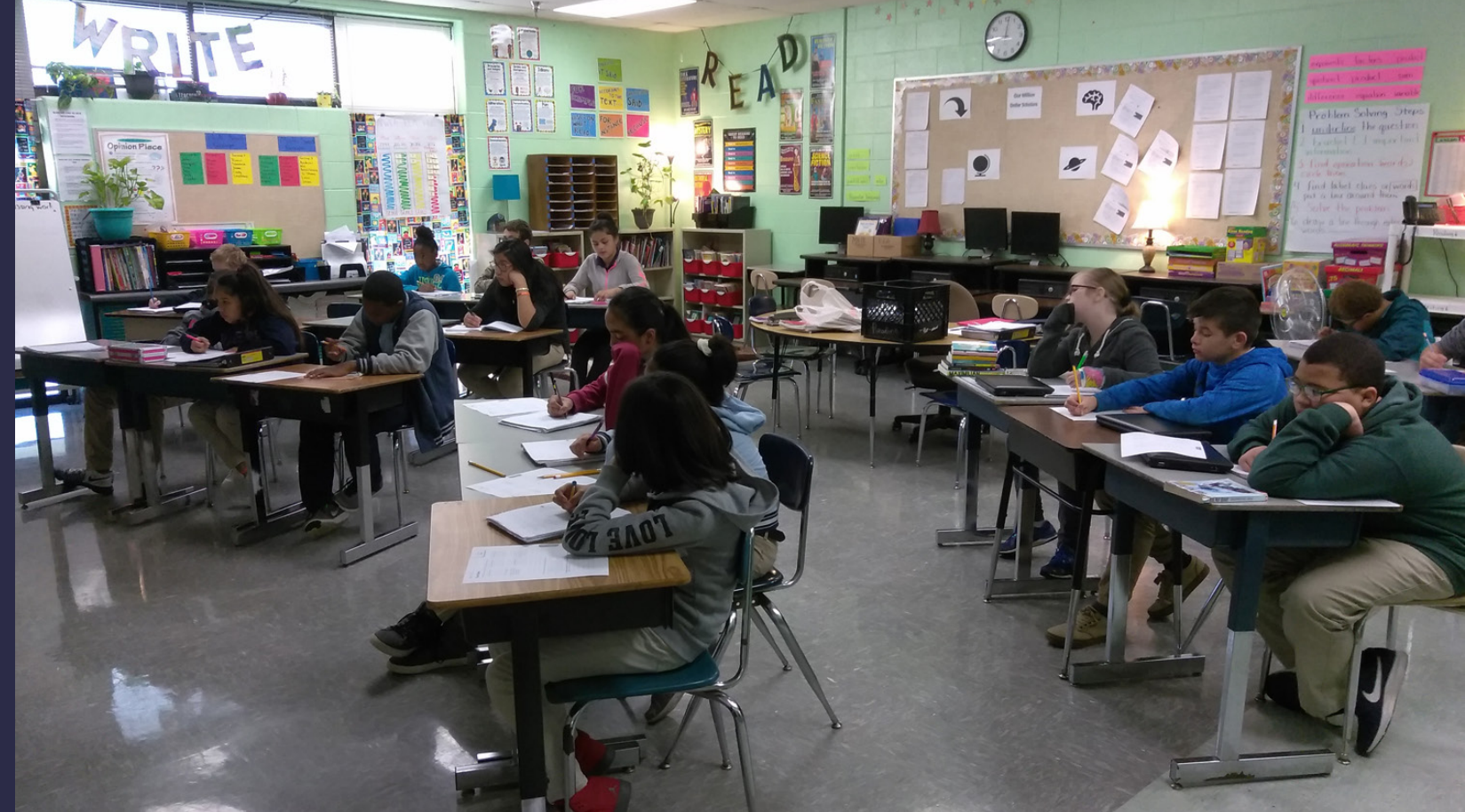
The extent to which the product is being delivered by end users in an authentic education setting as it was designed to be.

Promise of Outcomes

The extent to which the pilot research shows improvement in student academic achievement or other outcomes of interest.

Lead End User (LEU)

The individual/s at the school site responsible for the implementation of intervention.



SCHOOL BACKGROUND & PROBLEM OF PRACTICE

Pitcher Elementary is a public school in the Kansas City Public School System (KCPS) that serves approximately 350 children in preschool through grade six. It is one of the most diverse schools in KCPS. Twenty-five percent of the students are English Language Learners and, racially, approximately half of the students are African-American, thirty percent are Hispanic, and twenty percent are Caucasian. In addition to having an English as a Second Language program, Pitcher is the only school in the district with a Specific Language Impaired (SLI) program. The SLI is an alternative educational placement for children whose language acquisition and usage is significantly discrepant from the level expected for their age and cognitive ability. Despite facing significant student mobility, the school has received recognition for its performance on the Missouri Assessment Program test. However, the administration has been keenly aware of gaps in instruction, such as limited resources in Science and professional development that can help teachers shift from direct instruction to teaching as facilitator and leader.

inquirED & Pitcher Elementary



inquirED is an online platform that delivers a rigorous, inquiry-based curriculum with embedded personalized teacher training, designed to support a whole-school transition to inquiry-based learning.

Pitcher chose to partner with inquirED to test implementation of their inquiry-based learning model, provide teachers with science curricular materials and professional development in inquiry-based learning, and see benefits in student engagement. Thus the purpose of research was two-fold: 1) To provide feedback on implementation to improve the platform and inform the development of a "Model 0" - a new potential inquirED model used with schools starting without any previous training in inquiry-based teaching; and, 2) To test the conjectures that inquiry-based teaching practice, inquiry-based learning, and student engagement would be higher when associated with lessons taught using inquirED resources when compared to lessons taught without using inquirED resources. The two instructional coaches were the lead end users for the study.

Theory of Action

Key Levers - Innovation/ Intervention - Inputs
If we do the following...

- a. Provide inquiry-based science units.
- b. Embed "Inquiry Foundation" videos.
- c. Embed lesson implementation tips.

Desired Practice - Implementation - Outputs
Then we will impact practice/ behavior in the following ways...

- a. Teachers will grow their inquiry-based teaching practice.

Measurable Student Outcomes by Nov 8 - Impact Goals
And we will reach our student outcome goals...

- a. Students will be more engaged during the inquirED block.
- b. Students will participate in inquiry-based learning.

METHODOLOGY

There was a mixed methods approach with data collected from a number of different sources. A survey and focus groups were utilized to collect teacher feedback on the key levers and usage of different platform features was tracked using Mixpanel. Inquiry-based teaching practices were assessed in a few ways: 1) teachers completed an inquirED teaching practices self-assessment prior to and following implementation; and, 2) the instructional coaches completed the inquirED teaching practices observation tool for teachers, during both inquirED and non-inquirED blocks of instruction. Finally, student engagement was measured in a few ways: 1) a 5-item student engagement survey was given to students as an exit ticket on a weekly basis; and, 2) the instructional coaches completed the inquirED teaching practices observation tool for students, during both inquirED and non-inquirED blocks of instruction.

FINDINGS

There were many valuable insights about implementation from teachers that were shared via focus groups. For example, the teachers felt challenged to cover the inquiry-based science units in the time allocated by their schedule, often cutting the units short or skipping parts as needed. Teachers felt that the inquiry foundation videos were helpful but sometimes setting teachers up for disappointment when things did not go the way the videos made it seem they would go.

Instructional coaches completed a total of 14 teacher observations and 14 student observations using the inquirED teaching practices observation tool. Of those, 4 were during blocks using inquirED and 10 were during blocks not using inquirED. Three teachers were observed both during an inquirED block and a non-inquirED block. Overall, inquirED teaching practices were more frequently observed in inquirED blocks than non-inquirED blocks. Teachers were found facilitating independent learning, cultivating a collaborative community, assessing and differentiating learning, and promoting a growth mindset in three out of the four inquirED blocks; teachers were found honoring student voice and choice in two out of the four inquirED blocks. The most any of these were observed among the non-inquirED blocks was twice (out of 10). Similar results were found when observing student engagement among the same practices (e.g., evidence that students were independently learning, collaborating, etc.)

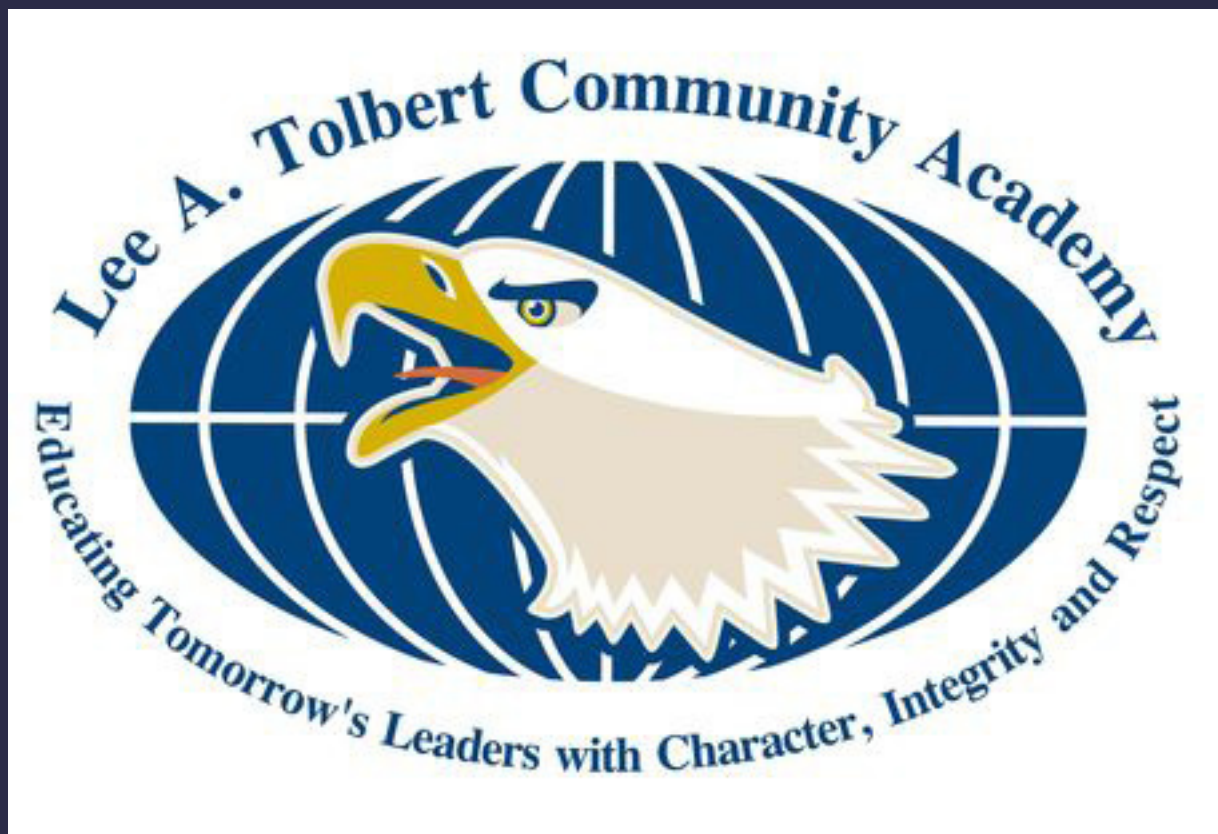
In addition to this evidence (and that of the observations completed by instructional coaches), teachers expressed that there were more opportunities for different learning styles to be engaged, and that they were positively surprised by the amount of content knowledge students were retaining based on the different learning strategies employed.

MODIFICATIONS

Given the feedback from teachers about the key levers, inquirED decided to make a number of modifications to the platform. They added framing videos to curb teachers expectations, and made platform design changes such as e-mailing videos instead of embedding them in lesson plans after finding that teachers were only accessing lesson plans to print them and read them offline. inquirED is also exploring expanding their team after the study. Based on teacher comments about differentiation and the ability of curriculum to reach different learning styles, inquirED wants to become more intentional about making accommodations for special education and English Language Learner students.

CONCLUSIONS

Pitcher teachers and staff remain excited about their partnership with inquirED. Many teachers have grown enthusiastic about the content and learning a new way of teaching, seeing the impacts it has had on all of their students. Overall, the results of the study are promising. A longer study duration would allow for additional data collection which would allow for more observations and achieve even comparison groups. One concern was the potential spillover effect of comparing different instructional blocks for the same teacher. While this did not seem to occur, a different study design would generate more reliable results. inquirED has decided to continue the research at Pitcher incorporating stronger research methods, such as utilizing the Tripod engagement survey and independent observers.



SCHOOL BACKGROUND & PROBLEM OF PRACTICE

Lee A. Tolbert Community Academy (LATCA) is a K-8 public charter school founded in 1999 with a focus on preparing students for entrepreneurial leadership in the 21st century. Located in the Center City neighborhood in midtown Kansas City, the school serves more than 500 students who are 100% free and reduced lunch, primarily African-American, and 10% have an individualized education plan (IEP). The school is sensitive to the fact that a majority of their students have experienced some sort of trauma. In response, the school has ensured all staff are trained in various methods of care and instruction. They are a trauma-informed school, a B.I.S.T. (Behavior Intervention Support Team) school, and a P.B.I.S. (Positive Behavior Interventions and Supports) school. They have multiple community partnerships to serve students in need of extra, holistic supports. Through the LINC (Local Investment Commission), they provide extended day care for students to accommodate parents working non-traditional work schedules.

Base Academy of Music & Lee A. Tolbert Community Academy



Base Academy of Music combines mentoring with private music lessons to positively impact social and emotional development and make music accessible and affordable for all children. BAM currently serves more than 100 students in Kansas City, MO.

LATCA chose to partner with the Base Academy of Music (BAM) to help foster social and emotional development among their students, given the school's notable experience with students facing trauma and the frequent need for behavioral interventions at school. Thus the purpose of research at LATCA was to test the conjecture that exposure to BAM would increase students ability to self-regulate, as evidenced by fewer reports of behavioral interventions and/or referrals for students taking the private music lessons. LATCA chose the music teacher to serve as the Lead End User.

Theory of Action

Inputs - Key Levers - Innovation/ Intervention
If we do the following...

- a. Build a safe environment where children want to learn and practice music (ignition environment)
- b. Focus on developing children's deep practice skills
- c. Provide development through master coaching

Desired Practice - Implementation - Outputs
Then we will impact practice/ behavior in the following ways...

- a. Students will connect with their teacher on an emotional level
- b. Students will stretch, struggle, and improve with short, direct feedback.
- c. Students will practice independently

Measurable Student Outcomes by Nov 8 - Impact Goals
And we will reach our student outcome goals...

- a. Students ability to self regulate will increase.

METHODOLOGY

Reflecting the study purpose, the Lead End User (LEU) and BAM founder chose to prioritize students known as “frequent fliers”, or those frequently requiring interventions, for recruitment. The counselor and teachers were asked to help identify students who could benefit most from the additional support provided by BAM. Once identified, parents of students were contacted for permission to participate in BAM and the research study. In total, six students, approximately one in each grade, took BAM lessons.

In addition to collecting the number of interventions/referrals by their teacher or an administrator, students completed “exit tickets” that asked them questions about each of the key levers, some of the desired practices, and the outcome goal in the Theory of Action after each lesson. Specifically, the Social Support Scale (Pagago, 2001) and four scales from the Youth Experiences Survey (Identity Exploration, Effort, Goal Setting, Emotion Regulation; Larson, 2000) were used to assess the BAM teacher’s ability to provide an ignition environment, deep practice, and master coaching (key levers); the student’s emotional connection and “stretching” (desired practices); and self-regulation during the activity. Last, anecdotes were collected from the students’ homeroom teachers.

FINDINGS

There was not enough time in the short 3-month testing period to measure change in association with BAM exposure with only six students. However the findings are promising given these limitations. First, students reported that the key levers and desired practices did occur. Students rated experiencing “a little” identity exploration during BAM Lessons (e.g., “This activity got me thinking about who I am”), which the BAM founder relates to an ignition environment. Students reported “definitely” putting all their energy into practicing, pushing themselves, and focusing during BAM lesson (deep practice). On average, students gave high ratings (4.6 and 3.8 out of 5) for trusting the BAM teacher/feeling valued by the BAM teacher and relating to the BAM teacher as a mentor, respectively (master coaching, emotional connection). These are all extremely significant given the short amount of time students experienced BAM.

There was also some evidence that students ability to self-regulate increased. For example, students reported learning about and practicing regulating their emotions quite a bit during their BAM lessons. Then, there were several anecdotes by students classroom teachers and parents. One teacher commented that after starting BAM lessons, she noticed positive behavior changes in one student such that he needed less referrals. “He is able to be a little bit more reasonable when he is upset rather than the immediate escalation to land in the SMARTE room. He still has those moments, but it’s no longer daily/hourly.” Another teacher commented on the visible changes in his student, “He went from never being focused in my class to being laser focused in his lesson. It was like a whole new student.” Unfortunately the intervention/referral data during the study time period was not systematic enough to glean potential impact.



CONCLUSIONS

Overall, Lee A. Tolbert is excited to continue to partner with BAM to provide its' service to their families. They continually express how impressed they are with the difference they feel the program has made for their students in a short time period. While the results of the research are promising, the results are bounded by the time and sample size limitations. To address these limitations, BAM is continuing this research with Tolbert and another local school while also planning to conduct a larger research study across the organization, which serves more than 100 students, in the future.

Innovare & Lee A. Tolbert Community Academy



Innovare Social Innovation Partners is an education consulting group that provides an intelligent software platform that guides education leaders through key milestones in the continuous improvement cycle.

LATCA chose to partner with Innovare Social Innovation Partners (SIP) to help enhance data literacy throughout the school, starting with the Instructional Leadership Team (ILT). As a leadership team, they were interested in better goal setting practices and monitoring student progress toward goals that would lead to overall better achievement. Thus the purpose of research at LATCA was to test the conjecture that in-person and virtual staff development focused on data literacy at the leadership level would increase data literacy at the teacher level, and teachers would ultimately be able to practice the strategies and techniques Innovare SIP worked on with leadership to impact their classroom achievement levels. The lead end user was the principal, although the Innovare SIP typically worked with the entire ILT which included the principal.

Theory of Action

Inputs - Key Levers - Innovation/ Intervention
If we do the following...

- a. Help school leaders self-reflect on their own practice and correlated impact using relevant data.
- b. Help school leaders use protocols for problem solving.
- c. Provide in-person and virtual staff development focusing on goal setting and personalization.

Desired Practice - Implementation - Outputs
Then we will impact practice/ behavior in the following ways...

- a. ILT will implement agendas focusing on data.
- b. ILT will implement problem solving process.
- c. ILT will train teacher teams to set improvement goals for individual students.
- d. Teachers will develop student-level goals,

Measurable Student Outcomes by Nov 8 - Impact Goals
And we will reach our student outcome goals...

- a. Observable changes in the school leaders' ability to use data to identify problems of practice.
- b. Observable changes in the teachers' ability to use data to identify problems of practice.

METHODOLOGY

The primary method used to track and assess implementation and the Theory of Action was document review. Innovare SIP's online platform provides multiple tools for school improvement, which they also provide in-person and virtual training on, such as a self-assessment rubric, a driver diagram, the 5 Why's protocol worksheet, a meeting agenda template, and a student-level goal setting spreadsheet. Then, progress using these tools can be assessed by accessing the school's individual portal or via online sharing.

Throughout the study, each of these documents were reviewed for use in practice. In addition to completion of the multiple resources, the goal was to assess evidence of continuous use. This included reviewing school leadership team meeting agendas for use of the template and discussion/agenda items reflecting the multiple other resources shared by Innovare SIP. As well, the use of student-level goal setting spreadsheet by teachers.

FINDINGS

At the time of this report, the study is currently ongoing. To date, the document review revealed completion of the self-assessment rubric, driver diagram, 5 Why's protocol, and implementation of the meeting agenda. The Instructional Leadership Team identified unique primary and secondary drivers for each of their two areas of focus: Math and ELA performance. For example, with Math performance, the primary drivers identified are high-quality instruction, school culture, stakeholder engagement, and the ILT itself. While the ILT is also a primary driver for ELA performance, the secondary drivers are different. An online resource sharing aspect of Innovare's platform allows the leaders at Lee A. Tolbert to learn from other schools and research publications about what strategies work for activating the drivers identified by the team.

Innovare's goal setting template was also completed, but the ILT has not yet begun using the tool. The next steps in implementation are for Innovare SIP to train the ILT on the goal setting process and using the template, and the ILT to train teacher teams in the same practices. As such, there have been no observable changes in the school leaders'/teachers' ability to use data to identify problems of practice (desired outcome), but only due to timing of implementation the fact that the study is ongoing at the time of this report. Still, the Principal has given great qualitative evidence of the benefits of working with Innovare SIP. "Innovare has helped us focus on the areas we want to improve and the dashboard gives us a quick view of data in one location. I love that! It is easy to read and very user friendly."

MODIFICATIONS

During the K12 Fellowship Program, Innovare SIP began working on a new and improved platform to support education leaders to drive student achievement and impact their communities. Whereas the current platform is G-suite based, the new platform has been designed by their team and uses a proprietary technology. It was developed conducting design research with the Lee A Tolbert Instructional Leadership Team and their other school partners. Due to tremendous feedback from their LEU's, the new platform will have several new features and enhancements to old features such as in-app messaging, notifications, administrator privileges for various users, and connectivity to other users.

CONCLUSIONS

Overall Innovare SIP and LATCA have dedicated many hours in in-person and conference meeting time to professional development and implementation of practices that can improve their functioning as a leadership team and school. Although they are midway through implementation, the Instructional Leadership Team gave many praises early on about the impact of their time with Innovare on their own learning and productivity as a team that could impact their students. The major limitation of this study is the short time that does not allow for a full cycle of implementation with Innovare, and therefore precludes the ability to assess outcomes. However, both Innovare and LATCA are committed to continuing with implementation and studying the outcome of this work.



Crossroads Preparatory Academy



SCHOOL BACKGROUND & PROBLEM OF PRACTICE

Crossroads Preparatory Academy (CPA) is a public charter school founded in 2017 to provide "high-quality seats" to high school students after establishing two lower schools and identifying a need for expansion. In previous years the district was the highest performing charter school district in the state of Missouri. The Academy was voted Charter School of the Year in its founding year, in which it served students in grades 7-9. The school is highly focused on personalized, project-based learning experiences, 21st century learning skills, community engagement, and college and career readiness - making it ideal for testing an early stage innovation. It uses downtown Kansas City, where it is located, as its extended classroom. In 2017, about 60% of students received free-and-reduced-price lunch. While Crossroads schools have performed well on the ELA state exam, CPA embraces opportunities to provide their students with new and engaging approaches to learning.

Doors to Explore & Crossroads Preparatory Academy



Doors to Explore provides a mobile platform that enables students to discover STEM subject areas, schools, and employers to complete potential career pathways.

CPA partnered with Doors to Explore given a unique opportunity for students to gain experience co-creating the app through design-based research. Students were able to use and test a preliminary version of the app, which also enabled a study to observe preliminary evidence of the theory of action. The LEU was a high school STEM teacher who helped to design and manage the study, and also participated in multiple educator feedback sessions along with the Director of Innovation.

Theory of Action

Inputs - Key Levers - Innovation/ Intervention
If we do the following...

- a. Provide students with a mobile app quiz that recommends various STEM careers based on their interests
- b. Provide subject areas/ majors of study for recommended STEM careers
- c. Provide colleges that offer majors of study for recommended STEM careers
- d. Provide employers that offer recommended STEM careers
- d. Allow students to create a pathway to obtain a recommended STEM career

Desired Practice - Implementation - Outputs
Then we will impact practice/ behavior in the following ways...

- a. Students will use the mobile app to take the quiz, and receive STEM career recommendations.
- b. Students will explore STEM career recommendations.
- c. Students will explore subjects areas/majors for recommended STEM careers
- d. Students will explore colleges that offer majors of study for recommended STEM careers.
- e. Students will explore employers that offer recommended STEM careers.
- d. Students will use the mobile app to create a pathway for desired STEM careers.

Measurable Student Outcomes by Nov 8 - Impact Goals
And we will reach our student outcome goals...

- a. Increase career awareness.
- b. Increase career literacy.

METHODOLOGY

A combination of observation and focus group was used to measure the key levers, desired practices, and student outcome goals. Specifically, a researcher observed three 10th grade students using the app during a 20 minute advisory period for ease of use while they navigated the app. Then, a small focus group was conducted by asking targeted questions guided by the Theory of Action. In addition to this, a STEM career interest survey was conducted with 10 students prior to app exposure to understand general baseline knowledge and interest in STEM careers.

In addition, feedback was collected from the LEU and Director of Innovation about the app's utility for schools and additional key levers that would elevate the app's promise for use by educators.

FINDINGS

Observations yielded evidence that most of the key levers, desired practices, and outcomes in the Doors to Explore Theory of Action were present. For example, the students agreed that the platform's quiz was easy to use and recommended careers that made sense based on their interests.

Due to the short duration of the advisory period, students didn't have enough time to get much further in the app than receiving their career recommendations. However, once they received the recommendation, students could explore colleges that offered subjects of interest and learned the geographical location of those schools relative to their hometown. Students also discovered and learned more about employers of interest and shared existing knowledge with one another.

Since these students were eager to learn more about their career recommendations before exploring the career pathway, educators gave feedback that the app could be used as a supplemental tool in the classroom. They expressed a strong preference for an in-classroom resource with supporting curriculum and envisioned packaging the app with a curriculum, including activities for students to engage in outside of the app before creating a milestone in the app (such as choosing a career, subject area, college, or employer).

The focus group uncovered an increase in STEM career awareness for students who used the app. For example, one student who wanted to be an OBGYN was recommended a career in Health Technology based on her responses to the quiz. The app sparked curiosity about the career as she mentioned that she had never heard of it and was previously confident in her career choice.

MODIFICATIONS

Doors to Explore observed student use of the app to measure UX effectiveness and directly solicited design feedback. Students were delighted to offer suggestions and experience the improvements in subsequent software versions. Some of the design feature recommendations included were to include known abbreviations for schools in addition to their full names in drop-down lists, and provide more information for selections such as careers and subjects. Recommendations highlighted by educators were to create a version that could be used in-classroom such as via the web (it is currently available via mobile device), and aligning the tool with a curriculum, for example. Doors to Explore has recently received funding to work on these modifications.

CONCLUSIONS

Doors to Explore was at an integral stage of product development where user feedback made a pivotal difference in the outcome of the product. Whereas the product was originally being marketed to students and their parents through the Apple/Android app store, it is now undergoing changes to be marketed to schools based on feedback. This could be a timely change to the process of learning about and choosing a career, learning about the pathway for career achievement, and exposure to STEM careers. Doors to Explore is embracing these changes and collaborating with the CPA LEU and Director of Innovations, as well as other schools and businesses in Kansas City, to ensure a useful and impactful product in the Kansas City ecosystem that can be replicated in other markets.

Words Liive & Crossroads Preparatory Academy



Words Liive (WL) is a web platform for lesson plan development that isolates grammar structure and literary techniques in song lyrics and integrates them into classroom source texts (e.g., novels, speeches) commonly used in primary and secondary schools' English Language Arts (ELA) classes to improve student literacy. In a new feature, teachers can request customized content that is relevant to their classroom.

Crossroads Preparatory Academy chose to partner with Words Liive to test implementation and to help make ELA instruction culturally relevant and engaging, to impact students' concept acquisition and retention and ultimately increase achievement. Thus the purpose of research was two-fold: 1) To provide feedback on classroom implementation to improve the platform; and, 2) To test the conjectures that student engagement and academic performance would be higher when associated with ELA lessons taught using Words Liive (WL) when compared to lessons taught without using Words Liive (non-WL). The 10th grade ELA teacher served as the lead end user for the study.

Theory of Action

Inputs - Key Levers - Innovation/ Intervention
If we do the following...

- a. Link literary learning objectives in music students like
- b. Provide teachers the ability to build a lesson plan, including selection of music and matched learning objectives
- c. Provide teachers the ability to export lesson plan for implementation

Desired Practice - Implementation - Outputs
Then we will impact practice/ behavior in the following ways...

- a. Teachers will integrate music into their lesson plans
- b. Teachers will use music-enhanced content to engage students in teaching the learning objectives
- c. Teachers will assess student performance and scaffold material based on learning gaps

Measurable Student Outcomes by Nov 8 - Impact Goals
And we will reach our student outcome goals...

- a. Increased student engagement
- b. Increased academic performance

METHODOLOGY

Implementation data was collected using an instructional log template that was completed each time a lesson was taught using WL, as well as a few open-ended interviews with the lead end user following implementation. The instructional log template included the lesson objective, song and texts used in the lesson, reasons for each instructional choice, evidence of what went well and what could have been improved, and overall reflection.

A combination of exit tickets were used to measure student engagement and performance. The student engagement exit ticket was a 3-question survey which asked students to rate their enjoyment, concentration, and interest (i.e., Sherman, 2013) after every WL lesson and randomly after non-WL lessons. Academic performance was assessed using the exit ticket implemented by the teacher as a part of classroom instruction.

FINDINGS

The lead end user had valuable feedback concerning the key levers that initially limited her ability to implement the material with high-quality. For example, she struggled early on to find music on the platform with good examples of the learning objectives her students needed. She did implement during this period and her instinct was validated. She found classroom discussion to be engaging but also that the students lack of clarity about the meaning of concepts taught based on examples. This was quickly resolved through customization of content that directly served her classes needs, which she said paid off through a noticeable increase in engagement in the lesson. She was very excited about the outcome of teaching the customized content exclaiming that it was by far the best lesson she had taught during the school year up until that time. Other insights she had were about the usability of the platform's export the lesson plan feature, including the formative assessment. These features were not readymade features for her and resulted in more planning time than she expected. She was ultimately able to implement three times, including one time early on with a response to intervention (RTI) group.

The LEU described student engagement as a result of teaching Words Liive in her instructional log. While reflecting on her first time teaching two different classes using WL she noted, "I felt both classes participated more with less teacher prompting." But, in another log, she wondered if engagement would be increased with more relevant song choices. This was before receiving the customized content. The quantitative data collected on student engagement somewhat mirrored the LEU feedback. Overall, responses to student engagement surveys taken after WL lessons had mostly similar ratings to student engagement surveys taken after non-WL lessons. Enjoyment was rated slightly higher, on average, for non-WL lessons compared to WL lessons. However, the customized WL lesson had the highest rated enjoyment out of all lessons surveyed, suggesting the potential of this feature to increase student engagement.

There were no differences between academic performance associated with WL lessons and non-WL lessons.

MODIFICATIONS

The next version of Words Liive includes a ticketing system for teachers intended to expedite the customization process. While planned prior to this study, the study validates the need for this feature. As a result of this study, Words Liive has begun analyzing and refining the examples of literary concepts embedded in the song lyrics available on the platform, revisiting the lesson plan export function and considering more useful tools such as lesson plan excerpts, and updating the formative assessment resource to include a bank of standards-aligned items sourced by teachers from which teachers can choose - a recommendation that came from the LEU.

CONCLUSIONS

Overall, the deep engagement with CPA and the LEU led to meaningful insights and recommendations that can make Words Liive more accommodating and useful for teachers. The outcome data suggests there may be increased potential to impact engagement when a teacher requests customized content for their classroom. However, an additional study after the next iteration of WL is needed to continue to investigate impact based on those changes. As well, two major caveats to observing outcomes is the limited sample size and cross-sectional nature of the study. Investigating outcomes across teachers, schools, and time would give a clearer indicator to true differences occurring from separate instructional techniques.