EMOTE
GUADALUPE CENTERS HIGH SCHOOL & BANNEKER ELEMENTARY

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LEANLAB EDUCATION

Cohort 6

GUADALUPE CENTERS HIGH SCHOOL, BANNEKER ELEMENTARY & EMOTE

2020 Research Report

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SCHOOL SUMMARY AND PROBLEM OF PRACTICE

Guadalupe Centers High School is an urban, charter high school located just east of downtown Kansas City, MO. The high school is part of a larger network of Guadalupe Centers, which was originally created in 1919 in response to the needs of the growing Mexican immigrant community in Kansas City. Since Mexican children were not allowed into certain schools at that time, Guadalupe Centers created a volunteer school for these children. According to the National Register for Historic Places, the Guadalupe Centers is the "longest continuously operating agency serving latinos in the United States." Today, 90% of Guadalupe Centers High School is Latinx and 95% qualify for free and reduced price lunch.

Banneker Elementary is an urban public elementary school within the Kansas City Public School district and serves Kindergarten through 6th grade. It is named after Benjamin Banneker who was an "outstanding scientist, astronomer, mathematician, and surveyor who lived during colonial times…[and] was one of the leaders of his time in the use of technology and was a driving force in the area of human rights." Banneker Elementary opened in 1990 and serves 420 students today, representing 57% black students and 28% Latinx students. All students qualify for free and reduced price lunch.

The problem identified by teachers at both Guadalupe Centers High School and Banneker Elementary was that teachers do not have effective resources to identify students in need of trauma-sensitive support. Teachers need a way to proactively and systematically help all students manage their social-emotional needs and to share strategies with each other to support students who have experienced traumatic events. At Guadalupe, Mrs. Sarah Hellhake, an Electives teacher, led the pilot initiative. At Banneker, Ashten Link, a Kindergarten teacher, and Cristian Marquez, a trauma sensitive school clinician at KCPS worked together to implement the pilot of Emote.

VENTURE SUMMARY AND INTENDED EFFECT

Emote is a platform that continually collects and analyzes SEL (social-emotional learning) data to deliver insights to the right person at the right time—empowering schools to deliver proactive support to 100% of students with existing staff. Emote was founded by Julian Golder. Through real-time insight recorded by teachers for each

student, teachers can respond earlier to students' emotional needs and behavioral escalations in a proactive way. Emote promotes collaborative support by allowing teachers to share intervention strategies and insights for students across different classrooms. Emote can also be used to support whole-child trends.

RESEARCH GOALS

There were four research goals of this study. The first goal was to evaluate the effect of Emote on the type and frequency of student interventions. Student interventions at Guadalupe range from low-level, in-class interventions to high-level, discipline referral interventions. **The first hypothesis was that teachers that used Emote would see a decrease in the number of high-level interventions they used and an increase in the number of low-level interventions they used over the course of the semester. Conversely, teachers that did not use Emote would not see a decrease in the number of high-level or low-level interventions they used.**

The second goal of the study was to evaluate the effect of Emote on teachers' awareness of the social-emotional learning (SEL) needs of their students. **The second hypothesis was that teachers that used Emote would become more aware of their students' SEL needs over the course of the semester while teachers that did not use Emote would have no change in their level of awareness of their students' SEL needs.**

The third goal of the study was to evaluate the effect of Emote on teachers' level of stress. **The third hypothesis was that teachers that used Emote would report less stress over the course of the semester while teachers that did not use Emote would report the same or more stress over the course of the semester.**

The fourth goal was to gather feedback from the teachers on usability and implementation of Emote 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 unit of analysis in this study was teacher-week (each teacher was surveyed each week). The outcomes of interest were changes in teachers' behaviors or attitudes and how those changed over ten weeks. At Guadalupe, there were **7 teachers in the "treatment" group** that used Emote and there were **6 teachers in the "control" group** that did not use Emote. Among the 7 teachers that used Emote, they were tracking **226 students** in 9th-12th grade. Of the students being tracked, 93% were Latinx and 97% qualified for free and reduced price lunch.

Measurement of Outcomes

1. The first outcome evaluated in this study is **student interventions**. There are three primary forms of student interventions at Guadalupe. The first is a *Safe Seat* intervention, which is when a teacher moves a student from his/her current seat to a different seat in the classroom for the remainder of that class period. The second is a *Buddy Room* intervention, which is when a teacher moves a student to a separate classroom for the remainder of that class period. The third is a *Focus Room* intervention, which is when a teacher moves a student from the classroom to a behavioral intervention coordinator's office. On a continuum, safe seat interventions are considered the least reactive while focus room interventions are considered the most reactive. Buddy room interventions would lay in the middle of the continuum.

Teachers at Guadalupe were already required to record each time they used one of the three interventions with any student throughout the day. For this study, the number of interventions in each category a teacher used were totaled at the end of each week for the 13 weeks of the pilot duration. The average number of interventions in each category for the treatment group were compared over time to the average number of interventions in each category for the control group.

Interventions were not systematically tracked and recorded at Banneker, so this outcome is not evaluated at Banneker.

2. The second outcome evaluated in this study was **teacher awareness** of students' SEL needs. To assess teacher awareness at both Guadalupe and Banneker, pre- and post-surveys were given to teachers in the control and treatment group every two weeks that asked them to self-report on how aware they were of their students' SEL needs over the last week. Teachers self-reported on a scale of 1-5, with higher values

corresponding to more awareness. The average survey responses of the treatment group were compared over time to the average survey responses of the control group.

Classroom observations were also used to assess teacher awareness. The purpose of the classroom observations was to validate teachers' responses on the surveys and provide a standardized way to evaluate teacher behavior. A research assistant observed each teacher in the treatment and control classrooms one day a week for one hour and used a rubric (see Appendix) to evaluate various components of teacher awareness, preparedness, and stress related to students' SEL needs. For each statement on the rubric, the research assistant scored the teacher on a scale of 1-5, with higher values corresponding to more positive behavior.

3. The third outcome evaluated in this study was teacher stress. Just as with teacher awareness, the same pre- and post-survey that was administered to teachers at Guadalupe and Banneker asked them to rate their level of stress every two weeks. Teachers self-reported on a 1-5 scale, with higher values corresponding to higher levels of stress. The average reported levels of stress of the treatment group were compared over time to the average reported levels of stress of the control group.

Classroom observations were also used to validate the teacher responses on the survey. Again, a research assistant observed each teacher once a week for one hour and used a rubric (see Appendix) to evaluate how stressed the teacher appeared and how the teacher managed his/her stress. For each statement on the rubric, the research assistant scored the teacher on a scale of 1-5, with higher values corresponding to more positive behavior.

Teacher Interviews

Once a month for three months, in-person interviews were conducted with the teachers that used Emote to collect qualitative evidence on the impact of Emote on their perceptions and reactions to the SEL needs of their students. 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 first three research outcomes: **student interventions**, **teacher awareness of student SEL needs**, and **teacher stress**. The evidence presented here is *correlational*. The results compare pre- and post-changes in behavior and perceptions of the treatment and control group. There were, however, no other confounding variables controlled for, so causation is neither tested nor implied in this study.

STUDENT INTERVENTIONS AT GUADALUPE

Overall, there is preliminary support for the first hypothesis. Consistent with expectations, teachers who used Emote reduced the number of mid-level interventions (Buddy Room interventions) they chose to use. They did not, however, reduce the number of high-level interventions (Focus Room interventions) they used, and they did not increase the number of low-level interventions (Safe Seat interventions). As expected, teachers that did not use Emote did not reduce the number of low, mid, or high-level student interventions they chose to use.

In Figure 1, the average number of Safe Seat Interventions over the pilot period per user group at Guadalupe are illustrated. Recall that Safe Seat interventions are when a teacher moves a student to a different seat within the current classroom and is considered a low-level, proactive intervention. Contrary to expectations, for the seven Emote users, they actually *reduced* (rather than increased) the number of safe seat interventions they used. In the first week, the Emote teachers used seven safe seat interventions, on average, and steadily decreased the number of safe seat interventions they used over the 13-week pilot period. For the six non-Emote users, in the first week, the teachers used only one safe seat intervention, on average, and maintained that level over time. The change in the number of interventions used over the pilot period was, however, not statistically significant for either group. The average change between groups is also not statistically significant. Therefore, there is no evidence that Emote users or non-Emote users systematically changed the number of safe seat interventions they used over the pilot period; although the decrease is not statistically significant (based on a paired t-test).

Figure 1: Average Number of Safeseat Interventions
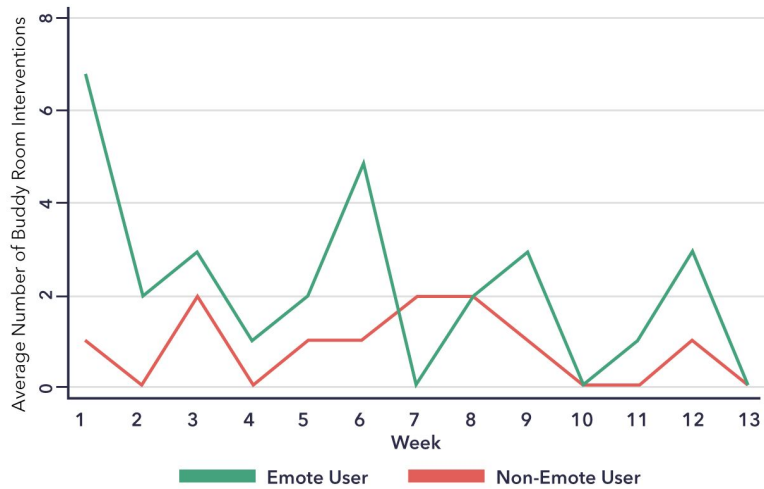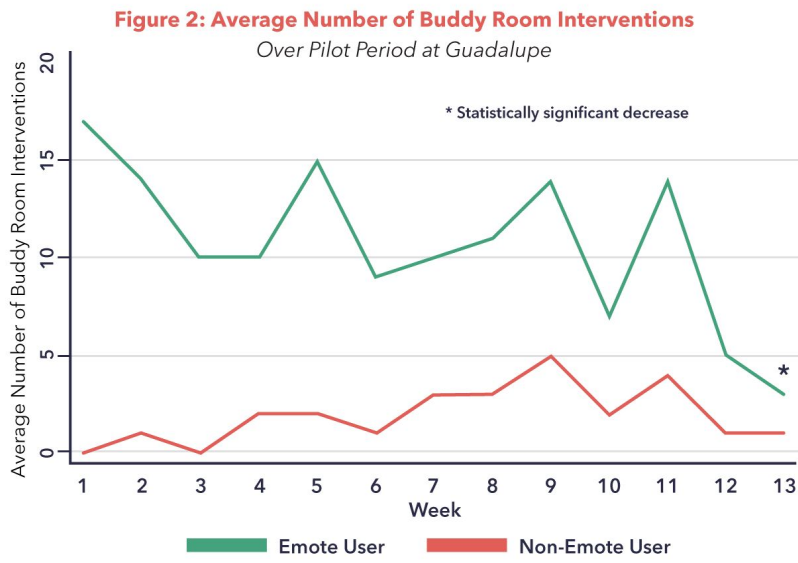*Over Pilot Period at Guadalupe*

Figure 2 illustrates the average number of Buddy Room interventions over the pilot period per user group. Recall that Buddy Room interventions are when a teacher moves a student to a different classroom for the remainder of a class period and is considered a mid-level, somewhat reactive intervention. Consistent with expectations, Emote users reduced the number of Buddy Room interventions they used over the course of the pilot period. In the first week, Emote teachers were averaging about 17 Buddy Room interventions a week and by the last week of the pilot period, they were averaging just four Buddy Room interventions, which reflects a 76% decrease that is statistically significant (using a paired t-test). Conversely, and as expected, the non-Emote users did not change the number of Buddy Room interventions they used. The average change between Emote users and non-users is also statistically significant. It is, however, important to note a key difference between the two groups. Emote users' starting average is much higher than the starting average for Emote non-users. That is, Emote users were using Buddy Room interventions at high levels when the pilot period began, whereas the non-Emote users were using Buddy Room interventions at very low levels and, therefore, had very little need to decline. Thus, the two groups are not directly comparable and the results are biased as a result.

Figure 2: Average Number of Buddy Room Interventions

Over Pilot Period at Guadalupe

* Statistically significant decrease

Emote User   Non-Emote User

Finally, in Figure 3, the average number of Focus Room interventions over the pilot period per user group at Guadalupe are illustrated. Recall that Focus Room interventions are when a teacher moves a student out of the current classroom and to a behavioral intervention coordinator's office and is considered a high-level, reactive intervention. Contrary to expectations, both Emote users and non-users did not see any change in the number of Focus Room interventions they used over the course of the pilot period. This type of intervention was not used very often by either group at the beginning of the pilot period and neither group further reduced the use of Focus Room interventions during the whole period.

Figure 3: Average Number of Focus Room Interventions

Over Pilot Period at Guadalupe
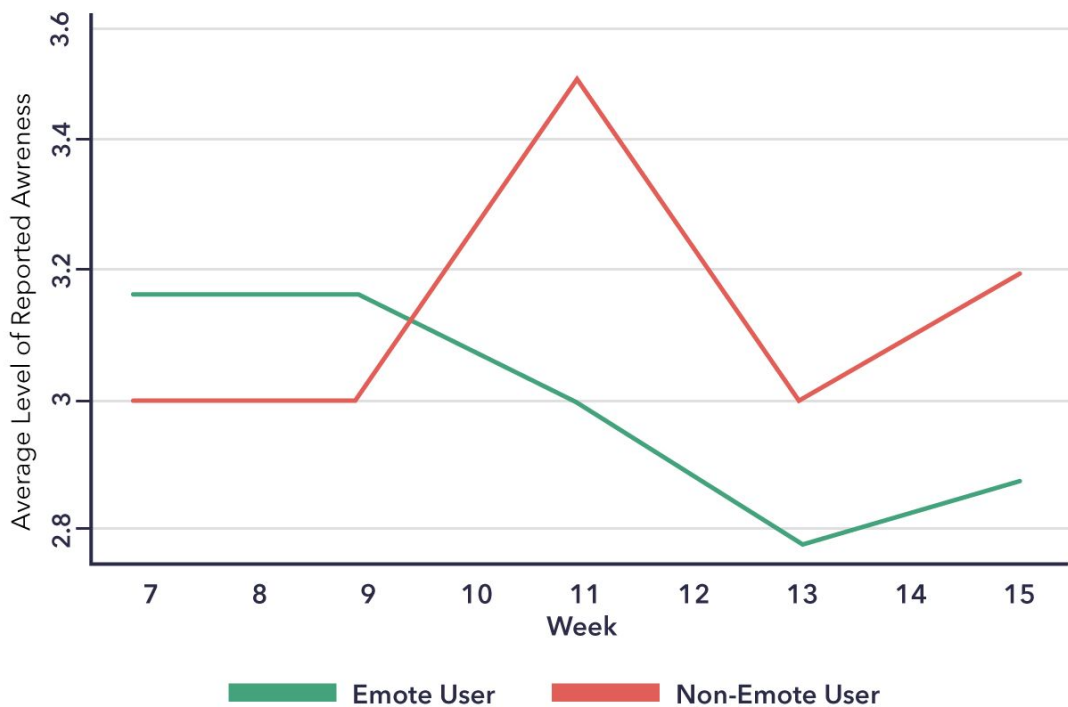
Emote User   Non-Emote User
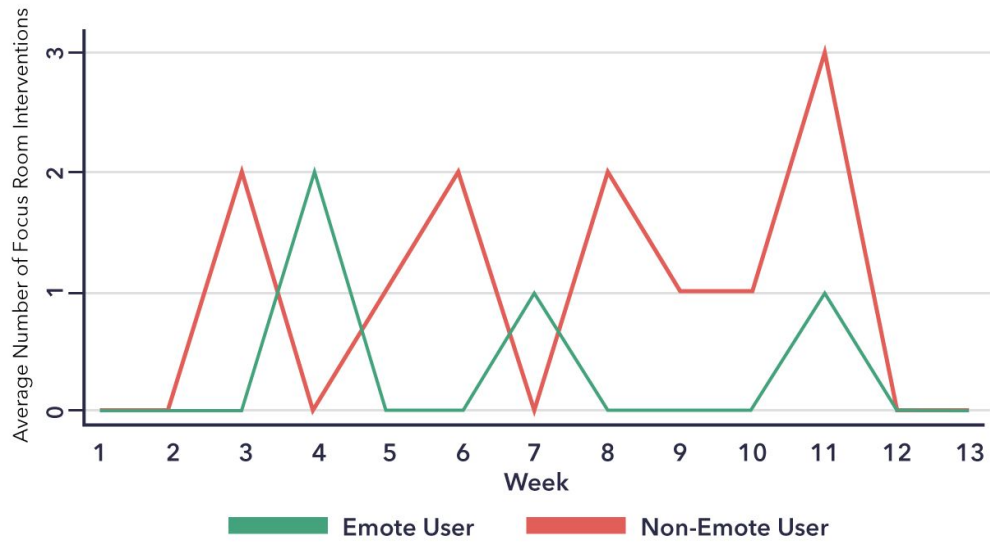
TEACHER AWARENESS OF STUDENT SEL NEEDS

Overall, there is not support for the second hypothesis, as Emote users did not report being more aware of their students' SEL needs over the course of the semester. Furthermore, there was no difference in the change or direction of change between Emote users and non-users.
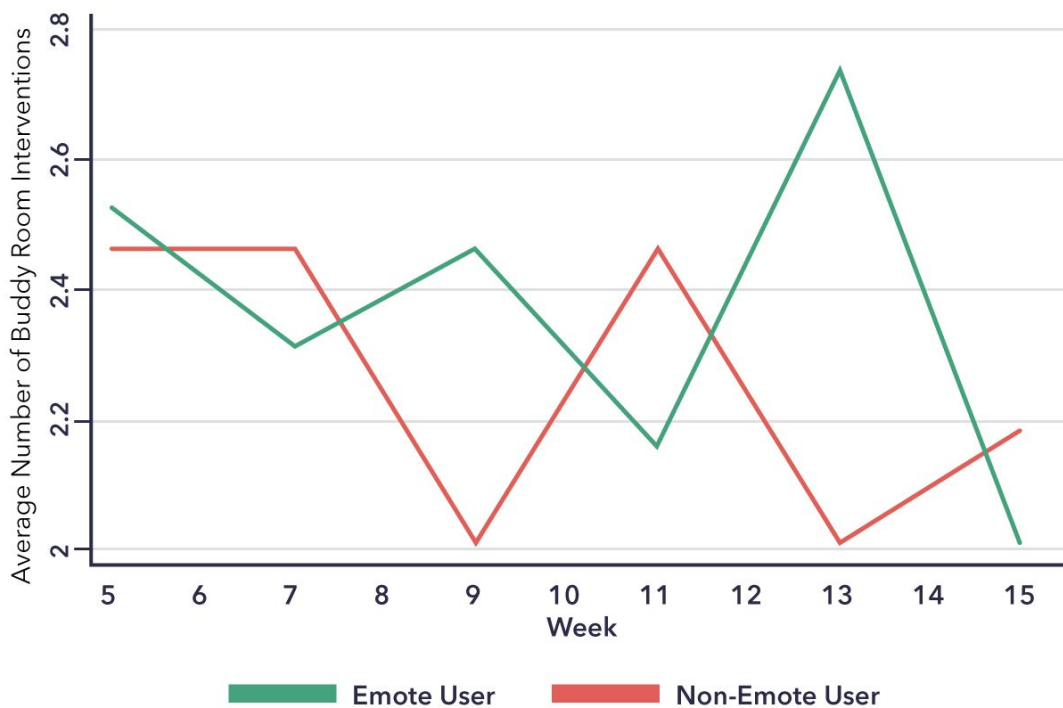
Figure 4 illustrates the average-level of teacher reported SEL awareness over the course of the pilot period by user group. Contrary to expectations, Emote users actually reported less awareness over the course of the pilot period while Emote non-users reported more awareness. The change for both groups was, however, not statistically significant so the changes do not reflect meaningful change.

Figure 4: Average Level of Teacher Reported SEL Awareness
Over Pilot Period at Guadalupe

In Figure 5, the average-level that a teacher reported being "caught off-guard" over the course of the pilot period by user group is illustrated. Again, contrary to expectations, Emote users did not experience a steady decline in how "off-guard" they felt. For both Emote users and non-users, there was not a meaningful or consistent change in either direction in how "off-guard" they felt over the course of the pilot period.


Figure 5: Average Level of Teacher Reported Caught Off-Gaurd
Over Pilot Period at Guadalupe

TEACHER STRESS

Overall, there is support for the third hypothesis, as Emote users did report less stress over the course of the pilot period than non-Emote users.

Figure 6 illustrates the change in the average-level teacher-reported stress over the pilot period at Guadalupe by user group. As expected, Emote users did report less stress over the pilot period, on average. At the beginning of the pilot period, Emote users reported an average-level of 3.4 (on a scale of 1-5) and by the end of the pilot period, they reported an average-level of 2.5, which reflects a 26% decline in their level of stress, which was a statistically significant decline (using a paired t-test). Conversely, teachers that did not use Emote did not experience a statistically significant decline in their reported level of stress. In this case, both groups of teachers had relatively similar levels of stress to begin with, suggesting a relatively good comparison.

Figure 6: Average Level of Teacher Reported Stress
Over Pilot Period at Guadalupe

* Statistically significant decrease

Emote User — Non-Emote User
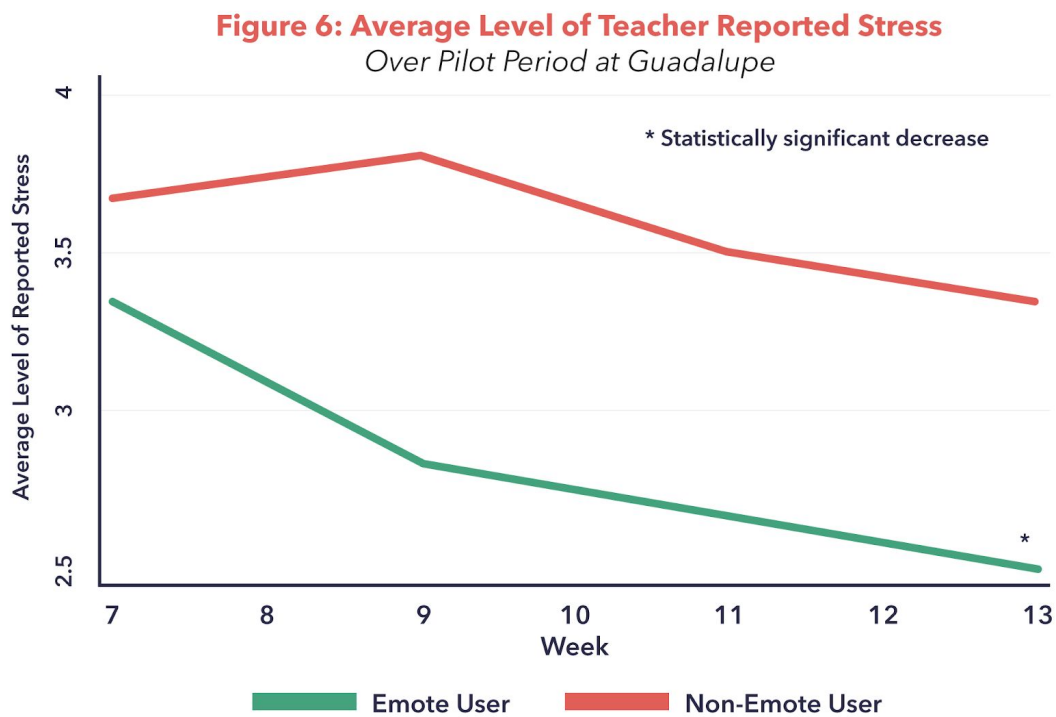
ANECDOTAL EVIDENCE

Overall, the anecdotal evidence from the teachers provides some support for the second hypothesis, as some teachers reported that Emote helped them be more aware of their students' SEL needs and patterns and gave them a way to collaborate with other teachers on reaching out to struggling students.

Of the seven teachers that used Emote at Guadalupe, three of them reported ways in which Emote helped them be more aware of their students' SEL needs. First, the feature teachers appreciated the most was being able to identify when a particular student was having an "off" day. Since Emote tracks and stores teachers' perceptions of students' feelings over time, teachers are able to see when a student is exhibiting emotions that are different than usual. This helps them be more proactive with those students and reach out and offer assistance before emotions escalate. Similarly, the same three teachers reported that Emote helped them identify what time a day a student is typically in a vulnerable mood and proactively prepare for that. After about a month of using Emote, these teachers felt like they were more conscious about checking-in with students. Finally, teachers liked that Emote gave them a tool to collaborate with one another on students' SEL needs. When teachers were able to see patterns of student emotions or behavior throughout the day or week, they identified which teachers they needed to follow-up with and proactively implement consistent interventions. The collaboration made teachers feel more empowered to help their students.

PRODUCT MODIFICATIONS

The fourth goal of this research study was to gather feedback from teachers about product usability and implementation requirements. A number of suggestions were made by the teachers that would make implementation of Emote easier and more effective. First, on a practical basis, it was hard for teachers at Guadalupe to take attendance and log Emote at the same time. They suggest that Emote be integrated with Infinite Campus (or whatever attendance platform is used) at schools where teachers are required to take attendance during transitions between class periods, as it would help streamline the process.

Second, for Emote to be most effective—in terms of tracking and identifying students in need—all teachers/staff in the building need to use it on a consistent basis. If one teacher doesn't record the emotions as intended, another teacher may be caught completely off-guard and react to a student's behavior rather than be proactive toward it. Similarly, when Emote is not used on a consistent basis, it is easy to miss patterns in student behavior that might also prevent reactive teacher interventions that overload the capacity of behavioral support staff.

Third, teachers at Guadalupe had two product suggestions that they believe would help them be more disciplined in using Emote. The first is to add the ability to record and track interventions that they took with a student. Teachers wanted to be able to see what, if any, interventions had already been tried with a student, so that they weren't continuing to try something that didn't work or further "press a student's buttons." Teachers also thought it would be nice if they could record and track their own emotions throughout the day, as they thought it might help them identify patterns in their own behavior and emotions and could take proactive self-care measures. Emote has already added this latter feature to the tool.

Fourth, the teacher at Banneker had suggestions on how to make Emote more relevant at the elementary level. Since she was with the kids for the vast majority of the day, she didn't feel like recording student emotions throughout the day was all that insightful. She also wanted to use Emote as a tool with the students to help them better understand their emotions and respond to them. She suggested, therefore, that Emote adapt the interface for elementary classrooms where students would be able to self-report their emotions and then see their own progress and/or patterns, which would give the teacher a tangible and visual tool to talk to students with about their feelings.

DISCUSSION AND NEXT STEPS

This study yielded some preliminary evidence that suggested a negative relationship between Emote and teacher stress as well as a negative relationship between Emote and mid-level, reactive interventions. Additional research is definitely warranted. There are a couple of limitations in this study that warrant discussion and prevent us from making causal claims.

First, the sample size in this study was very low. Only seven teachers at Guadalupe used Emote and only two teachers at Banneker used Emote, which is a very small group to infer generalizability to a wider context. More importantly, while this study did have a control group, a couple limitations arose. At Guadalupe, the teachers were not entirely randomly selected and, instead, were chosen based on those that expressed interest and willingness to participate. Ultimately, the seven teachers that were chosen for the treatment group were all freshman-level teachers and the control group teachers were more junior- and senior-level teachers. As such, the freshman-level teachers had more vulnerable and emotionally unstable younger students thereby increasing the opportunities and need for interventions. Thus, the result that shows that non-Emote users did not decrease the number of mid- and high-level interventions they used while Emote users did should be interpreted with caution. The non-Emote users had a very different group and nature of students that typically required fewer interventions to begin with. Furthermore, we cannot say in this study that Emote was the *reason* mid-level interventions decreased and stress decreased among Emote users without having a proper control group and controlling for other possible explanations for change. Future research should, therefore, include a proper control group and collect data on confounding variables to control for in a statistical analysis.

Second, the survey data on SEL awareness and stress did not yield significant changes, but this is possibly due to problems in the research study and not because Emote failed to correlate with changes. The time period for this study was too short, and more change may have occurred with more time. Factors like stress and awareness likely take longer than two months to systematically change, so future research should conduct a longer pilot period. As mentioned above, in order to compare changes between the control and treatment group, a more comparable control group should also be created. Lastly, teachers in the treatment group—those teachers assigned to use Emote—must be disciplined in the pilot period to consistently use the app as intended to evaluate the true effect. In this pilot, the majority of teachers in the treatment group were not using Emote

on a consistent basis, which diminished the effectiveness of the tool in the first place and also makes them hardly different from the control group. From an implementation standpoint, it is helpful to know what things would have incentivized more consistent teacher use, but from an efficacy standpoint, the inconsistent use biases results and we are unable to assess the impact of Emote.

Third, for unforeseen and personal reasons, the control group at Banneker dropped from participation. Therefore, we only have the survey data on teacher awareness and stress from two teachers that used Emote, and one of those was a P.E. teacher who used it in one class period a day. Thus, we only have pre- and post- survey data for one teacher at Banneker combined with her anecdotal evidence. Ultimately, her experience and insight was used to inform product modifications and implementation requirements for an elementary setting, which was extremely valuable as Emote had not had much exposure to an elementary setting. The efficacy part of the study was not feasible, however, at Banneker.

Despite these limitations, there is sufficient preliminary quantitative evidence and positive qualitative evidence to warrant a larger usability and efficacy study of Emote. In future research, a larger and more comparable treatment and control group should be created and implementation should occur for a longer time period. Teachers must also commit to consistent use.

CONCLUSION

Guadalupe High School and Banneker Elementary were grateful for the opportunity to co-design a new solution with Emote. This study showed that teachers who used Emote experienced, on average, less stress over time and decreased the number of reactive interventions they took with students. While the efficacy evidence is limited by sample size and validity bias, the preliminary positive evidence this study did find combined with the positive anecdotal evidence from the teachers lends support for a larger, more robust research study. Emote also proved to be a responsive partner in co-design with the school, as it added a system for teachers to track their own emotions and is working to integrate with attendance platforms.

Classroom Observation Rubric
(Statements evaluated on a 1-5 scale, with higher values corresponding to more evidence of the behavior)

Rapport with Students
Evidence of authentic engagement with students
Teacher interacts with students, including both words and actions
Teacher is consistent and fair with discipline
Teacher is sensitive to the needs of students
Teacher follows through on what he/she says
Teacher listens and understands students' point of view; students appear to feel understood
Teacher helps students when they ask for help

Classroom Environment
Teacher manages time well
Teacher has clear classroom behavior expectations posted
Teacher is organized and prepared for crisis (Safe Spot, Calming Corner)
Students understand how to use behavior management tools (Safe Spot/Calming Corner/emotion check in chart)
Students are allowed to utilize behavior management tools to self regulate when needed
The classroom has a positive climate
The classroom has a calm climate (dimmed lighting, essential oil diffusers, music, etc.)
Teacher is flexible in accommodating for individual student needs
Teacher communicates expectations clearly

Teacher Self-Regulation
Teacher appears anxious or stressed
Teacher was caught off guard by a student's behavior or reaction
Teacher tried an in-class intervention before referring a student out of the classroom
Teacher knew how to address the unique SEL needs of students when they demonstrated a need
Teacher effectively models emotional regulation skills with students
Teacher remains calm during crisis