engage2learn K-5 EFFICACY STUDY 2021-2022

LXD Research
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Learning Experience Design (LXD)
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engage2learn Efficacy Study 2021-2022

An exploration of NWEA MAP Growth, Reading and Math K-5

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Research Summary

Responsive coaching at engage2learn is an innovative and with this report is now an evidence-based solution. This 2021-2022 study compellingly validates the efficacy of the engage2learn program through an exploration of NWEA MAP® Growth™, Reading and Math K-5. LXD Research, an independent research firm, analyzed educator achievement through the life of the engage2learn partnership with a medium-sized district in Texas.

This report focuses on student growth on benchmark assessments (over 4,000 students) during the 2021-2022 school year and evaluates the relationship between educator mastery badge attainment and student growth. The robust sample, 309 teachers and 9 coaches across 14 schools, showed that the impact of teacher mastery on student academic growth is positive and significant in both reading and math.

Key Findings

Students of teachers who earned multiple Mastery Badges (4 or more) had significantly higher growth in reading and math achievement scores (MAP RIT Score) gains than students of teachers who earned No Mastery Badges (grades K-5). Students of teachers who earned multiple Mastery Badges were also significantly more likely to meet growth targets than teachers who earned No Mastery Badges. The findings are relatively consistent across grades for both subject areas.

Results Summary of MAP RIT Scores and Growth by Mastery Badge Category (No Mastery Badges vs. 4+ Mastery Badges)

Subject	Higher Gains from Fall to Spring?	Higher Percentage of Students Met Growth?
Reading	+4 RIT points gained (9.65 vs. 12.56)	+22 percentage points (38% vs. 60%)
Math	+2.5 RIT points gained (10.82 vs. 13.23)	+27 percentage points (33% vs. 60%)

Introduction

Public education in the United States faces teacher shortages and declining enrollment. In particular, states consistently report staffing challenges in subject areas including special education, mathematics, science, foreign language, and English as a second language classrooms (McVey & Trinidad 2019). Proposed solutions to this problem in public education come through diverse channels including new teacher hiring policies, retention incentives, and research-based personalized instructional teacher and leadership coaching support and technology tools such as those provided by engage2learn. Recognizing the quality of teacher preparation and training programs and perceived working conditions as factors in teacher retention spotlights the need and opportunity for novel innovations in servicing teacher training and professional development (Geiger & Pivovarova, 2018).

Research shows that teacher turnover undermines student achievement and school improvement efforts (Kini & Podolsky, 2016; Ronfeldt et. al., 2013). On a related hopeful note, research demonstrates that well-designed mentoring programs improve retention rates and increase feelings of efficacy and instructional skills for new teachers (Sutcher, et. al., 2019). The next phase of understanding, and what is missing from the research landscape, is research on the relationships between teaching retention strategies such as mentorship and coaching, and academic achievement.

The engage2learn approach to educator support provides an in-person and virtual coaching system that builds capacity and engagement in public schools. Learning Experience Design Research (LXD Research), a third-party independent evaluator, was hired to analyze data collected during the 2021-2022 school year. The goal was to measure how engage2learn contributed to the faculty's shared and growing use of instructional best practices in the classroom, and if those best practices impacted student outcomes. Specifically, this study investigates the impact of earning four or more Best Practice Mastery Badges on student achievement (the district chose four core Best Practices plus three additional standards to focus on each year).

Starting in the summer of 2019, engage2learn (e2L) began a partnership with a midsize urban school district (15K+ students) to strategically improve a number of schools. By focusing on standards alignment, teacher growth, and a combination of administrator, instructional support staff, and direct teacher coaching, the district's educators showed tremendous growth after just one semester of coaching, evidenced by badge recognition in eSuite (e2L's integrated professional learning delivery, management, and reporting platform). Encouraged by the rapid improvement in such a short amount of time, in spite of the pandemic-related disruption in learning in the spring of 2020, district leaders were motivated to keep going. This report covers educator achievement through the end of the 2022 school

year and focuses on student growth on benchmark assessments during the 2021-2022 school year.

Implementation Description

The district expanded its partnership with e2L to include Coaches Academy, a "train the trainer" model that allowed the district to scale coaching quickly to reach more teachers, and Executive Coaching for leadership development across all of their elementary, middle, and high school campuses. This decision aimed to equip teachers, instructional coaches, and principals with the support to not only get through a particularly difficult time in public education but to feel prepared and confident in their craft in the future. Participating teachers were supported by district and campus instructional coaches, who were simultaneously being trained by e2L experts (a "train the trainer" model).

District Demographics

- Over 15,000 students
- 13% Black, 46% Hispanic, 35% White
- 68% Economically Disadvantaged
- 5% ELL

Teacher Demographics

3% Black, 14% Hispanic, 81% White

Making Progress Visible

As teachers and instructional coaches continued to learn and implement new tools and systems into their classrooms, the district's Associate Superintendent for Curriculum & Instruction understood the importance of recognizing and celebrating their achievements. Coaches earned badges through documenting coaching sessions and evidence of classroom implementation in eSuite. There are four levels of badges:

Progress Levels

1. Initiating Progress
2. Approaching Expectation

Mastery Levels

3. Meeting Expectations
4. Exceeding Expectations

"We knew we needed to create a badge recognition system that was accessible, observable, and communicated clear goals. We knew we wanted it to be seen as a way of celebrating educator growth, so we decided to call it 'Badge Celebrations.'"

– Associate Superintendent for Curriculum & Instruction

Setting School-Specific Goals

During executive training with e2L, district principals analyzed the educator growth data captured in eSuite from the start of the coaching – over a year and a half of data. From there, each principal identified three priority best practices, three priority coach standards, and badge goals for teachers and instructional coaches to work toward (these were within the district-chosen yearly set).

The district then hung up posters in each school and ordered stickers of e2L's badges. Every time a teacher or instructional coach earns a badge, the respective sticker is added to the Badge Celebrations poster. This system is intended to foster a sense of celebration, camaraderie, and motivation among teachers and staff. The district decided to start by focusing on the following four BPs:

Standards Alignment
Designs units, objectives, resources, activities, and assessments that are aligned to conceptually clustered standards and are relevant to learners.

Assessment/Formative Feedback
Designs and facilitates standards-aligned formative and summative assessments to monitor progress of all learners in academic standards and future-ready skills and provides feedback for learners to guide decision-making and progress toward mastery.

Differentiation/Scaffolding
Designs and facilitates opportunities for individualized learning and makes adjustments to meet the needs of all learners.

Small Group Instruction
Designs and facilitates effective, differentiated small group instruction workshops personalized to individual learner needs.

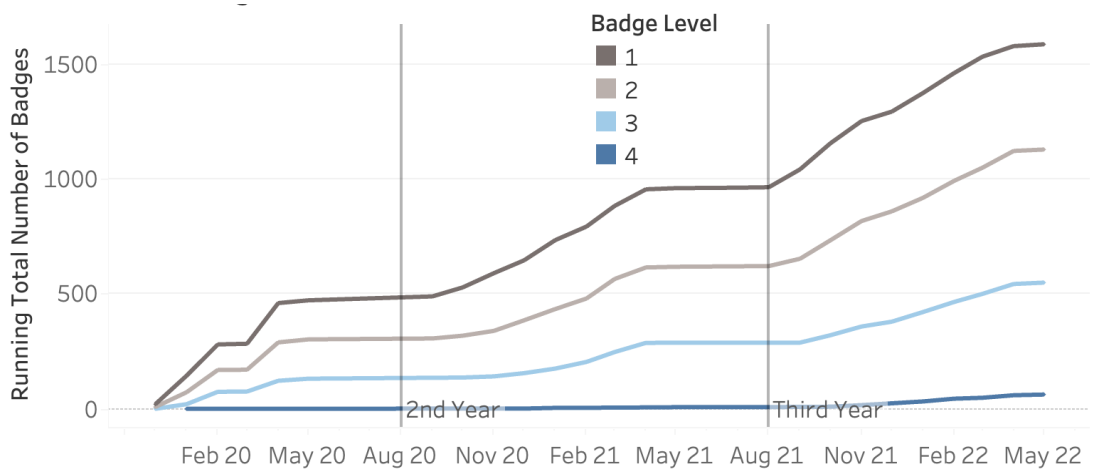
> *"The experience of coaching for me has been one of the most tangible things we've done throughout the year in terms of seeing the success on a daily basis."*
>
> *– Elementary School Principal*

2021-2022 Teacher Outcomes

Teacher Instructional Competency Growth

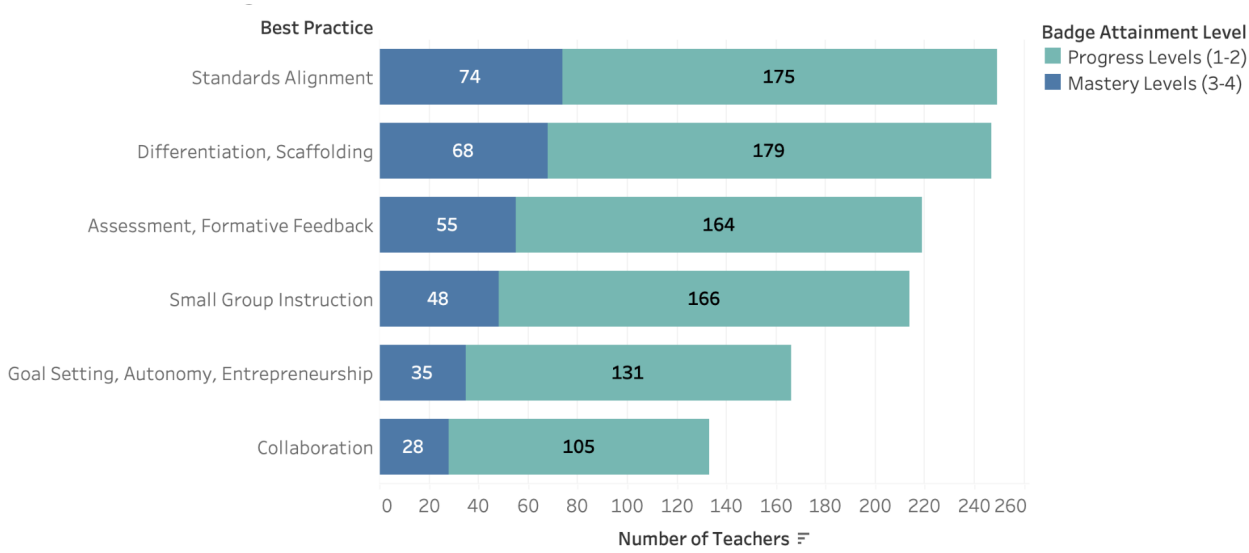
A total of 309 teachers across 14 schools earned badges over the last three years, with 176 teachers earning at least one mastery level badge on the Core Best Practices (BPs). In addition, these schools had nine instructional coaches who earned badges, of which nearly half mastered at least one BP, and participating teachers earned an average of 14 total badges. Two-thirds of teachers earned at least one Mastery Badge (Level 3 or 4). Badges were earned consistently over time (Figure 1).

Figure 1. Total Number of Teacher Badges Earned per Level



Most of the BP badges earned fell within the targeted core competencies (Figure 2). Badges for Standards Alignment and Differentiation were the most widely obtained (~80% of teachers), with Assessment/Formative Feedback and Small Group Instruction close behind (~70% of teachers).

Figure 2. The Number of Teachers with Badges by Core Best Practices



Teachers set their own path for making progress towards mastery in e2L Best Practices. To achieve a mastery level badge takes a concentrated effort and long-term commitment, and may lead to an increased boost in student achievement. Over the years, teachers have gained mastery level badges on multiple Best Practices. The theory of change suggests that teachers with at least four mastery badges (starting with the Core BPs and then adding others) would lead to accelerated gains in student achievement measures. Teachers were organized into three categories to test this theory (Table 1).

Table 1. The number of teachers and students by Mastery Badge Level

	Sample Size	No Mastery Badges	1-3 Mastery Badges	4+ Mastery Badges
Reading	Teachers	64	59	41
	Students	1,472	1,478	1,039
Math	Teachers	59	64	45
	Students	1,405	1,643	1,209

Impact of engage2learn on Student Growth

The school district provided LXD Research with NWEA MAP scores for all students during the 2021-2022 school year. Overall gains were examined and the results of an exploration of the impact of Mastery Level teachers on student achievement are reported below.

Overall Student Growth

MAP provides students with RIT scores, which allow researchers to compare scores across the year and grade. In addition, MAP created projected RIT growth targets for each student based on their grade and RIT score at the beginning of the year. In this district, students made RIT gains in line with national trends reported by NWEA. Rebounds from the pandemic appeared strongest in math, and among younger students (Figure 3).

For every student, MAP provides a projected growth target and then indicates whether or not students met that target at the end of the year as “Yes” or “No” (Figure 4)[1].

[1] MAP provides four categories of “Met Projected Growth” see the appendix for more details

Figure 3. MAP RIT Scores Gains from by Grade and Test

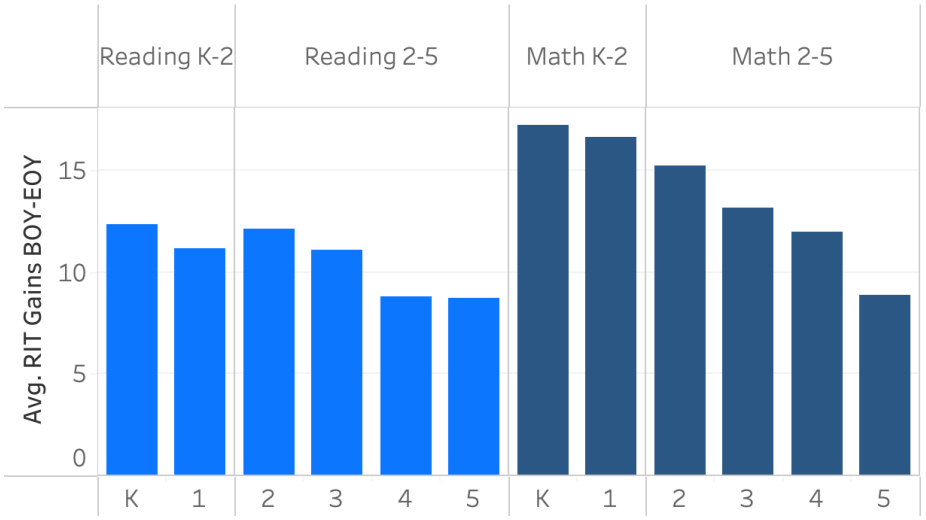
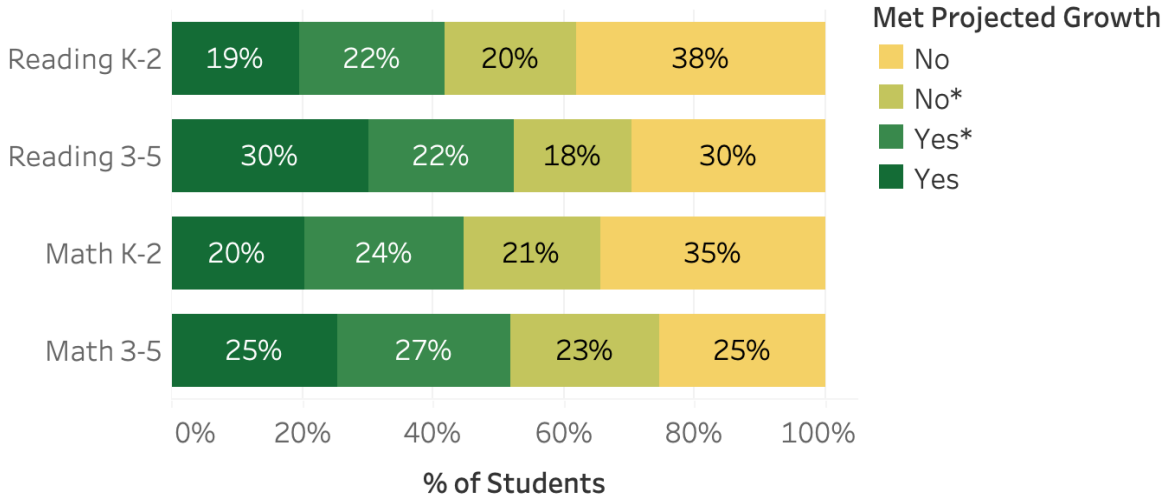


Figure 4. Percent of Students by Test and Met Projected Growth Category



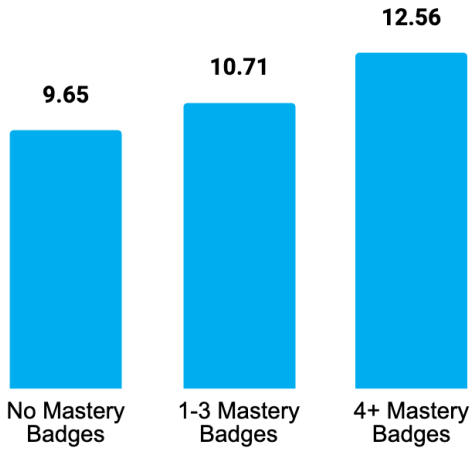
Impact of Teacher Mastery on Student Reading Growth

Reading MAP RIT Score Gains from Fall 2021 (BOY) to Spring 2022 (EOY)

Mastery badges to indicate that a teacher has demonstrated competency in an e2L best practice. The goal is for teachers to gain mastery in at least 4 e2L best practices. We compared teachers with No Mastery Badges, 1-3 Mastery Badges, and 4+ Mastery Badges to determine if earning Mastery Badges predicted student growth in reading for students across Grades K-5.

Reading MAP RIT score gains results showed a significant difference between the three groups[2] (Figure 5). Students of teachers who earned 1-3 Mastery Badges had significantly higher growth in Reading MAP RIT Scores (an average gain of 10.71) than students of teachers who earned No Mastery Badges[3] (an average gain of 9.65). Students of teachers who earned 4+ Mastery Badges showed even greater growth in Reading MAP RIT Scores (an average gain of 12.56) compared with teachers who earned No Mastery Badges[4]. While the impact seems modest, even a small boost in RIT scores can change a student's trajectory.

Figure 5. Gains on MAP Reading Scores from Fall 2021 to Spring 2022 By Mastery Level Badge Category



Met Reading Growth Targets from Fall 2021 (BOY) to Spring 2022 (EOY)

We likewise compared teachers with No Mastery Badges, 1-3 Mastery Badges, and 4+ Mastery Badges to determine if earning Mastery Badges predicted whether a student met their reading growth targets for the full sample across Grade K-5.

Results once again suggest a significant difference between the three groups in the percentage of students who met their reading growth targets[5] (Figure 6). Students of teachers who earned 1-3 Mastery Badges were significantly[6] more likely to meet reading growth targets (46%) than teachers who earned No Mastery Badges (38%). Students of teachers who earned 4+ Mastery Badges were even more likely to meet reading growth targets (60%) compared with students of teachers who earned No Mastery Badges[7].

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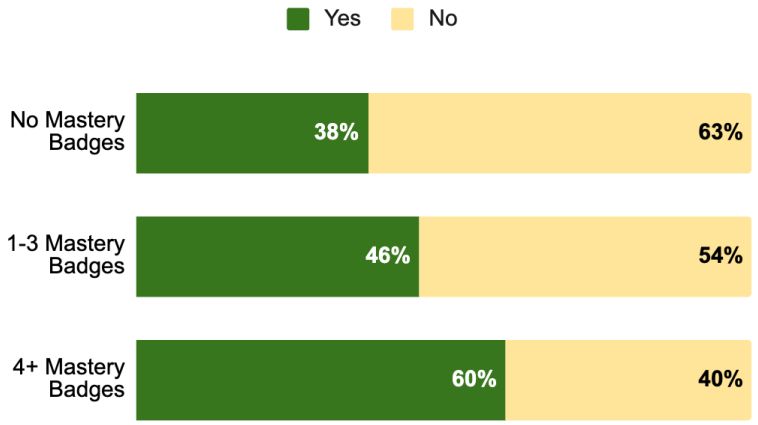
[2] $F(2, 3986) = 26.6$, $p < .001$
[3] p = .003, Cohen's d effect size = .11
[4] p < .001, Cohen's d effect size = .29
[5] $F(2, 2349) = 36.9$, $p < .001$
[6] p < .001, Cohen's d effect size = .16
[7] p < .001, Cohen's d effect size = .45

Figure 6. Percent Met Reading Growth Targets by Mastery Level Badge Category



Reading Results by Grade, Comparing No Mastery Badges to 4+ Mastery Badges

To explore reading MAP RIT score change by grade, a comparison of teachers who completed the meaningful milestone of having 4+ Mastery Badges to those who have No Mastery Badges helps school leaders understand the difference between a high (4+ Mastery Badges) and low fidelity (No Mastery Badges) implementation on the impact of student growth, and the percentage who met growth targets. The number of students and teachers in the fidelity groups was fairly balanced.

Nearly all grades (K-3 & 5) showed significant differences between students whose teachers had 4+ Mastery Badges and those who had No Mastery Badges when it came to RIT gains ($p<.01$) and the percentage of students who met growth targets ($p<.05$). Detailed tables with information related to Figures 7 and 8 are presented in the appendix.

Figure 7. Reading: MAP RIT Score Change from Fall 2021 to Spring 2022 by Grade

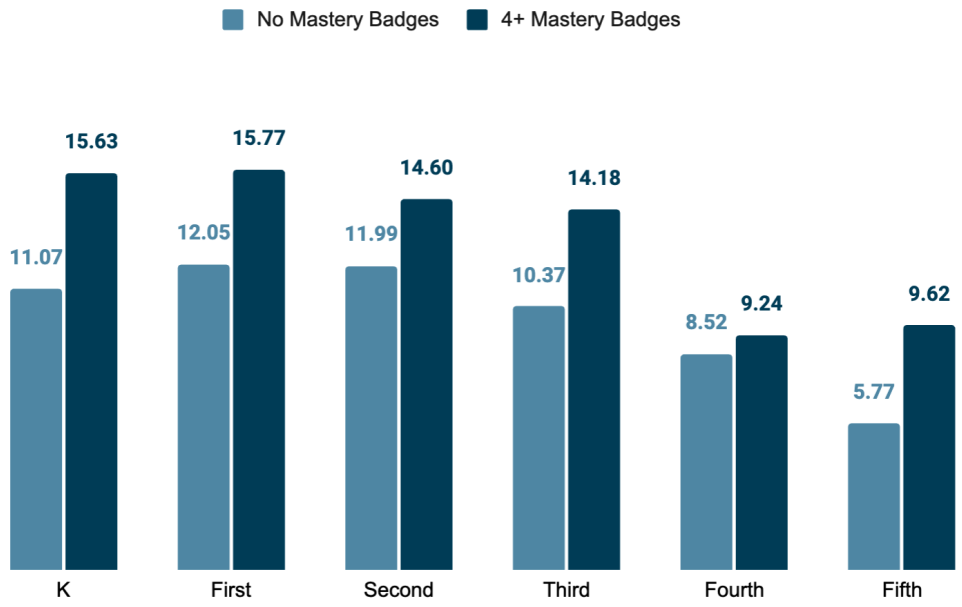
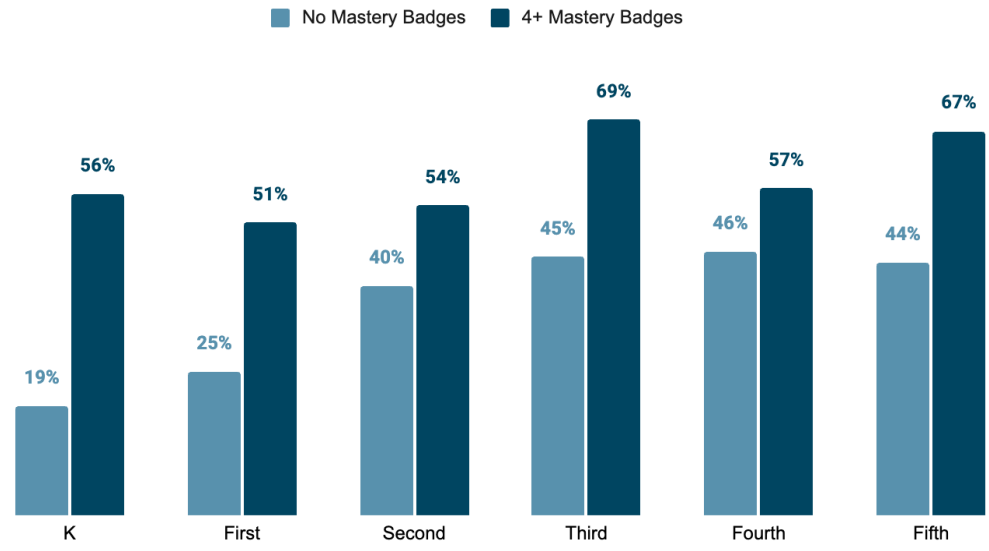


Figure 8. Reading: Percent of Students Who Met Projected Growth Fall 2021 to Spring 2022 by Grade



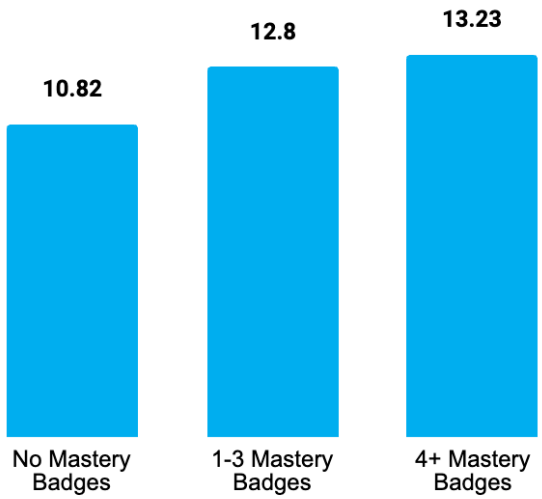
Impact of Teacher Mastery on Student Math Growth

Math MAP Gains from Fall 2021 (BOY) to Spring 2022 (EOY)

Similar to our analysis of reading, we compared teachers with No Mastery Badges, 1-3 Mastery Badges, and 4+ Mastery Badges to determine if earning Mastery Badges predicted student growth in math scores for the full sample across Grade K-5.

Results of the Math MAP RIT score gains suggest a significant difference between the three groups[8] (Figure 9). Students of teachers who earned 1-3 Mastery Badges had significantly higher growth[9] in Math MAP RIT Scores (an average gain of 12.80) compared with students of teachers who earned No Mastery Badges (an average gain of 10.82). Students of teachers who earned 4+ Mastery Badges had even greater growth[10] in Reading MAP RIT Scores (an average gain of 13.23) than teachers who earned No Mastery Badges.

Figure 9. Gains on MAP Math Scores from Fall 2021 to Spring 2022 By Mastery Level Badge Category

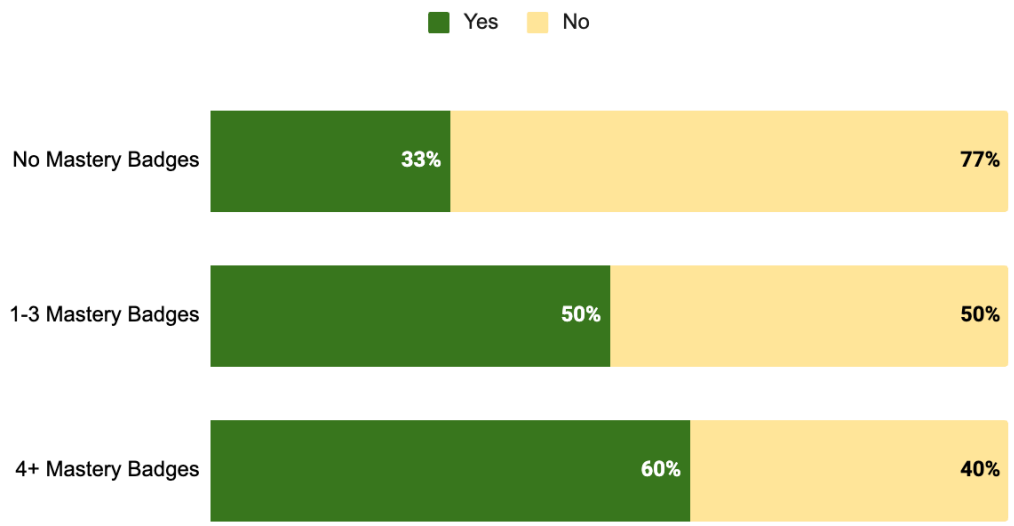


We likewise compared teachers with No Mastery Badges, 1-3 Mastery Badges, and 4+ Mastery Badges to determine if earning Mastery Badges predicted whether a student met their math growth targets for the full sample across Grade K-5. Results once again suggest a significant difference[11] between the three groups in the percentage of students who met their math growth targets (Figure 10). Students of teachers who earned 1-3 Mastery Badges were significantly more likely to meet math

[8] $F(2, 4254) = 35.0$, $p < .001$
[9] $p < .001$, Cohen's d effect size = .24
[10] $p < .001$, Cohen's d effect size = .30
[11] $F(2, 2210) = 52.1$, $p < .001$

growth targets (50%) than teachers who earned No Mastery Badges (33%[12]). Students of teachers who earned 4+ Mastery Badges were even more likely[13] to meet math growth targets (60%) compared with students of teachers who earned No Mastery Badges.

Figure 10. Percent Met Math Growth Targets by Mastery Level Badge Category



Math Results by Grade, Comparing No Mastery Badges to 4+ Mastery Badges

To explore Math outcome data by grade, a comparison of teachers who completed 4+ Mastery Badges to those teachers who did not complete any Mastery Badges was implemented to determine the impact on student growth. The number of students and teachers in the fidelity groups was fairly balanced.

All grades showed significant differences between students whose teachers had 4+ Mastery Badges and those who had No Mastery Badges when it came to Math RIT gains ($p<.05$) and percentage of students who met Math growth targets ($p<.05$). Detailed tables with information related to Figures 11 and 12 are presented in the appendix.

[12] $p < .001$, Cohen's d effect size = .33
[13] $p < .001$, Cohen's d effect size = .54

Figure 11. Math: MAP RIT Score Change from Fall 2021 to Spring 2022 by Grade

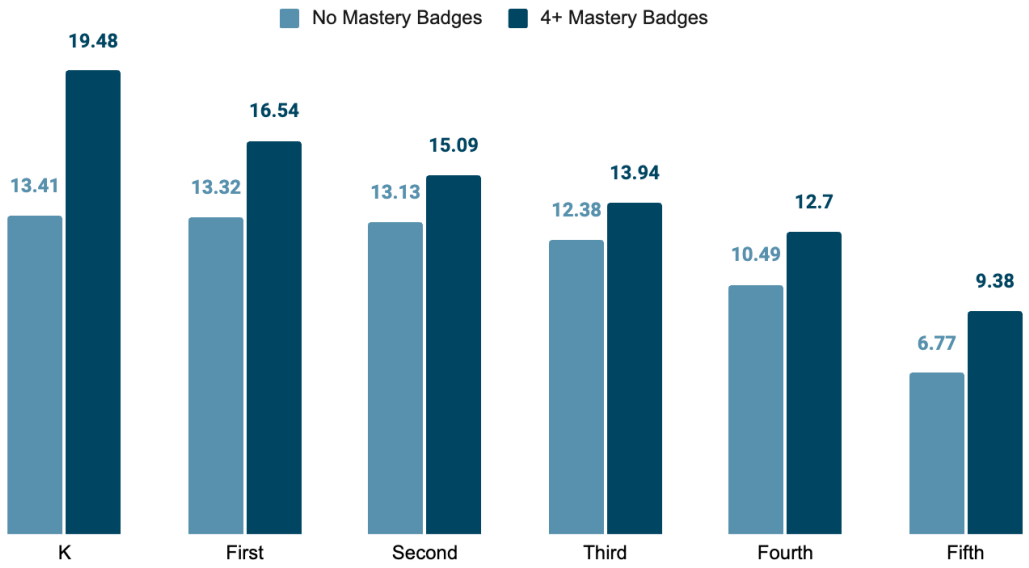
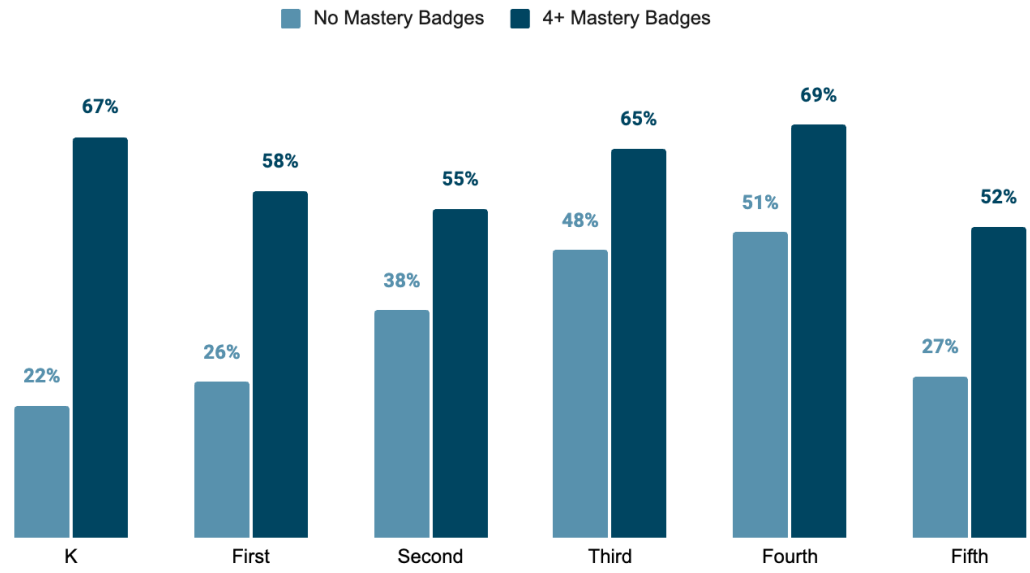


Figure 12. Math: Percent of Students Who Met Projected Growth Fall 2021 to Spring 2022 by Grade



Conclusion & Limitations

Responsive coaching at engage2learn is an innovative and with this report is now an evidence-based solution.. The findings of this 2021-2022 study compellingly validate the efficacy of the engage2learn program through an exploration of NWEA MAP Growth, Reading and Math K-5. The findings have value on their own to stakeholders interested in the impact of coaching and standards alignment and serve as the foundation for future mixed methods research.

Data tracked and analyzed in this report cover educator achievement through the life of the partnership, and the report focuses on student growth on benchmark assessments during the 2021-2022 school year. The news is positive for student growth. The robust sample, a total of 309 teachers and 9 coaches across 14 schools, showed that the impact of teacher mastery on student academic growth is positive and significant in reading and math. Students of teachers who earned multiple Mastery Badges (4 or more) had significantly higher growth in Reading and Math MAP RIT Score gains than students of teachers who earned No Mastery Badges. Students of teachers who earned multiple Mastery Badges were also significantly more likely to meet reading growth targets than teachers who earned No Mastery Badges. The findings are particularly convincing due to the consistency of significant results across multiple grades and subject areas.

The impact and findings are relevant for diverse stakeholder groups including those who care primarily about student achievement and those who believe in or are curious about the connection between strong and innovative teacher coaching and student outcomes. Uses for the research are many. The district may use the findings to make decisions about continued or increased levels of partnership with engage2learn. Product leaders have the opportunity to reinforce the research-based messaging of its product to existing users and pursue additional users who require and/or value evidence-based products. Additionally, the district's addition of Coaches Academy adds insight into the efficacy of that offering, in addition to one-on-one e2L teacher coaching. The findings may also contribute to the larger discussion among policymakers, educational theorists, administrators, and educators working to find evidence-based solutions to the growing problem of teacher shortages and turnover.

Limitations in the study do exist and may be addressed through future research and inquiry. For example, teachers in the study were not randomly assigned to high and low-fidelity groups. The focus on secondary data has inherent limitations that should be addressed in future mixed-methods research. The addition of educator voices in future studies will offer feedback about implementation and engagement to add insight to the assessment data and allow for the research to inform the ongoing

product design, development, and iteration. For example, interviews and surveys could include questions that lead to understanding whether and to what extent features around choice and customization - such as teachers choosing a coach persona that appeals to them, or schools setting school-specific goals - matter in the user's experience and commitment to the program.

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Appendix

MAP provides each student with a categorical label about whether or not they met their projected growth target from Fall to Spring. Because students' gains may be very close to the target, NWEA recommends that the labels with an asterisk are used with caution for evaluation purposes (e.g., No vs. No*, Yes* vs. Yes). In order to make a clear distinction between students who truly met their projected growth targets from students who did not, this report focuses on the ends of this scale for the analysis that looks at the impact of Mastery Badges (e.g., Yes and No).

Reading: All K-5 Students

Grade	Number of Students	BOY Mean (SD)	EOY Mean (SD)	Percent Yes for growth targets (without *)
Kindergarten	954	138.1 (8.9)	151.4 (11.3)	38%
First	1,020	153.7 (12.2)	166.6 (13.4)	29%
Second	983	168.1 (15.9)	181.8 (15.5)	48%
Third	938	183.6 (16.2)	195.0 (15.6)	53%
Fourth	955	195.6 (15.8)	203.1 (15.6)	45%
Fifth	948	201.7 (16.3)	209.5 (15.2)	55%

Math: All K-5 Students

Grade	Number of Students	BOY Mean (SD)	EOY (Mean SD)	Percent Yes for growth targets (without *)
Kindergarten	989	140.4 (10.3)	155.7 (12.3)	42%
First	1,057	158.2 (12.2)	172.1 (13.3)	32%
Second	992	170.5 (14.0)	184.3 (13.1)	43%
Third	953	184.5 (13.4)	197.9 (13.6)	59%
Fourth	931	197.2 (14.5)	208.5 (15.6)	60%
Fifth	959	205.2 (14.8)	213.0 (14.8)	37%

Reading: MAP RIT Score Change from Fall 2021 to Spring 2022

	No Mastery Badges	4+ Mastery Badges
K	11.07	15.63***

1	12.05	15.77***
2	11.99	14.60**
3	10.37	14.18***
4	8.52	9.24
5	5.77	9.62***

Note: * = p <.05, ** = p <.01, *** = p <.001.

Reading: Percent Met Growth Targets from Fall 2021 to Spring 2022

	No Mastery Badges	**4+ Mastery Badges**
K	19%	56%***
1	25%	51%***
2	40%	54%*
3	45%	69%***
4	46%	57%*
5	44%	67%***

Note: * = p <.05, ** = p <.01, *** = p <.001.

Math: MAP RIT Score Change from Fall 2021 to Spring 2022

	No Mastery Badges	**4+ Mastery Badges**
K	13.41	19.48***
1	13.32	16.54***
2	13.13	15.09*
3	12.38	13.94*
4	10.49	12.70**
5	6.77	9.38***

Note: * = p <.05, ** = p <.01, *** = p <.001.

Math: Percent Met Growth Targets from Fall 2021 to Spring 2022

	No Mastery Badges	**4+ Mastery Badges**
K	22%	67%***

1	26%	58%***
2	38%	55%*
3	48%	65%*
4	51%	69%**
5	27%	52%***

Note: * = p <.05, ** = p <.01, *** = p <.001.

For more information visit
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