# Examining the Relationship Between Subject-Specific Instructional Time, Instructional Practices, and Reading Achievement in the Charter Sector - Year One Report

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This report uses teacher survey and student assessment data to understand how the allocation of instructional time and use of discipline-specific instructional practices varies across GVSU-authorized elementary schools.

Key findings include:

- Two-thirds of instructional time in GVSU-authorized elementary schools is allocated to ELA and Math.
- Considerable variation in the allocation of instructional time exists across GVSU-authorized elementary schools.
- Students scored at the 41st percentile on the NWEA MAP reading assessment prior to the study.

## Introduction

In their study examining the relationship between subject-specific instructional time and students' reading achievement, Tyner and Kabourek (2020) found that increased emphasis on social studies is associated with improvements in students' reading performance. Despite the considerable focus on English Language Arts in US schools, students who receive an additional thirty minutes of social studies instruction daily outperform their peers by 15 percent of a standard deviation (Tyler and Kabourek, 2020). While this study provided valuable insights into the positive association between social studies instruction and reading achievement, it did not explore the instructional practices that contributed to this relationship. Consequently, less is known about whether it is the quantity of instructional time or exposure to certain subject-specific instructional practices that significantly influences student achievement.

This study will build upon the work of Tyner and Kabourek (2020) by investigating the relationship between the allocation of subject-specific instructional time, the frequency of subject-specific instructional practices used, and students' reading achievement. Results from the longitudinal study aim to provide a more comprehensive understanding of the factors influencing students' reading achievement and inform targeted interventions for improved educational outcomes. This report represents the first in a series of annual reports from a four-year longitudinal study. Each subsequent report will build upon the findings from the previous year, providing a comprehensive and evolving picture of the factors influencing students' reading achievement over time.

## Research Questions

This longitudinal study examines the following research questions:

1. To what extent does the amount of classroom time spent on different subjects — including English language arts (ELA), math, science, and social studies — differ across elementary classrooms in GVSU schools?

2. To what extent does students' exposure to subject-specific instructional practices differ across elementary classrooms in GVSU schools?

3. Do students in classrooms who spend more time on certain subjects demonstrate greater progress in reading during grades three through five compared to students in classrooms who spend less time in these subjects?

4. Do students with greater exposure to subject-specific instructional practices demonstrate greater progress in reading during grades three through five compared to students in classrooms with less exposure to these practices?

The current report addresses the first through third research questions. Forthcoming reports will investigate all research questions.

## Methods

**Research Design.** This is the first report associated with a four-year longitudinal study examining the relationship between subject-specific instructional time, exposure to subject-specific instructional practices, and students' reading achievement. We will link teacher survey data and NWEA MAP assessment data of students in grades three through five to establish connections between the allocation of subject-specific instructional time, instructional practices used, and students' reading achievement. Table 1 below provides an overview of the grades eligible for inclusion in the study by year. For example, only teachers in grade three were eligible to receive a survey invitation in spring 2024 while teachers in grades three and four will be eligible for inclusion in Spring 2025.

**Table 1: Grades eligible for inclusion in the disciplinary literacy study by year.**

| | Grade 3 | Grade 4 | Grade 5 |
|---|---|---|---|
| 2023-24 | X | | |
| 2024-25 | X | X | |
| 2025-26 | | X | X |
| 2026-27 | | | X |

**Data Sources.** This report draws on teacher survey and student achievement data. We administered a survey to third-grade teachers working in GVSU-authorized schools in the spring of 2024. The survey includes validated items inquiring about the allocation of instructional time and the use of content-specific instructional practices in elementary school classrooms[1]. We then shared the survey instrument with GVSU CSO leadership for review and approval. See Appendix A for a copy of the teacher survey instrument. We administered the survey through Sogolytics.

Additionally, we used student-level NWEA MAP data provided by the GVSU CSO[2]. The CSO shared spring assessment data from 2022-23 and fall assessment data from 2023-24, resulting in two testing administrations. Assessment data included school name, student identification code, teacher identification code, term (i.e., fall, spring), subject, RIT (Rasch unIT) score, and test percentile. The CSO also shared NWEA students by school roster, NWEA program assignments, and NWEA class assignments. We used these data sources to link student assessment data to teacher survey responses.

**Sample.** We distributed survey invitations to 101 full-time third-grade teachers working in GVSU-authorized elementary schools. At the conclusion of the survey window, 43 teachers (43 percent) completed the survey. We linked 40 of these teachers to teacher identification codes included in the NWEA class assignment roster from fall 2023. This yielded 1,235 students rostered to the 40 teachers with complete survey data. The number of students rostered to each teacher ranged from 19 to 85 students.

[1] We draw on items from the following surveys: ECLS-K: 2011, American Instructional Resources Survey, Trends in International Mathematics and Science Teacher Questionnaire, Surveys of Enacted Curriculum.

[2] The GVSU CSO entered into a data use agreement with Basis permitting the sharing of deidentified student-level NWEA MAP data. The data use agreement specifies the steps Basis will undertake to securely access and store deidentified student-level data.

Our analytic sample includes all students with non-missing assessment data from spring 2023 who were assigned to a third-grade teacher who completed the survey in spring 2024. We restricted the sample to students with spring 2023 assessment data because this represents the period prior to the start of the longitudinal study and will serve as the baseline period for future analyses of assessment data. This yielded 490 students rostered to 30 third-grade teachers. The number of students with non-missing assessment data from spring 2023 rostered to each teacher ranged from 1 to 25 students.

**Measures.** We constructed three measures for inclusion in this study. We describe each measure below.

**Instructional Time.** We used the survey items (1) how often children in their class spend in different subject areas (i.e., never to five days a week) (Appendix A, Table 1, Rows 1-10) and (2) how much time is spent on the lesson (i.e., never to more than three hours) (Appendix A, Table 2, Rows 1-10) to develop a measure of instructional time. We used responses to these two items to estimate the amount of time spent in Math, ELA, Social Studies, Science, and non-core subject areas (e.g., Dance, PE, Art, Foreign Language). We combined items to generate a measure of time per day in the respective subject areas. While this report is restricted to instructional time in grade three, future reports will aggregate instructional time variables across grades three through five to produce an estimate of students' exposure to different content areas. The construction of the instructional time variables mirrors the work of Tyner and Kabourek (2020) and Engel et al. (2013).

**Disciplinary-Specific Instructional Practices.** The teacher survey includes items addressing teachers' use of disciplinary-specific instructional practices. We intended to apply an exploratory factor analysis (EFA) to these items, but the sample size did not meet the recommended threshold of 200 observations before obtaining high-quality factors (Jung & Lee, 2011). In future reports, we will apply an EFA to these items to examine patterns in responses and identify latent constructs. Factors with eigenvalues greater than one will be used to construct measures of students' exposure to subject-specific instructional practices. Finally, we will average exposure to disciplinary-specific instructional practices across grades three through five to produce an estimate of students' exposure to different instructional practices. For this report, we will report primarily on the distribution of teachers' responses to subject-specific instructional practices.

**Academic Achievement.** We constructed a measure of academic achievement using NWEA MAP reading data. The primary measure of academic achievement is students' reading RIT score. We standardized scores using NWEA 2020 reading norms for fall and spring assessments. A standardized score indicates a mean of zero and a standard deviation of one. Thus, a score of 1 is the equivalent of being in approximately the 85$^{th}$ percentile. This report focuses exclusively on students' reading achievement prior to the start of the study. The final report will use students' spring reading RIT scores from second grade and spring reading RIT scores from fifth grade to include as a focal predictor and outcome variables in our model.

**Analytic Strategy.** We discuss our analytic process by research question below.

**1 | To what extent does the amount of classroom time spent on different subjects — including English language arts (ELA), math, science, and social studies — differ across elementary classrooms in GVSU schools?**

We used descriptive statistics to answer this research question. Specifically, we explored the distribution of time spent in different subject areas in grade three. Future reports will explore how time spent in different subject areas varies across time and survey administrations. Additionally, we explored the distribution of instructional time across different teacher- and school-level variables, including the percentage of economically disadvantaged students, prior academic achievement, teachers' years of experience, and teachers' highest academic degree.

**2 | To what extent does students' exposure to subject-specific instructional practices differ across elementary classrooms in GVSU schools?**

We also used descriptive statistics to answer this research question. Specifically, we explored the distribution of teachers' responses to items associated with subject-specific instructional practices. In future reports when the sample size threshold is met (n=200), we will explore results from the EFA to identify cut points representing more or less exposure to subject-specific instructional practices. We will then explore the distribution of students' exposure to subject-specific instructional practices across and within grade levels. The analysis will also explore how the distribution of exposure to subject-specific instructional practices varies across the different teacher- and school-level variables used to address the first research question.

**3 | Do students in classrooms who spend more time on certain subjects demonstrate greater progress in reading during grades three through five compared to students in classrooms who spend less time in these subjects?**

In the current report, we provide baseline data on students' reading achievement in the spring prior to launching this study. In future reports, we will run a series of ordinary least squares (OLS) regression models estimating students' fifth-grade reading achievement as a function of instructional time by subject. Equation 1 describes the general model:

$$(1) Y_{is} = \beta_0 + \beta_1 InstructionalTime_{is} + \beta_2 Grade2Reading_{is} + \beta_3 TotalInstructionalTime_{is} + \beta_4 X_i + \beta_5 Z_s + \beta_6 T_{ts} + \varepsilon_{is}$$

In this specification, the spring fifth grade reading score for student *i*, in school *s,* is modeled as a function of a fixed intercept $\beta_0$, a vector of pooled classroom time-use variables *InstructionalTime*$_{is}$ [3], a vector of second grade reading[4] (lagged), a vector of pooled *TotalInstructionalTime*$_{is}$, a vector of

[3] We will include ELA, Math, Science, Social Studies, and pooled measure of non-core subjects (e.g., Art, Music, PE)
[4] The measure of second grade performance will include a fall NWEA reading assessment, spring NWEA reading assessment, and an interaction term for the two second grade NWEA assessments. We will use fall NWEA reading performance in third grade to control for

student characteristics $X_i$, a vector of pooled school demographics $Z_s$, and a vector of pooled teacher characteristics $T_{ts}$, and a random error term $\varepsilon_{is}$. We will also cluster standard errors at the school level to account for similarities in observations within the same school. We will also conduct a vif test to examine whether certain predictors are collinear with other covariates. Predictors found to be collinear with other predictors will be removed from the final models. Finally, as a robustness check we will use an alternative model specification – two level multilevel (MLM) regression models to account for the nesting of students in schools. This analytic approach is designed to isolate the impact of instructional time on reading achievement, taking into account both teacher and school characteristics. The robustness check further strengthens the analysis by ensuring that results are not the product of the analytic method employed, such as OLS regression of MLM. This rigorous approach enhances the reliability of the findings and provides greater confidence in the influence of subject-area time on reading achievement.

**4 | Do students with greater exposure to subject-specific instructional practices demonstrate greater progress in reading during grades three through five compared to students in classrooms with less exposure to these practices?**

The current report does not address this research question. In future reports, we will also run a series of ordinary least squares regression (OLS) models estimating students' fifth grade reading achievement as a function of their exposure to different subject-specific instructional practices. Equation 2 describes the general model:

$$(2) Y_{is} = \beta_0 + \beta_1 InstructionalPractices_{is} + \beta_2 Grade2Reading_i + \beta_3 TotalInstructionalTime_{is} + \beta_4 X_i + \beta_5 Z_s + \beta_6 T_{ts} + \varepsilon_{is}$$

The covariates in equation two mirror the variables included in the first equation except for the substitution of instructional time with instructional practices. We will use estimates from the $InstructionalPractices_{is}$ variable to answer this research question. We will continue clustering standard errors at the school level, conducting vif tests, and running two-level MLM regression models as an alternative model specification. This analytic approach also attempts to isolate the impact of instructional time on reading achievement by accounting for teacher and school characteristics. Furthermore, the robustness check will ensure results are not the product of the analytic method used and provide reliable evidence of the influence of instructional practices on reading achievement.

prior performance If the availability of second grade assessment data significantly reduces the sample of schools eligible to participate in this study.

## Results

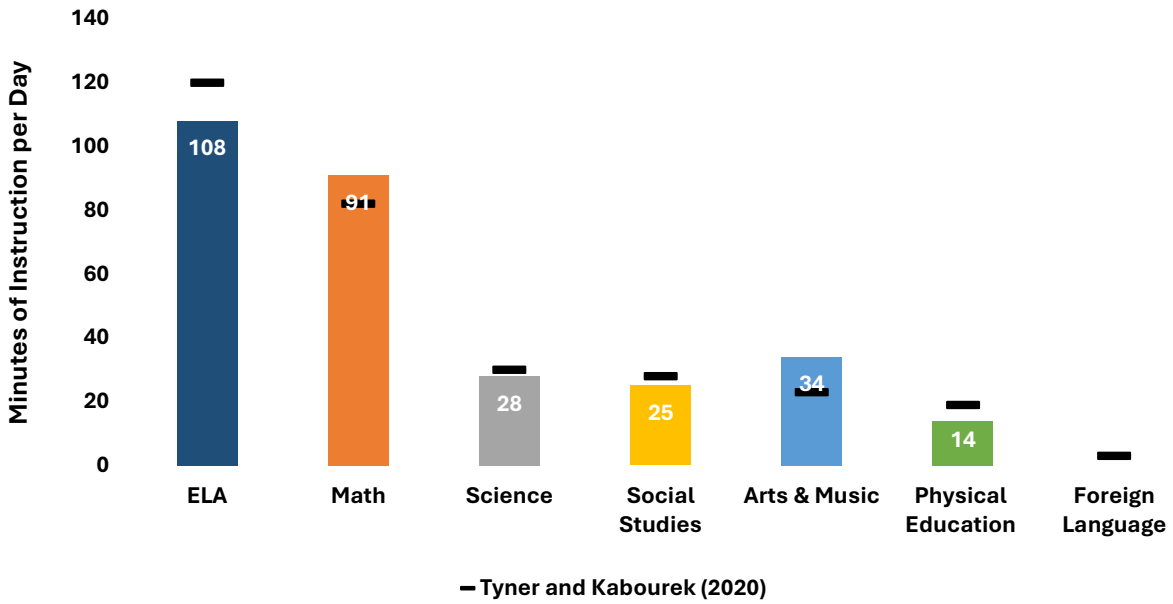
To answer the research questions, we restricted the sample to (a) teachers with complete survey data and (b) assigned students with valid NWEA MAP assessment data the spring prior to entering third grade. The analytic sample includes 30 teachers assigned to 490 students in 20 GVSU-authorized elementary schools. Where feasible, we draw on the results from the full sample of teachers who completed the survey, as well as findings from Tyner and Kabourek (2020), to conduct a comparative analysis of the analytic sample.

**1 | To what extent does the amount of classroom time spent on different subjects — including English language arts (ELA), math, science, and social studies — differ across elementary classrooms in GVSU schools?**

***Two-thirds of instructional time in third-grade classrooms in GVSU-authorized elementary schools is allocated to ELA and Math.***

Figure 1 displays the average time students spent in different subject areas during the 2023-24 school year in third-grade classrooms in GVSU-authorized elementary schools (henceforth titled "GVSU-authorized elementary schools"). Teachers reported that students received approximately 300 minutes of instructional time daily. Notably, two-thirds of daily instructional time is devoted to ELA (108 minutes) and Math (91 minutes). Our analysis also reveals that more time is allocated to ELA than all other non-math subjects combined, including Science (28 minutes), Social Studies (25 minutes), Arts & Music (34 minutes), and Physical Education (14 minutes). We include a detailed breakdown of the share of instructional time allocated across subject areas in third grade in Figure B1 in Appendix B.

**Figure 1: Minutes of daily instructional time by subject area in third-grade classrooms**



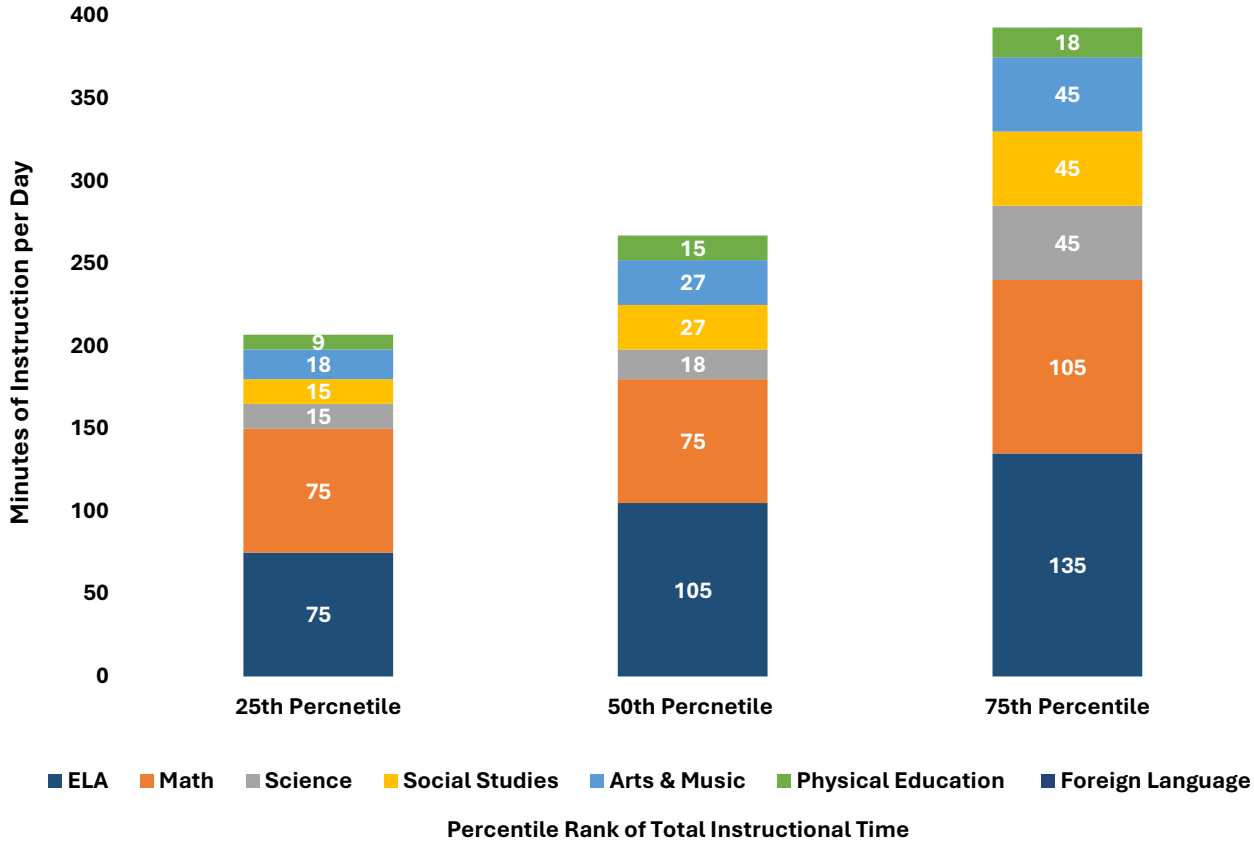

Source: GVSU Disciplinary Literacy Survey; author's analyses.

While the reported allocation of instructional time across subject areas for teachers included in our sample aligns closely with the larger sample of surveyed teachers, we observe some notable differences when we compare results with the work of Tyner and Kabourek (2020) (see black dash in Figure 1). Particularly, U.S. elementary schools devote more instructional time to ELA compared to GVSU-authorized elementary schools. This difference, which amounts to 12 minutes daily, translates to 39 percent of instructional time being allocated to ELA in U.S. elementary schools, while GVSU-authorized elementary schools allocate 37 percent of instructional time to ELA. In contrast, GVSU-authorized elementary schools allocate slightly more time to Math (a 9-minute difference) and Arts and Music (an 11-minute difference) compared to U.S. elementary schools. This equates to a three percentage point difference between GVSU-authorized elementary schools and U.S. elementary schools. The allocation of time for the remaining subjects is largely comparable between GVSU-authorized and U.S. elementary schools.

***Considerable variation in the allocation of instructional time exists across third-grade classrooms in GVSU-authorized elementary schools.***

Figure 2 illustrates the allocation of instructional time across different subject areas for students at the 25$^{th}$, median, and 75$^{th}$ percentiles of total instructional time. Our analysis reveals considerable variation in the distribution of instructional time for students across percentiles. For instance, while the average daily instruction for ELA is 108 minutes, students at the 75$^{th}$ percentile receive approximately one additional hour of ELA instruction (135 minutes) compared to those at the 25$^{th}$ percentile (75 minutes). Furthermore, we find that students at the 75$^{th}$ percentile receive three times as much daily instruction in Science and Social Studies (45 minutes) compared to their peers in the 25$^{th}$ percentile (15 minutes). Notably, students at the 75$^{th}$ percentile also receive, on average, an additional 30 minutes of daily Math instruction as compared to students at both the 25$^{th}$ percentile and the median of total instructional time. Findings from Tyner and Kabourek (2020) also revealed substantial variation in the distribution of instructional time across subject areas.

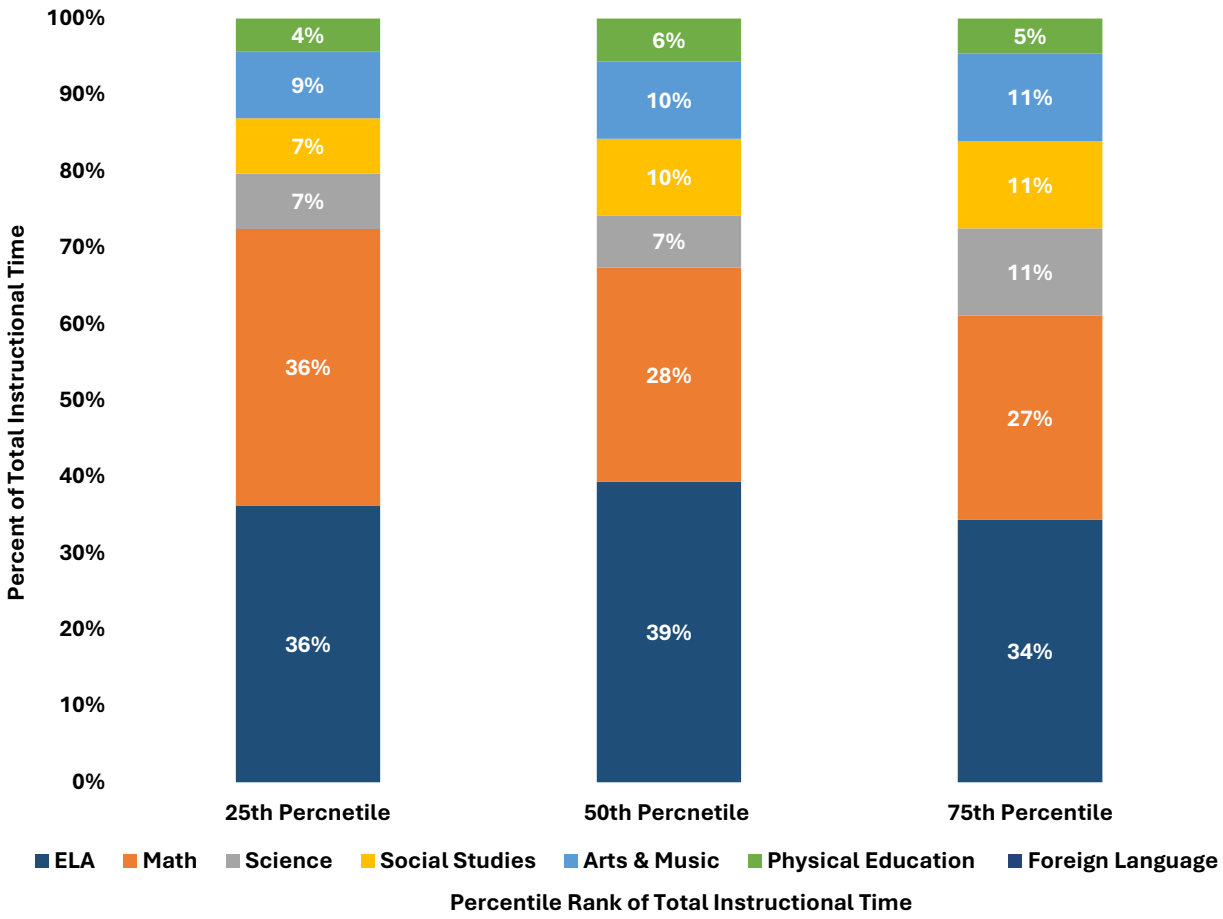
**Figure 2: Distribution of instructional time by subject areas and percentile rank.**




Source: GVSU Disciplinary Literacy Survey; author's analyses.

Further, we find slight differences in the share of instructional time allocated to different disciplines across GVSU elementary schools. Results in Figure 3 indicate schools with less total daily instructional time allocate a larger share of time to ELA as compared to schools with more total instructional time. In contrast, schools with more instructional time allocate a larger share of time to all non-ELA subjects.

**Figure 3: Share of instructional time by subject areas and percentile rank.**

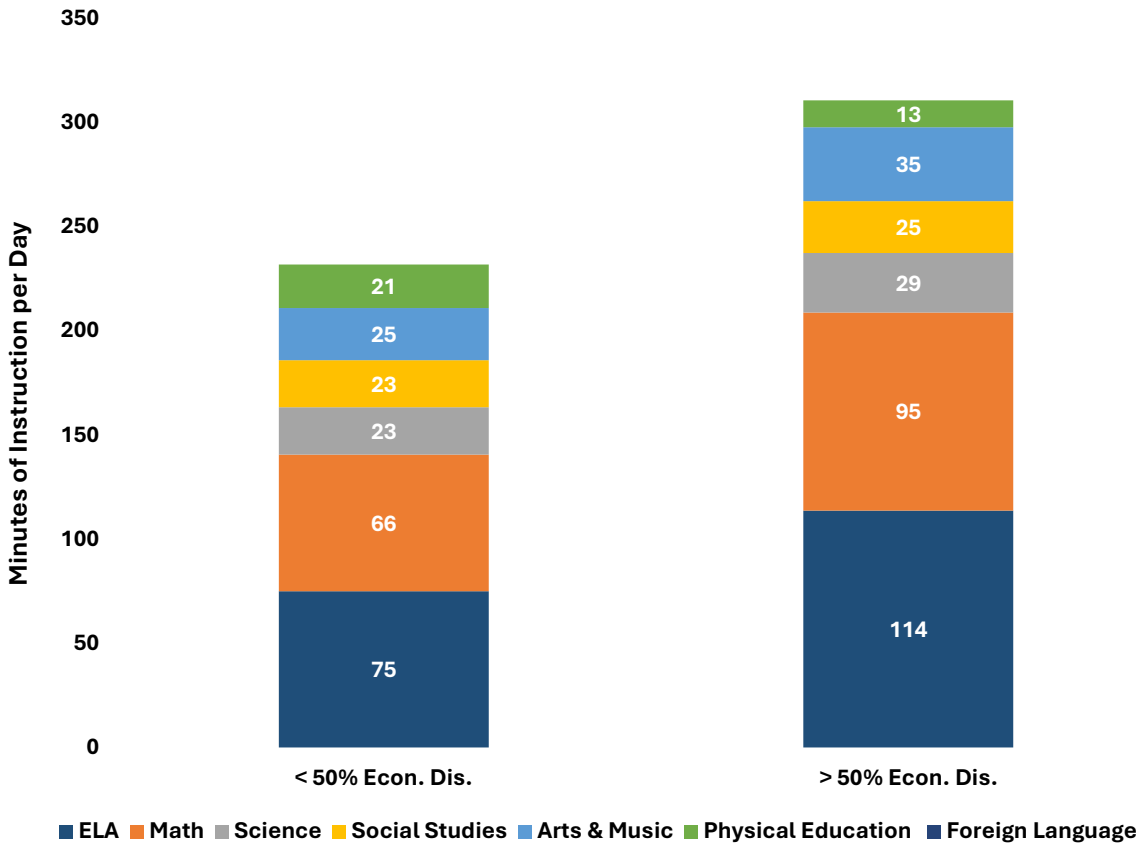



Source: GVSU Disciplinary Literacy Survey; author's analyses.

***Students in high-poverty schools are exposed to between 29 to 39 minutes of Math and ELA content daily.***

We also sought to understand whether the allocation of instructional time across subject areas varied in high-poverty (>50 % economically disadvantaged, "ED") and low-poverty (< 50% economically disadvantaged, "ED") schools. Results in Figure 4 indicate that students in high-poverty schools, on average, have exposure to about 80 more minutes of instructional time daily. Further, students in high-poverty schools are exposed to between 29 to 39 more minutes of Math and ELA content daily. We also find that students in high poverty schools also receive about 10 more minutes of daily Arts and Music instruction. In addition to having more exposure to Math and ELA instruction, we find the share of instructional time allocated to these disciplines is eight percentage points greater in high-poverty schools. The share of instructional time allocated to Science, Social Studies, and Arts and Music is comparable between high and low-poverty schools (See Figure B2 in Appendix B).

**Figure 4: Distribution of instructional time by subject areas and poverty status.**



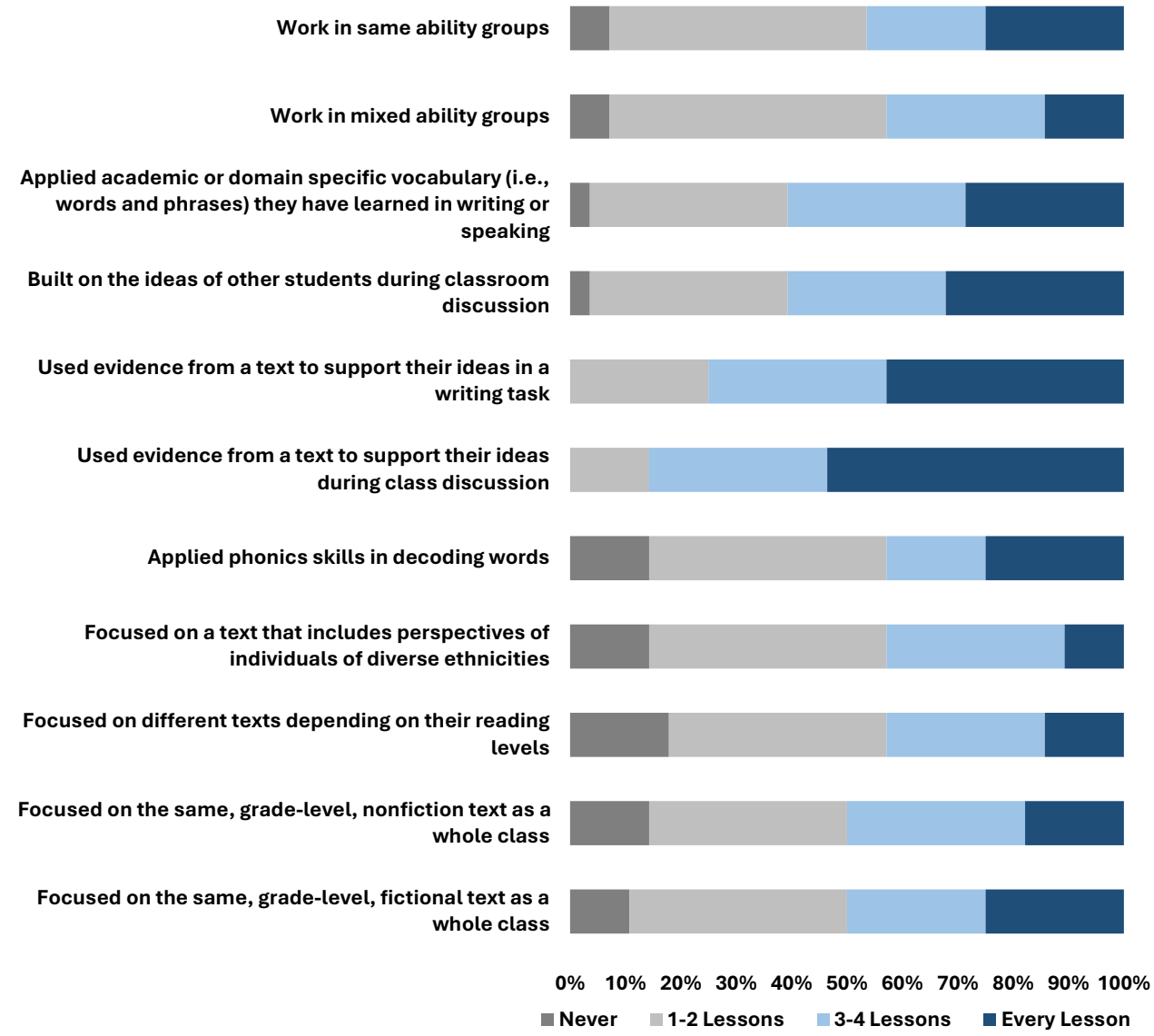

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**2 | To what extent does students' exposure to subject-specific instructional practices differ across elementary classrooms in GVSU schools?**

***There is considerable variation in both the types and frequency of ELA-specific instructional practices teachers report using.***

Figure 5 displays the distribution of teachers' self-reported use of ELA-focused instructional practices. Results reveal a considerable variation in both the types and frequency of ELA-focused instructional practices that teachers report implementing. Teachers most frequently report asking students to use evidence from the text to support their ideas during class discussions or on writing tasks. Other commonly used instructional practices include encouraging students to build on the ideas of their peers during classroom discussions and apply academic or domain-specific vocabulary in writing or speaking. Less frequently used domain-specific instructional practices teachers report implementing include having students apply phonic skills in decoding words, work in mixed ability groups, use different texts based on reading ability, and focus on texts that include perspectives of diverse ethnicities. Finally, we find that the distribution of responses for respondents included in the analytic sample is comparable to the distribution of responses for the full sample.

**Figure 5: Distribution of teachers' self-reported use of ELA-specific instructional practices.**




Source: GVSU Disciplinary Literacy Survey; author's analyses.

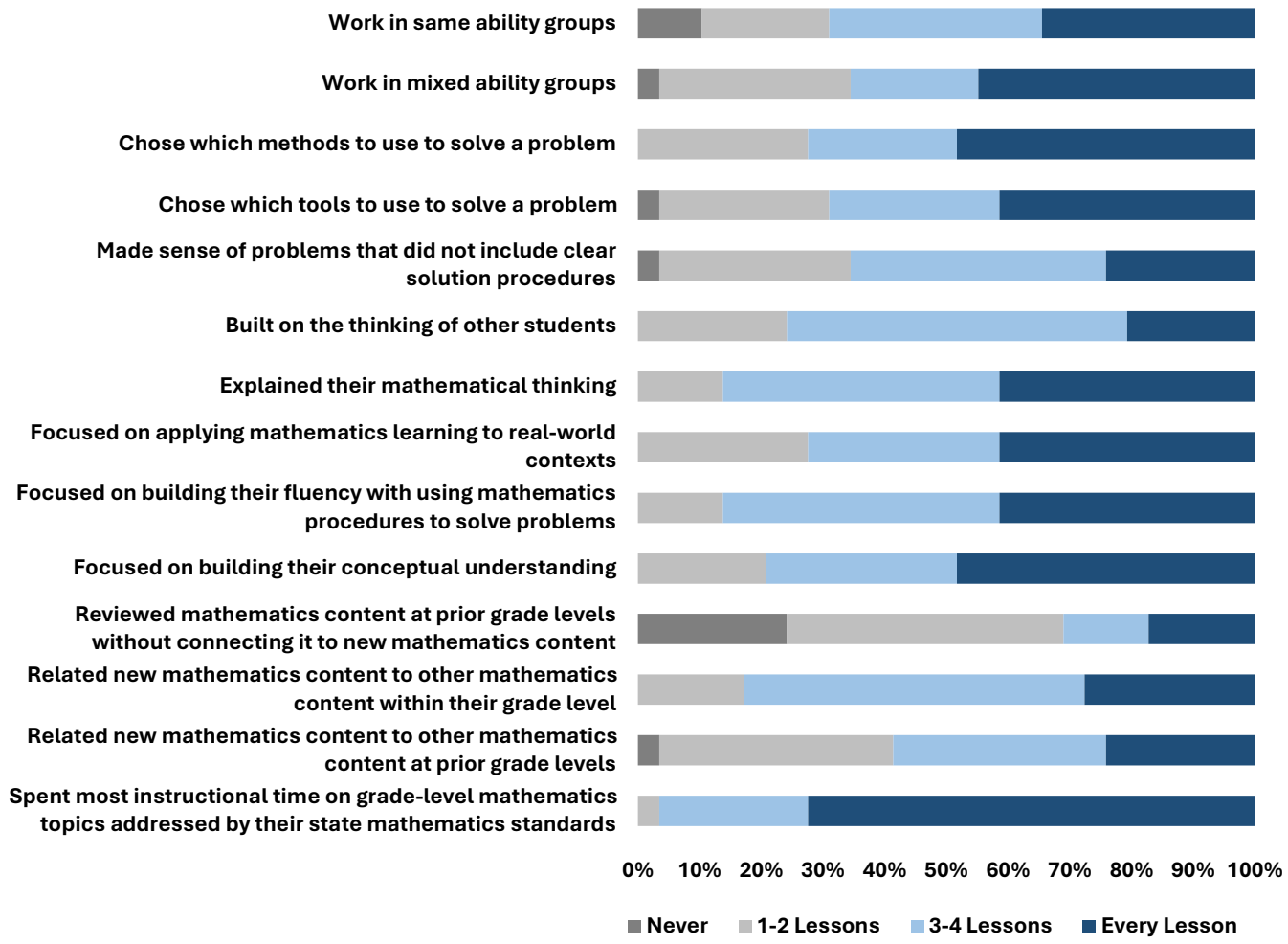
Our analysis sought to understand whether the use of ELA-specific instructional practices varied by teachers' and schools' demographics. Findings indicate considerable differences in the implementation of instructional practices based on teachers' years of experience, their level of education, and the demographic composition of students. For instance, teachers with more than six years of professional experience were found to be more likely to instruct students to use evidence from a text to support their ideas during class discussions or in writing tasks and apply academic or domain-specific vocabulary. Similarly, teachers holding a Master's or Education Specialist degree were more likely to engage students in discussions that built on others' ideas and

require students to apply academic or domain-specific vocabulary. Furthermore, in schools with a majority of students from historically marginalized groups, teachers were more likely to focus on the same grade-level nonfiction text as a whole class and have students work in same-ability groups. Figures B3-B4 in Appendix B disaggregate results by select teacher and school demographics.

***There is considerable variation in both the types and frequency of math-specific instructional practices teachers report using.***

Figure 6 displays the distribution of teachers' self-reported use of math-specific instructional practices. Results reveal a considerable variation in both the types and frequency of math-specific instructional practices that teachers report implementing. Teachers most frequently report spending time on grade-level topics included in Michigan state mathematics standards, having students explain their mathematical thinking, having students focus on building fluency by using mathematics procedures to solve problems, and relating new content to other content within their grade level. Other common instructional practices include focusing on applying mathematics learning to real-world context, having students build on the thinking of other students, and asking students to choose which tools to use to solve a problem. Less frequently used domain-specific instructional practices teachers report implementing include relating new mathematics content to other content from prior grade levels, reviewing mathematics content from prior grade levels without connecting it to new content, and having students work in mixed-ability groups. Finally, we find that the distribution of responses for respondents included in the analytic sample is comparable to the distribution of responses for the full sample.

**Figure 6: Distribution of teachers' self-reported use of math-specific instructional practices.**



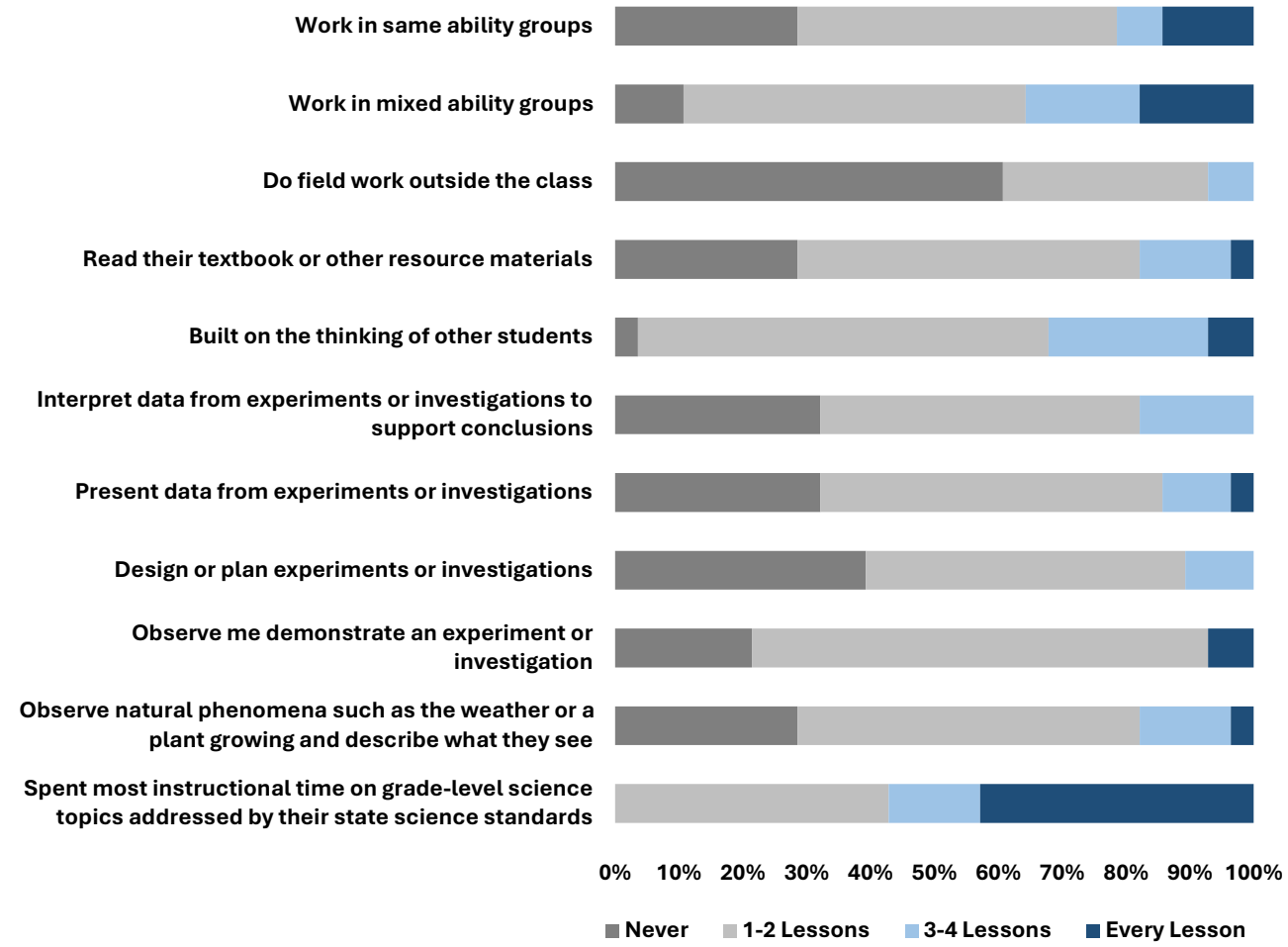

Source: GVSU Disciplinary Literacy Survey; author's analyses.

Lastly, we sought to understand whether the use of math-specific instructional practices varied by teachers' and schools' demographics. We continue to find considerable differences in the implementation of instructional practices based on teachers' years of experience, their level of education, and the demographic composition of students. For instance, teachers with more than six years of professional experience were found to be more likely to focus on building students' conceptual understanding and have students build on the thinking of other students. Additionally, we find that teachers with a bachelor's degree were more likely to have students work in the same ability groups as compared to teachers with more advanced degrees. Furthermore, in more affluent schools, teachers were more likely to have students choose which tools or methods to solve a problem and work in the same ability groups. Figures 5-6 in Appendix B disaggregate results by select teacher and school demographics.

***There is considerable variation in both the types and frequency of science-specific instructional practices teachers report using.***

Figure 7 displays the distribution of teachers' self-reported use of science-specific instructional practices. Results indicate that teachers report varying frequencies of use for different science-focused instructional practices. Teachers most frequently report spending time on grade-level topics included in Michigan state science standards and having students work in mixed-ability groups. Less frequent domain-specific instructional practices teachers report implementing include doing fieldwork outside of class, designing or planning experiments or investigations, demonstrating an experiment or investigation, and having students present data from experiments or investigations. Finally, we find that teachers reported less frequent use of a larger number of science-specific instructional practices compared to ELA- or math-specific instructional practices. However, we cannot conclude that third-grade teachers implement fewer science-specific instructional practices as compared to other subjects. While the survey captured a range of frequently cited science-specific instructional practices, there may be others that were not included in the survey that could have altered the results.

**Figure 7: Distribution of teachers' self-reported use of science-specific instructional practices.**



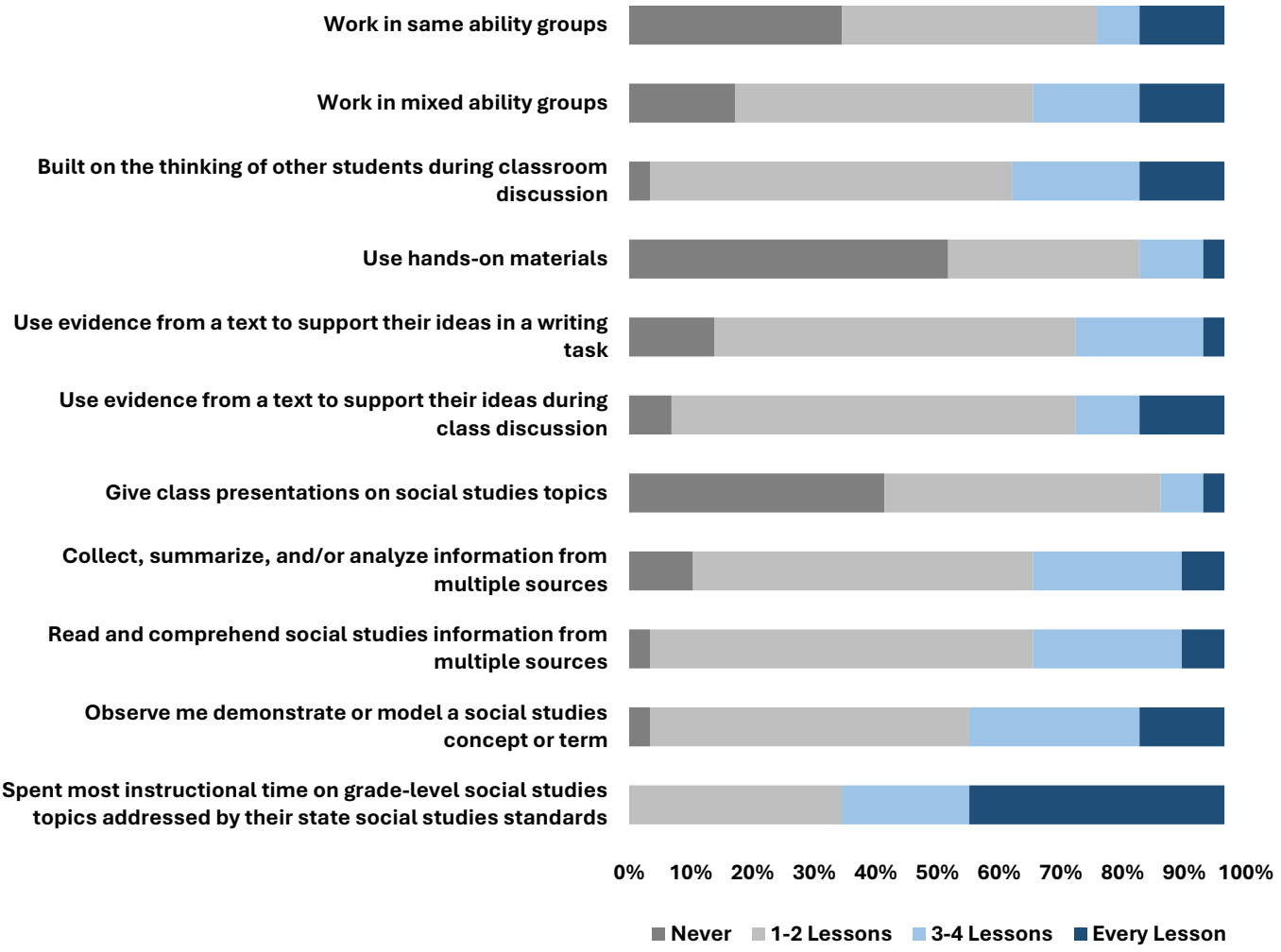

Source: GVSU Disciplinary Literacy Survey; author's analyses.

Finally, we sought to understand whether the use of science-specific instructional practices varied by teachers' and schools' demographics. We continue to find considerable differences in the implementation of instructional practices based on teachers' years of experience, their level of education, and the demographic composition of students. For instance, teachers with more than six years of professional experience were more likely to spend most of their instructional time on grade-level science topics, have students work in mixed-ability groups, and have students build on the thinking of other students. Similarly, teachers with a Master's or Education Specialist degree were more likely to spend most instructional time on grade-level science topics and have students build on the thinking of peers. Furthermore, in schools with fewer students from historically marginalized groups, we find teachers were more likely to have students spend most of their instructional time on grade-level science topics. Figures 7-8 in Appendix B disaggregate results by select teacher and school demographics.

***There is considerable variation in both the types and frequency of social studies-specific instructional practices teachers report using.***

Figure 8 displays the distribution of teachers' self-reported use of social studies-focused instructional practices. Consistent with the other disciplines, we find that teachers report varying frequencies of use for different social studies-focused instructional practices. Teachers most frequently report spending time on grade-level topics included in Michigan state social studies standards, having students observe them demonstrate or model a social studies concept, and having students build on the thinking of other students during classroom discussions. Less frequent domain-specific instructional practices teachers report implementing include having students use hands-on materials, give class presentations on social studies topics, use evidence from a text to support their ideas during class discussions, and work in same-ability groups. As with the implementation of science-specific practices, we find that teachers reported less frequent use of a larger number of social studies-specific instructional practices compared to ELA- or math-specific instructional practices. However, we cannot conclude that third-grade teachers implement fewer social studies-specific instructional practices as compared to other subjects. While the survey captured a range of frequently cited social studies-specific instructional practices, there may be others that were not included in the survey that could have altered the results.

**Figure 8: Distribution of teachers' self-reported use of Social Studies-specific instructional practices.**




Source: GVSU Disciplinary Literacy Survey; author's analyses.

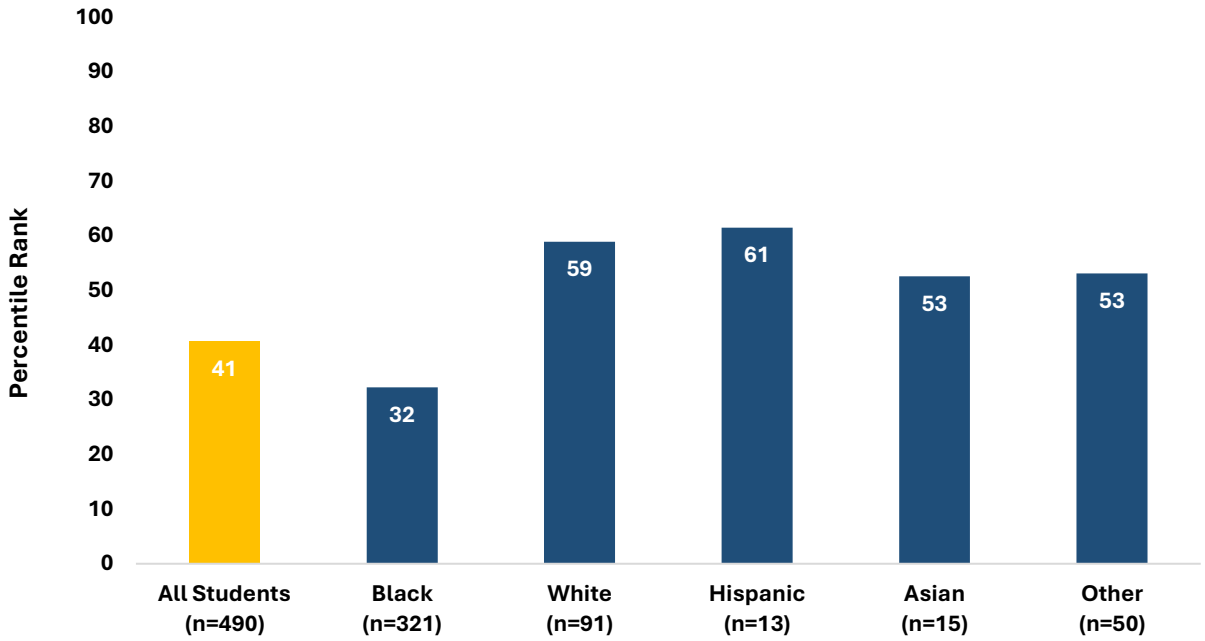
Lastly, we sought to understand whether the use of social studies-specific instructional practices varied by teachers' and schools' demographics. We continue to find considerable differences in the implementation of instructional practices based on teachers' years of experience, their level of education, and the demographic composition of students. For instance, teachers with more than six years of professional experience were more likely to spend most of their instructional time on grade-level social studies topics, have students observe them demonstrate or model social studies concepts or terms, and have students work in mixed-ability groups. Additionally, we find teachers with a bachelor's degree were more likely to report having students collect, summarize, or analyze information from multiple sources. Furthermore, in more affluent schools, teachers were more likely to report having students deliver class presentations on social studies topics. Figures 9-10 in Appendix B disaggregate results by select teacher and school demographics.

### 3 | To what extent is the allocation of instructional time in GVSU-authorized elementary schools associated with improvements in students' reading achievement?

***Students scored at the 41st percentile on the NWEA MAP reading assessment prior to the study.***

Figure 9 displays the mean RIT score in reading in spring 2023. The sample includes all students (n=490) rostered to a third-grade teacher who completed the survey and had a valid NWEA MAP RIT score from spring 2023, the term immediately preceding the initiation of this study. Results indicate that students, on average, scored at the 41st percentile in reading in spring 2023. This equates to students obtaining a 179 RIT score on the NWEA MAP reading assessment (see Figure 11 in Appendix B). Furthermore, when results are disaggregated by race and ethnicity, we find that Black or African American students' percentile rank is between 21 to 29 percentile points lower compared to their peers. This is the result of Black or African American students obtaining a RIT score that is 8 to 16 points lower compared to the remainder of the sample. Finally, results are mostly comparable to the larger sample of 3rd grade students enrolled in GVSU-authorized elementary schools but not eligible to participate in this study.

**Figure 9: NWEA MAP reading achievement percentiles by race in Spring 2023.**




Source: GVSU CSO NWEA MAP assessment data; author's analyses.

## Discussion

This is the first report from a longitudinal study investigating the relationship between the allocation of subject-specific instructional time, the frequency of subject-specific instructional practices used, and students' reading achievement. Here we present three primary findings. First, two-thirds of instructional time in GVSU-authorized elementary schools is allocated to ELA and Math. We also found that students in high-poverty schools are exposed to between 29 to 39 more minutes of daily Math and ELA content. Second, results indicate that there is considerable variation in both the types and frequency of domain-specific instructional practices teachers report using. We also found that the use of domain-specific instruction varies by teachers' and schools' demographics, including teachers' years of professional experience and education level. Finally, students rostered to a third-grade teacher who completed the survey scored at the 41$^{st}$ percentile on the NWEA MAP reading assessment the term prior to the start of the study. For context, third grade students not included in this study and enrolled in GVSU-authorized elementary schools scored, on average, at the 42$^{nd}$ percentile on the NWEA MAP reading assessment in the same term.

The next phase of this work will include the re-administration of the disciplinary literacy survey to all (a) third-grade teachers with students participating in the NWEA MAP reading assessment in 2024-25 and (b) fourth-grade teachers rostered to students included in the current analytic sample. The year two report will explore how the allocation of instructional time and implementation of subject-specific instructional practices has changed while providing preliminary evidence of the relationship between instructional time, instructional practices, and reading achievement.

## References

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# Appendices

## Appendix A: Discipline Literacy Survey Instrument

### Block I: Profile

1. Counting this school year (2023-24), how many total years of teaching experience do you have in your current school?

    A. 0-3 years
    B. 4-6 years
    C. 7-9 years
    D. 10-14 years
    E. 15 or more years

2. Counting this school year (2023-24), how many total years of teaching experience do you have in any school?

    A. 0-3 years
    B. 4-6 years
    C. 7-9 years
    D. 10-14 years
    E. 15 or more years

3. Which grade(s) do you spend most of your time teaching in the current school year? (Please select all that apply) [Buttons for each grade PreK – 8]

4. What is the highest academic degree you hold?
    A. High school diploma
    B. Associate's degree/vocational certification
    C. Bachelor's degree
    D. Master's degree
    E. Education specialist's or professional diploma based on at least one year's work past master's degree
    F. Doctorate
    G. Professional degree (e.g., M.D., J.D., D.D.S.)

5. Do you hold a regular or standard certificate that is valid in the State of Michigan?

    A. Yes, I hold a permanent certificate
    B. Yes, I hold a temporary certificate (This type of certificate may require additional coursework, student teaching, etc)
    C. No, but I am current working toward certification
    D. No, and I am not planning to obtain certification

**Block II: Instructional Time**

| 6. How often does the typical child in your class or classes usually work on lessons or projects in the following general subject areas, whether as a whole class, in small groups, or in individualized arrangement? Mark one on each row. | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| A. Reading and language arts | | | | | | | |
| B. Mathematics | | | | | | | |
| C. Social Studies | | | | | | | |
| D. Science | | | | | | | |
| E. Music | | | | | | | |
| F. Art | | | | | | | |
| G. Physical Education | | | | | | | |
| H. Dance/creative movement | | | | | | | |
| I. Theater/creative dramatics | | | | | | | |
| J. Foreign language | | | | | | | |

(1) = Never
(2) = Less than once a week
(3) = 1 day a week
(4) = 2 days a week
(5) = 3 days a week
(6) = 4 days a week
(7) = 5 days a week

*Source: ECLS-K Teacher Surveys*

| 7. On the days children work in these areas, how much time does the typical child in your class or classes usually work on lessons or projects in the following general subject areas? Mark one on each row. | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| A. Reading and language arts | | | | | | | |
| B. Mathematics | | | | | | | |
| C. Social Studies | | | | | | | |
| D. Science | | | | | | | |
| E. Music | | | | | | | |
| F. Art | | | | | | | |
| G. Physical Education | | | | | | | |
| H. Dance/creative movement | | | | | | | |
| I. Theater/creative dramatics | | | | | | | |
| J. Foreign language | | | | | | | |

(1) = Not Applicable/Never
(2) = Less than ½ hour a day
(3) = ½ hour to less than 1 hour
(4) = 1 to less than 1 ½ hours
(5) = 1 ½ to less than 2 hours
(6) = 2 to less than 2 ½ hours
(7) = 2 ½ to less than 3 hours
(8) = 3 hours or more

*Source: ECLS-K Teacher Surveys*

| 8. Which of the following subjects did you teach during this school year? *Mark one response on each row.* | (1) | (2) |
|---|---|---|
| A. Reading/ELA | | |
| B. Mathematics | | |
| C. Science | | |
| D. Social studies | | |
| (1) = Yes | | |
| (2) = No | | |

*Source: ECLS-K Teacher Surveys*

**Block III: Instructional Practices**

| 9. In the Last Five Lessons You Taught This Class [Reading/ELA] (i.e., the Past Week, If You Teach Every Day), How Often Did Students Engage in Each of the Following Tasks, With or Without Your Prompting? | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| A. Focused on the same, grade-level, fictional text as a whole class | | | | |
| B. Focused on the same, grade-level, nonfiction text as a whole class | | | | |
| C. Focused on different texts depending on their reading levels | | | | |
| D. Focused on a text that includes perspectives of individuals of diverse ethnicities | | | | |
| E. Applied phonics skills in decoding words | | | | |
| F. Used evidence from a text to support their ideas during class discussion | | | | |
| G. Used evidence from a text to support their ideas in a writing task | | | | |
| H. Built on the ideas of other students during classroom discussion | | | | |
| I. Applied academic or domain specific vocabulary (i.e., words and phrases) they have learned in writing or speaking | | | | |
| J. Work in mixed ability groups | | | | |
| K. Work in same ability groups | | | | |
| (1) = Never | | | | |
| (2) = 1-2 Lessons | | | | |
| (3) = 3-4 Lessons | | | | |
| (4) = Every Lesson | | | | |

*Source: RAND American Instructional Resources Survey (AIRS)*

| 10. In the Last Five Lessons You Taught This Class [Mathematics] (i.e., the Past Week, If You Teach Every Day), How Often Did Students Engage in Each of the Following Tasks, With or Without Your Prompting? | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| A. Spent most instructional time on grade-level mathematics topics addressed by their state mathematics standards | | | | |
| B. Related new mathematics content to other mathematics content at prior grade levels | | | | |

C. Related new mathematics content to other mathematics content within their grade level
D. Reviewed mathematics content at prior grade levels without connecting it to new mathematics content
E. Focused on building their conceptual understanding
F. Focused on building their fluency with using mathematics procedures to solve problems
G. Focused on applying mathematics learning to real-world contexts
H. Explained their mathematical thinking
I. Built on the thinking of other students
J. Made sense of problems that did not include clear solution procedures
K. Chose which tools to use to solve a problem
L. Chose which methods to use to solve a problem
M. Work in mixed ability groups
N. Work in same ability groups

(1) = Never
(2) = 1-2 Lessons
(3) = 3-4 Lessons
(4) = Every Lesson

*Source: RAND American Instructional Resources Survey (AIRS)*

| 11. In the Last Five Lessons You Taught This Class [Science] (i.e., the Past Week, If You Teach Every Day), How Often Did Students Engage in Each of the Following Tasks, With or Without Your Prompting? | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| A. Spent most instructional time on grade-level science topics addressed by their state science standards | | | | |
| B. Observe natural phenomena such as the weather or a plant growing and describe what they see | | | | |
| C. Observe me demonstrate an experiment or investigation | | | | |
| D. Design or plan experiments or investigations | | | | |
| E. Present data from experiments or investigations | | | | |
| F. Interpret data from experiments or investigations to support conclusions | | | | |
| G. Built on the thinking of other students | | | | |
| H. Read their textbook or other resource materials | | | | |
| I. Do field work outside the class | | | | |
| J. Work in mixed ability groups | | | | |
| K. Work in same ability groups | | | | |

(1) = Never
(2) = 1-2 Lessons
(3) = 3-4 Lessons
(4) = Every Lesson

*Source: Modified items from the Trends in Internal Mathematics and Science Study (TIMSS) Teacher Questionaire and RAND American Instructional Resources Survey (AIRS)*

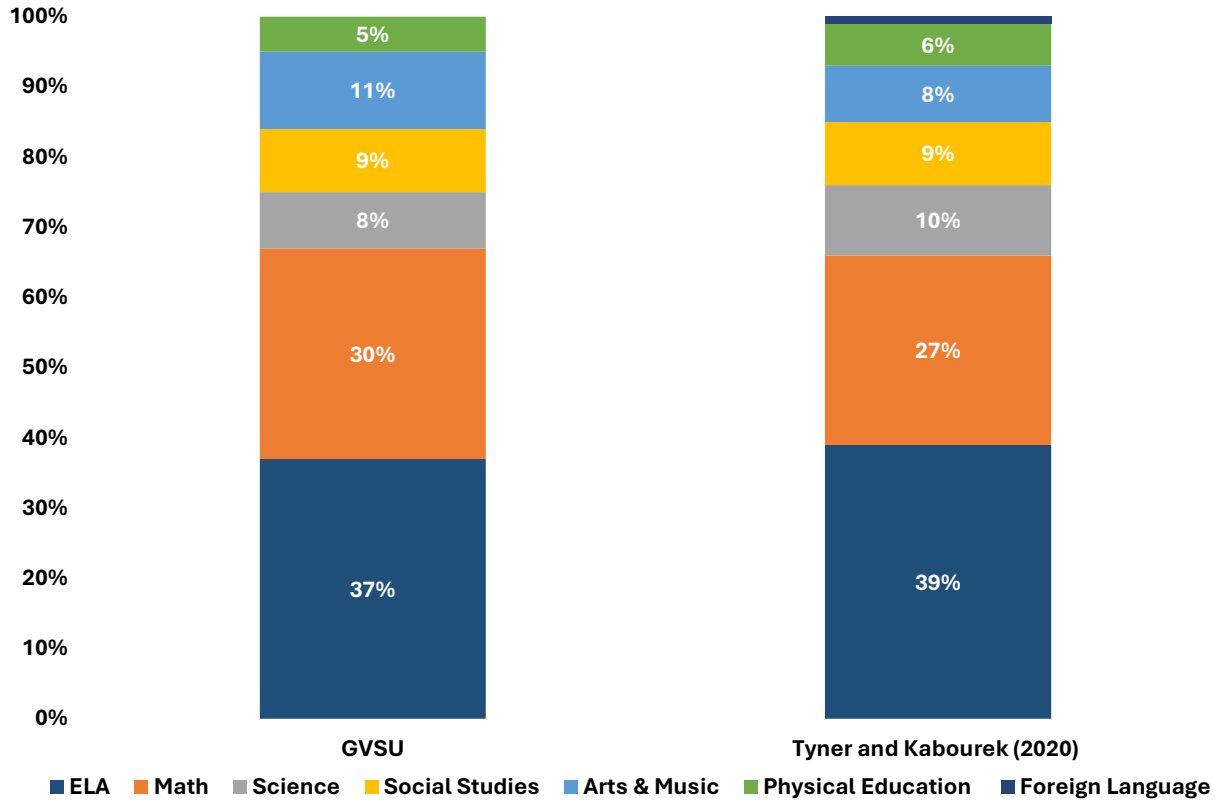
| 12. In the Last Five Lessons You Taught This Class [Social Studies] (i.e., the Past Week, If You Teach Every Day), How Often Did Students Engage in Each of the Following Tasks, With or Without Your Prompting? | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| A. Spent most instructional time on grade-level social studies topics addressed by their state social studies standards | | | | |
| B. Observe me demonstrate or model a social studies concept or term | | | | |
| C. Read and comprehend social studies information from multiple sources. | | | | |
| D. Collect, summarize, and/or analyze information from multiple sources. | | | | |
| E. Give class presentations on social studies topics | | | | |
| F. Use evidence from a text to support their ideas during class discussion | | | | |
| G. Use evidence from a text to support their ideas in a writing task | | | | |
| H. Use hands-on materials | | | | |
| I. Built on the thinking of other students during classroom discussion | | | | |
| J. Work in mixed ability groups | | | | |
| K. Work in same ability groups | | | | |

(1) = Never
(2) = 1-2 Lessons
(3) = 3-4 Lessons
(4) = Every Lesson

*Source: Modified items from the Trends in Internal Mathematics and Science Study (TIMSS) Teacher Questionaire and RAND American Instructional Resources Survey (AIRS), and Surveys of Enacted Curriculum (https://curriculumanalysis.org/Reference/SECsocstSurvey2012.pdf)*

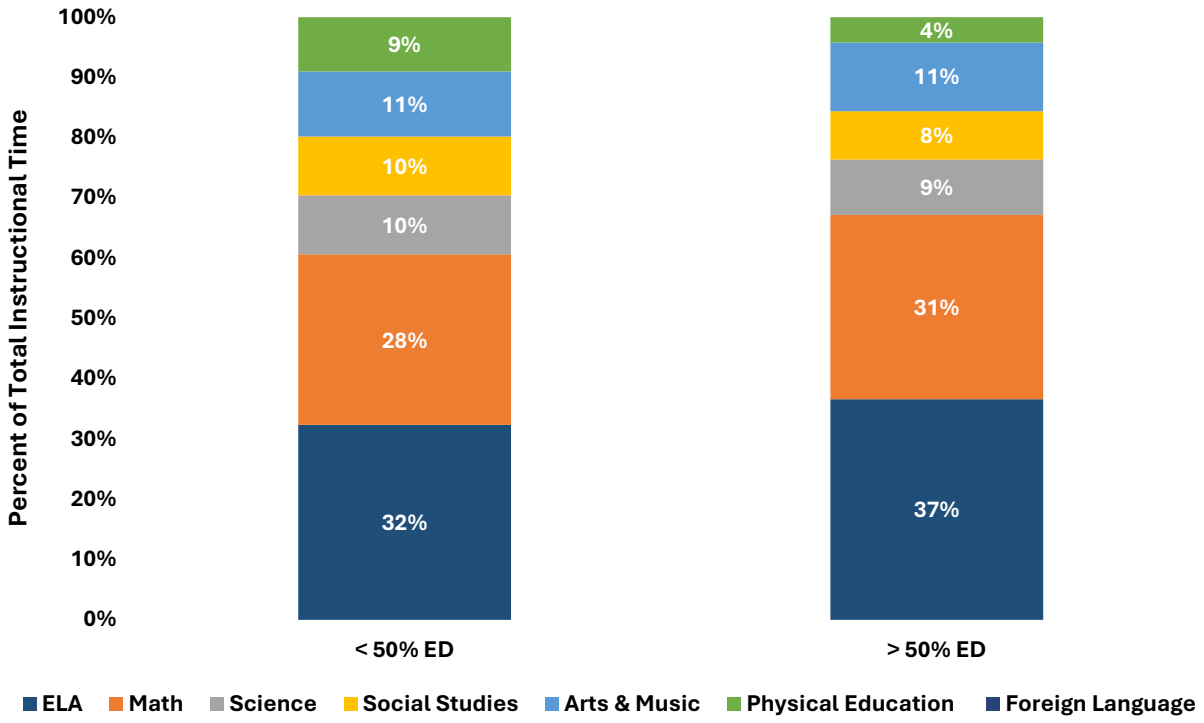
## Appendix B: Additional Figures

**Figure B1: The share of instructional time allocated in elementary school classrooms.**



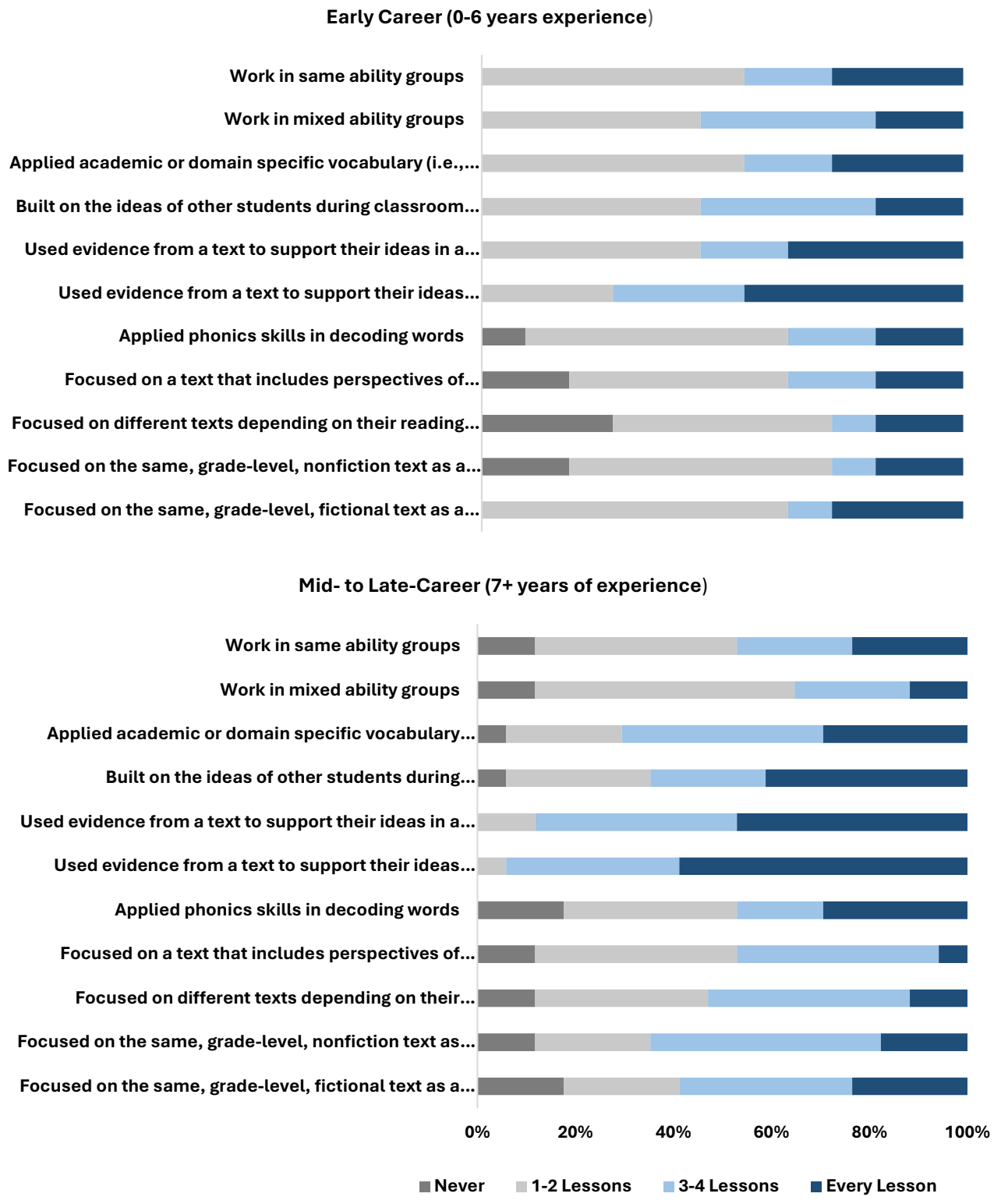

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B2: The share of instructional time allocated in high- and low-poverty GVSU authorized elementary schools.**



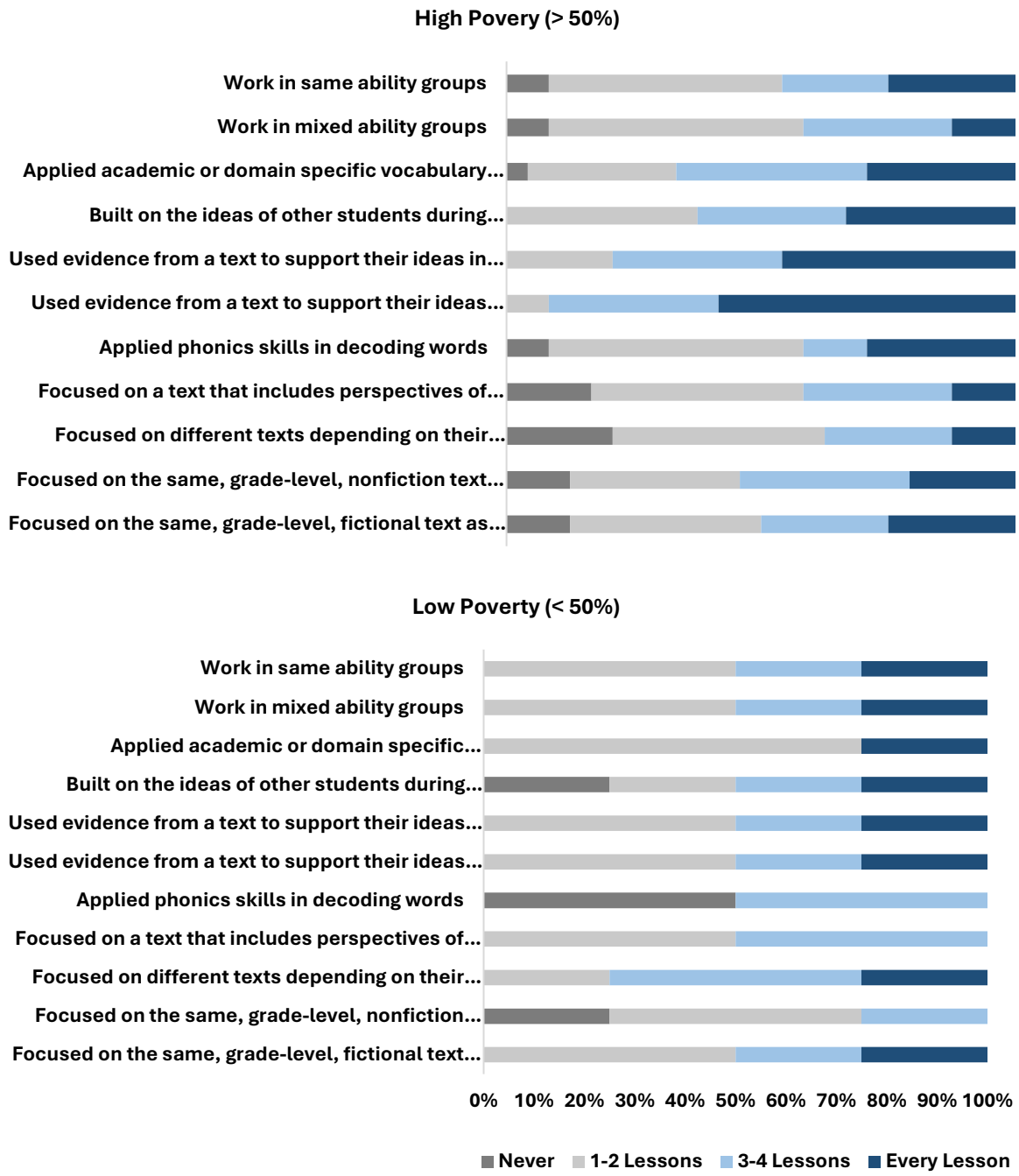

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B3: Distribution of teachers' self-reported use of ELA-specific instructional practices by teacher characteristics.**



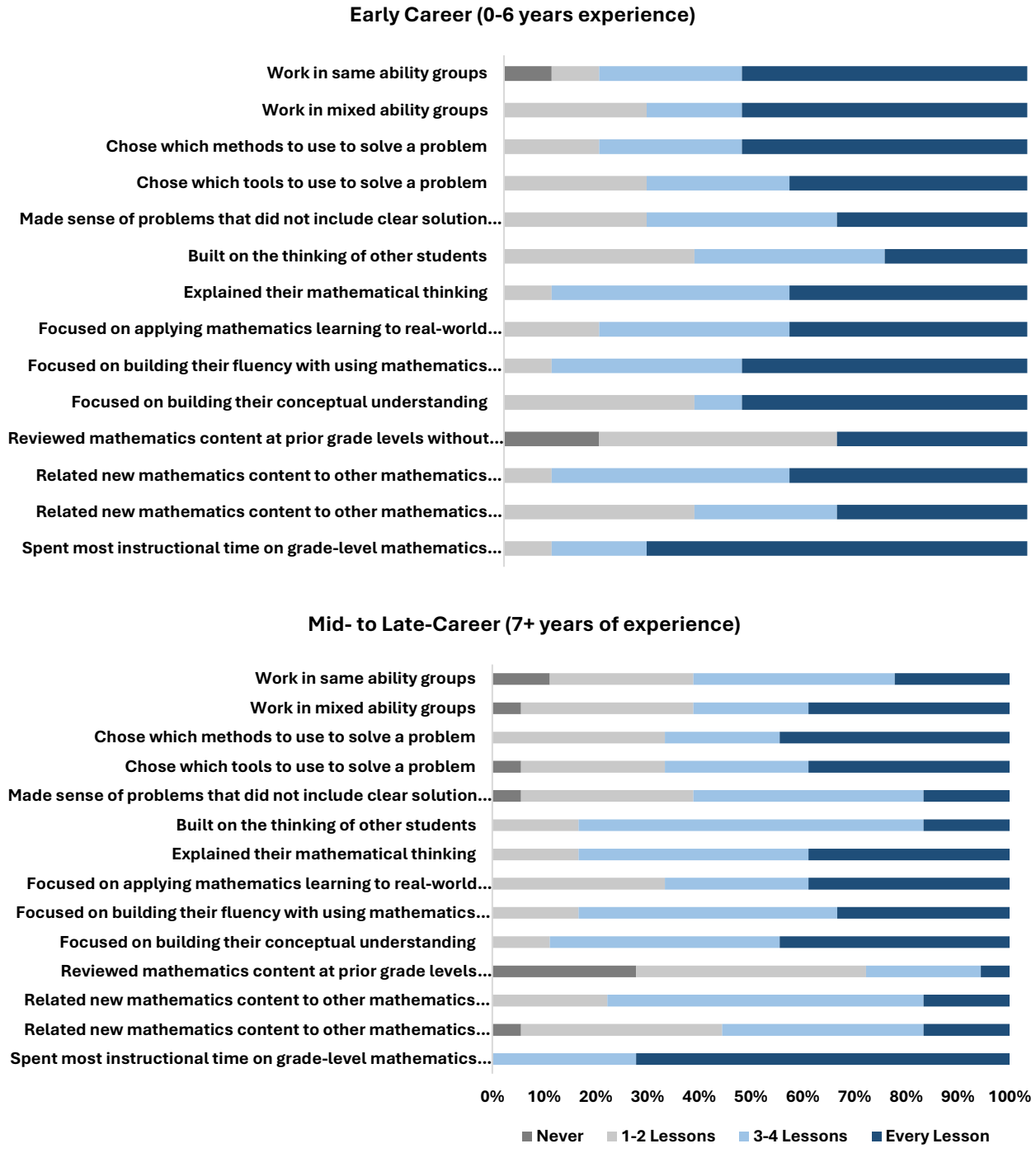

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B4: Distribution of teachers' self-reported use of ELA-specific instructional practices by school characteristics.**



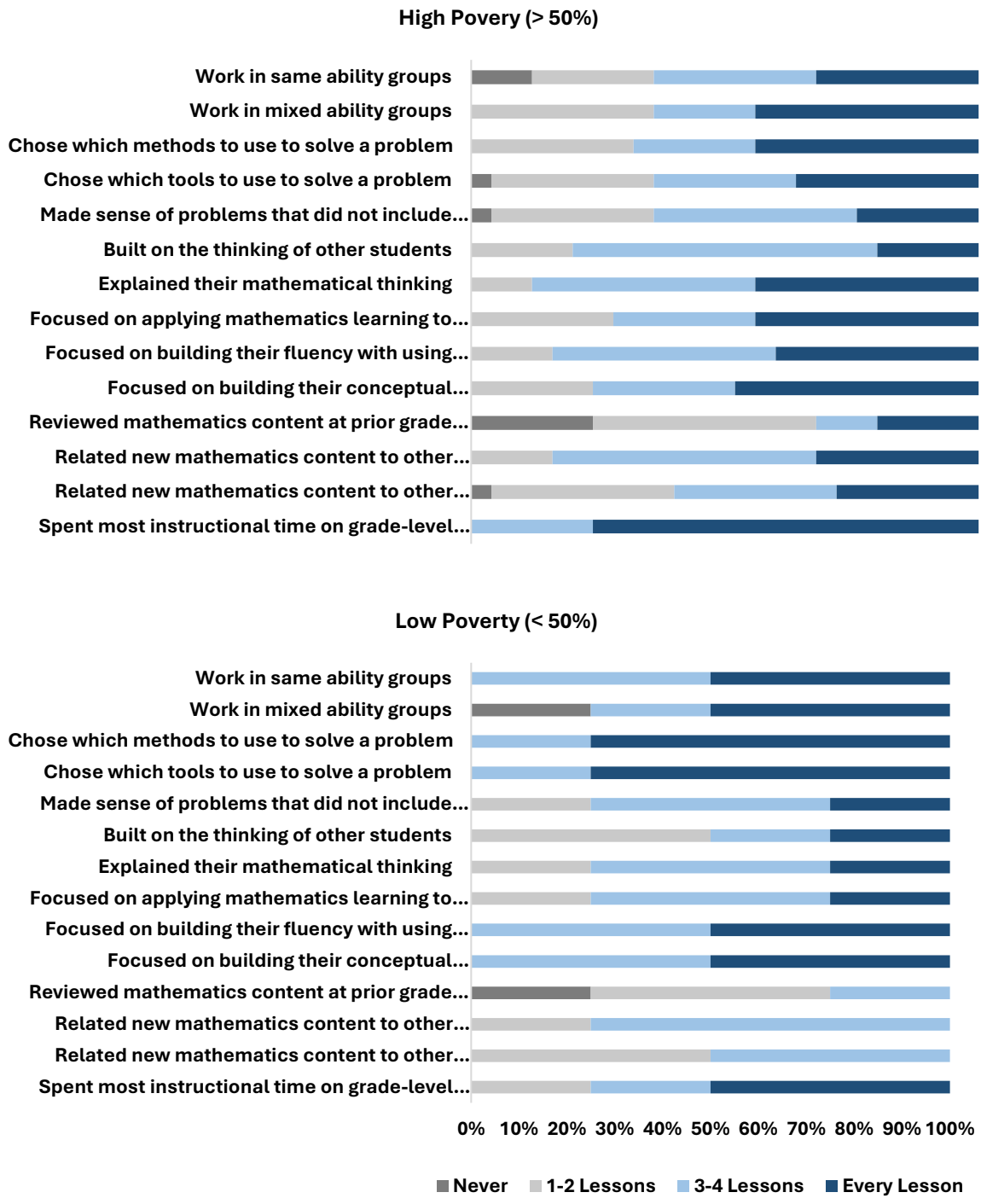

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B5: Distribution of teachers' self-reported use of math-specific instructional practices by teacher characteristics.**



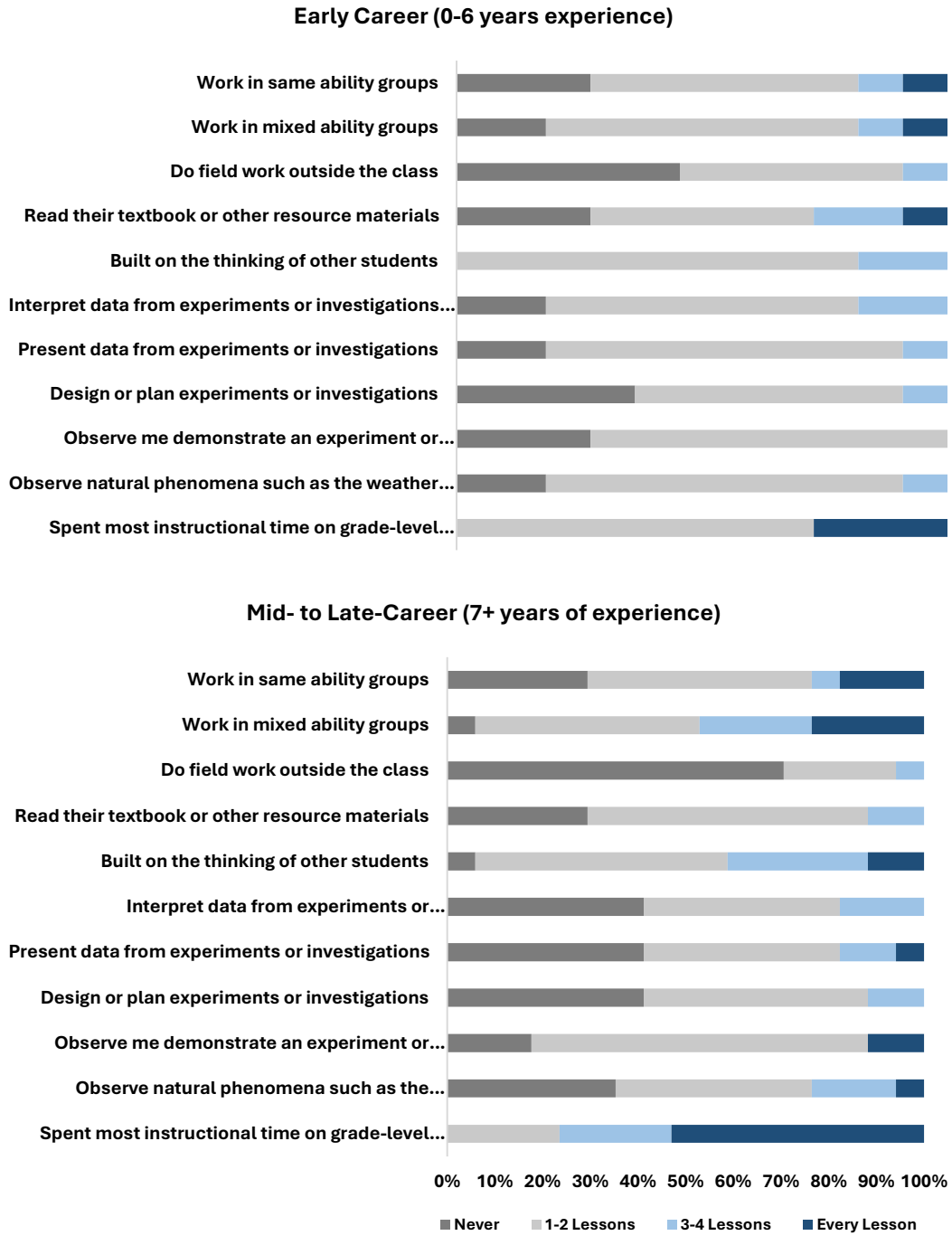

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B6: Distribution of teachers' self-reported use of math-specific instructional practices by school characteristics.**



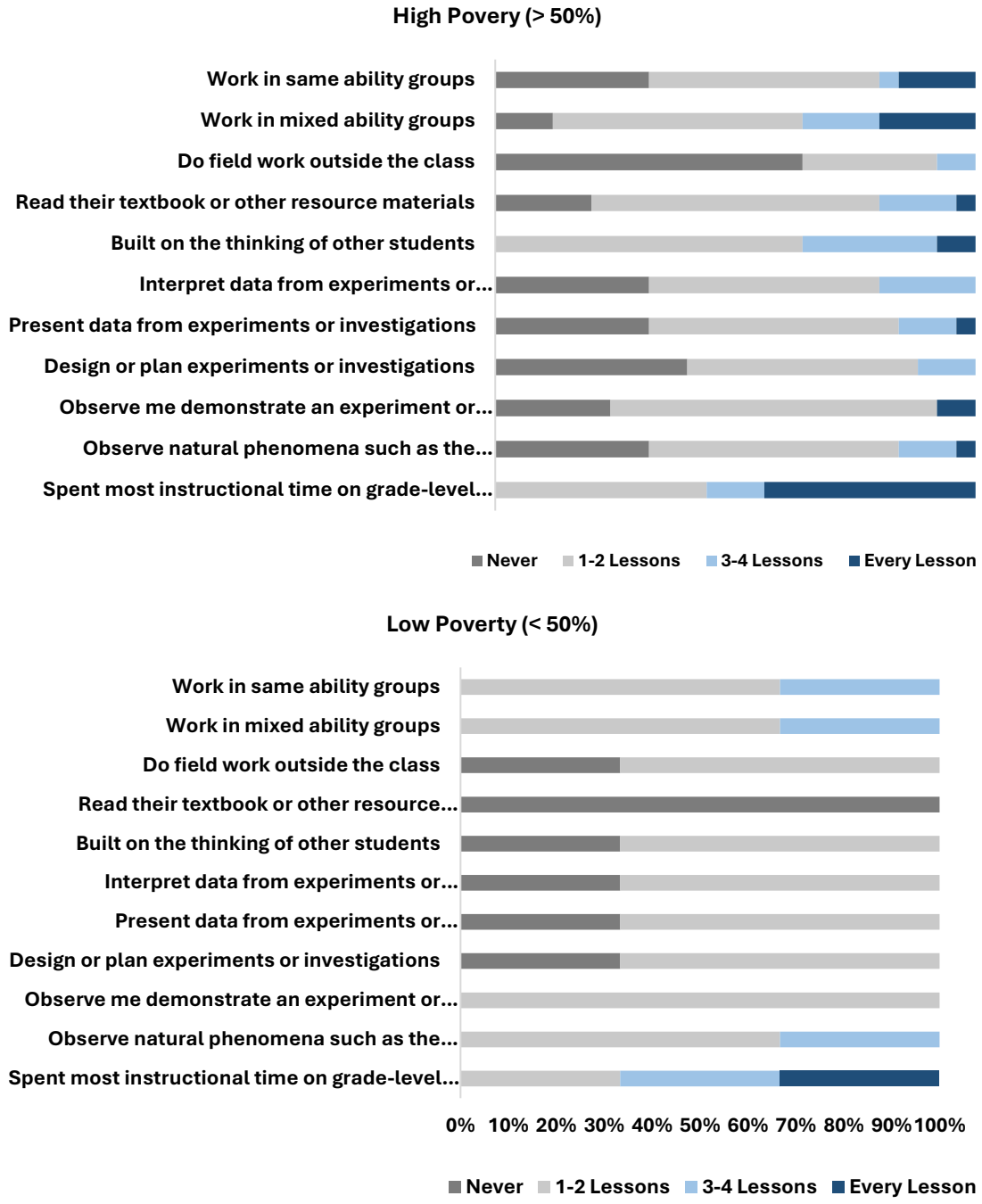

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B7: Distribution of teachers' self-reported use of science-specific instructional practices by teacher characteristics.**



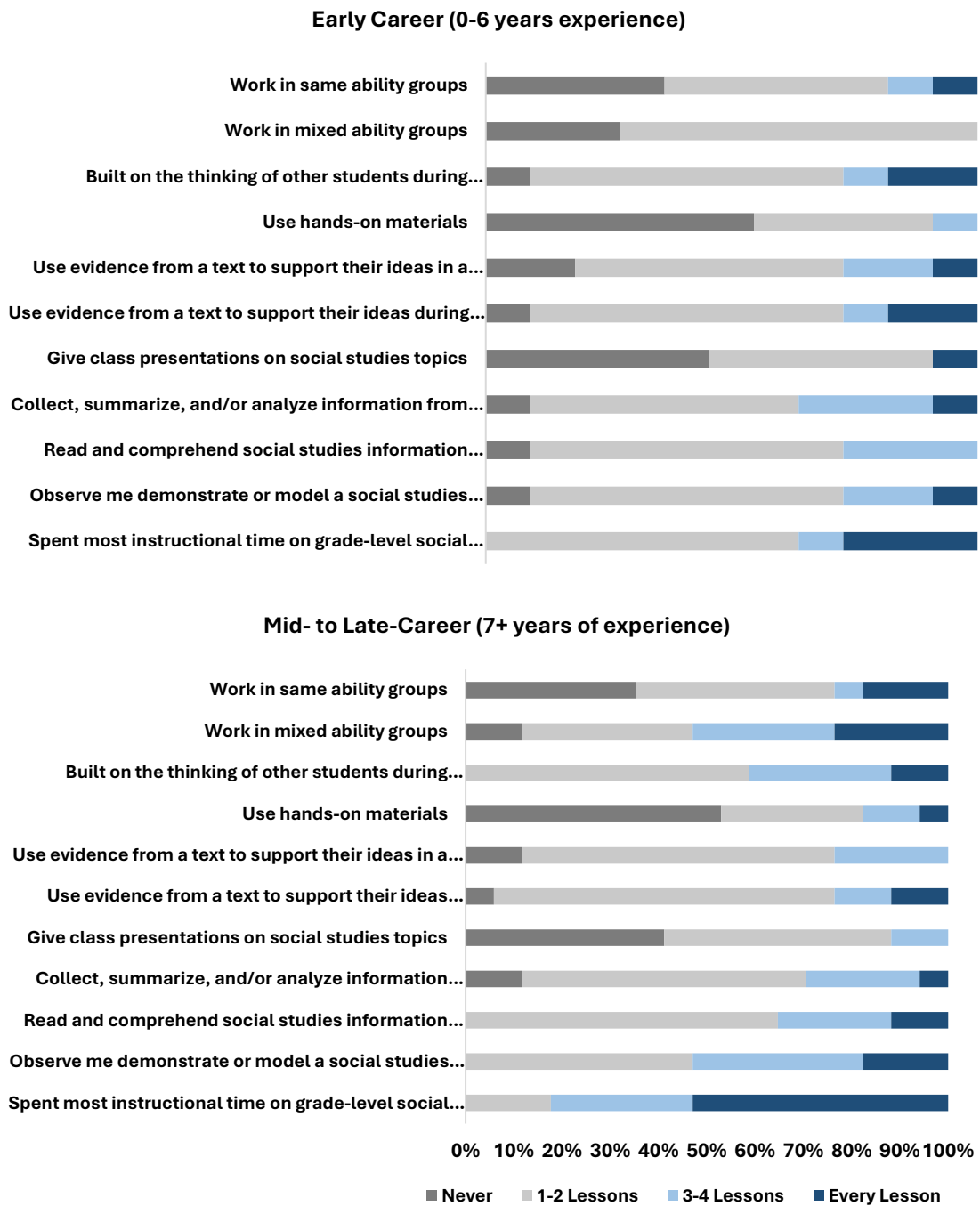

Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B8: Distribution of teachers' self-reported use of science-specific instructional practices by school characteristics.**




Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B9: Distribution of teachers' self-reported use of social studies-specific instructional practices by teacher characteristics.**




Source: GVSU Disciplinary Literacy Survey; author's analyses.

**Figure B10: Distribution of teachers' self-reported use of social studies-specific instructional practices by school characteristics.**

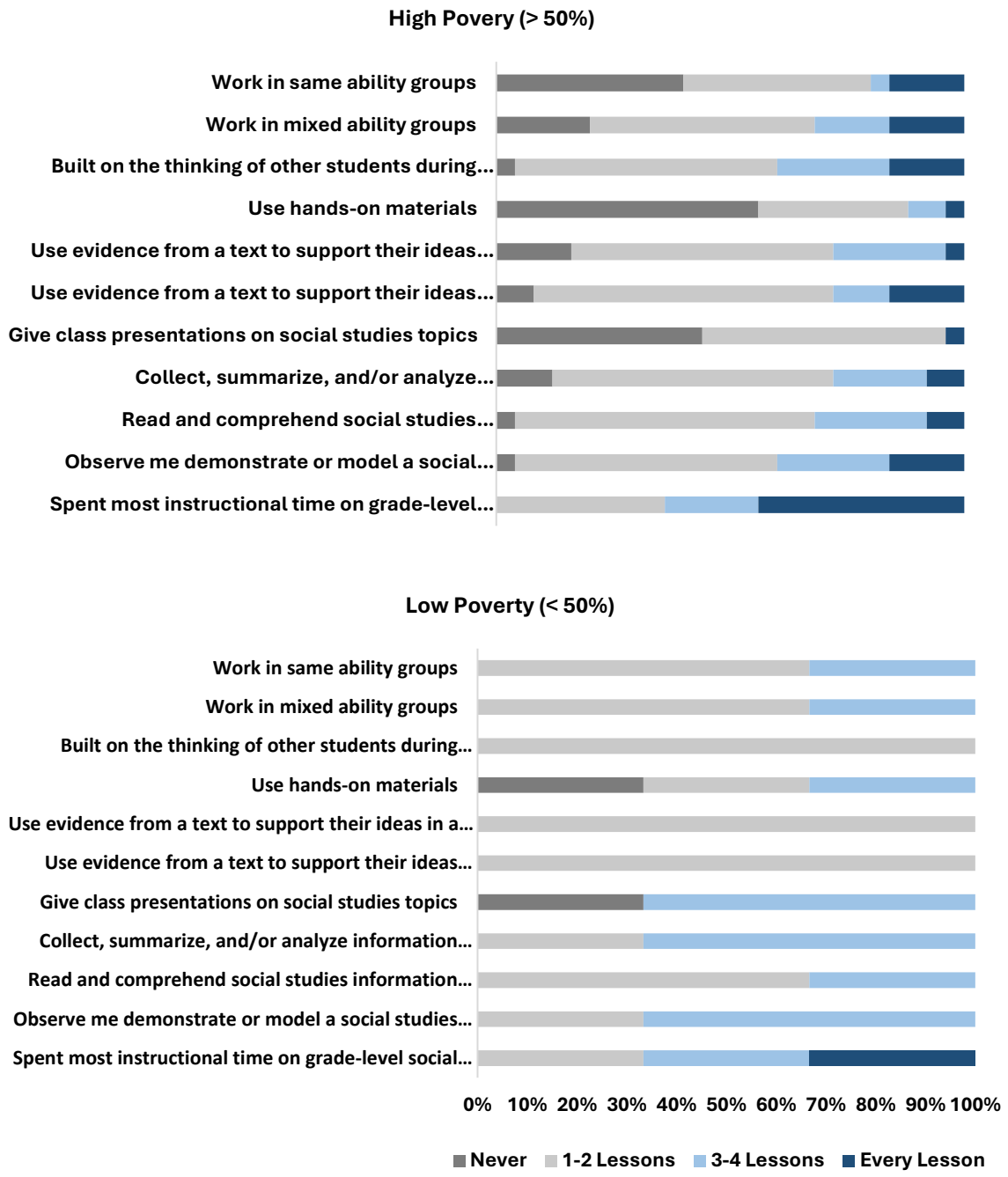
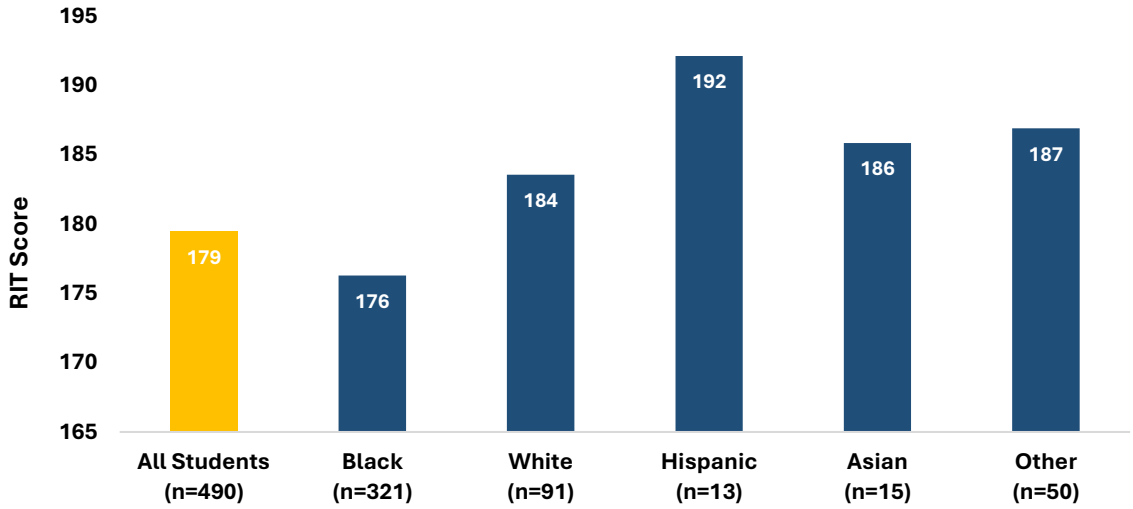


**Figure B11: NWEA MAP RIT scores in reading in spring 2023 for students in grade three.**




Source: GVSU CSO NWEA MAP assessment data; author's analyses.