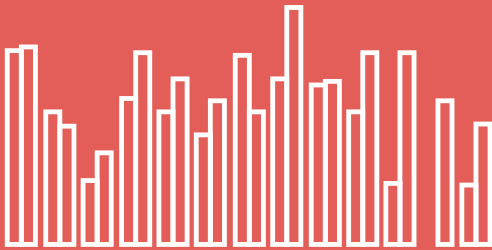# SPEAK AGENT
KIPP ENDEAVOR ACADEMY

by Erin Huebert

LEANLAB EDUCATION

Cohort 6

KIPP ENDEAVOR ACADEMY & SPEAK AGENT

2020 Research Report

Erin Huebert, PhD
Vice President of Research and Programs
LEANLAB Education

SCHOOL SUMMARY AND PROBLEM OF PRACTICE

KIPP Endeavor Academy (KIPP KC) is a public charter school located on the northeast side of Kansas City, Missouri that serves students in 5th through 8th grade. It is part of a national KIPP network of free, open-enrollment, college-preparatory schools traditionally located in educationally underserved communities. Of KIPP KC's 287 middle-school students, 92% are African-American or Hispanic students and all qualify for free lunch through the Community Eligibility Provision (KIPP Regional Report Card 2020).

A concern for teachers and administrators at KIPP KC is **middle-school reading proficiency**. While 65% of middle-school students are making 1+ years of academic progress in reading (as measured by the 2017-18 Measures of Academic Progress (MAP) exam), 6th and 7th grade students, in particular, remain significantly behind in reading proficiency. Seventy-nine percent of 6th graders and 56% of 7th graders were in the bottom or 3rd quartile of the spring 2018 MAP exam. Only 15% of 6th graders and 17% of 7th graders meet or exceed grade-level proficiency, which is significantly below the state of Missouri's attainment levels of 48% and 44%, respectively (KIPP Regional Report Card 2020). Teachers reported that students have become frustrated and disengaged from reading class and do not exhibit a growth mindset, leading to a cycle of disengagement and low performance. KIPP KC decided, therefore, to focus their intervention efforts in **Skylar Hurst's 7th grade classroom** with the goal to bring students back up to grade-level proficiency.

VENTURE SUMMARY AND INTENDED EFFECT

[Speak Agent](#), founded by Ben Grimley, Dan LaFountain, and Katie Cunningham, is a breakthrough digital platform that empowers diverse learners of all ages to quickly and deeply master challenging academic language and concepts critical for success in schools and careers. "Speak Agent's content-based language toolkits for Math, Science, and ELA give students the language they need to effectively learn and communicate using academic content" (Speak Agent 2020). Speak Agent customizes their content to each school's own curriculum, thereby integrating with existing lesson plans, schedules, and classroom technology. On the app, students use game-based learning and are encouraged to collaborate with their peers. Speak Agent is designed specifically for students that are behind in reading proficiency, and the intent is that, through consistent use of the platform over a short period of time, students will be brought up to grade-level reading proficiency.

RESEARCH GOALS

There were three research goals of this study. The first two goals focused on testing the efficacy of Speak Agent on two student outcomes: reading performance and social-emotional learning. **The first hypothesis is that students will see an increase in their reading exam scores from the first exam to the second exam. The second hypothesis is that students will exhibit and report more positive behaviors and attitudes about reading and reading class after using Speak Agent than before.** The third goal was to gather feedback from the teacher and students on usability and implementation of Speak Agent in order to modify and/or enhance product features and development that met the unique needs of the classroom and its students.

METHODOLOGY

Sample

The sample for this study consisted of **13 students** in Mrs. Hurst's 7th grade "Powerblock" class. Powerblock is a special class that occurs for 40 minutes at the end of each day on Monday through Thursday specifically for students that are in Tier-3 (two grades or more behind) for reading. These are students that are reading anywhere from 1 to 4 grades below the 7th-grade reading level. One-hundred percent of the sample were African-American students and all received free lunch through the Community Eligibility Provision. Since this group included all of the Tier-3 students in 7th grade, there was no available comparison group to use as a control group. Therefore, this study is purely descriptive in that it assesses pre- and post performance among just this sample of students, all of who used Speak Agent.

Measurement of Outcomes

The first outcome evaluated in this study is ***reading performance***. Scores from the end of module exams were used to assess reading performance. At KIPP KC, there are four modules over the course of the academic year and each module lasts for ten weeks. At the end of each module, students take an exam to assess their learning from content based in each module. Each end of module exam assesses, therefore, different content and different reading standards, so scores on each end of module exam could not be *directly* compared. Still, there are general reading standards assessed in each end of module exam and can give a general idea of how a student progresses. Speak Agent was implemented during the second module, from October to December 2019. The overall score from the second end of module exam was, therefore, compared to the overall score from the first end of module exam. Scores were out of 100 points.

The second outcome evaluated in this study is ***social-emotional learning (SEL)***. To assess social-emotional learning, two data collection efforts were used; classroom observations and student surveys. In the first approach, a research assistant conducted weekly classroom observations and used a customized rubric (Table 1) to score various social-emotional competencies. There were nine behavior indicators on the rubric that aligned to four SEL competencies, as measured in the Panorama Social-Emotional Learning User Guide (November 2015). The four main SEL competencies were 1) student engagement, 2) perseverance/grit, 3) self-efficacy/confidence, and 4) collaboration. Each student was given a score in each area that ranged from 1 (never) to 5 (almost always).

Table 1: SEL Competencies	
Student Engagement	The student leans forward attentively toward device.
	The student seems to enjoy or be absorbed in interacting with the app.
Perseverance / Grit	The student remains focused on the lesson.
	The student tries again if/when mistakes are made.
Growth Mindset	The student puts in a lot of effort into the lesson.
Self-Efficacy / Confidence	The student shows signs of frustration.
	The student seems confident, as expressed by comments, body language and/or facial expressions.
Collaboration and Communication	Students communicate with each other about the lesson during the lesson.
	Students get along with one another during the lesson.

In the second approach, pre- and post-surveys were given to students via Google Forms. Students took a survey the week before they started using Speak Agent and the week after they stopped using Speak Agent. The pre- and post-survey were identical and measured the same four SEL areas described above and used question wording from the Panorama Social-Emotional Learning User Guide (November 2015). Some customized questions were added that gauged "how much students enjoyed reading." Students self-reported on a scale of 1 to 10, with higher numbers corresponding to more positive attitudes/perceptions.

Teacher and Student Interviews
Once a month for three months, in-person interviews were conducted with the teacher and with students to collect qualitative evidence on the impact of Speak Agent. Four different students were interviewed each month. A standardized questionnaire was created to guide the interview and collect comparable evidence. Interviews were recorded and patterns in responses were later identified.

RESULTS

In this section, the quantitative results are presented in regards to the two research outcomes: reading performance and social-emotional learning. The evidence presented here is strictly descriptive. The results illustrate pre- and post-changes in student exam scores, observed behavior, and survey responses among the 13 students who used Speak Agent. There was no control group and no other confounding variables were controlled for, so causation is neither tested nor implied in this study.

READING PERFORMANCE

Overall, there is support for the first hypothesis that students who used Speak Agent will experience an increase in reading exam scores from the first to the second exam.

In Figure 1, the class average exam scores from the first to the second end of module exams are shown. On the first end of module exam (pre-exam), the class averaged a 44.83%. On the second end of module exam (post-exam), the class averaged a 56.08%. This change represents a 27% increase from the first to second exam and that increase is statistically significant (based on a paired t-test), which is consistent with expectations.

Figure 1: Change in Class-Average Exam Scores
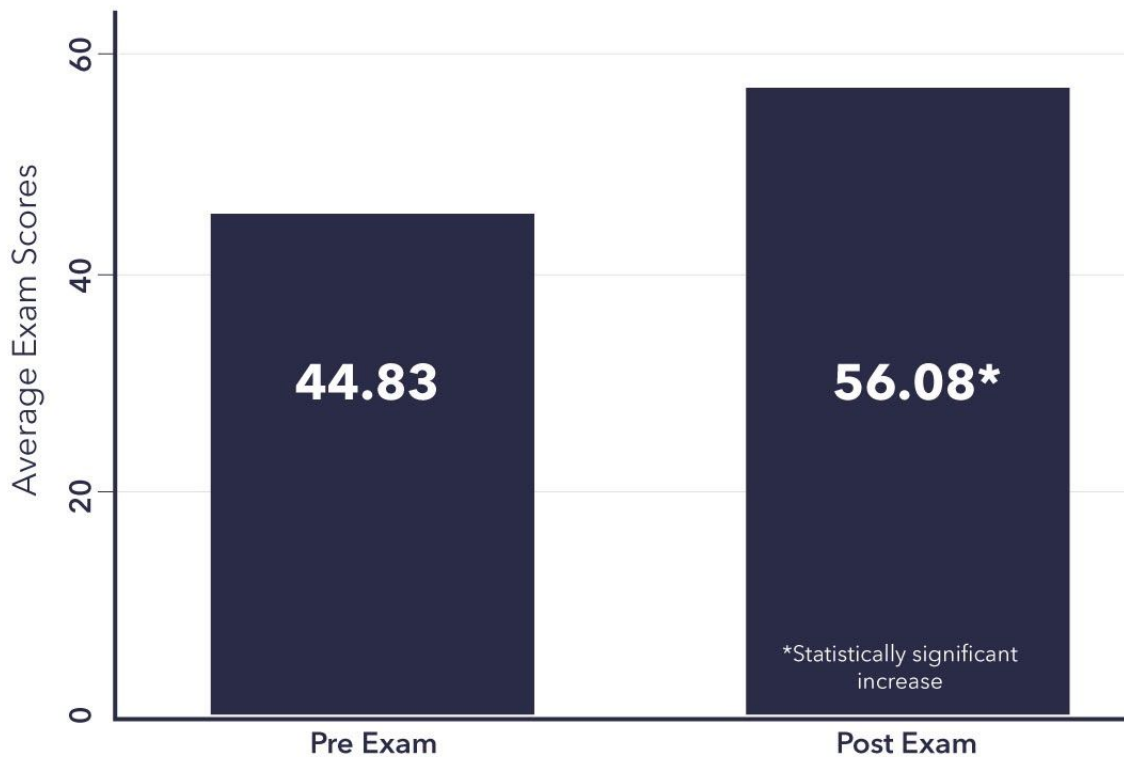
In Figure 2, the scores on the pre- and post-exam for each of the 13 students are presented, showing that all but two students increased their scores. (Student 12 did not take the pre-exam.) There is extreme variation among the students in the extent to how much a student improved from the first to the second exam.

Figure 2: Pre- and Post Exam Scores for each Student
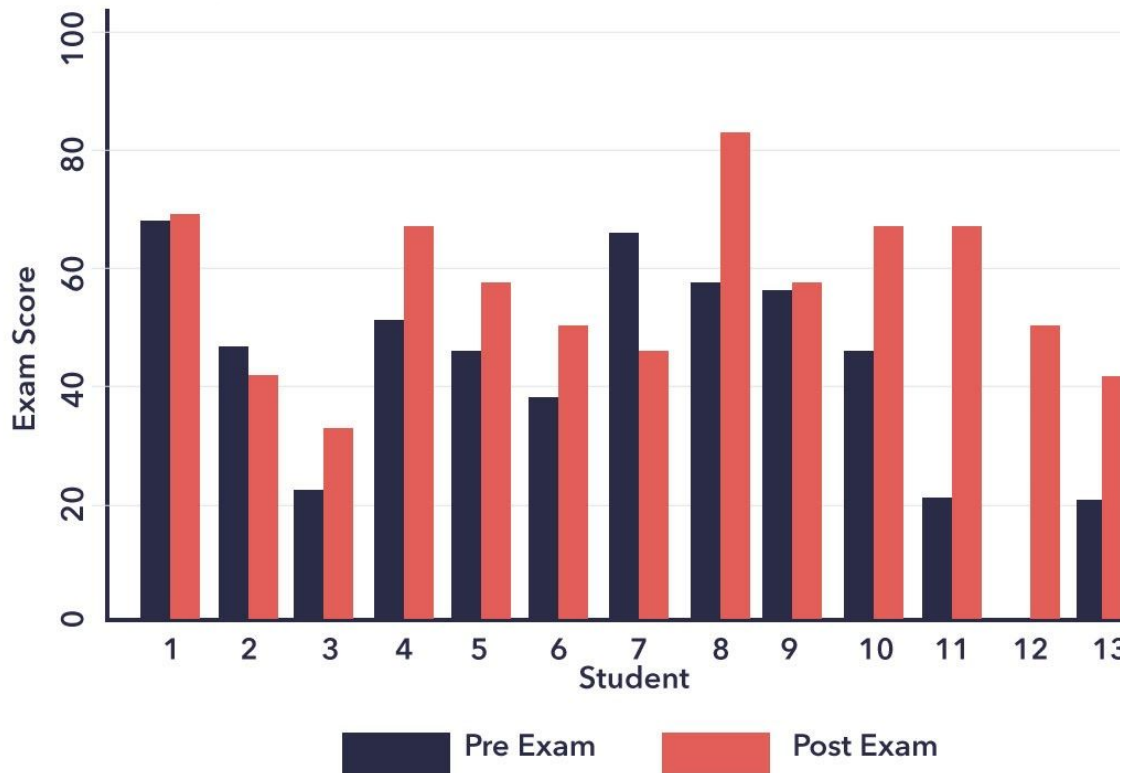
SOCIAL-EMOTIONAL LEARNING

There is some evidence in support of the second hypothesis that students who used Speak Agent will become more engaged in the classroom and express more positive attitudes towards reading and reading class.

First, the classroom observations yielded no statistically significant findings. While many students did exhibit positive behavior growth in one or more of the SEL competencies listed in Table 1, the increases were not large enough to reach statistical significance. This data collection had, however, some major challenges that will be discussed below.

Second, there were two SEL competencies that showed some evidence of improvement, as measured by the pre- and post-surveys: student engagement and self-efficacy/confidence. Among the engagement indicators (Figure 3), there was a statistically significant increase (as assessed with a paired t-test) in the class-average response to the question of "how much do you *like reading*?" Students, on average, reported the largest increase (from 5.08 to 6.67) in how much they like reading, which was an attitude of particular importance to KIPP KC's teachers and administrators. There were no statistically significant increases in the other three engagement indicators.

The self-efficacy/confidence category is the SEL competency where the most consistent positive change occurred for the class, on average (Figure 4). There was a statistically significant increase (using a paired t-test) from the pre-survey to the post-survey in how *good at reading* students felt they were as well as how confident they were that they could *master topics* in reading class.

There were no statistically significant gains in the perseverance / grit or collaboration / communication SEL competencies.

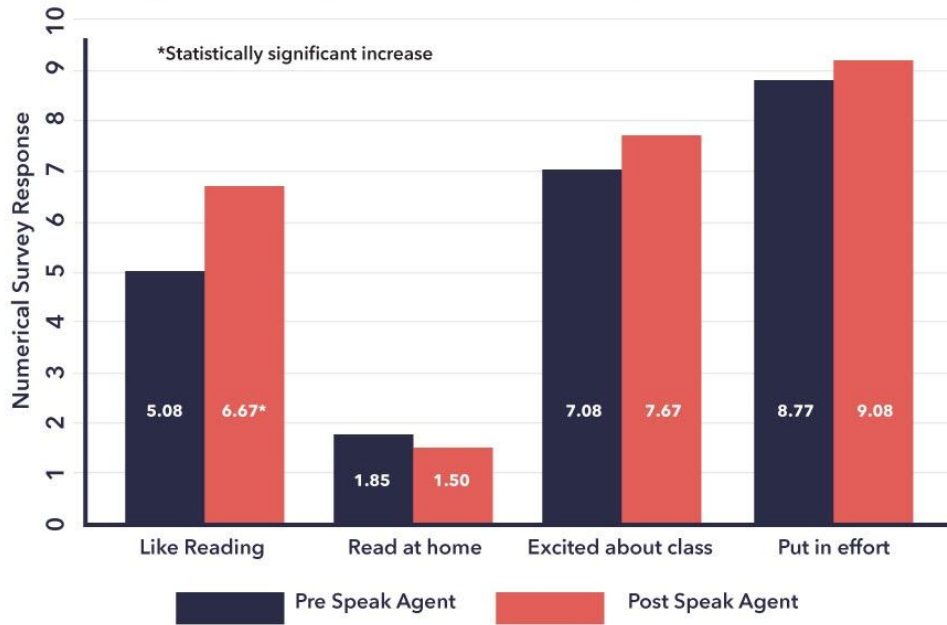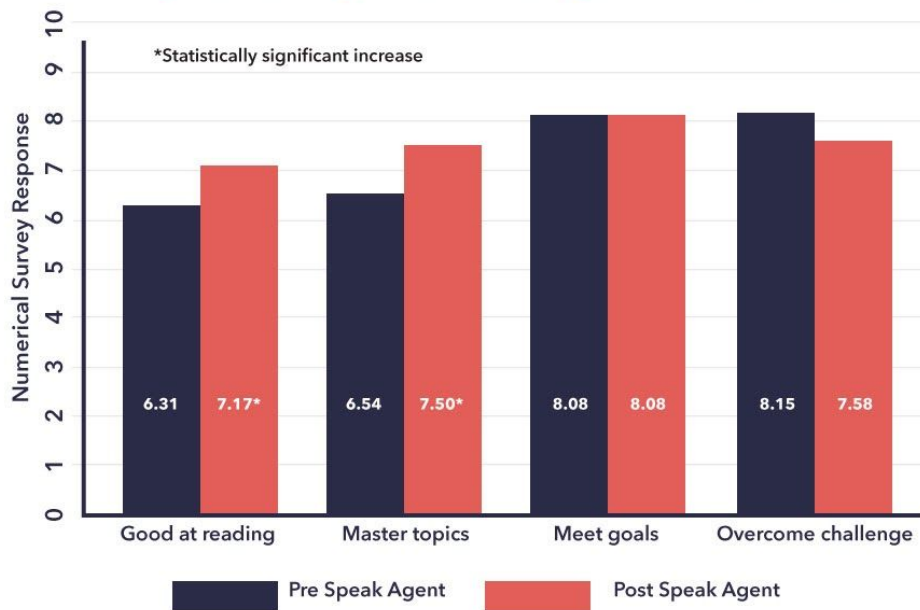**Figure 3: Change in Class-Average Engagement Indicators**

*Statistically significant increase

Numerical Survey Response

	Like Reading	Read at home	Excited about class	Put in effort
Pre Speak Agent	5.08	1.85	7.08	8.77
Post Speak Agent	6.67*	1.50	7.67	9.08

Pre Speak Agent   Post Speak Agent

Figure 4: Change in Class-Average Confidence Indicators

*Statistically significant increase

Numerical Survey Response

	Good at reading	Master topics	Meet goals	Overcome challenge
Pre Speak Agent	6.31	6.54	8.08	8.15
Post Speak Agent	7.17*	7.50*	8.08	7.58

Pre Speak Agent   Post Speak Agent

ANECDOTAL EVIDENCE

The responses from the in-person interviews with students and the teacher were overwhelmingly positive. The teacher consistently reported that students were more engaged than usual and were able to engage in a variety of different ways, including active listening and read-along. The teacher also felt that the quick feedback from the app and the ability to record and hear themselves made students feel successful.

For students, they consistently reported that Speak Agent helped them pronounce words. Students liked the voice application and ability to hear themselves because it gave them an opportunity to compare how they were saying it to the proper pronunciation. Although Speak Agent was challenging for many students, the game-based nature of the app motivated many of them to keep working.

For both the teacher and the students, the fact that Speak Agent lined up to what they were already doing in class, reinforced the meaning and context of words, which helped students grow their vocabulary. **Overall, the anecdotal evidence from the teacher and students supports the second hypothesis that students would have more positive behaviors and attitudes about reading after using Speak Agent.**

PRODUCT MODIFICATIONS

The third goal of this research study was to gather feedback from teachers and students about product usability and implementation requirements. In response to teacher feedback that it was difficult to track student progress within the app, Speak Agent is working to build a teacher dashboard for teachers to be able to track student progress and outcomes on modules and activities within the app.

DISCUSSION AND NEXT STEPS

This study yielded preliminary evidence that suggested a positive relationship between Speak Agent and student reading outcomes and warrants additional research. There are a couple of limitations in this study that prevent us from making causal claims. First, the sample size in this study was very low. While nearly all of the 13 students improved their exam scores and reported more positive attitudes about reading, it is a very small group to infer generalizability to a wider context. More importantly, this study did not compare changes in exam scores or reading attitudes of a control group. As stated earlier, all Tier-3 students were in one group at KIPP KC, which meant that the other 7th graders were all in Tier-1 or 2 and, therefore, not a viable comparison group. We cannot say in this study that Speak Agent is the *reason* exam scores and attitudes increased without having a control group and/or controlling for other possible explanations for growth. Future research should, therefore, include a proper control group and collect data on confounding variables to control for in a statistical analysis.

Second, the end of module exams from the first to the second are not the best comparison metric. Each exam measures different reading standards, so a final score of each exam is not perfectly comparable. Still, the overall final score of each exam gives an estimate of a student's overall reading ability and can, therefore, provide some preliminary evidence of change. Future studies should use a different pre- and post-reading assessment that is directly comparable.

Third, the pre- and post-survey results on SEL competencies yielded little change, which is likely due to the short timeline (ten weeks) between surveys. Changes in SEL outcomes likely take much longer to notice significant changes. In future research, different measures of SEL that can be measured and assessed on a weekly basis may be helpful, such as student self-reports on exit tickets or discipline referrals, etc. Objective measures of SEL would also be helpful to avoid potential reliability bias with survey data. The classroom observation data was an attempt to validate student reports on surveys

by observing and recording actual behavior aligned to SEL outcomes. Since the observations were, however, only conducted once a week, a couple of limitations arose. First, several students had significant missing data, as they happened to be absent on the observation day. Second, observing students just once a week is not necessarily representative of their typical behavior, as some students may exhibit an "off" day on the days of observation leading to validity bias. This further stresses the importance of new and creative approaches to measure SEL outcomes.

Despite these limitations, there is solid preliminary quantitative evidence and extremely positive qualitative evidence to warrant a larger efficacy study of Speak Agent. In future research, all Tier-3 students in a school should be randomly divided into a treatment and control group and then compare changes in a similar pre- and post-fashion to the approaches in this study. A larger sample size across multiple schools or contexts would also help validate the results and make them more generalizable.

CONCLUSION

KIPP KC is excited about continuing to use Speak Agent and about the promise it has at bringing up students to grade-level reading proficiency. This study showed that students who used Speak Agent experienced, on average, an increase in overall reading exam scores and reported more positive attitudes about reading and more confidence in their ability to read. While the efficacy evidence is only descriptive and limited by sample size, reliability bias, and validity bias, the preliminary positive evidence this study did find combined with the overwhelmingly positive anecdotal evidence from the teacher and students lends support for a larger, more robust research study. Speak Agent also proved to be a responsive partner in co-design with the school, as it is adding a teacher dashboard to its interface to make the platform more accessible to teachers.

REFERENCES

KIPP Regional Report Card. Accessed on March 9, 2020.
https://www.kipp.org/wp-content/uploads/report-card-results/2018/school/kipp-endeavor-academy.pdf

Gehlbach, Hunter. November 2015. *User Guide: Social-Emotional Learning.* Panorama Education.

Speak Agent. Accessed on March 9, 2020. https://www.speakagent.com/