"Becoming Embedded In What We Do"

The Implementation and Impact of the Learning Differences Program at Centennial Campus Magnet Middle School in Raleigh, North Carolina

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Abstract

There is growing attention to the differences in how students learn; however, little is known about how schools and districts can successfully build capacity and make progress in addressing students' learning differences. To better understand and support the capacity-building process, the Friday Institute for Educational Innovation (FI) used a modified Research-Practice Partnership (RPP) with a continuous feedback approach as schools implemented the FI's Learning Differences program and applied concepts of learning differences to their professional practice. This case study details the implementation and impact of the Learning Differences program at Centennial Campus Magnet Middle School (CCMMS) in Raleigh, North Carolina.

The authors intend for this case study to be a practical resource that schools and districts can reference as they implement their own learning differences initiatives. This case study is organized into three sections. Section one provides an overview of the Learning Differences program. Section two describes how the Learning Differences program was implemented at CCMMS and how data were collected. Section three draws on qualitative and quantitative data to illustrate nine key lessons learned from the implementation process as well as the program's impact on students.

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Executive Summary

During the 2019-2020 academic year, Centennial Campus Magnet Middle School (CCMMS), a public school in Raleigh, North Carolina, implemented the Learning Differences program, which was developed by the Professional Learning and Leading Collaborative (PLLC) at the Friday Institute for Educational Innovation (FI).

Implementation began with the formation of a modified Research-Practice Partnership (RPP) established by the director of the PLLC and the principal of CCMMS. The purpose of this RPP was to provide technical assistance to CCMMS teachers as they took the ***Learning Differences Massive Open Online Course for Educators (MOOC-Ed)*** in the summer of 2019 and facilitated the ***Students LEAD (Lead, Explore, Advocate Differently) online course*** to their students in the fall of 2019. The RPP also formed an implementation team consisting of the CCMMS co-university liaison who was a liaison between the teachers and the administrators, three of the Learning Differences program developers and three evaluators from the Research and Evaluation Team at the FI, one of which also served as the FI liaison for CCMMS' co-university liaison.

Implementation continued as CCMMS teachers were incentivized to participate and complete the Learning Differences MOOC-Ed course. Eight teachers completed the course over the summer of 2019 and received a $500 stipend. When they returned to campus for the fall of 2019, six seventh grade CCMMS teachers and six eighth grade CCMMS teachers also facilitated the Students LEAD online course during their weekly advisory period. In the spring of 2020, teachers planned to infuse learning differences concepts into their content classroom curriculums. However, plans were delayed at the beginning of the term and ultimately cancelled due to priority shifts related to COVID-19.

Over the course of the year, the implementation team conducted weekly and monthly check-in meetings to discuss the implementation of the Learning Differences program and attended teacher staff meetings to hear implementation concerns. The FI liaison also shared important updates and action items with the

implementation team via weekly and monthly memos, and course developers made programmatic shifts based on the memos. Finally, evaluators collected and analyzed data from students, teachers, administrators and Learning Differences program staff in the form of non-obstrusive observations, surveys and focus groups.

In analyzing the data, the evaluation team found nine key lessons from the CCMMS Learning Differences program implementation that may help future schools and districts as they design their implementation strategies, namely:

Nine Key Lessons

KEY LESSON ONE

1

Establish School Leader Commitment Early

KEY LESSON TWO

2

Align the Program with the School's Priorities

KEY LESSON THREE

3

Identify an On-The-Ground Champion and Teacher Leaders

KEY LESSON FOUR

4

Dedicate Time to Fully Orient and Train Staff

KEY LESSON FIVE

5

Consider Phased Implementation

KEY LESSON SIX

6

Develop a Communication Process

KEY LESSON SEVEN

7

Adapt the Program to Match Your Technology and Teacher Preferences

KEY LESSON EIGHT

8

Incentivize and Celebrate Participation

KEY LESSON NINE

9

Adopt a Collective Growth Mindset

The data also underscore how the program positively impacted student learning and development. In their survey and focus group responses, students described having a better understanding of their own learning differences and tools that support learning differences as a result of engaging with Students LEAD. They also expressed the stronger ability to advocate for themselves by asking their teachers for what they needed to be successful. Moreover, students communicated greater empathy for their peers' learning styles and preferences.

Overview of the Learning Differences program

Defining Learning Differences

The field of differential psychology examines how individual differences, such as cognitive styles and personality, impact human behavior (Jonassen & Grabowski, 2012; Riding & Rayner, 2013). A plethora of studies have found that individual differences have a significant influence on how learners receive and filter information (Jonassen & Grabowski, 2012; Cassidy, 2004). Scholars believe enhanced awareness of individual differences will help teachers and instructional designers become sensitive to their role in learning (Jonassen & Grabowski, 2012). Deriving from this perspective, the Friday Institute for Educational Innovation (FI) uses the term ***learning differences*** to refer to the variability among learners. All learners have unique strengths, and awareness of those strengths can make learning more enjoyable and impactful.

The Learning Differences Program

The Professional Learning and Leading Collaborative (PLLC), a unit of the Friday Institute for Educational Innovation, created the ***Learning Differences program*** in 2014. This program seeks to deepen student and educator understanding of learning differences, specifically around the constructs of working memory, executive function and learner motivation, as these constructs have been associated with positive student outcomes (Gilmore & Cragg, 2018; National Academies of Sciences, Engineering, and Medicine, 2018). In this program, educators and students participate in free online courses developed by the PLLC. The goal of participation in these online courses is to enhance how educators approach instruction and how students approach their learning.

Learning Differences Massive Open Online Course for Educators

Overview

The purpose of the ***Learning Differences Massive Open Online Course for Educators (MOOC-Ed)*** is to expand educators' knowledge related to learning differences, provide actionable strategies to impact the learning experience of their students and cultivate a growth mindset related to learning differences. As of fall 2020, this course has run nine times with over 10,000 participants from more than 90 countries. The intended audience for this MOOC-Ed is elementary school teachers, middle school teachers, high school teachers, instructional coaches, instructional support teams and administrators.

Design

The course begins with a registration survey in which educators provide background information about themselves and their schools or districts in addition to their goals for participating in the MOOC-Ed. The remainder of the course is organized into six units (see Table 1 for more information). Each unit provides foundational resources, activities, classroom examples, micro-credentials, video stories depicting student experiences, discussions and technology tools. Participants learn from students, teachers, administrators, researchers and additional perspectives on the topic. Instructional coaches, media coordinators and teacher leaders also have the opportunity to participate in three additional modules within the MOOC-Ed focused on strategies for coaching and supporting other teachers in their work with learning differences.

Table 1: Units, Unit Descriptions and Essential Questions of the Learning Differences Massive Open Online Course for Educators

Unit	Unit Description	Essential Questions for Educators
Thinking Differently about Student Learning	The first unit focuses on furthering educators' thinking about learning differences and the "myth of average" among their students. Educators begin to develop and apply learning differences teaching competencies that will support student learning.	• What are learning differences? • How does thinking about students' learning differences affect my teaching practice? • What are the benefits of focusing on students' strengths rather than weaknesses? What are the challenges of this approach?
Working Memory	The second unit focuses on the impact of working memory on student learning and behavior in classrooms. Educators learn and apply strategies to better support students' working memories.	• What is working memory and how does it affect student learning? • How can teachers support students who struggle with working memory or leverage students with strong working memory? • Which strategies or solutions related to working memory best meet your students' needs?
Executive Function	The third unit establishes a basic understanding of executive functioning skills by explaining what they are and how they impact student learning.	• What are executive functioning skills and how do they affect student learning? • How can teachers develop students' executive functioning skills in classrooms? • Which strategies or solutions related to executive functions best meet your students' needs?
Student Motivation	The fourth unit focuses on the impact of students' motivation on learning and behavior in classrooms. Educators learn and apply strategies to better foster student motivation.	• What are intrinsic and extrinsic motivation and how do they affect student learning? • How can teachers build intrinsic and extrinsic motivation in classrooms? • Which strategies or solutions related to motivation best meet your students' needs?
Strategies for Supporting the Whole Student	The fifth unit focuses on the complexities and relatedness of learning differences. Educators begin honing skills to approach a student and identify how to leverage that student's learning profile to best support them. Throughout the course, this strategy is referenced as being a "learning scientist."	• How do the constructs of learning work together to build a complex, individual learner profile in each of my students? • How can I collect student data to select and implement strategies to support individual student needs?
Internalizing a Growth Mindset	The sixth unit focuses on bringing the various constructs of learning differences together to apply in classrooms. This unit also outlines opportunities for future learning.	• What progress have you made in your classroom with regard to learning differences? • What strategies or next steps would you take to continue down this path?

Students LEAD (Learn, Explore, Advocate Differently) Online Course

Overview

The purpose of the ***Students LEAD (Learn, Explore, Advocate Differently) online course*** is to help students deepen their understanding of learning differences and learn how to advocate for their own learning needs. As of fall 2020, 1,450 students across the world have taken the course, and 575 teachers have created accounts to explore with their classroom. The intended audience for this online course is students between the ages of 13-18.

Design

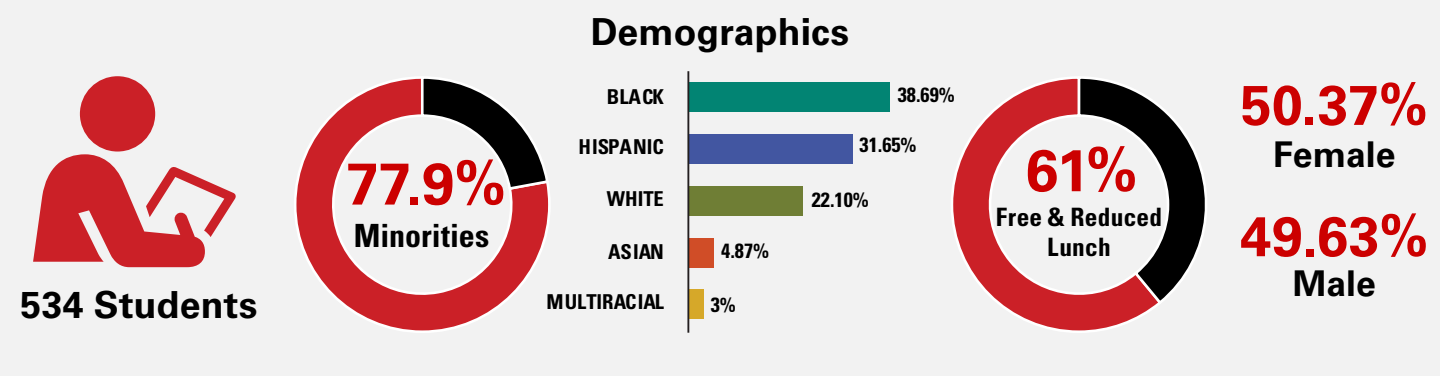
The course is divided into six learning "zones" (see Table 2 for more information). After watching a brief tutorial, students explore key resources, engage in activities, participate in discussions and respond to polls within each zone. Throughout the course, they also complete an Action Plan to help them communicate their needs to adults and allies beyond the course. Individual students or whole classes can take the course. The PLLC team has developed both a teacher guide and a parent guide to support educators and parents as they work with their students on the content.

Table 2: Zones, Introduction Prompts and Highlights of the Students LEAD Online Course

Zone	Introduction Prompt	Highlights
Me As A Learner	Welcome to the course! In this first zone, you'll explore your own learning and discover how all students learn in different ways. You'll meet four students — Matt, Matthew, Chelsea and Carly — who have different learning strengths and challenges, and you'll connect with your peers from all across the country. But first, watch a welcome message from our four student experts.	• Meet the student experts • Meet your peers • Take the Learner Sketch • Share what you learn with an adult ally
Attention	All day long, tons of sights, sounds and words are flying at us — and we have to sort all of this fast! But sorting through and knowing what to pay attention to can be a lot to manage. Our attention system helps us process huge amounts of information. Think about what happens when you're having a conversation and get interrupted. Can you hold a thought and shift back to it to continue the original conversation? That's your attention at work. Our brains are equipped to perform multiple and complex attention-related tasks. This helps us to process all kinds of information, coming from a variety of places, at once. Attention challenges can look very different from individual to another. If you're struggling with attention, you may have difficulty concentrating during school, talking with friends or completing everyday tasks.	• Learn about Chelsea • Test your attention • Practice some strategies • Explore new tools
Memory	Our memory helps us navigate our lives and understand who we are based on who we have been in our past. It keeps, recalls and uses the information available around us. And it makes connections to what we learned from earlier experiences. It asks questions like: Have I encountered similar situations before? What was that information I studied last night for the test?	• Learn about Matt • Test your own memory • Practice some strategies • Explore new tools

Zone	Introduction Prompt	Highlights
Expressing Ideas	Difficulties with expressing ideas can mean different things for different learners. You might have a formally diagnosed learning disability such as dysgraphia and dyscalculia. Or it may just be harder for you to put what you're thinking out loud or on paper. Either way, this zone will give you a chance to explore new ideas and strategies for expressing yourself.	• Learn about Matthew • Try different ways of expressing yourself • Practice some strategies • Explore new tools
Organization and Time Management	Organization and time management give you a way to keep track of all of your responsibilities. It helps you stay on top of your homework, projects and other assignments to make sure that you're able to do your best.	• Learn about Carly • Navigate a challenging scenario • Practice some strategies • Explore new tools
Action Plan	Think back to the beginning of this course. Remember that sometimes, both in and out of school, you just don't get it… and that's okay. Everyone feels that way at some point. By now, though, you've had a chance to explore some of the possible reasons. Maybe you discovered some challenges with memory, attention, expressing ideas, or organization and time management. You may have tried many of the suggested strategies and wonder what happens when you still just don't get it. This is when you need to reach out to others for more support. Talk to your allies — your teachers, parents, friends — as you learn to advocate for yourself to get the support you need.	• Hear from student experts • Understand why advocacy matters • Practice some strategies • Figure out your next steps

CCMMS Implementation and Data Collection



Centennial Campus Magnet Middle School (CCMMS) is a University Connections & Leadership magnet middle school and member of Wake County Public School Systems' (WCPSS) STEM Schools Network. CCMMS' mission is to (1) provide a diverse learning environment that significantly increases achievement for all students, and to (2) provide a safe, nurturing atmosphere that fosters learning and leadership through the integration of curriculum, technology and university resources to produce students that positively impact their community. CCMSS specializes in The 7 Habits of Highly Effective Teens by Sean Covey, has a partnership with North Carolina State University, and is a part of Wake County's own STEM network. The school is led by Principal Kathryn Hutchinson and serves over 400 students in Wake County, North Carolina.

The following timeline details how the Learning Differences program was implemented at CCMMS.

Spring 2019

A Partnership is Formed

> *"We just started talking about some of the ideas and some of the directions [the school administrators] were heading in and the idea that our work around learning differences might be a really effective way to work together."*
>
> *–Learning Differences Program Developer*

Mary Ann Wolf, Ph.D. and Principal Kathryn Hutchinson formed a modified research-practice partnership (RPP) to provide technical assistance to CCMMS teachers as they implemented the Learning Differences program. RPPs are collaborative and iterative relationships that capitalize on the strengths of both researchers and practitioners. In RPPs, researchers and practitioners work together to develop strategies, tools and products that reflect the goals, expertise and needs of the practitioner, and data is collected via a research-based approach. This modified RPP created an implementation team that included:

- **CCMMS' co-university liaison,** who is a liaison between the teachers and the administrators
- **Three of the Learning Differences program developers** from the Professional Learning and Leading Collaborative at the Friday Institute for Educational Innovation (FI)
- **Three evaluators from the research and evaluation team** at the FI, one of which also serves as the FI liaison for CCMMS' co-university liaison

Spring 2019 (continued)

Summer 2019

Fall 2019

This partnership is unique for two reasons

1 Both CCMMS and the Friday Institute are close in physical proximity, as their buildings are joined together, which makes frequent meetings between researchers and practitioners very convenient.

2 At the time this partnership was formed, it fulfilled a mutually beneficial need for both the practitioners and the researchers. The practitioners at CCMMS were seeking programming for their advisory class period, and the researchers at the Friday Institute were seeking real-world feedback from teachers and students as they experienced the newly developed MOOC-Ed courses. This mutually beneficial need established a shared vision for the implementation team early on.

Educators Engaged in Online Learning and Professional Development

Ten CCMMS teachers enrolled in the Learning Differences **Massive Open Online Course for Educators (MOOC-Ed),** which helps educators deepen their understanding of learning differences, specifically around the constructs of working memory, executive function and learner motivation. Teachers were incentivized to participate and complete the course by **August 26, 2019.** Eight completed the course by the deadline and received a $500 stipend.

Educators Piloted the Student Course during their Advisory Period

Six seventh grade CCMMS teachers and six eighth grade CCMMS teachers facilitated ***Students LEAD (Learn, Explore, Advocate Differently)*** to students on Mondays during their 55 minute advisory period (Monday, July 30 - Monday, December 16, 2019). The ***Students LEAD online course*** helps students deepen their understanding of learning differences and learn how to advocate for their own learning needs. Evaluators conducted non-obtrusive classroom observations during the advisory period. These observations were approximately one hour in length and were inclusive of all content areas. Teachers were not required to prepare for the observations, as evaluators aimed to view a random sample of typical lessons. To systemically gauge teacher instructional practices, evaluators recorded field notes using an observation protocol. A copy of the observation protocol is available in Appendix A. Observations occurred every 1-2 weeks, and a total of 30 classroom observations were conducted in the fall.

At the same time, the implementation team conducted weekly check-in meetings to discuss the implementation of the ***Learning Differences program***. Each week the FI liaison shared important updates and action items with the implementation team via a weekly memo. Course developers made programmatic shifts based on the memos. The implementation team also attended the four teacher staff meetings to hear implementation concerns.

Spring 2020

Plans Shift as Educators Respond to Global Pandemic

In the spring of 2020, teachers planned to infuse learning differences concepts into their content classrooms curriculums. Likewise, evaluators planned to conduct classroom observations during content periods and collect feedback from program participants through focus group discussions and surveys. The implementation team also planned to conduct monthly check-in meetings to discuss the progress throughout the spring.

2020

Timeline Interrupted

In the spring of 2020, teachers planned to infuse learning differences concepts into their content classrooms curriculums. Likewise, evaluators planned to conduct classroom observations during content periods and collect feedback from program participants through focus group discussions and surveys. The implementation team also planned to conduct monthly check-in meetings to discuss the progress throughout the spring.

- **The month of January** was dedicated to finalizing survey and focus group protocols as well as scheduling when the evaluators would conduct observations and collect survey and focus group data. In February and March, 212 students respond to the survey and eight participated in focus group discussions. Additionally, the administrators and the program design team also participated in focus group discussions. Focus group protocols are available in Appendix B. The evaluators administered a teacher survey in February and March, but only two teachers responded. Without a representative sample, these responses are not included in this case study.
- Content observations, teacher focus groups and parent focus groups were slated for **March-May 2020.**
- **Plans for spring 2020 immediately shifted in mid-March 2020,** however, due to the global health pandemic COVID-19. As the governor made executive orders concerning public school functioning, the FI liaison continued to document important updates and shared them with the implementation team via a monthly memo.

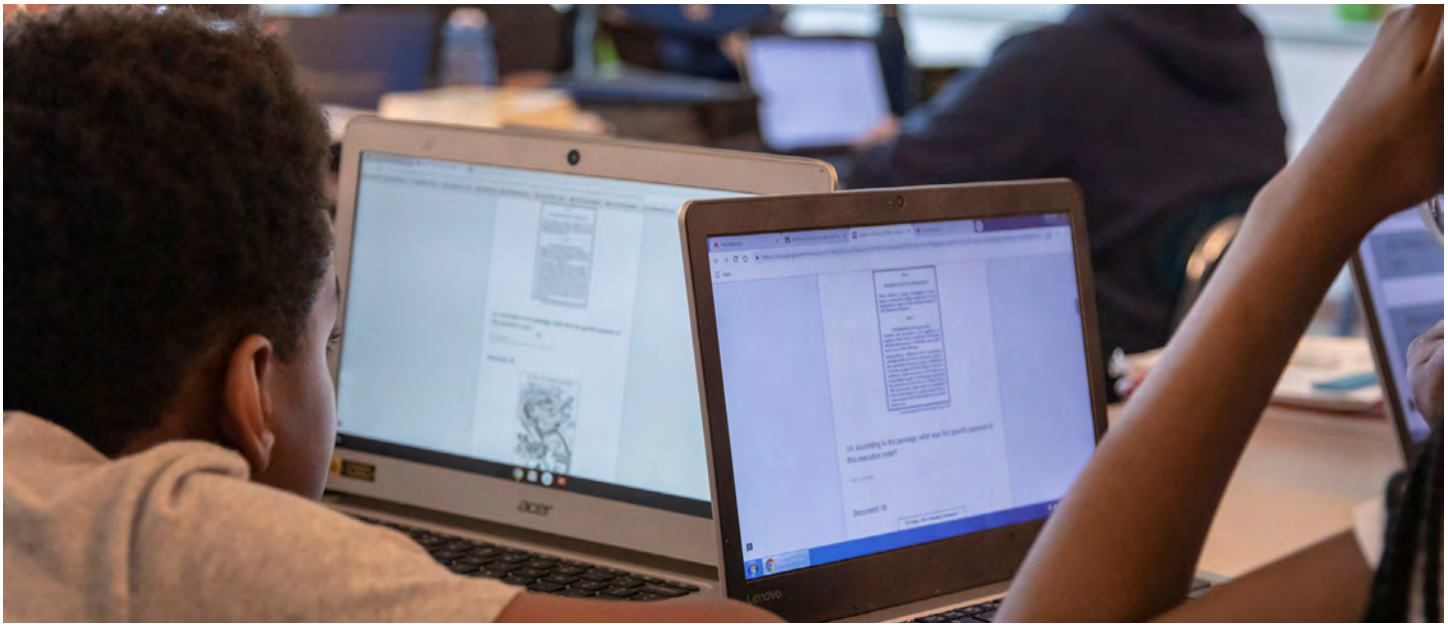
Data Collection

To learn about stakeholder perceptions regarding the implementation and impact of learning differences awareness, evaluators collected data from students, teachers and administrators. Table 3 outlines the different data sources that were collected. Evaluators obtained research permissions from the North Carolina State University Institutional Review Board and the Wake County Public School System's Data and Accountability Department.

Table 3: Data Sources

Data Source*	Description	Quantity
Observations	Evaluators observed periods of advisory and content classrooms, as well as House (grade level team) and Advisory Board meetings. All observations occurred with the permission of the teachers and administrators and were non-intrusive. Observation protocols were utilized and detailed field notes were gathered at each observation.	• Advisory classroom observations occurred every 1-2 weeks, and a total of 30 classroom observations were conducted. • Two House (grade level team) meeting observations were conducted. • Two Advisory Board meeting observations were conducted.
Focus Groups	Students, administrators and program staff were invited to participate in semi-structured focus groups to gauge information about program implementation, impact and improvement. Focus groups for each participant group were conducted once and lasted approximately 60 minutes. All participants were informed that their participation was voluntary and that there were no consequences for non-participation. Audio was recorded, transcribed and used for analyses.	• Two student focus groups were conducted. • One administrator focus group was conducted. • One program staff focus group was conducted.
Surveys	The FI administered a survey to students to learn about the impact of the initiative. All surveys were voluntary. Participants had the choice to take surveys electronically using a survey software (e.g., Qualtrics) or on paper.	• One retrospective pre-post survey was administered to all seventh and eighth grade students. 212 students responded to the survey.

*Spring 2020 content classroom observations, teacher focus groups and parents focus groups were planned but were cancelled due to COVID-19. A spring 2020 teacher survey was administered, but only two teachers responded. Without a representative sample, these responses were not included in this case study.



Implementation Lessons Learned and Program Impact on Students

Implementation Lessons Learned

Implementing a program of this magnitude is no easy feat. Administrators, teachers, students and parents alike have to first buy-in to the idea that this program is worthwhile. Then, once the initial excitement and "newness" of the program has subsided, maintaining interest becomes the next challenge, especially as implementation hiccups such as competing priorities, lack of time or technology issues arise. Across data sources, the following nine lessons were apparent. These insights from the Centennial Campus Magnet Middle School (CCMMS) implementation may help future schools and districts as they design their implementation strategies:

Lesson 1: Establish School Leader Commitment Early

1

Much of the success of the Learning Differences program implementation at CCMMS can be attributed to the early commitment of Principal Hutchinson. As mentioned previously, this partnership was built to mutually benefit CCMMS and the Friday Institute (FI). Principal Hutchinson was a key stakeholder in developing the partnership because she envisioned how this program could benefit her staff and students. In no uncertain terms, Principal Hutchinson supported the implementation, which sent a clear message to her staff that it was a priority for her. Others seeking to implement this program in a school community should consider how to first engage with the school leaders and develop a meaningful partnership with them.

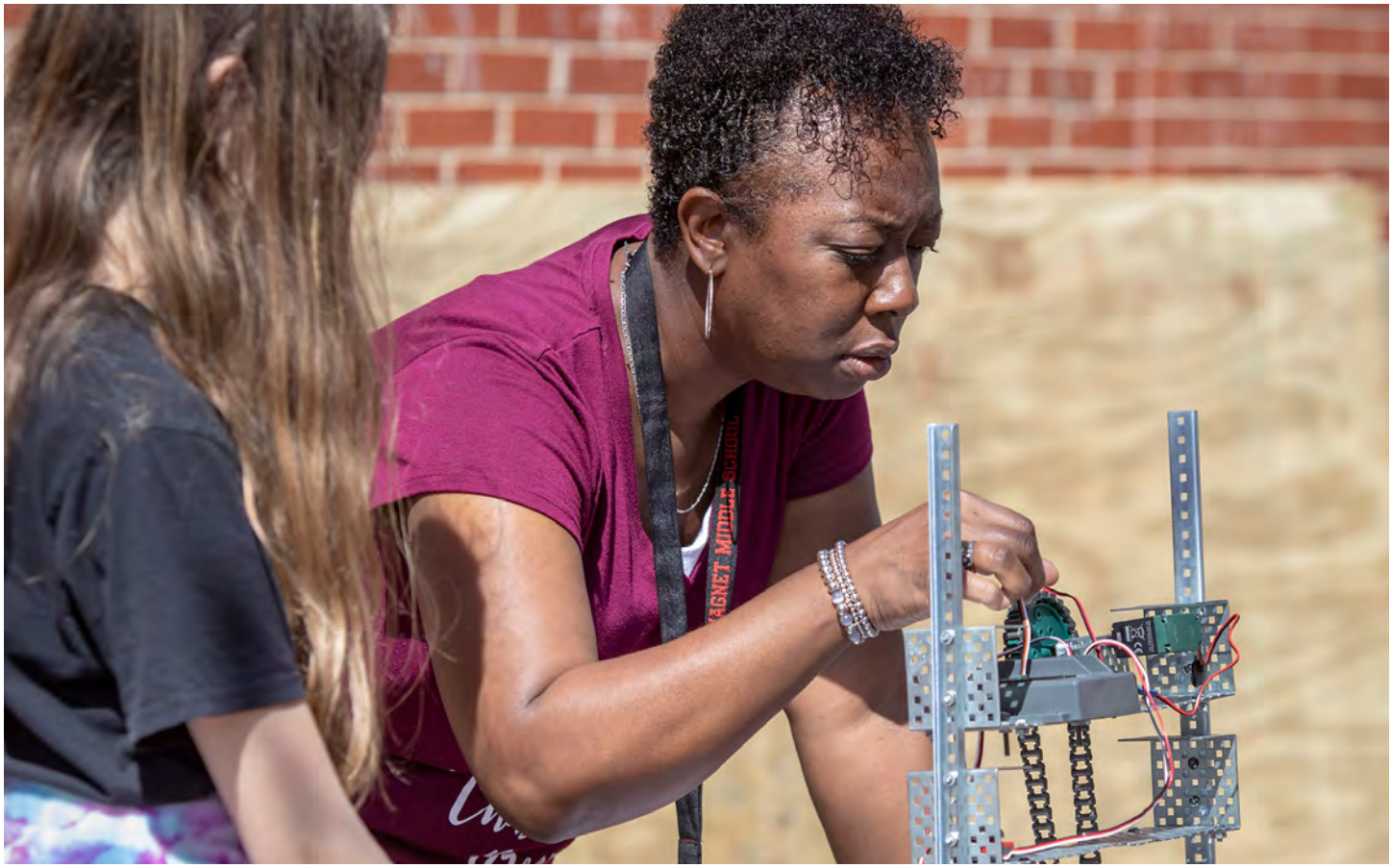
> *"The fact that the principal backed to this and was willing to come in and say, 'We're going to do this. We really need to do it' helped [the coordinator] a lot. But also then helped us. Because I think there were a few points where people were a little overwhelmed or a little frustrated by perhaps their technology situation. And I think the principal kind of being committed to this work mattered a great deal but also how she supported [the coordinator].*
>
> –Learning Differences Program Developer
>
> *I think having a principal committed who's really supporting the work in the school and supporting it with teachers and kids and even their willingness to have us at the parent night, like, all of that to me speaks to the principal believes in this [program]."*
>
> –Learning Differences Program Developer

Lesson 2: Align the Program with the School's Priorities

2

Another key success factor in the program implementation was aligning the program with the school's priorities. CCMMS is a leadership magnet school that specializes in The 7 Habits of Highly Effective Teens. The co-university liaison took the initiative of aligning the learning differences concepts with Sean Covey's 7 Habits and science, technology, engineering and mathematics (STEM) education to more fully integrate learning differences into the school's existing work. Aligning the program with the school's priorities promoted synergy. Teachers did not feel as though learning differences was "additional work" but rather it was a part of their daily work. As the co-university liaison exclaimed in a meeting, learning differences became embedded in what they did.

> *How can you fuse this initiative or program into the school culture and into what you're already doing so it's not an additional layer [...] It's just an extension of what we already do.*
>
> –Centennial Campus Magnet Middle School Administrator



Lesson 3: Identify an On-the-Ground Champion and Teacher Leaders

3

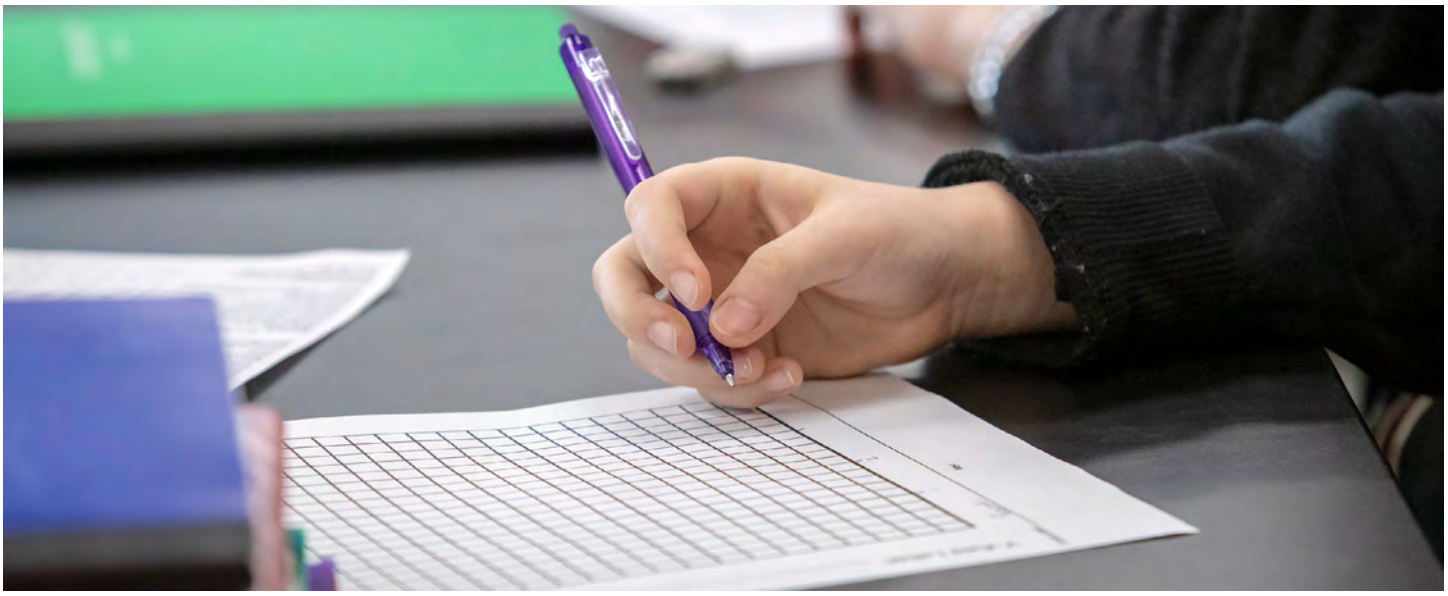
While the principal is the instructional leader of the school, they often do not have the time to delve into the intricacies of program implementation. Instead, mid-level school administrators may be well suited for this role. For example, at CCMMS, the co-university liaison was the on-the-ground champion who led the program implementation. The co-university liaison regularly communicated with teachers about their implementation processes and was in regular communication with the principal and leadership team. Because of the flexibility of her role, the co-university liaison was often able to actively identify and address issues as they arose as well as provide formative feedback to the design team. Learning Differences program developers stressed the importance of the co-university liaison's role as a learner embedded in the school who was familiar with both the content and her school context. She was deeply invested in the project, which helped the team overcome hiccups as they emerged.

In addition to identifying an on-the-ground champion, it is also beneficial to identify teacher leaders who will rally around the project and will support the work. The program developers believe fostering these additional program ambassadors help diffuse the innovation more broadly within a school community. For example, some CCMMS teachers emerged as leaders in their respective units and piloted different interventions to creatively respond to technology challenges, as described in lesson seven. These teacher leaders helped create grassroots momentum. Future sites may be more intentional about formalizing such roles that can lead to incentivizing and celebrating participation, a lesson that will be described later in this section.

> *"I think having that person is probably the make or break aspect of this because without that central point of communication and how busy the teachers and the principal is, I think that would be really hard. I do think who the liaison is matters a lot. The fact that [the coordinator] is a go getter and really valued the work rather than someone being assigned to care about this in some way probably helped us a lot. She was a leader of the work with or without a specific designation.*
>
> - Learning Differences Program Developer

> *Beyond the [coordinator], I think one thing that would be useful going forward is truly try to make a concerted effort to identify teacher leaders.*
>
> –Learning Differences Program Developer

> *I think our teachers, some took it and really tried to make it their own."*
>
> –Centennial Campus Magnet Middle School Administrator



Lesson 4: Dedicate Time to Fully Orient and Train Staff

4

In CCMMS implementation, building teacher knowledge and excitement about the program was difficult due to limited time and competing priorities. For example, initially, the Learning Differences program developers planned to conduct a program kickoff for the teachers during one of their first staff meetings of the school year. During this kickoff, the program developers planned to explain the program's rationale and components and generate enthusiasm for the year ahead. However, the staff meeting slated for the kickoff was jam packed with other pressing priorities, which minimized the kickoff time from 15 minutes to five minutes. Although they were able to introduce themselves, this simply was not enough time to fully orient the staff — both program developers and CCMMS administrators agreed. CCMMS administrators would have preferred "more intentional time together before [they] rolled out the program." In retrospect, the program developers recommend taking at least one hour to properly launch the program. A more comprehensive kickoff event, or even a supplemental orientation video, could have eliminated some of the confusion throughout the implementation. For instance, some CCMMS teachers continued to confuse aspects of the student course with the teacher course. Other teachers did not realize that implementing this program would require as much additional preparation work on their part as it did. In both of these circumstances, more training would help clarify terminology and expectations. Also, lack of training made it more difficult for some teachers to "buy into" the process. In an ideal environment, the program developers also suggest providing follow-up professional development opportunities to the staff while implementing the program. These opportunities can increase staff self-efficacy.

Dedicating time to orient and train staff is an advantageous investment not only for teachers but also for students. Essentially, teachers have to "sell it" to their students. Administrators, program staff ans students alike commented on how teacher buy-in directly impacted student buy-in. Students were more likely to find value in the Learning Differences program if their teachers were enthusiastic about it. In short, teachers themselves must have a clear understanding of the program and believe in it to communicate its importance to students. Others seeking to implement this program in a school community should work with school leaders to budget adequate time for engaging with teachers prior to and during implementation.

I wish we had a little bit more time on the front end to explain clearly [...] and show clearly the difference between the student course and the teacher course. Because again, in theory, they should have all gone through the teacher course and then been exposed to the student course and seen the difference. But in reality, given the lives of everyone, that doesn't often work that way.

–Learning Differences Program Developer

If we were designing this perfectly, we would have loved kind of a workshop introduction and then come back where maybe it was a little more tied to some of the face-to-face professional learning options.

–Learning Differences Program Developer

And I think that that is a very key piece when you're implementing something that teachers have to put additional planning into, and you have to really sell to your students as something that you believe in so that they buy into it.

–Centennial Campus Magnet Middle School Administrator

As far as students, I think it ties directly to where a teacher is on this [project]. I think where the teacher was really invested, understood the work, the kids did well.

-Centennial Campus Magnet Middle School Administrator

VIGNETTE

Teacher Establishing Buy-In By Sharing Own Learning Differences with Students

After watching "Chelsea's story" video, one teacher asked if there was anyone who could relate to the story. The teacher affirmed that they could identify with what Chelsea said. The teacher then asked the students to name the strategies Chelsea used. Students were able to name various strategies including looking out the window, doodling and using Google Read & Write. Following, the teacher facilitated a discussion around when a strategy is a useful tool verus a distraction. They asked students to think about what helps them pay attention this week, as this skill can be useful in high school and beyond. The teacher informed students that they would reflect on what worked and did not work in a future class.

Lesson 5: Consider Phased Implementation

5

Building on the need for solid teacher orientation and training, sites may consider a phased implementation. For example, in the initial weeks of CCMMS implementation, teachers and students were learning how to access the online courses simultaneously, and the learning curve prompted frustration. The magnet school coordinator encouraged teachers to come to them with questions and issues, acknowledging that their school was the "guinea pig." However, the champion feared the program may lose momentum if teachers did not have dedicated time to collectively reflect, vent and problem solve implementation challenges. While some of the challenges were out of the teachers' locus of control, such as lack of technology, these challenges were exacerbated by the fact that some teachers were not reviewing the lessons before presenting them to students.

> *"One of the recommendations I was going to include in the case study is about the timing of it. So I know that you all had the teacher course and then the student course and there was, like, some overlap. One thing I was thinking is that maybe a phase implementation might be easier.*
>
> –Centennial Campus Magnet Middle School Administrator
>
> *And I think in the ideal world, what would have made it easier for teachers if there was a time for me to sit with them before they gave the lesson and go through it. However, it was a very hard balance because they didn't want to stay after school. They didn't want an additional meeting and they already had packed meetings of their time that was already allotted.*
>
> –Centennial Campus Magnet Middle School Administrator
>
> *It would have been great to maybe have [Students LEAD] second semester cause we hurry up and did the move over the summer and then we, like, came in and were like, 'All right, Monday's here. Let's go. And it was so quick.'*
>
> –Centennial Campus Magnet Middle School Administrator"

Lesson 6: Develop a Communication Process

6

Consistent communication amongst the implementation team through weekly meetings and memos proved effective to identify and respond to implementation challenges in a timely manner. Although all schools and districts do not have the luxury to have an FI evaluator and liaison correspond each week, they can develop a flow chart process for how they plan to communicate throughout the implementation.

Having [an FI liaison] involved so much and us working so closely together was absolutely key. And I think the structures [the liaison] provided for us made it very easy for us to jump in and be part of that. And so, to me, that was a huge factor. I think our team all building relationships with [the liaison] but also with [the coordinator] and having some of that time with that advisory group from time to time were really important.

–Learning Differences Program Developer

[Having a] liaison was huge. You have to have that person who's willing to advocate in notes, and I know it's been stated,but I feel like that is an essential part of the success of the program and leadership support too—But having the person who can drive it home.

–Learning Differences Program Developer

"It's really important to communicate clearly and often and consistently because things can snowball and rumor ... Things can spread fast and then a perception is built around a program."

–Learning Differences Program Developer

Lesson 7: Adapt the Program to Match Your Technology and Teacher Preferences

7

At the beginning of the partnership, CCMMS teachers and administrators described how lack of technology was a significant barrier to program implementation. The school did not have one-to-one computing, so there was a limited supply of computers. Moreover, their machines were older models that experienced slow performance and connectivity. The program developers, co-university liaison and teachers worked collaboratively to respond to this challenge by developing a series of low and no technology lesson options in which the teacher could facilitate learning differences dialogues and activities. Thus, it is advisable that future sites consider adapting program activities to match the quality and quantity of technology available to them. CCMMS administrators also underscored the importance of teacher preferences. Even though other sites may have access to technology, their teachers may prefer low or no technology options. Including teachers as an active thought partner can help sites make more informed decisions about how to adapt the program to fit their context.

And I think that it was also great to have a realistic framework for me to say, 'Look we might have devices, but they don't all actually run on the program that you want them to run.' And I think that that was meaningful for both sides of the street to understand that some of the things that are being pushed out to us. There is an understanding above us of what it looks like. And then there's reality. And then for us to actually show a spotlight on that. I think it helps both sides because it is real that we want learning differences that go out to multiple schools, and I don't know of very many schools who are one-to-one with real actual devices. And so that's not a realistic idea when we are developing a program for schools.

–Centennial Campus Magnet Middle School Administrator

I think that when you're developing things, just making it fit multiple different scenarios. So if I'm presenting a lesson, I have several different types of students that I have to make sure grab it. And I think this [is] the same way when you're rolling it out to a school, [...] there might be one school that [has less tech] — how are they going to teach it in all those three scenarios? Because we can't only teach it to one section. It's got to fit.

–Centennial Campus Magnet Middle School Administrator

All the adults just got one-to-one working, which sounds ridiculous, but people have been using dinosaurs that had to be plugged in. But before looking at what's going to happen for our students, the district is admitting that, "Well, maybe we need to be mindful of what each space needs." And there is a debate of what we believe every school should have and then what teachers actually want. Like there are teachers who are very comfortable. "Give me a projector and I'm going to be able to take the kids." But then there are others who, "I need all my kids working through Canvas," and being able to have their hands on and, "I want a touchscreen. I want a TV." So I think there are preferences with teachers and how they like to teach and provide.

–Centennial Campus Magnet Middle School Administrator

VIGNETTES

Student Experiences with Lack of Technology: "How Did You Get One Of Them Good Computers?"

During an observation, one teacher informed the evaluator that they would not be implementing the Learning Differences program due to their lack of technology in the classroom. In another class, the evaluator overheard one student ask another student "How did you get one of them good computers?" Because technology options were limited, this student's teacher provided the class with a hybrid of engagement options, including using their personal laptop, using a school laptop, reading or going to the library with a media pass. The student in this quote was referring to the fact that another student's personal laptop was better quality than a school laptop, which needed to be plugged into a power strip at all times. In this class, the teacher spent the majority of their time solving technological issues, such as helping students log into school laptops and distributing power strips. Few students were able to begin the Students LEAD modules before it was time to pack up for the next class. The teacher also reminded students to bring earbuds to Advisory the following week because they needed to listen to videos and the teacher only had four pairs of earbuds to loan out for approximately 20+ students.

Teachers Adapting to Technological Challenges by Engaging the Class in a Team Stimulation Contest

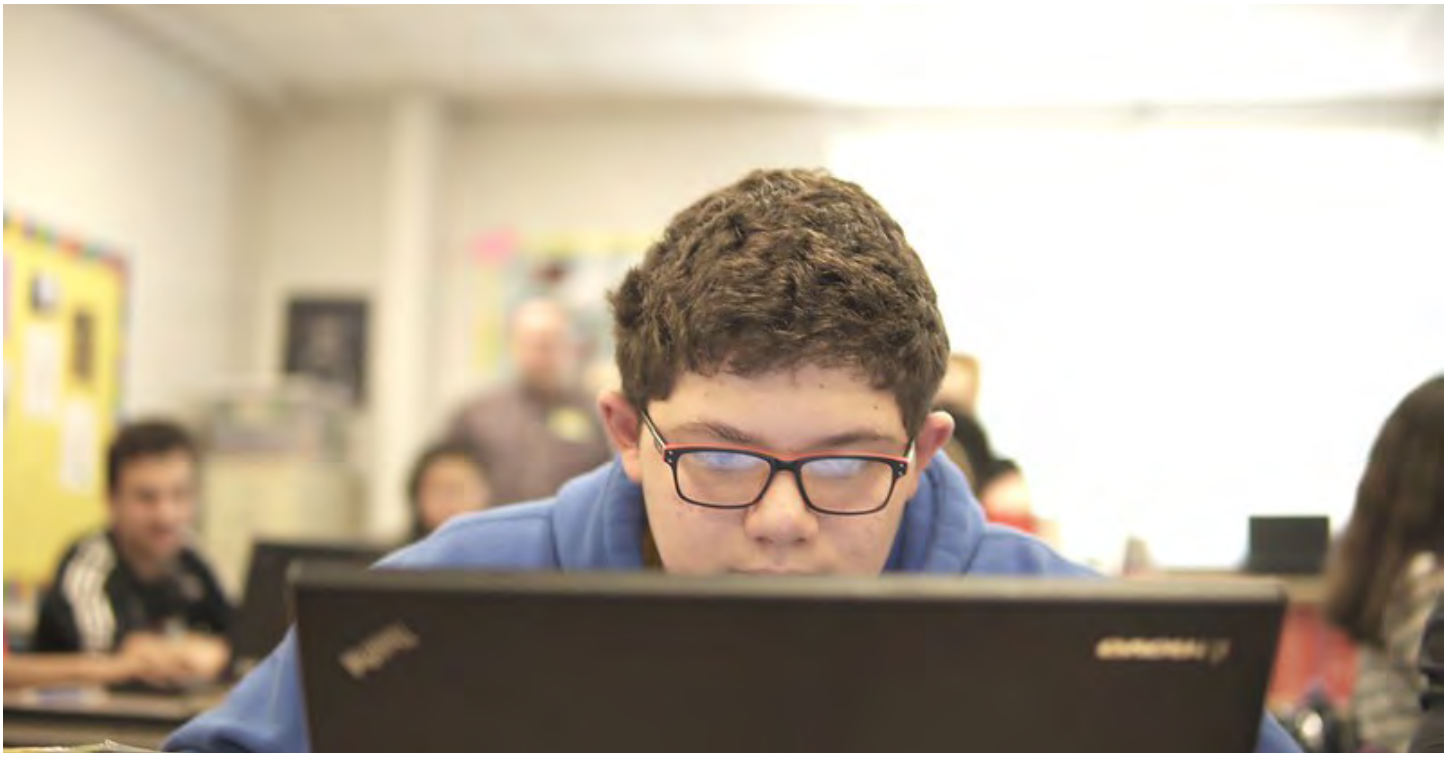
Some emerging teacher leaders creatively adapted to their technological barriers. For example, one teacher decided to implement Students LEAD in a way that did not require one-to-one computing. After providing a brief introduction to the topic of "Working Memory", this teacher projected a TED talk video from their laptop. After minor sound and connectivity issues, the teacher was able to play the video for approximately five minutes. The class of approximately 24 students appeared engaged as they listened to the speaker's stories and laughed at his jokes. The teacher then facilitated a short discussion summarizing the speaker's points and asking students questions. Next, the teacher completed the "Reading Issues" simulation on their computer, which was still connected to the projector. The time and suspense of the simulation intrigued the students as a game, as they shouted out the answers and eagerly volunteered to play the next round. This example shows that even with few technological resources, teachers can create a game-like atmosphere that appeals to the playful and intellectually curious side of their students. At the end of the class, students were talking and laughing amongst themselves stating phrases like, "That was stressful." The teacher informed students that they would upload these stimulations to Google classroom and have the opportunity to work on more simulations in the following week.

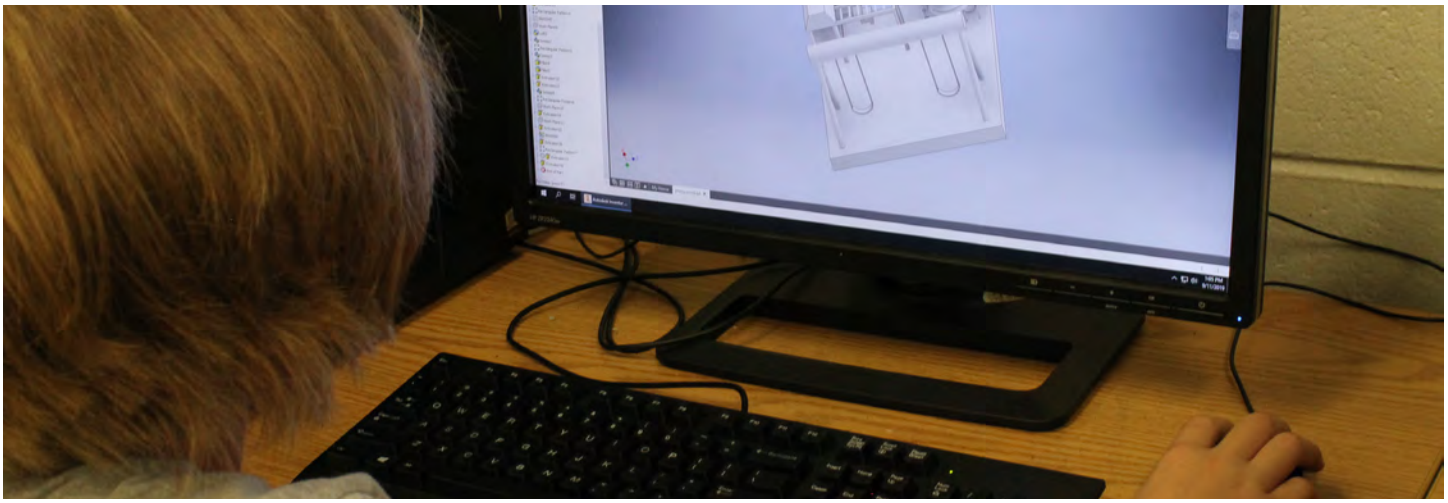
Lesson 8: Incentivize and Celebrate Participation

While obtaining some teacher buy-in was challenging at the beginning of the partnership, a significant turning point occurred when the implementation team began to incentivize and celebrate teacher participation. For instance, after observing advisory classrooms, the FI liaison would share exemplar best practices with the co-university liaison, who would then spotlight teachers in their staff newsletter. Additionally, the implementation team created and hand delivered thank you holiday goodie bags to teachers before winter break. These examples demonstrate how the team was intentional about expressing their appreciation to teachers. CCMMS administrators described how these efforts were well received by the teachers and led to garnering more teacher buy-in. It is recommended that future sites develop strategies for incentivizing and celebrating participation early and often.

> *But I also think what has been neat is the group was so mindful of teacher and teacher work. And so the little things like appreciation and the gifts, I think that was a neat turning point…*
>
> - Centennial Campus Magnet Middle School Administrator

> *[It meant so much] for our staff to get a 'Thank you so much for doing this.' And so I think that's a component to this whole process that is critical,not that you need to plan to buy gifts for teachers.*
>
> - Centennial Campus Magnet Middle School Administrator





Lesson 9: Adopt a Collective Growth Mindset

9

The Learning Differences program developers and the CCMMS administrators adopted a growth mindset towards implementation. Both parties understood that embarking on this journey of formative evaluation was novel and uncharted territory. However, both parties embraced the challenge and were agile to iterative refinement. In particular, the program developers welcomed constructive feedback from teachers about usability and then made changes based on teacher input. CCMMS administrators expressed that a transformative moment in the case study occurred when teachers realized that program developers were responding to their feedback. At that moment, teachers truly felt that they were an integral part of the partnership. Additionally, instead of being discouraged by setbacks, team members remained optimistic as they proactively brainstormed timely solutions. Their ability to pivot to meet the needs of their evolving context was key to preserving through the implementation hiccups. Other sites would benefit from developing similar perspectives.

And I think all of us going in with the idea of 'We don't have to know the answer, but we're willing to be flexible and change and make adjustments.' To me, all of those really played into the success of the work. And also I think to why everybody kept going right across the board.

–Learning Differences Program Developer

We've been adaptable and we take criticism, and that's fine. Things aren't going to get better if you don't do that.

–Learning Differences Program Developer

I think that was great when we did, I believe, it was lesson five. I gave them a copy of what was already written and then I [asked] the teachers... 'What would you change about this? How would you alter this lesson plan if you were actually giving it?' And then they saw that in the actual typed up final product on the document. I think that that really was very eye opening for them — that their feedback really was being heard and used.

–Centennial Campus Magnet Middle School Administrator

Program Impact on Students

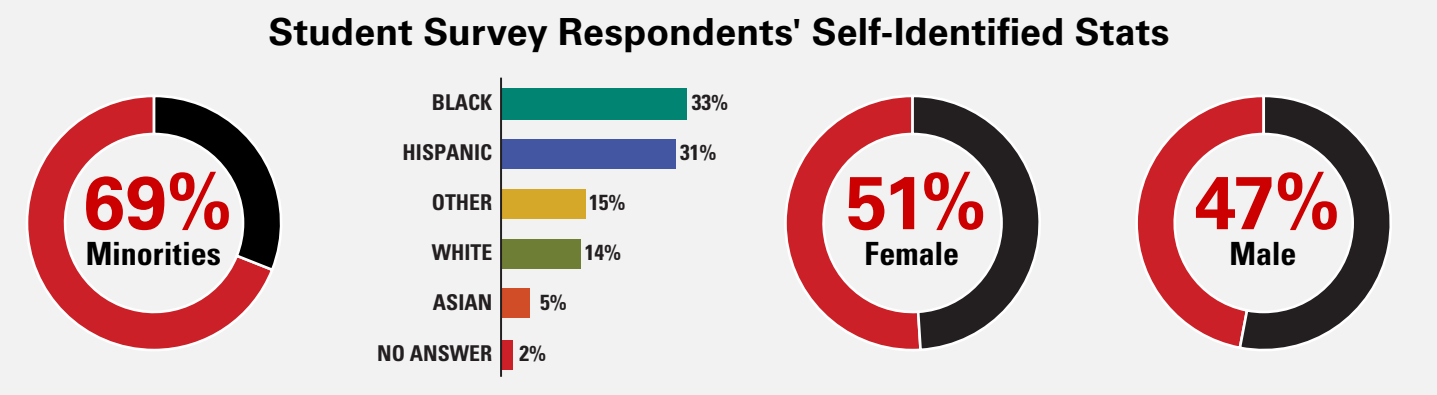
In addition to the nine lessons learned described previously, the evaluators also collected data to understand the program's impact on students. These insights can be instructive to future sites seeking to bring the Learning Differences program to their campuses.

Retrospective Pre-Post Survey

The Students LEAD course was implemented at Centennial Campus Magnet Middle School (CCMMS) from August 2019 - December 2019. In February 2020, students were asked to complete a retrospective pre-post survey to assess their knowledge, skills, attitudes and behaviors before and after participating in the Students LEAD program. The survey was designed by the implementation team and was organized into four sections: Understanding Myself, Understanding the Tools, Self-Advocacy, and Engaging with Others. In each section, students were presented with a series of four to eight statements, for example, "I know the ways that I learn best." For each statement, students were asked to rank how much they agreed or disagreed with the statement on a Likert scale before participating in the Students LEAD program and again after participating in the Students LEAD program. At the end of the survey, students responded to the open-ended question, "What does the term "learning differences" mean to you? A copy of the survey instrument is available in Appendix C.

Student Respondents

The survey was administered to all seventh and eighth grade students at CCMMS, and 212 anonymous surveys were returned. The following charts illustrate the self-identified demographics of the student respondents. No students identified as American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, or Other.



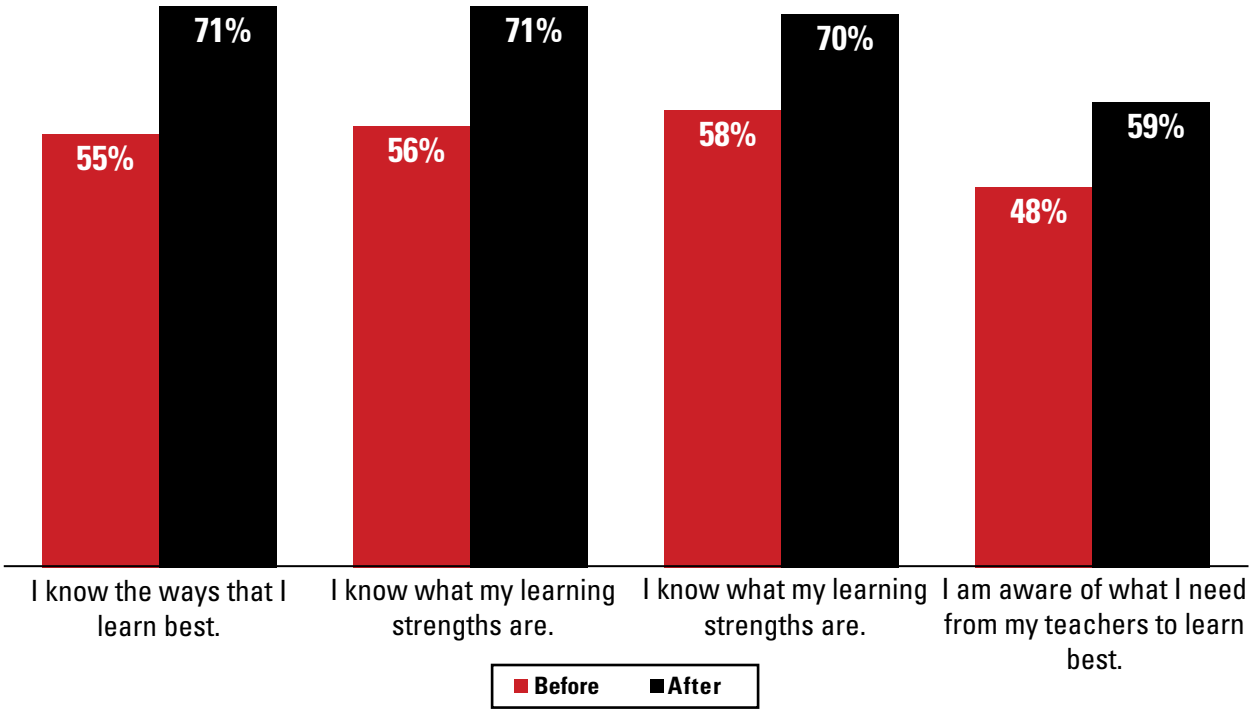
The Results

After participating in the Students LEAD program, students reported gains in their understanding of their own learning differences and tools that support learning differences. They also indicated that they were advocating for themselves more and engaging with their peers and teachers about their learning needs. By far, the largest reported change was the percentage of students who strongly agreed or agreed that they ask important adults for what they need to learn best (+27%). Other compelling changes were the percentage of students who strongly agreed or agreed that they use tools to support their organizational skills (+17%), are aware of tools that can help them express their ideas (+17%), use tools to help them express their ideas (+16%), and know the ways that they learn best (+16%).

The following graphs depict the differences in percentage of students who strongly agreed or agreed with all the statements at the beginning of the program compared with the end of the program. A full table depicting the differences on all Likert scale items is available in Appendix D.

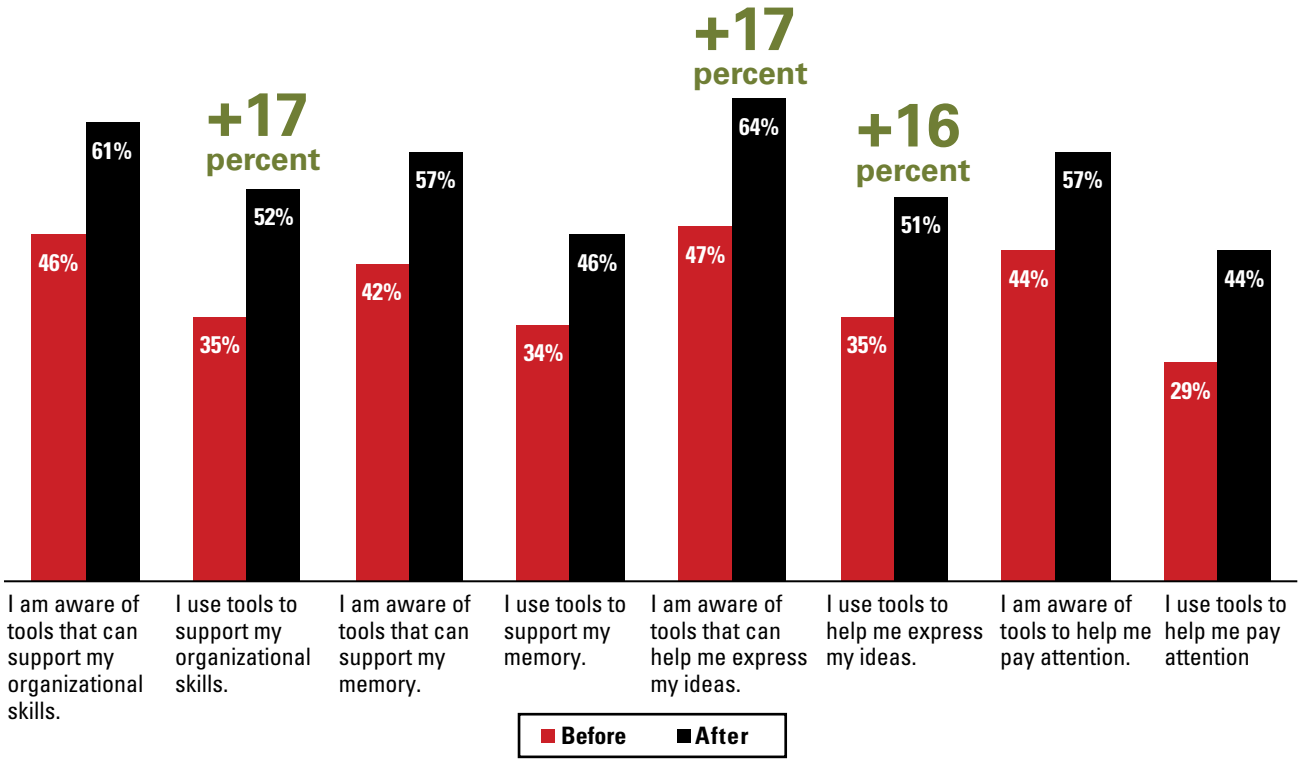
Understanding Myself

Percentage of Students Who Strongly Agreed or Agreed with the Statements Below



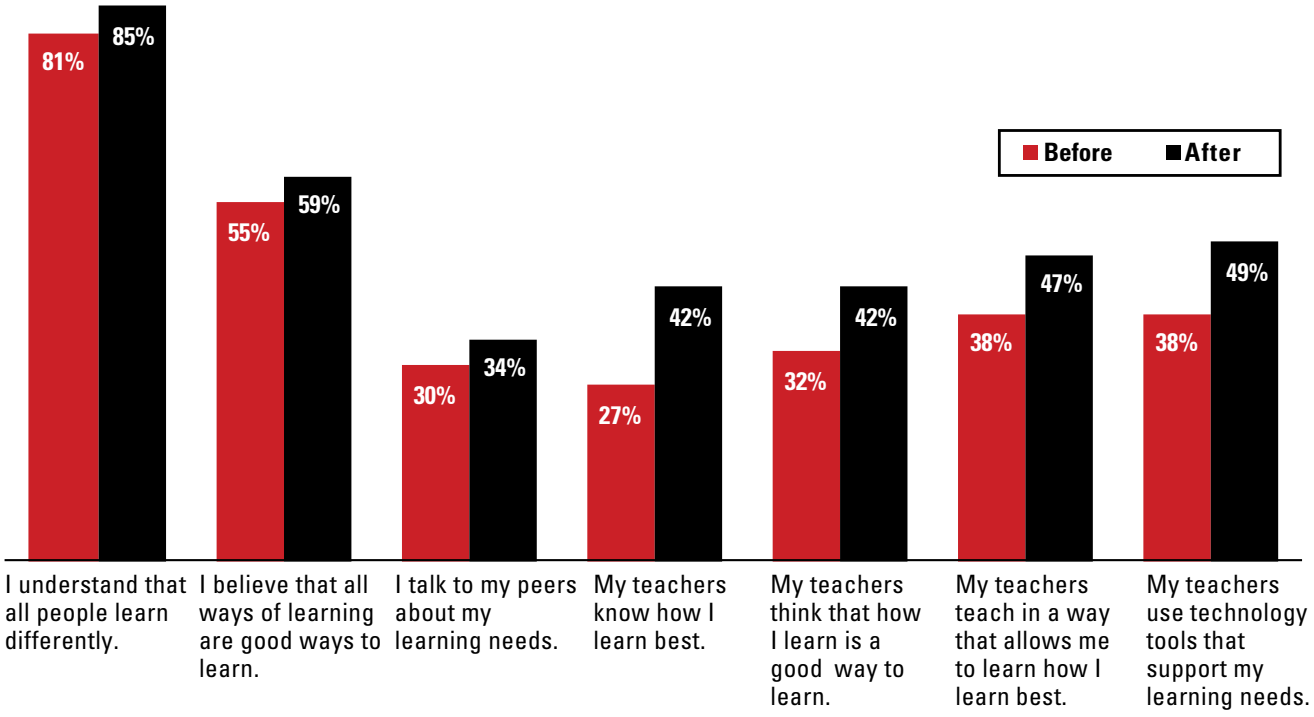
Understanding Tools

Percentage of Students Who Strongly Agreed or Agreed with the Statements Below



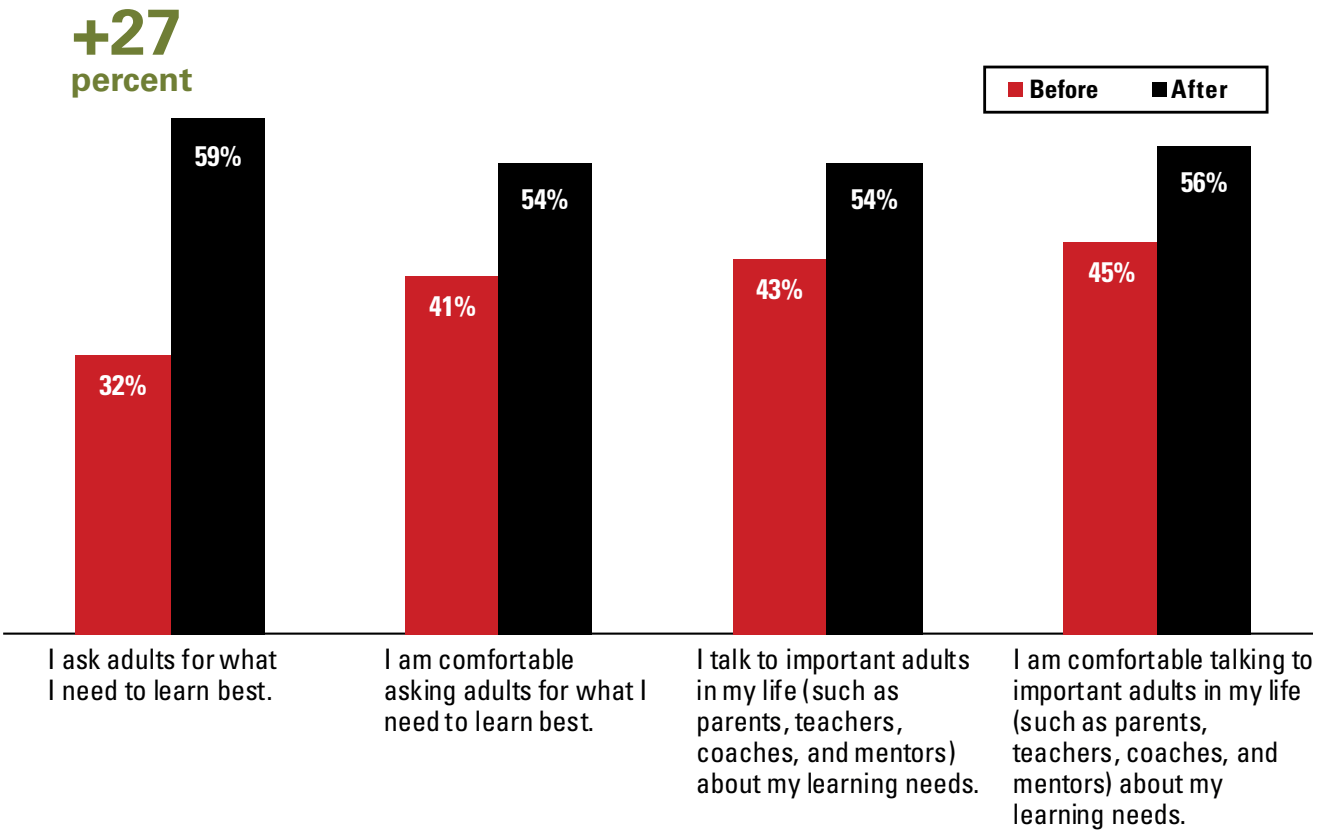
Engaging with Others

Percentage of Students Who Strongly Agreed or Agreed with the Statements Below



Self Advocacy

Percentage of Students Who Strongly Agreed or Agreed with the Statements Below



One hundred and forty-nine students responded to the open-ended question at the end of the survey, ***"What does the term "learning differences" mean to you?"*** Most student responses fell in one of four categories: describing learning styles and preferences, normalizing and celebrating different learning needs, identifying learning strategies and promoting a multipath perspective.

Most student responses described ***learning styles and preferences*** or the different ways that people learn best such as preferring information to be presented in a visual or audio format or exhibiting different learner strengths and weaknesses. As one student stated, "[The] different ways that people learn best [...] can be different for everyone". Another student responded,

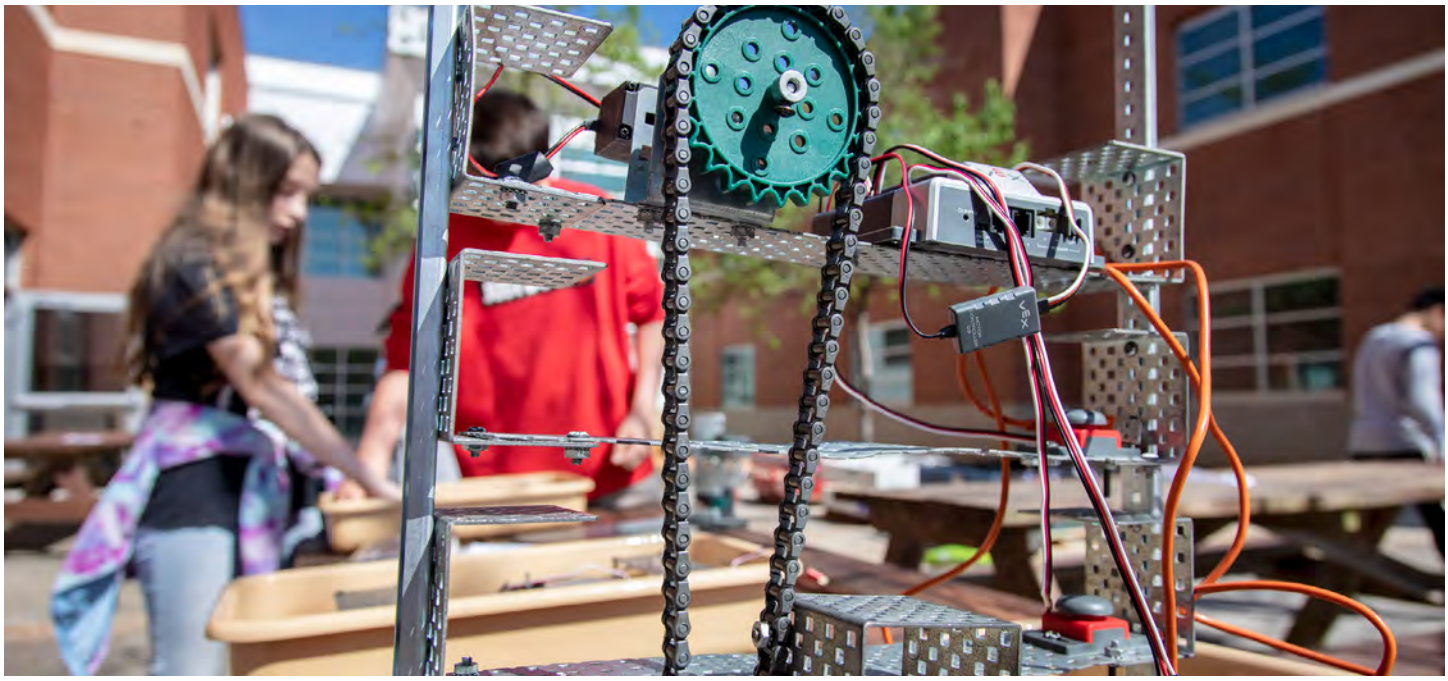
> *"[Learning differences mean] that people use different ways to learn. If a person is a visual learner then someone needs to write it out for them. If the person learns by hearing, the teacher can just talk to them; and if they learn by touching things, then they could probably do hands-on activities."*

Similarly, a third student affirmed, "Everyone is different, which means that people learn different [and] respond different; everybody is different in their own way."

Many student responses also ***normalized and celebrated different learning needs.*** This sentiment was profoundly illustrated when one student stated, "People all learn in a different, unique and wonderful way." For students, the term "different" did not indicate that some students struggled and others did not struggle. Rather, "different" simply meant that everyone had a personalized experience — in some areas they excelled and in other areas they benefited from some additional assistance. As one student described, "[Learning differences] tell me that everybody learns in different ways. Everybody has their own challenges when learning."

This idea was echoed by another student who responded, "[Learning differences] explain that different people learn in different ways. Not everyone will have the same strength or weakness; we are all different but capable of achieving great things."

Moreover, many student responses identified ***learning strategies*** or how people responded to their learning needs based on their learning styles and preferences, such as using different tools, resources or timelines to accomplish their goals. For instance, as one student explained, "You're learning but in different ways using other tools to get to the same solution." Another student indicated that it is important to infuse different learning strategies into the way information is taught, stating,



> *"The learning difference to me means that everyone has their own way of learning and understanding things. To really understand and learn things, they need to be taught things in a way they understand."*

A third student corroborated this idea, stating in part that "using learning differences [and] building on those to maximize success for each individual.

The fourth category of responses centered on an important takeaway message: ***a multipath perspective.*** Students articulated that there is no "right" or "wrong" way to learn. There are multiple pathways to learner success. All learning strategies are valuable and should be both acknowledged and respected.

> *"The term "learning differences" to me means that everybody learns a different way," one student said. "No way is incorrect or correct. The way you receive your learning is what's best for you, not anybody around you."*

Focus Group Discussions

Students and administrators also participated in focus group discussions where they discussed the impact of the program on students. Two themes emerged from these conversations: Student Advocacy and Empathy.

Student Advocacy

First, students discovered how they learned best and then advocated for themselves. They recognized the power of their own voice and were able to tell their teachers what they needed to be successful. For example, in one focus group, a student discussed how they were a kinesthetic learner and learned better with movement. After sharing their need to move, their teacher adjusted their seating arrangements. The student explained,

> *"I learn by talking and visual learning. A lot of times I [move a lot], but it helps me out. Since I've started beating on the table, I've started moving my leg a lot. And in the first quarter, one thing that they wouldn't let me do was lean back in my chair. I wanted to move it a little more, you know? I don't like stationary chairs; they're standard. And it bothered me because I can't sit down in them for too long. [I told my teacher, and] she put my seat all the way in the back now [...] she says,"I'll put you in the back so you can lean on your wall."*

Another student advocated to listen to music while they did their work. They understood that not all teachers would appreciate them listening to music, but the student still asked because they knew it was what they needed to be successful. After telling their story, they shared, "I tell them. I like complaining. I'm like, 'Let me listen to music.' Most of the teachers don't. But, some do. And I just complain to them."

Administrators also noticed that students were more likely to ask for the learning support and resources they needed, which was a new developmental skill for many students.

> *"And I think that it's very important that anytime you pause and say, 'Well, what do you think?' And I think that the whole idea behind this [implementation] was for us to pause and say, 'You as a human, you know yourself better than I do. What do you think? What do you need?' And I think giving power to that is so meaningful. And I think that students, even if they weren't a buy-in on the learning differences, just being asked, 'What do you need?' — That's powerful in itself. And every kid will buy into that if it's presented in the right way of saying, 'I'm really going to hear what you say back to me when I asked that question.' And I think that in general is going to be the win. You know?"*
>
> –Centennial Campus Magnet Middle School Administrator

Empathy

Not only did students have a deeper understanding of their own learning strengths, challenges and supports necessary for success, but students also developed an enhanced sense of empathy for learning needs that were different from their own. Students described noticing how their peers, younger siblings and other loved ones learned differently than they did and become more understanding towards them. Students and

administrators alike highlighted the simulation game as a key activity that illustrated the challenges some learners face. Participating in this activity pulled students out of a self-centered perspective and allowed students to feel the frustration some learners experience daily. Considering the needs and experiences of others jumpstarted students' journey towards having a more inclusive and compassionate outlook on learning. In one focus group, a student described the importance of empathy as follows,

When you grow up, you go to college. You have a roommate and they're doing this and doing that, or they act weird. Like [student name] said, you can understand other people's point of view because some people do this or do that for a certain reason.

> *"I think a big win was the simulation part of that program. A lot of teachers talked about it and a lot of students talked about it. And you don't always get to see through someone else's, I don't want to call it a handicap, but struggle, and I think that that was a great thing for it to make it real for them to see while it really is very hard to understand when there's a lot of other noises you hear. I think that that was even for me, I mean, being a teacher for so many years, I had never walked through that. And that was very difficult, and it definitely gave me another framework of trying to understand my students who do have ADHD and how that could be a really big hindrance for them. Even though they're trying really hard, they may not still get it."*
>
> –Centennial Campus Magnet Middle School Administrator

Conclusion and Next Steps

This case study provided an in-depth examination of Centennial Campus Magnet Middle School's (CCMMS) implementation of the Friday Institute's Learning Differences program during the 2019-2020 academic year. This model of implementation can be described as "high-touch", as the Friday Institute facilitated constant and iterative feedback with CCMMS teachers and administrators through weekly check-in meetings and weekly implementation memos. Through the various data collected, the Friday Institute identified the following nine key lessons learned that may assist future schools and districts seeking to implement the Learning Differences program, which were:

1. **Establish School Leader Commitment Early**
2. **Align the Program with the School's Priorities**
3. **Identify an On-The-Ground Champion and Teacher Leaders**
4. **Dedicate Time to Fully Orient and Train Staff**
5. **Consider Phased Implementation**
6. **Develop a Communication Process**
7. **Adapt the Program to Match Your Technology and Teacher Preferences**
8. **Incentivize and Celebrate Participation**
9. **Adopt a Collective Growth Mindset**

In addition, sites who are not well positioned for such a hands-on approach are invited to review the second case study in this series entitled, "A Constant Conversation: The Implementation and Impact of the Learning Differences Program at Manning Elementary School in Roanoke Rapids, North Carolina", which details a "lighter touch" model that may be more feasible to some schools and districts to implement.

As a result of this case study series, the PLLC plans to:

- Update the Learning Differences teacher course to **include a "school-wide" approach** section with suggestions, tips and guidance for schools looking to implement the course at the school level.
- Update the Learning Differences student course to **add additional flexibility** to account for the variety of contexts and implementation goals for classrooms and schools.
- Update the Learning Differences student course to account for the **varying technology circumstances** in schools who are implementing it (i.e., specifically adding a potential lower tech option).
- Leverage insights from this work to support other areas of the **Learning Differences program such as SEL and Learner Agency.**

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Appendix A: Learning Differences Observation Protocol

Observer	
Grade	❑ 7th ❑ 8th
Teacher	
Date	
Module/Topic	
Learning Mode	❑ Group ❑ Individual
Learning Objective	❑ Posted/Shared ❑ Not Posted/Shared
Learning Objective Text	
Lesson Synopsis	

Appendix B: Focus Group Protocols

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
1. Implementation. What are the major program elements of the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) implementation in a school setting?	Select a school to partner with and identify a liaison	~What factors were important when selecting the school in which you implemented this MOOC? ~How did you select the school you in which implemented this MOOC? ~How did you identify your liaison within that school? ~How did you interact with the school administration? Liaison? Teachers? ~What was the frequency of your communication with school administration? Liaison? Teachers? ~How often did you meet with the school administration? Liaison? Teachers?	~What prompted your school's implementation of this MOOC? ~(Liaison) How did you become the liaison between your school and the program staff? ~How did you interact with the program staff? ~What was the frequency of your communication with the program staff? ~How often did you meet with the program staff? ~How has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) been implemented in your school?			

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
	Facilitate teacher learning		~How specifically have teachers been involved with implementation of the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~What PD and coaching has been provided to your teachers as a part of the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.).?	~How has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) been implemented in your school? ~How did you become involved with the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~Walk me through the process of your participation in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.). ~Tell me about the PD and coaching you received as a part of the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.).		

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
	Facilitate student learning		~How specifically have students been involved with implementation of the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)?	~How did you introduce your students to the MOOC (Students Lead, SEL, etc.)? ~How did students participate in the MOOC (Students Lead, SEL, etc.)?	~How did your teachers introduce you to the MOOC (Students Lead, SEL, etc.)? ~How did you participate in the MOOC (Students Lead, SEL, etc.)?	
	Inform parents		~How specifically have parents been involved with implementation the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)?			~What information have you received about the MOOC (Students LEAD, SEL, etc)? ~How did you receive information about the MOOC (Students LEAD, SEL, etc)? ~How did your child participate in the MOOC (Students LEAD, SEL, etc)?

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
2. Impact. In what ways, and to what extent, has the Learning differences program impacted its participants?	(Teachers) Increased knowledge and appreciation of learning differences		~ In what ways has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) implementation impacted your teachers' knowledge and appreciation of learning differences?	~Has your participation in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) changed your perception of teaching? If yes, how so? If no, why not?		
	(Teachers) Changes in planning		~ In what ways has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) implementation impacted the way in which your teachers plan instruction? Use of technology?	~Has your participation in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) impacted the way in which you plan instruction? Use of technology?		
	(Teachers) Changes in instruction		~ In what ways has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) implementation impacted your teachers' classroom instruction and other professional practices?	~Has your participation in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) allowed you to improve your classroom instruction? If yes, how so? If no, why not?		

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
	(Students) Increased knowledge and appreciation of learning differences		~ In what ways has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) implementation impacted your students learning? ~Have you noticed a change in knowledge and appreciation of learning differences? Explain.	~ In what ways has the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) implementation impacted your students learning? ~Have you noticed a change in knowledge and appreciation of learning differences? Explain.	~Before the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.), did you know about learning differences? About how you learned best? ~What did you learn in the MOOC (Students LEAD, SEL, etc.)?	~ In what ways has the MOOC (Students LEAD, SEL, etc.) implementation impacted your child's learning? ~Have you noticed a change in your child's knowledge and appreciation of learning differences? Explain.
	(Students) Increased self-awareness of learning strengths and challenges		Have you noticed a change in your students self-awareness of learning strengths and challenges? Explain.	Have you noticed a change in your students self-awareness of learning strengths and challenges? Explain.	~Did the MOOC (Students LEAD, SEL, etc.) teach you anything new about yourself? If so, what?	Have you noticed a change in your students self-awareness of learning strengths and challenges? Explain.

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
	(Students) Increased awareness and use of strategies to support learning needs		Have you noticed a change in your students awareness and use of strategies to support learning needs? Explain.	Have you noticed a change in your students awareness and use of strategies to support learning needs? Explain.	Did you try any new strategies because of the MOOC (Students LEAD, SEL, etc.)? If so, what? ~What is something you will do differently because of the MOOC (Students LEAD, SEL, etc.)?	Have you noticed a change in your child's awareness and use of strategies to support learning needs? Explain.
	(Students) Increased communication about learning differences to parents, teachers, and peers.		Have you noticed a change in your students' communication to teachers and peers about learning differences? Explain.	Have you noticed a change in your students' communication to teachers and peers about learning differences? Explain.	~Before taking this MOOC (Students LEAD, SEL, etc.) did you talk to adults in your life about your learning needs? Peers? Have you noticed a change since taking the course?	Have you noticed a change in your child's communication to you about learning differences? Explain.
	(Students) Increased self-advocacy of learning needs		Have you noticed a change in your students' ability to advocate for their learning needs? Explain.	Have you noticed a change in your students' ability to advocate for their learning needs? Explain.	~Before taking this MOOC (Students LEAD, SEL, etc.) did you ask adults in your life for support to help you learn best? Have you noticed a change since taking the course?	Have you noticed a change in your child's ability to advocate for their learning needs? Explain.

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
3. Improvement. What are the supports and barriers to implementation? How can the program be improved?	Select a school to partner with and identify a liaison	~What was beneficial about your relationship with the school? Liaison? ~What was challenging about your relationship with the school? Liaison?	~What made it easy for your school to implement the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~What made it challenging your school to implement the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~What was beneficial about your relationship with the program staff? ~What was challenging about your relationship with the program staff?			

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
	Facilitate teacher learning		Based on your experience, what suggestions do you have to improve the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) for educators?	~What made it easy for you to participate in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~What made it challenging you to participate in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~Based on your experience, what suggestions do you have to improve the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) for educators?		

Evaluation Question	Strategy / Outcome	Program Staff	Admin	Teachers	Students	Parents
	Facilitate student learning		~Based on your experience, what suggestions do you have to improve the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) for students?	~Based on your experience, what suggestions do you have to improve the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.) for students?	~What made it easy for you to participate in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~What made it challenging you to participate in the MOOC (Learning Differences for Educators, Students LEAD, SEL, etc.)? ~What suggestions do you have to improve the MOOC (Students LEAD, SEL, etc.)?	~Based on your experience, what suggestions do you have to improve how the MOOC (Students LEAD, SEL, etc.) interacts with students?
	Inform parents		~Based on your experience, what suggestions do you have to improve how the MOOC (Students LEAD, SEL, etc.) interacts with parents?	~Based on your experience, what suggestions do you have to improve how the MOOC (Students LEAD, SEL, etc.) interacts with parents?		~Based on your experience, what suggestions do you have to improve how the MOOC (Students LEAD, SEL, etc.) interacts with parents?

Appendix C: Students LEAD Post-Inventory

Students LEAD Post Inventory

This year, Centennial Campus Magnet Middle School (CCMMS) tried a new educational program developed by NC State. As a part of this program, we would like students at CCMMS to complete this short post inventory.

The inventory should take approximately 5-10 minutes to complete. You can skip any questions you do not want to answer. If you don't want to take the inventory, you do not have to. The inventory will NOT ask for your name so no one will know what you said.

Who is your Advisory Teacher?

[List of teachers]

What is your grade?

- ☐ 6th
- ☐ 7th
- ☐ 8th

How do you describe your ethnicity?

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Unknown
- ☐ Other/Prefer to self-describe _____
- ☐ Don't wish to answer

What is your gender?

- ☐ Female
- ☐ Male
- ☐ Non-binary/third gender
- ☐ Prefer to self-describe _____
- ☐ Prefer not to say

Below you will see a list of statements, for example, "I know the ways that I learn best." For each statement, please decide how much you agreed or disagreed with the statement before participating in the Students LEAD program, and now after participating the Students LEAD program. Put a check in the box that best matches how you feel. Please check one box for BEFORE and one box for AFTER per statement.

	BEFORE Students LEAD					**AFTER Students LEAD**				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
UNDERSTANDING MYSELF										
I know the ways that I learn best.										
I know what my learning strengths are.										
I know what my learning challenges are.										
I am aware of what I need from my teacher to learn best.										
UNDERSTANDING THE TOOLS										
I am aware of tools that can support my organizational skills.										
I use tools to support my organizational skills.										
I am aware of tools that can support my memory.										
I use tools to support my memory.										

	BEFORE Students LEAD					AFTER Students LEAD				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am aware of tools that can help me express my ideas.										
I use tools to help me express my ideas.										
I aware of tools to help me pay attention.										
I use tools to help me pay attention.										

	BEFORE Students LEAD					AFTER Students LEAD				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SELF-ADVOCACY										
I am comfortable talking to important adults in my life (such as parents, teachers, coaches, and mentors) about my learning needs.										

	BEFORE Students LEAD					AFTER Students LEAD				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I talk to important adults in my life (such as parents, teachers, coaches, and mentors) about my learning needs.										
I am comfortable asking adults for what I need to learn best.										
I ask adults for what I need to learn best.										
ENGAGING WITH OTHERS										
I understand that all people learn differently.										
I believe that all ways of learning are good ways to learn.										
I talk to my peers about my learning needs.										
My teachers know how I learn best.										
My teachers think that how I learn is a good way to learn.										
My teachers teach in a way that allows me to learn how I learn best.										

	BEFORE Students LEAD					**AFTER Students LEAD**				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My teachers use technology tools that support my learning needs.										

Below you will see an open-ended question. Please share your thoughts in the box provided.

What does the term "learning differences" mean to you?	

Appendix D: All Students LEAD Likert Scale Items

Table 4: Differences in Students' Opinions

Statement	BEFORE Strongly Agree & Agree	AFTER Strongly Agree & Agree	BEFORE Neutral	AFTER Neutral	BEFORE Strongly Disagree & Disagree	AFTER Strongly Disagree & Disagree
I know the ways that I learn best.	55% n = 205	71% n = 179	40%	26%	5%	3%
I know what my learning strengths are.	56% n = 207	71% n = 178	34%	26%	10%	3%
I know what my learning challenges are.	58% n = 205	70% n = 176	34%	29%	9%	5%
I am aware of what I need from my teacher to learn best.	48% n = 207	59% n = 177	40%	34%	12%	7%
I am aware of tools that can support my organizational skills.	46% n = 203	61% n = 180	42%	33%	12%	6%
I use tools to support my organizational skills.	35% n = 200	52% n = 179	42%	34%	23%	6%
I am aware of tools that can support my memory.	42% n = 205	57% n = 175	40%	32%	18%	11%
I use tools to support my memory.	34% n = 203	46% n = 173	38%	38%	27%	17%
I am aware of tools that can help me express my ideas.	47% n = 200	64% n = 177	39%	26%	14%	10%
I use tools to help me express my ideas.	35% n = 202	51% n = 179	41%	35%	24%	14%
I am aware of tools to help me pay attention	44% n = 202	57% n = 180	37%	32%	19%	11%
I use tools to help me pay attention.	29% n = 203	44% n = 179	44%	37%	27%	19%

Statement	BEFORE Strongly Agree & Agree	AFTER Strongly Agree & Agree	BEFORE Neutral	AFTER Neutral	BEFORE Strongly Disagree & Disagree	AFTER Strongly Disagree & Disagree
I am comfortable talking to important adults in my life (such as parents, teachers, coaches, and mentors) about my learning needs.	45% n = 196	56% n = 171	34%	32%	21%	13%
I talk to important adults in my life (such as parents, teachers, coaches, and mentors) about my learning needs.	43% n = 196	54% n = 171	35%	32%	21%	15%
I am comfortable asking adults for what I need to learn best.	41% n = 195	54% n = 168	40%	33%	20%	13%
I ask adults for what I need to learn best.	32% n = 191	59% n = 162	41%	33%	27%	9%
I understand that all people learn differently.	81% n= 194	85% n = 169	15%	14%	3%	1%
I believe that all ways of learning are good ways to learn.	55% n = 193	59% n = 169	29%	33%	16%	9%
I talk to my peers about my learning needs.	30% n = 191	34% n = 169	34%	37%	37%	28%
My teachers know how I learn best.	27% n = 196	42% n = 170	50%	40%	27%	18%
My teachers think that how I learn is a good way to learn.	32% n = 193	42% n = 169	54%	49%	15%	9%
My teachers teach in a way that allows me to learn how I learn best.	38% n = 191	47% n = 169	47%	37%	16%	15%
My teachers use technology tools that support my learning needs.	38% n = 193	49% n= 170	47%	36%	16%	14%

*Two hundred and twelve anonymous surveys were returned; however, some surveys only contained demographic information. The highest number of responses to an individual survey item was 207.