Chesapeake Bay Watershed 2024 Environmental Literacy Report

Pennsylvania

Results from the ELIT Survey

Final Report: 4/4/2025

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Table of Contents

BACKGROUND

Study Purpose & Methods

ELIT Background & Purpose

The Chesapeake Bay Environmental Literacy Indicator Tool (ELIT) was developed to monitor the capacity and progress of public school districts toward meeting the environmental literacy goal stated in the 2014 Chesapeake Bay Watershed Agreement. The goal was to:

Enable every student in the region to graduate with the knowledge and skills to act responsibly to protect and restore their local watershed.

Three outcomes are stated in the agreement:

1. **Students**: Increase age-appropriate understanding of the watershed through meaningful watershed educational experiences (MWEEs) and rigorous, inquiry-based instruction, with a target of at least one MWEE in elementary, middle, and high school, depending on available resources.

2. **Sustainable Schools**: Increase the number of schools that reduce impact of buildings and grounds on their local watershed, environment, and human health through best practices, including student-led protection and restoration projects.

3. **Environmental Literacy Planning**: Develop a comprehensive and systemic approach to environmental literacy for all students, including policies, practices and voluntary metrics that support environmental literacy goals and outcomes.

The ELIT contributes to monitoring public school districts' progress toward these outcomes, collecting data about:

- School district preparedness to implement a comprehensive and systemic approach to environmental literacy education (Outcome 3);
- Student participation in MWEEs during the school year (Outcome 1);
- School district needs to support further improvements in environmental literacy education.

The ELIT tool used in 2024 was identical to the tool used in 2022.

The ELIT is administered biennially to all local education agencies (LEAs) in six jurisdictions in the Chesapeake Bay Watershed. **This report presents results from all responding LEAs in Pennsylvania, regardless of whether they are in or out of the watershed.**

ELIT Data Collection

Data Collection Procedure

The ELIT is administered every two years as an electronic survey. It is intended to be completed by a single representative from the administration of each LEA (school district) who is able to report on district-wide activities. Additional data that are more reliably obtained through non-survey means (e.g., student enrollment) are identified from external sources and merged with the survey responses.

Past ELIT data were collected in 2015, 2017, 2019, and 2022. There was a one-year pause in data collection during the COVID-19 pandemic.

The Chesapeake Bay Program Education Workgroup organized data collection in 2024. Representatives from each state's education office led distribution of the survey to LEAs within their jurisdiction. ELIT data collection targets only public school districts. This report does not contain data about private or charter schools.

Data Collection Timing & Details

The 2024 ELIT asked districts to report on the status of activities for the 2023-24 school year. The ELIT survey opened for responses in August 2024 and remained open for responses through early December 2024.

This analysis and report present results from across the entire jurisdiction, which includes LEAs both inside and outside of the watershed.

Additional Information about Data

The most significant challenge of the ELIT is obtaining a strong response rate from 680 LEAs across six jurisdictions. As more LEAs report their activities into this dataset, the Chesapeake Bay Program has a more accurate understanding of the status of environmental literacy regionwide.

To maximize ability to generalize about conditions across the region, ELIT results include all data submitted in the current year's survey, as well as available data from prior ELIT surveys, within two years. **In this report, results include all responses to the 2024 ELIT, as well as data from any LEA that responded in 2022, but did not update their records in 2024.** The underlying assumption is that changes for non-reporting districts are likely minor in just two years.

In some analyses, we constrain the dataset to only those districts who provided data in *both* recent years – 2024 and 2022 – to offer the most accurate reporting of patterns of change at the district level.

> **About Rounding:** In tables and graphs throughout this report, we display distributions with whole number percentages. In some tables and graphs, percentages may appear to add up to slightly more or less than 100%. This is due to variation when rounding decimals.
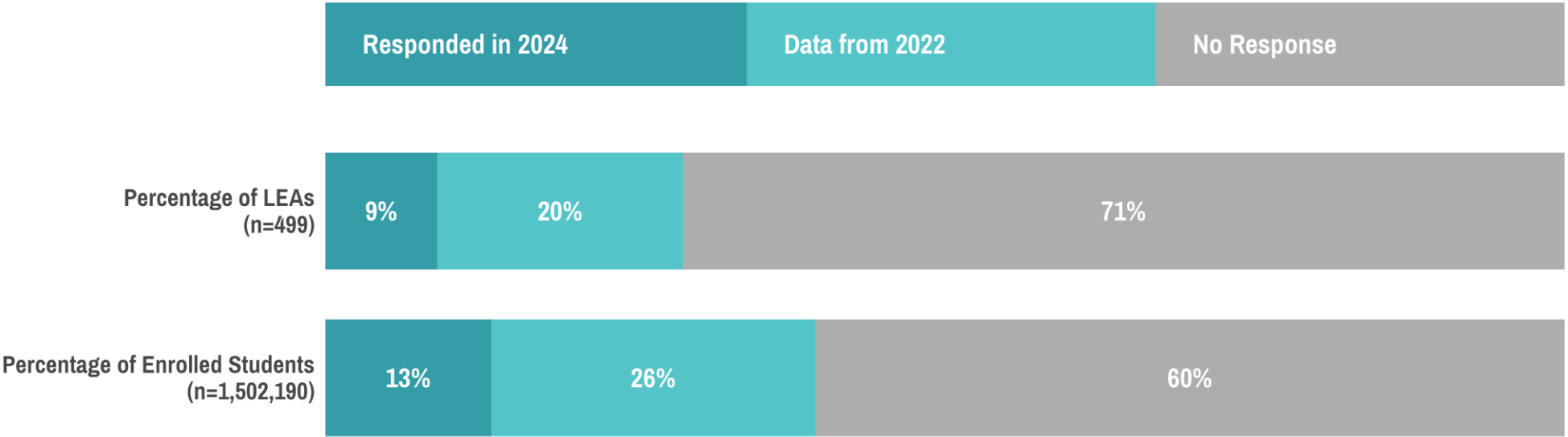
2024 ELIT Response Rate

45 out of 499 LEAs in Pennsylvania completed the ELIT survey in 2024. This constituted a response rate of 9% of all districts, and 13% of enrolled students in the state.

In addition to these new responses, Pennsylvania had 2022 data from 99 LEAs, which was carried forward and included in analysis for the 2024 ELIT result. With these recent (but not updated) data included, the 2024 ELIT results for Pennsylvania represent 29% of all LEAs and around 40% of all enrolled students.

Pennsylvania's response rate was much lower in 2024 than it was in 2022 (when 24% of districts responded to the survey). This means that much of the data used to report ELIT results in 2024 is carried forward from the prior year's survey, and it can be expected that metrics may not show substantial changes for this reason. Even with the incorporation of all available data, the sample still covers less than 30% of LEAs, and it should not be taken as a fully accurate representation of environmental literacy efforts statewide.

ELIT Response Rate: Percentage of all LEAs and of Enrolled Students across Pennsylvania in 2024

	Responded in 2024	Data from 2022	No Response
Percentage of LEAs (n=499)	9%	20%	71%
Percentage of Enrolled Students (n=1,502,190)	13%	26%	60%

Availability of Paired Year-to-Year Data

Only 16% of data from LEAs in Pennsylvania include paired responses from both 2022 and 2024 ELIT surveys. This means that comparisons of year-to-year changes will be accurate for this subset, but cannot be broadly generalized for the entire state.

In the analyses that follow, we use this paired dataset to explore the degree to which changes have occurred between the last two years of ELIT surveys. By isolating comparisons to districts that responded in both current and previous years, we can eliminate "noise" in the data that may be due to changes in which districts responded (or not) in a given year. While a smaller dataset, these analyses allow the jurisdiction to see the actual movement of a given district between years.

With only 23 LEAs having paired data, year-to-year changes presented by the data should not be taken as a fully accurate representation of environmental literacy efforts statewide.

Repeat ELIT Respondents: Availability of Paired 2024 and 2022 Data

The dataset used for the 2024 analysis includes data from 144 LEAs. The yellow segments show the proportion of districts for which we have paired data from both 2024 and 2022 ELIT collection. The remaining segments (teal) indicate districts for which we only have one year's data (either 2024 or carried-forward data from 2022).

Paired 2024 and 2022 Data	2024 Data Only	2022 Data Only

PA (n=144): 16% | 15% | 69%

Staff Responsible for Sustainable Schools

Nearly a third of the responding LEAs indicated that their district has dedicated staff responsible for sustainable schools.

The 2024 ELIT did not engage in a full inquiry of sustainable school practices, in order to reduce the burden on districts where data may be gathered elsewhere. Only one question was asked, which was to gauge if the district had dedicated staff responsible for sustainable school efforts.

Pennsylvania reported a modest rate of this staffing level, with 31% (or 44 of 144) of LEAs confirming that they had dedicated staff responsible for coordinating sustainable school efforts in 2024.

Sustainable Schools: Presence of Support Staff

Responses to the question: Does your LEA have a staff lead or team responsible for coordinating sustainable schools efforts?

Yes	I don't know	No

PA (n=144)

31%	9%	60%
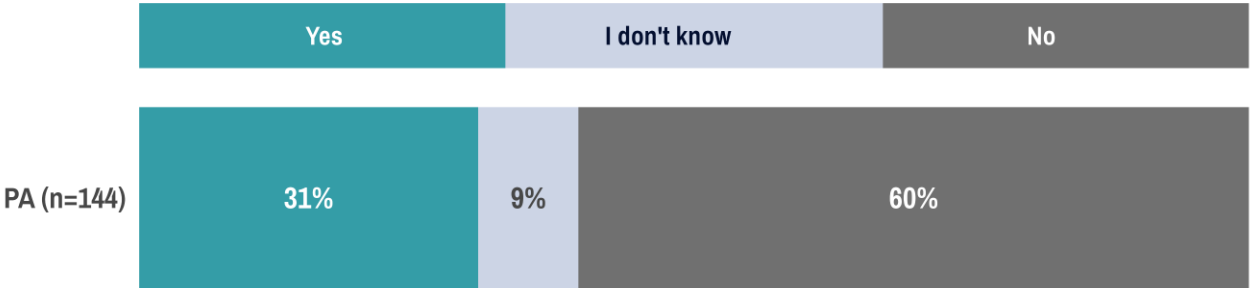
RESULTS

**Preparedness to Implement
Environmental Education**

Measurement Overview

To assess each LEA's current capacity to implement a comprehensive and systemic approach to environmental education (EE), respondents considered six elements (below) and indicated for each whether it was:

- Not in place

- Partially in place

- Fully in place

The response for each element was scored with a value of 0, 1, or 2, respectively. These values were summed to arrive at a total preparedness score for the district.

Six Elements Used to Determine LEA Preparedness for EE:

a) An established program leader for environmental education (providing effective, sustained, and system leadership).

b) An integrated program infusing environmental concepts into appropriate curricular areas.

c) Regular communication among staff responsible for environmental education curriculum and program implementation.

d) A support system in place that enables teachers and administrators to engage in high quality professional development in content knowledge, instructional materials, and methodology related to environmental education.

e) A plan to ensure opportunities for all students to engage in meaningful watershed educational experiences (MWEEs) at the elementary, middle and high school levels.

f) Established community partnerships for delivery of environmental education, including implementation of MWEEs.
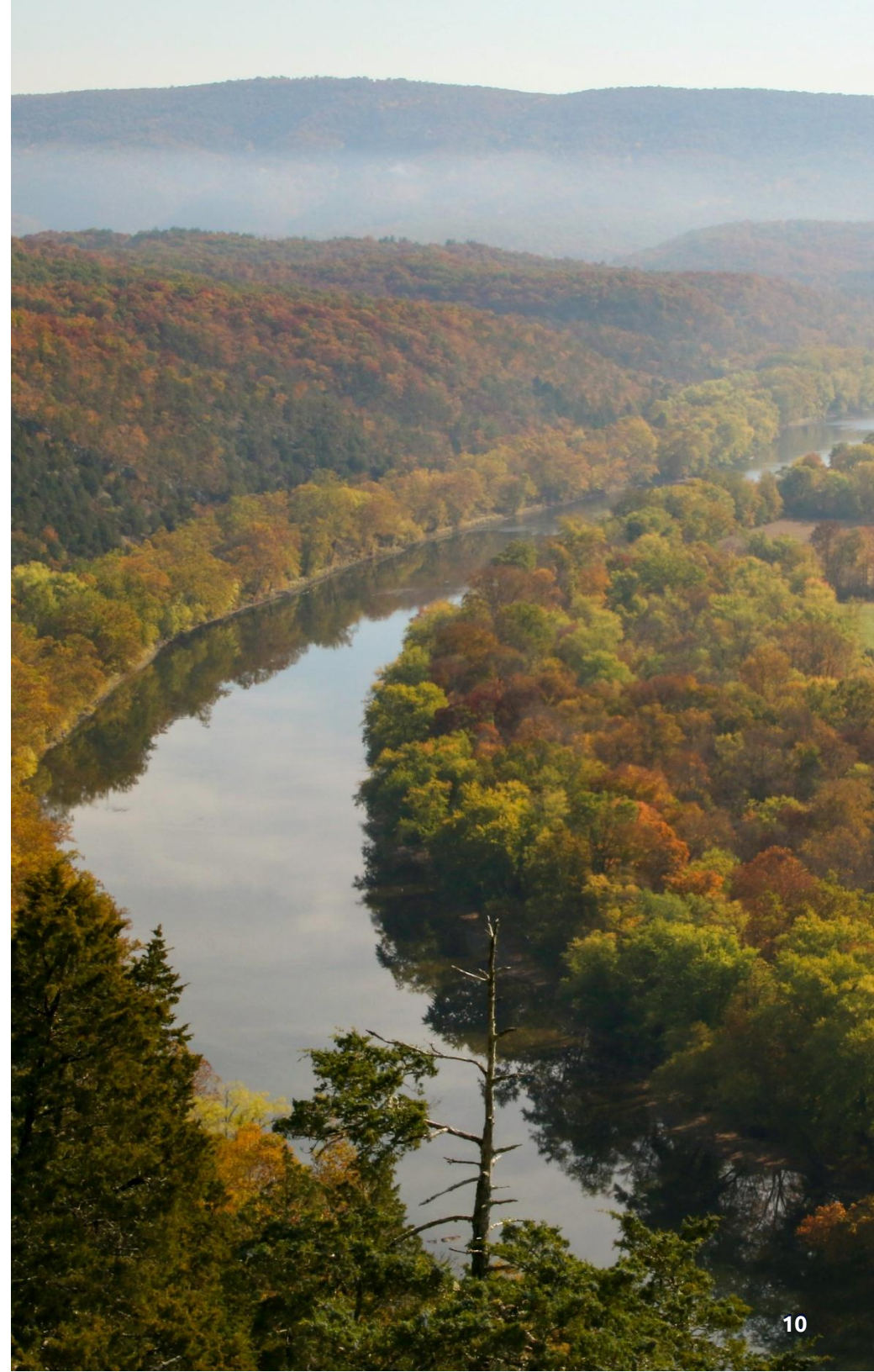
LEA Preparedness: Trends Over Time

Changes in Environmental Literacy Preparedness Over Time (2015-2024)

State-wide preparedness levels in each of the ELIT years' reporting. Divergence illustrates the change in proportion of districts reporting any level of preparedness. Number of reporting districts may vary from year to year.
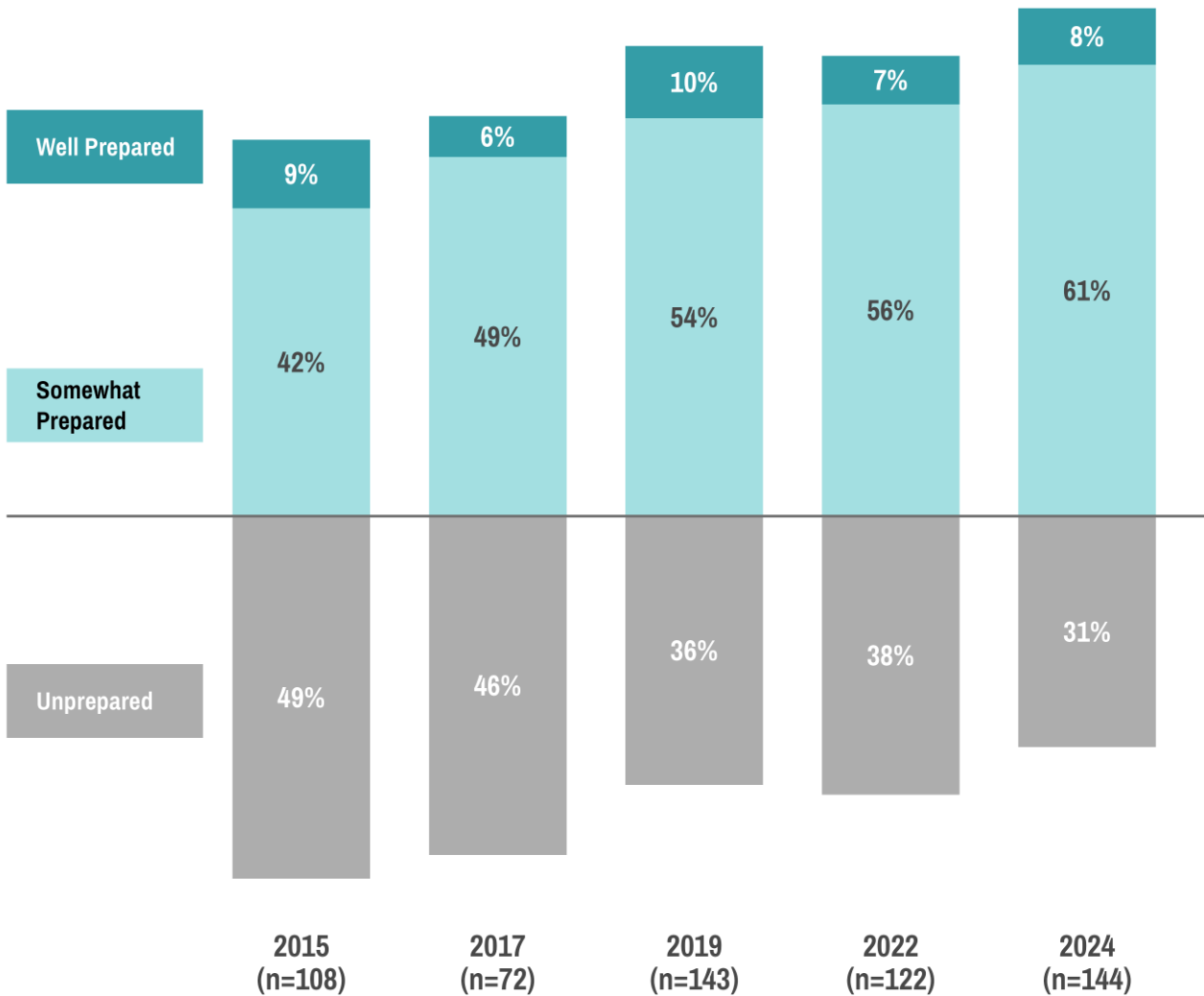
61% of LEAs in Pennsylvania are somewhat prepared to implement high quality environmental education in 2024.

Responding LEAs rated how fully their district has implemented the six indicators of planning and infrastructure for high quality EE. Total preparedness scores, across all indicators, were grouped into three levels of preparedness:

Well Prepared: scores from 9-12

Somewhat Prepared: scores from 4-8

Not Prepared: scores from 0-3

In 2024, rates of unprepared LEAs dropped to their lowest rates on record, while rates of well-prepared LEAs increased very slightly after a drop from 2019's high. Most notably, the proportion of LEAs falling into the somewhat prepared level seemed to grow quite a bit.

It is unclear whether this difference is due to changes in sample from year to year. When we look at the raw, total preparedness score (used to assign the levels), there was a slight increase in scores, from 4.31 in 2022 to 4.51 in 2024.

On the next page, we examine changes for just districts with paired 2022 and 2024 data.

LEA Preparedness: District Changes from 2022 to 2024

ELIT Preparedness: Pathways of Change between 2022 and 2024

This graphic shows how the planning level of individual school districts changed between the 2022 and 2024 ELIT. It includes only districts that responded to the survey in both years (n=23).
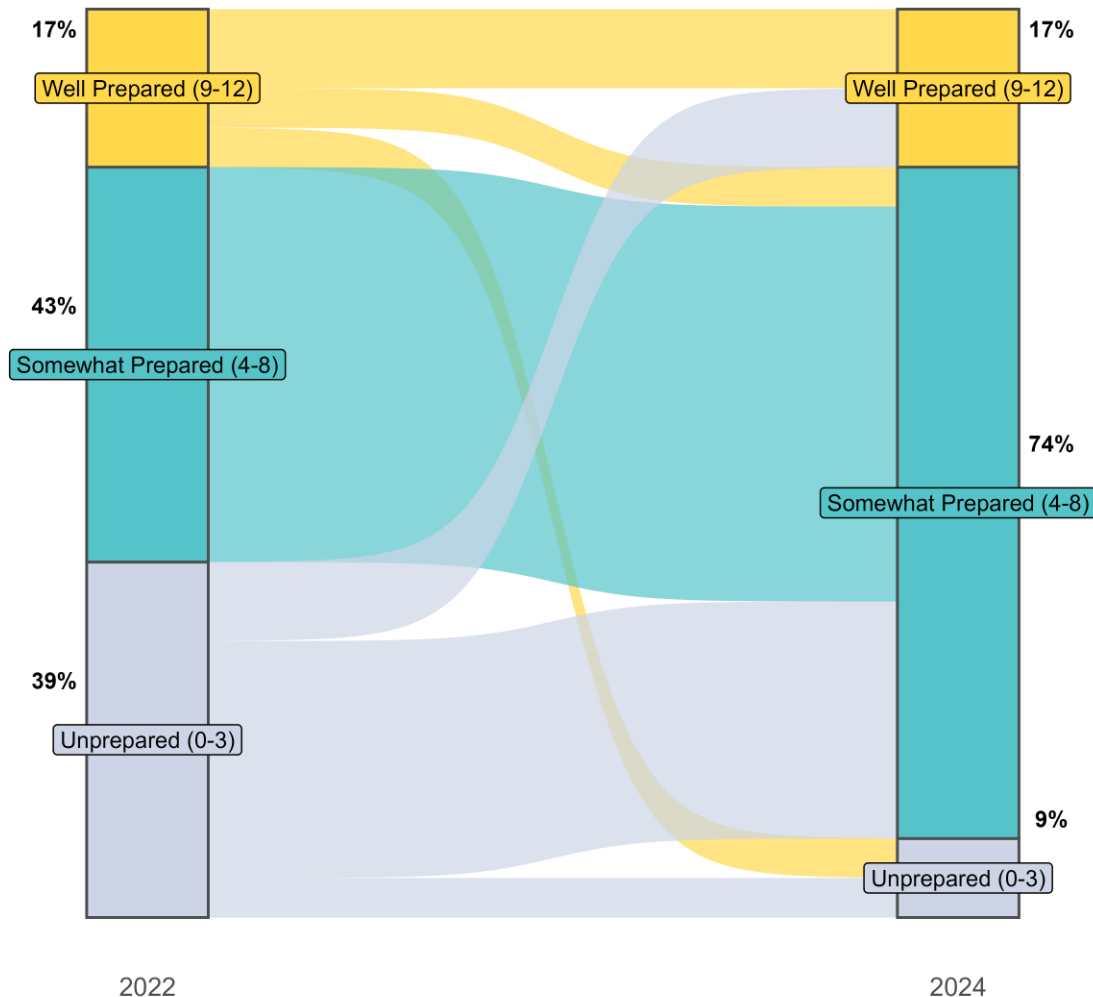
When we look only at districts for which we have reported data in both 2022 and 2024, we see a large increase in LEAs that reported being somewhat prepared in 2024 – an increase of 31 percentage points.

This analysis provides a clear picture of year-to-year change and pathways of movement in the metric by tracking each individual district that reported status in both years. Most districts maintained their level of preparedness over the two years. But more districts rose to higher levels of preparedness than fell to lower levels of preparedness.

This graph highlights that 8 districts increased their preparedness, while 2 districts moved in the reverse direction.

When we look at the raw, total preparedness score (used to assign the levels) of all LEAs with paired data, **the average total score increased from 5.22 in 2022 to 6.22 in 2024**. This indicates an overall trend of school districts reporting slightly more preparedness items in place since 2022.
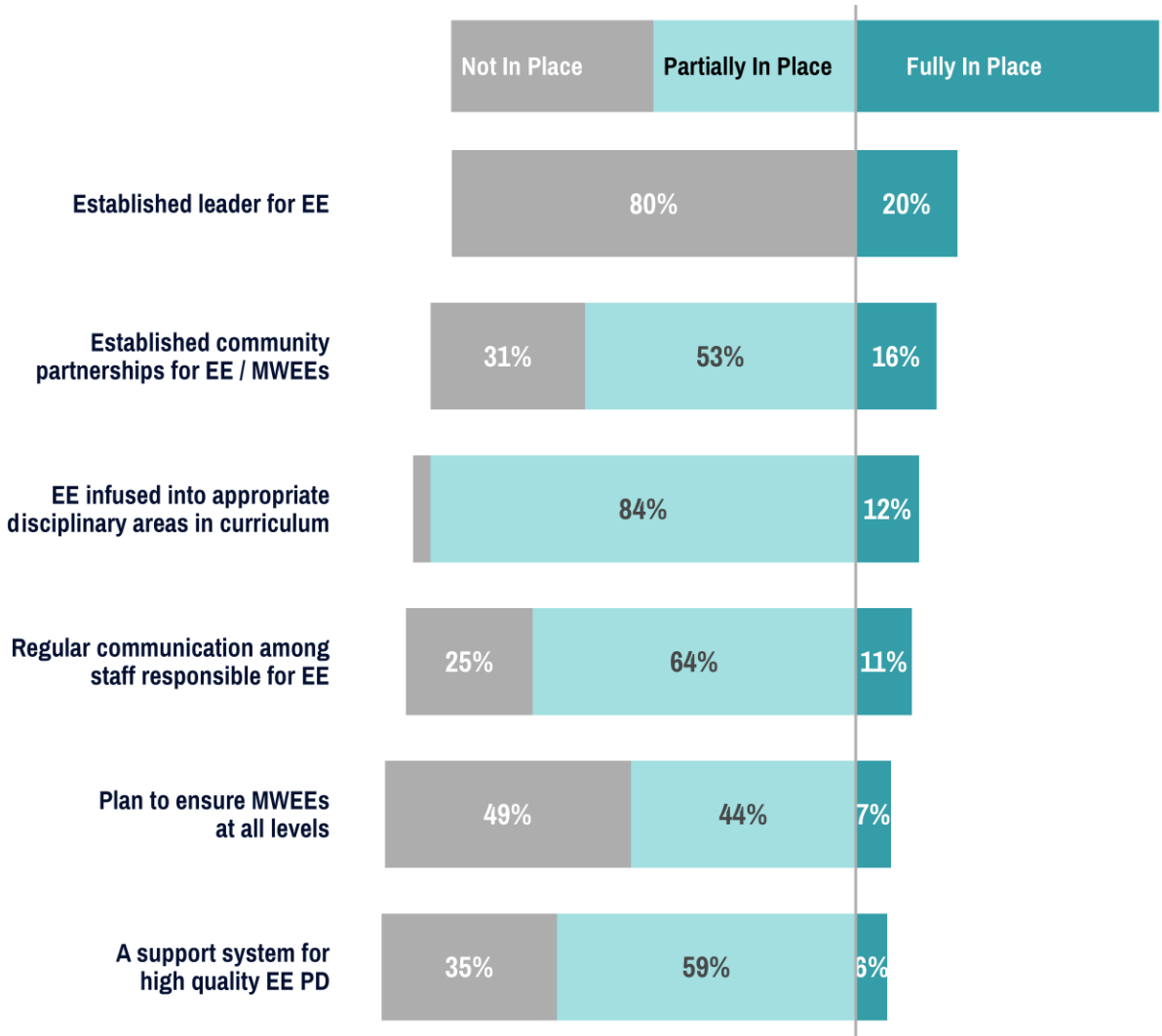
Breaking Down the Elements of Readiness

About 1 in 5 Pennsylvania LEAs reported having an established leader for EE, with 16% having community partnerships fully in place.

The breakdown of readiness within each element in the preparedness indicator show some trends in districts' strengths and challenges for planning. Similar to past years, creating an integrated program that infuses environmental topics across the curriculum is the area in which the greatest number of LEAs have made some progress (84%) but only 12% have fully achieved this element.

The next page further breaks down these data, by comparing the three sub-groups (well-prepared, somewhat prepared, or unprepared). It suggests that community partners, communication among EE staff, and establishing EE leadership are areas in which less-prepared districts make early strides toward greater preparedness.

Degree of Readiness for Each Element of LEA Planning and Infrastructure.

Distribution of ratings to individual items in the planning indicator by all LEAs in Pennsylvania (n=144)

	Not In Place	Partially In Place	Fully In Place
Established leader for EE	80%		20%
Established community partnerships for EE / MWEEs	31%	53%	16%
EE infused into appropriate disciplinary areas in curriculum		84%	12%
Regular communication among staff responsible for EE	25%	64%	11%
Plan to ensure MWEEs at all levels	49%	44%	7%
A support system for high quality EE PD	35%	59%	6%

Elements Fully or Partially in Place
Comparing Strategies between Levels of Preparedness

	Strategies at Well Prepared LEAs (n=11)		Strategies at Somewhat Prepared LEAs (n=88)		Strategies at Unprepared LEAs (n=45)	
	Partially In Place	**Fully in Place**	**Partially In Place**	**Fully in Place**	**Partially In Place**	**Fully in Place**
Established leader for EE		91%		22%		
Established community partnerships for EE / MWEEs	27%	73%	70%	16%	27%	
EE infused into appropriate disciplinary areas in curriculum	27%	73%	90%	10%	87%	
Regular communication among staff responsible for EE	18%	82%	84%		36%	
Plan to ensure MWEEs at all levels	55%	45%	61%			
A support system for high quality EE PD	45%	55%	83%		16%	

RESULTS

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Student Participation in Meaningful Watershed Educational Experiences (MWEEs)

Measurement

To assess the level of student participation in MWEEs within each LEA, respondents were asked to assess the presence of MWEEs within curricular offerings within each grade level (K-12), considering if they were system-wide or isolated to schools or classes. (See detail, right.) Respondents were given a reminder of the complete definition of a MWEE before the questions.

Although respondents reported at individual grade levels, analysis aggregated these data to report results by grade band (elementary, middle, or high school). The aggregation grouped each LEA into one of three levels within each grade band:

- At least one system-wide MWEE provided in the grade band;

- Some MWEE programming in the grade band, but not system-wide;

- No MWEE programming provided in the grade band.

For elementary (K-5) and middle school (6-8) grades, respondents indicated whether the district had:

- A system-wide MWEE experience for students in this grade

- Some schools or classes in this grade participate in MWEEs

- No evidence that students in this grade participate in a MWEE

For high school, MWEEs are more likely to correspond to a course than a grade level. Therefore, respondents reflected on courses at the high school level, indicated if the course was required or elective and whether the district had:

- A system-wide MWEE experience for students in this course

- Some schools or classes participate in MWEEs for this course

- No evidence that students in this course participate in a MWEE

The MWEE level was computed based only on courses that were indicated to be graduation requirements (i.e., needed for all students).

HS MWEE Measurement

The method for gathering data about high school MWEEs in 2024 was identical to the method used in 2022. However, the 2022 method was a shift from past years, as described below.

Early ELIT surveys received feedback that there may be inaccuracies in how high school courses were reported, particularly regarding clarifying whether MWEE reports were clearly limited to *required* courses (a critical element to be "system-wide"). For example, an AP course might be listed as a system-wide MWEE; but as AP course are electives, it indicated that early ELIT reports may have conflated requirements and electives.

In 2022, the question provided LEAs with an inventory of specific, common subjects, including: biology, chemistry, physics, Earth/environmental science, history, government/civics, geography, algebra I, algebra II, geometry, language arts, literature, health/physical education, AP science, AP English, AP math, AP history, with space for write-in courses. LEA representatives reported the presence of MWEEs in each of these courses (system-wide, some schools, no evidence) – *regardless* of if it was required or elective. This allowed LEAs to focus on course topics.

A secondary question provided the same list of subjects and asked them to indicate which courses were graduation requirements. Analysis used this response to distinguish if each MWEE rating (above) pertained to a requirement (for the indicator) or an elective.
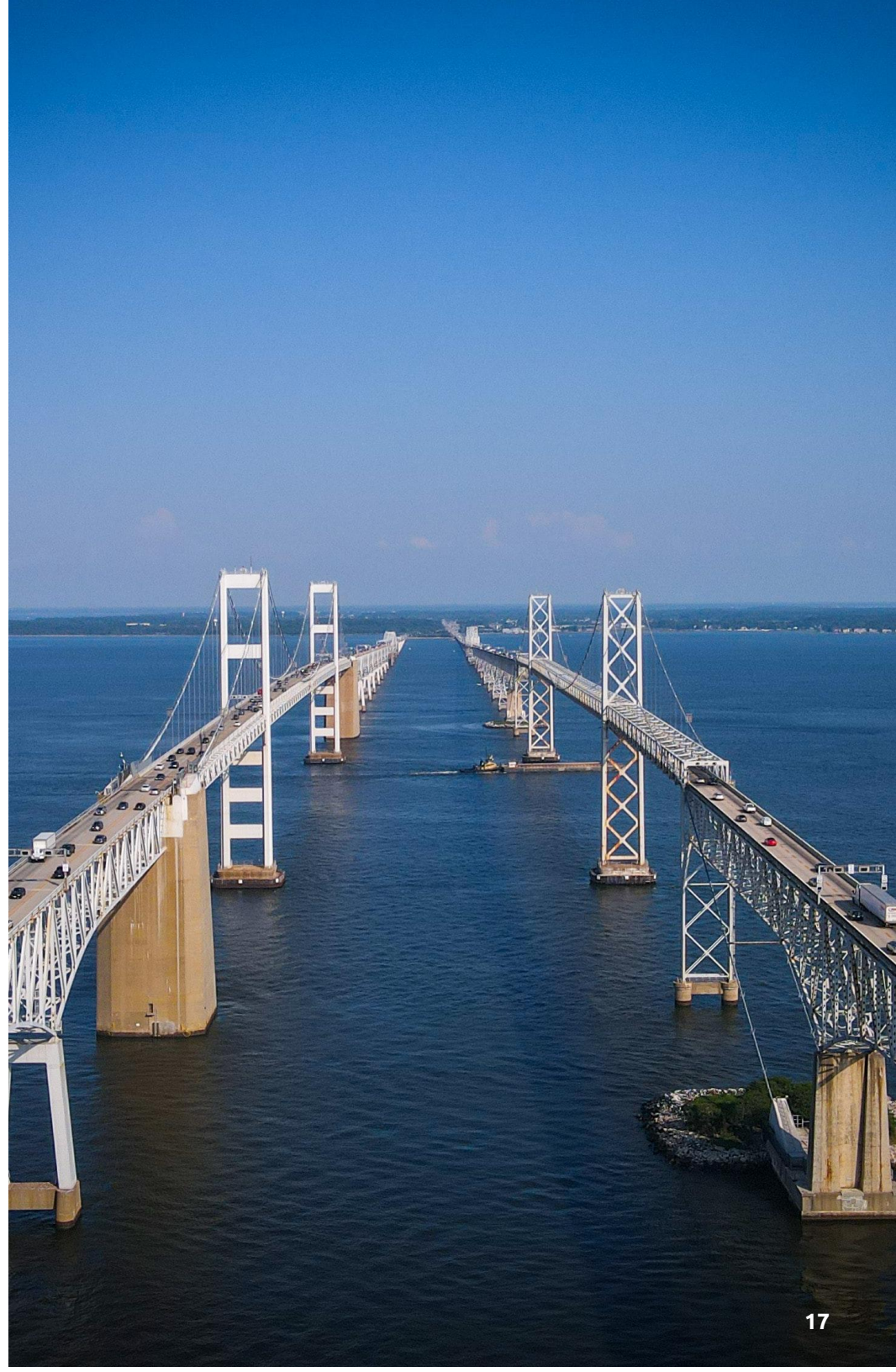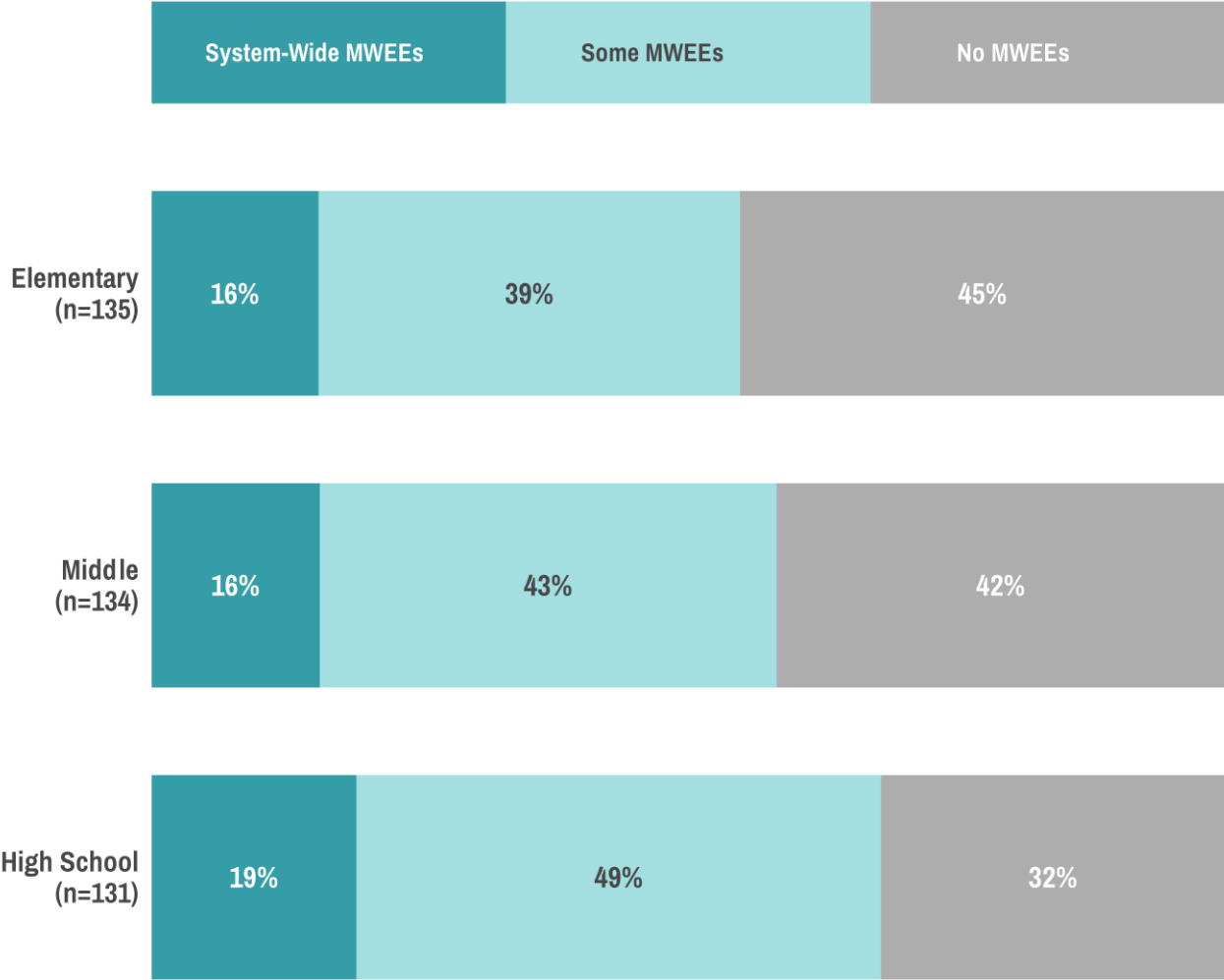
Student Participation in MWEEs

Rates of system-wide MWEEs were relatively similar across all three grade bands, ranging from 16% to 19% of responding LEAs. High school grades seem to be the level with the strongest use of MWEEs in any capacity.

System-wide MWEEs were only present in 16% to 19% of LEAs responding. Over 40% of LEAs reported not having any MWEEs in elementary or middle school grades. Rates of MWEE availability in high school was slightly higher, with only 32% of LEAs reporting no MWEEs at this level.

On the next page, results from ELIT 2017 through 2024 are compared. Overall, rates of MWEE presence have remained quite steady between 2022 and 2024, particularly at the elementary and middle school levels. The high school level seemed to show some progress. However, these patterns are likely influenced by the large portion of 2022 data that was carried forward (rather than updated) by LEAs in the state.

MWEE Availability among LEAs within Pennsylvania in 2024

Rates of availability across all responding LEAs. If a district reported there was a system-wide MWEE at any grade level(s), they were scored as having "System-Wide MWEEs"; "No MWEEs" indicates no MWEEs at any grade in the band.

System-Wide MWEEs	Some MWEEs	No MWEEs

Elementary (n=135): 16% | 39% | 45%

Middle (n=134): 16% | 43% | 42%

High School (n=131): 19% | 49% | 32%

Note: sample sizes reflect the number of LEAs that answered question(s) for each grade band. LEAs that do not respond to some items result in varying sample sizes.

MWEEs by Grade Band: Change Over Time

Elementary Grades
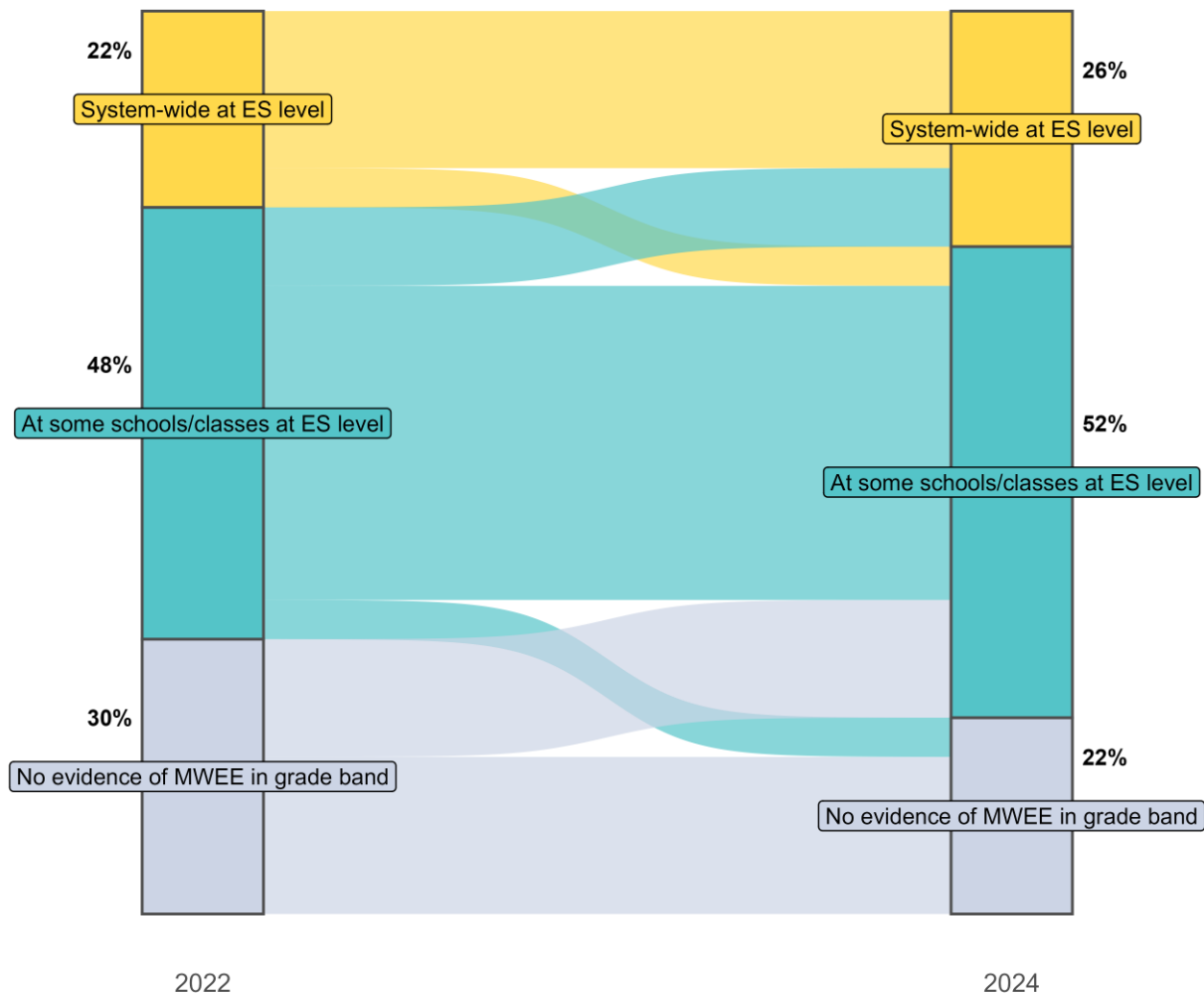
	2017 (n=71)	2019 (n=143)	2022 (n=116)	2024 (n=135)
System-Wide MWEEs	16%	18%	15%	16%
Some MWEEs	39%	36%	40%	39%
No MWEEs	45%	46%	46%	45%

Middle School Grades

	2017 (n=71)	2019 (n=143)	2022 (n=116)	2024 (n=135)
System-Wide MWEEs	20%	20%	14%	16%
Some MWEEs	37%	41%	43%	43%
No MWEEs	44%	39%	43%	42%

High School Grades

	2017 (n=71)	2019 (n=143)	2022 (n=116)	2024 (n=135)
System-Wide MWEEs		27%	17%	19%
Some MWEEs	46%	43%	48%	49%
No MWEEs	23%	31%	36%	32%

System-Wide MWEEs

Some MWEEs

No MWEEs

Change in Elementary: Paired 2022 and 2024 Data

ES MWEEs: Pathways of Change between 2022 and 2024

This graphic shows how the presence of MWEEs of individual school districts changed between the 2022 and 2024 ELIT. It includes only districts that responded to the survey in both years (n=23).

22% System-wide at ES level

48% At some schools/classes at ES level

30% No evidence of MWEE in grade band

26% System-wide at ES level

52% At some schools/classes at ES level

22% No evidence of MWEE in grade band

2022

2024

Exploring the subset of LEAs for which we have year-to-year data, we see that the overall proportion of LEAs with system-wide MWEEs in elementary grades grew from 2022 to 2024 by 4 percentage points.

In fact, the frequency of both system-wide MWEEs and some MWEE use increased since 2022. Conversely, the proportion of LEAs with no evidence of MWEEs in elementary school decreased. These are all positive trends.

As is illustrated here, the movement between levels is somewhat complex. While most LEAs with paired, year-to-year data reported no changes in MWEE presence at the elementary grade band since 2022, there was some movement by a few districts. Slightly more districts moved to a higher level than those that fell to a lower level of MWEEs. In addition, changes showed that no districts moved from having system-wide MWEEs to completely removing them (or visa versa).

Change in Middle School: Paired 2022 and 2024 Data

MS MWEEs: Pathways of Change between 2022 and 2024

This graphic shows how the presence of MWEEs of individual school districts changed between the 2022 and 2024 ELIT. It includes only districts that responded to the survey in both years (n=22).
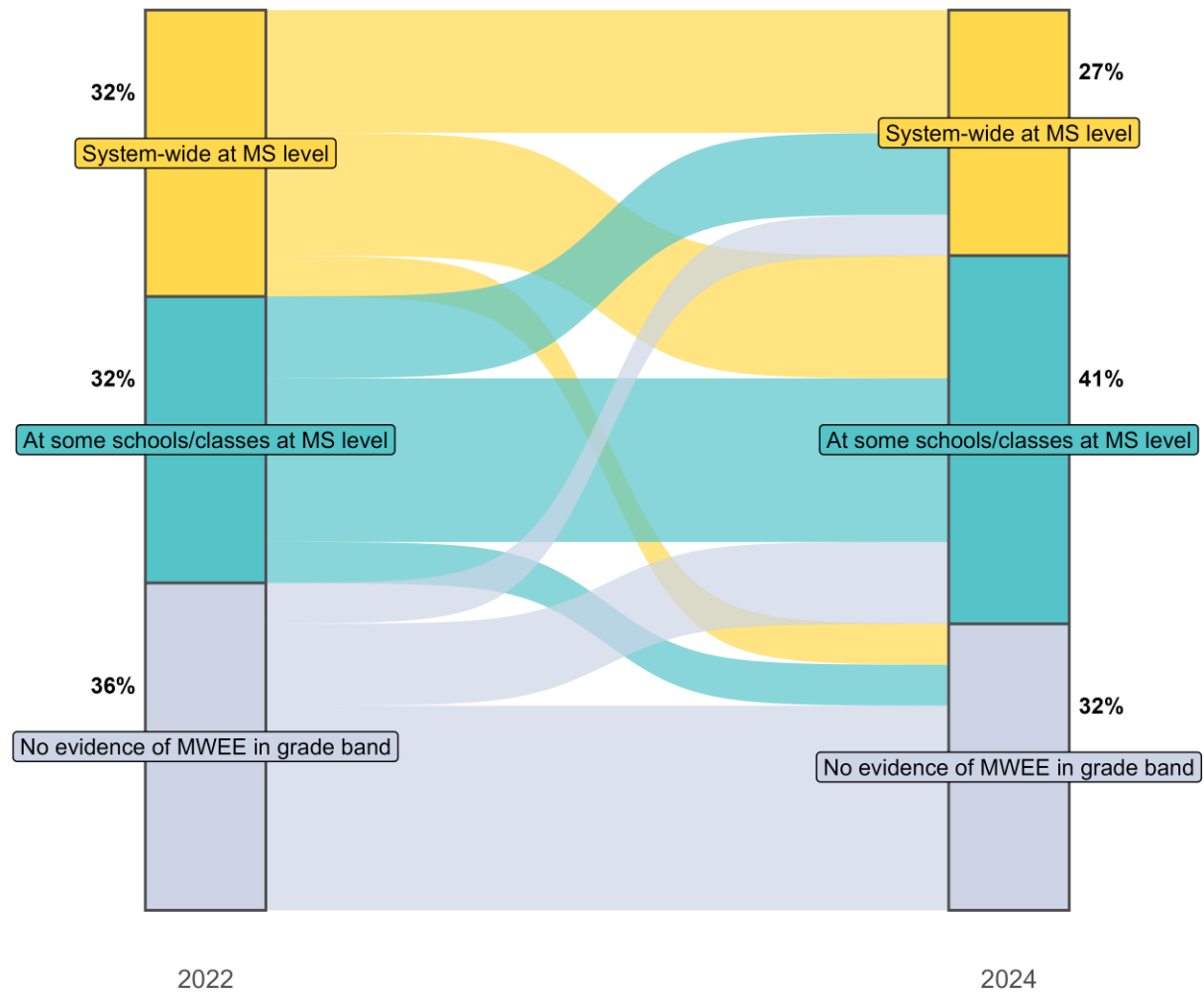
For the subset of LEAs with year-to-year data, we saw an increase in districts with only some MWEEs present (9 percentage points), while the number of LEAs with system-wide MWEEs decreased slightly (by 5 percentage points).

For the middle school level, the paired data show a mixed trend. While the number of LEAs reporting no use of MWEEs in middle school decreased, so did the number reporting system-wide MWEEs. As illustrated in the diagram to the left, a substantial portion of LEAs that had system-wide MWEEs in 2022 reported they were not as widespread this year.

While a little more than half of the LEAs reported no change in the use of MWEEs at middle school since 2022, an equal number of districts reported positive and negative changes. Of the ten districts which saw changes, several were drastic changes as they moved from one end of the scale to the other.

Change in High School: Paired 2022 and 2024 Data

HS MWEEs: Pathways of Change between 2022 and 2024

This graphic shows how the presence of MWEEs of individual school districts changed between the 2022 and 2024 ELIT. It includes only districts that responded to the survey in both years (n=21).
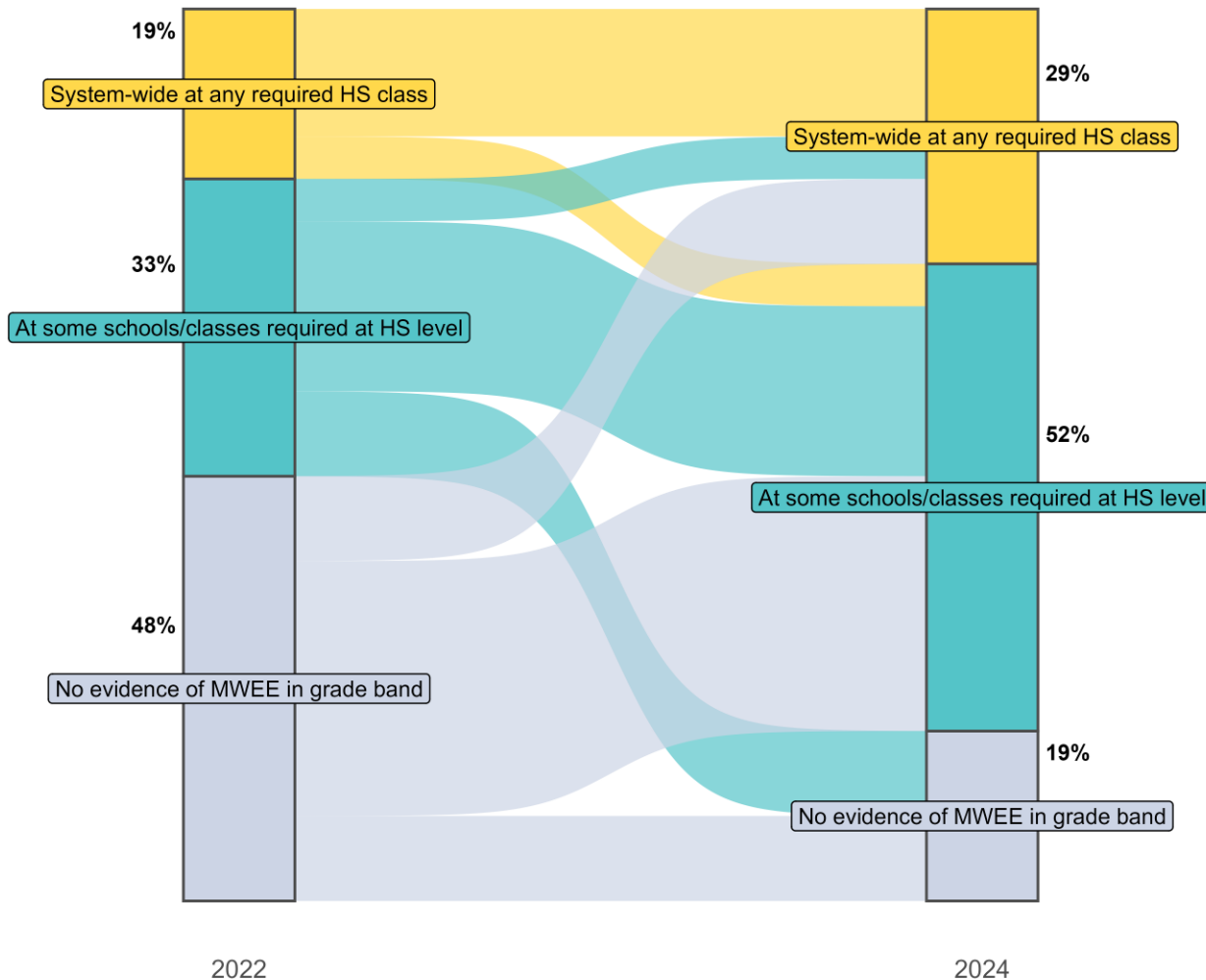
Within the subset of LEAs with paired data, we see that there was robust improvement at the high school level, with an increase of 10 percentage points in LEAs with system-wide MWEEs since 2022.

The greatest growth and movement, however, was the substantial portion of LEAs who moved from reporting no evidence of MWEEs in high school classes to those reporting some MWEE presence in these grades. This suggests, among the limited set of LEAs with paired data, progress is being made in this indicator.

In this indicator, only 3 districts reduced or stopped using MWEEs at this level since 2022.

High School: Required Courses Using MWEEs

Of the 89 LEAs that reported having at least some MWEE experiences within required high school course(s), most tended to be within in science courses.

Biology was the most common required subject that incorporated MWEEs – whether in individual courses or system-wide. Environmental science was another common required course for MWEEs at the high school level.
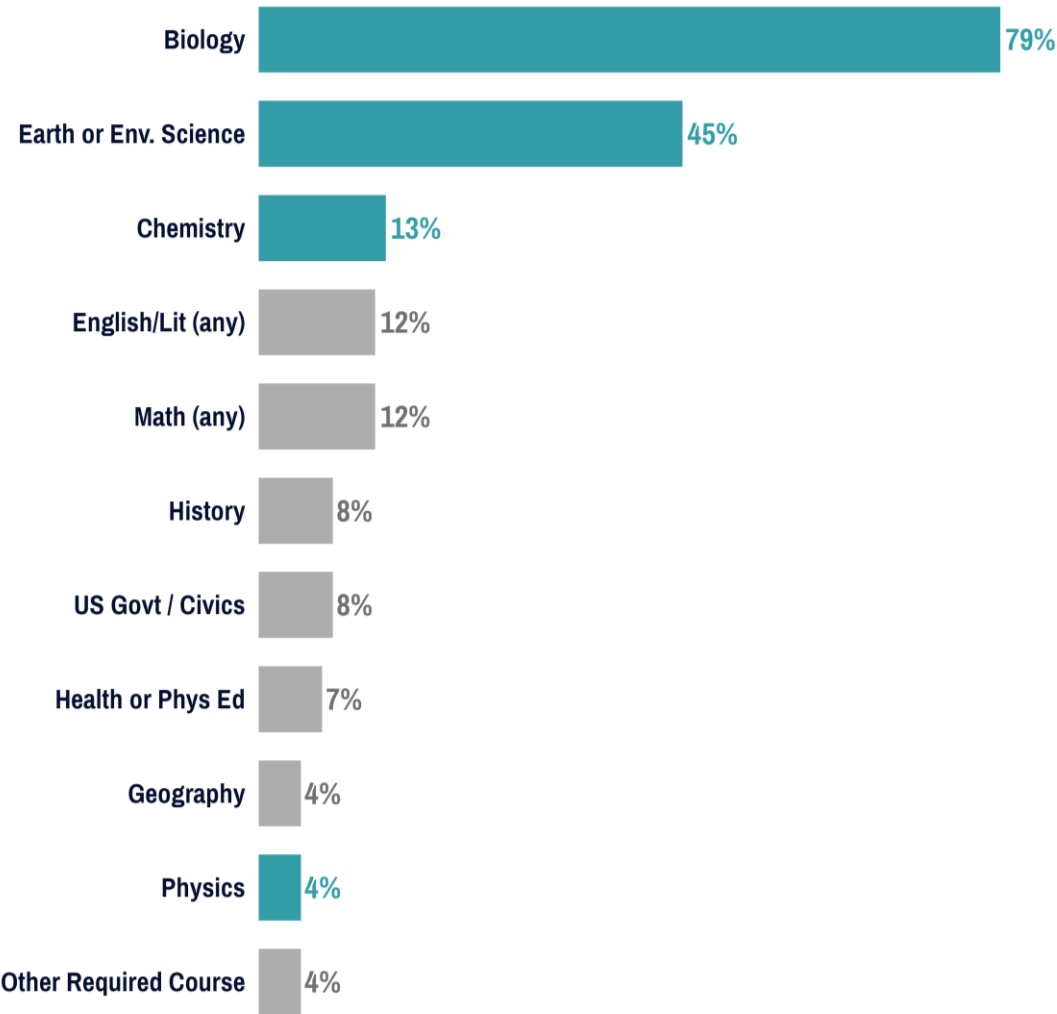
Among required non-science courses, English and mathematics were the most common subject for a MWEE to be present. This graph and analysis has combined these subjects, to see greater patterns.

Four districts listed "other required courses" that use MWEEs. The courses mentioned were "English" and "PA Science." One district did not specify which required course they meant. Additionally, one district mentioned that a small percent of seniors' culminating projects contain MWEEs.

Note: These data include all responses in the 2024 ELIT dataset (not only those LEAs that reported in both years).

Percentage of LEAs that Provide MWEEs within Each Required Subject (n=89)

Sample is just of LEAs that reported having MWEE(s) in at least one required high school course. Data rely on accurate self-reports that courses are requirements. Teal-colored bars indicate science-focused courses (the most common broad subject area); gray bars indicate non-science courses.

Subject	Percentage
Biology	79%
Earth or Env. Science	45%
Chemistry	13%
English/Lit (any)	12%
Math (any)	12%
History	8%
US Govt / Civics	8%
Health or Phys Ed	7%
Geography	4%
Physics	4%
Other Required Course	4%

High School: Elective Courses Using MWEEs

77 Pennsylvania LEAs reported offering MWEEs within high school elective courses; most of these were in environmental science or AP science courses.
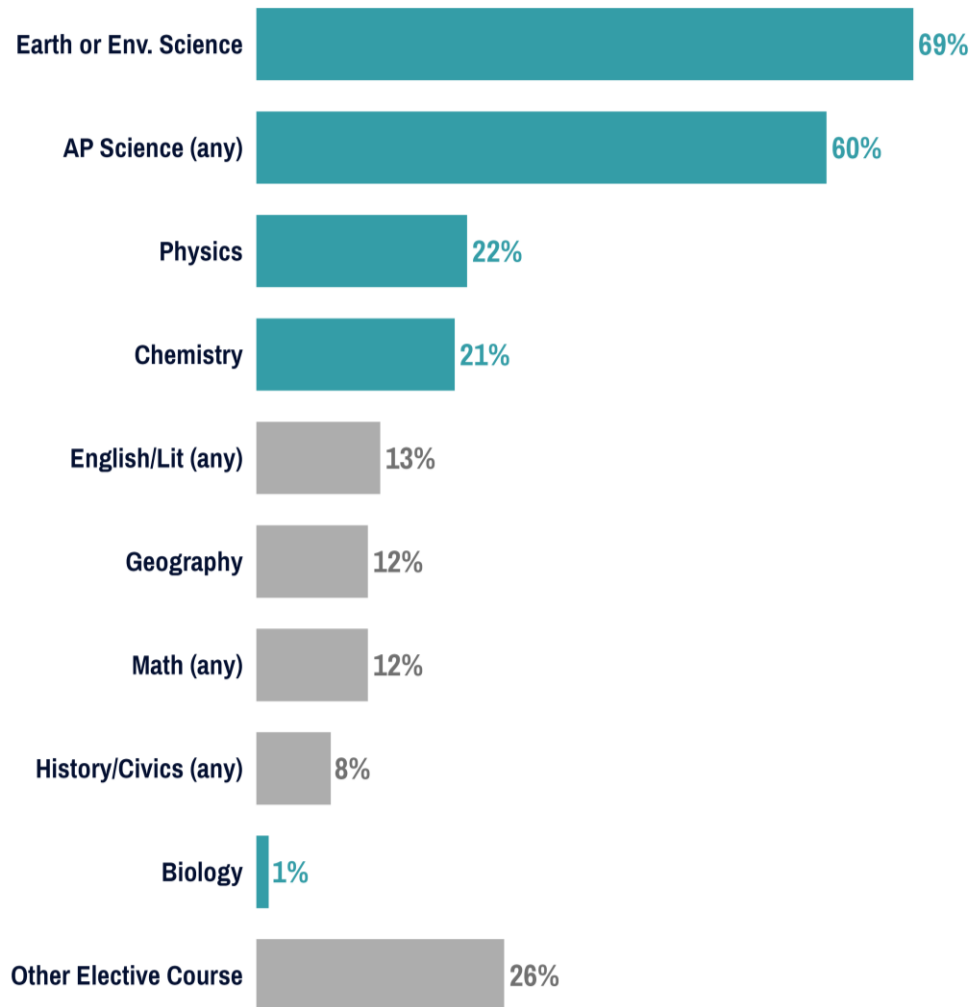
The top 4 most common elective subjects that included a MWEE were all science courses. Other non-science elective courses included English, geography, mathematics, and history.

Among those that indicated MWEE usage in AP Science courses, the specific subjects were almost entirely AP Biology and AP Environmental science, with one mention of AP Physics and one of college-level Ecology. No LEAs reported MWEE use in other (non-science) AP classes.

There were 20 districts which listed "other electives" that use MWEEs, which was a wide variety of topics. These other electives included courses like: Ecology, Agriculture, Zoology, Freshwater Biology, Forestry and Wildlife Management, other Earth sciences, and even a course entitled "Science in Literature."

Percentage of LEAs that Provide MWEEs within Each Elective Subject (n=77)

Sample is just of LEAs that reported having MWEE(s) in at least one elective high school course. Data relies on accurate self-reports that courses are requirements. Teal-colored bars indicate science-focused courses (the most common broad subject area); gray bars indicate non-science courses.

Subject	Percentage
Earth or Env. Science	69%
AP Science (any)	60%
Physics	22%
Chemistry	21%
English/Lit (any)	13%
Geography	12%
Math (any)	12%
History/Civics (any)	8%
Biology	1%
Other Elective Course	26%

RESULTS

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Environmental Education Support Needs

Greatest Needs for EE Support

In Pennsylvania, funding for programming and supplies was rated as the greatest need, on average.

Notably, all of the items focused on funding and professional development (PD) were those that were rated as the highest areas of need across LEAs. The exception was PD to use outdoor learning spaces, which was an area of more moderate need across the districts.

Support from the central office / administration was rated the lowest need, by far. There also seemed to be somewhat less need for instructional technology to support investigations.

Several respondents wrote in "other needs" in addition to these items, which included:

"Additional staffing and funds to pay for staffing"

"Funding for substitutes / substitute availability" (multiple mentions)
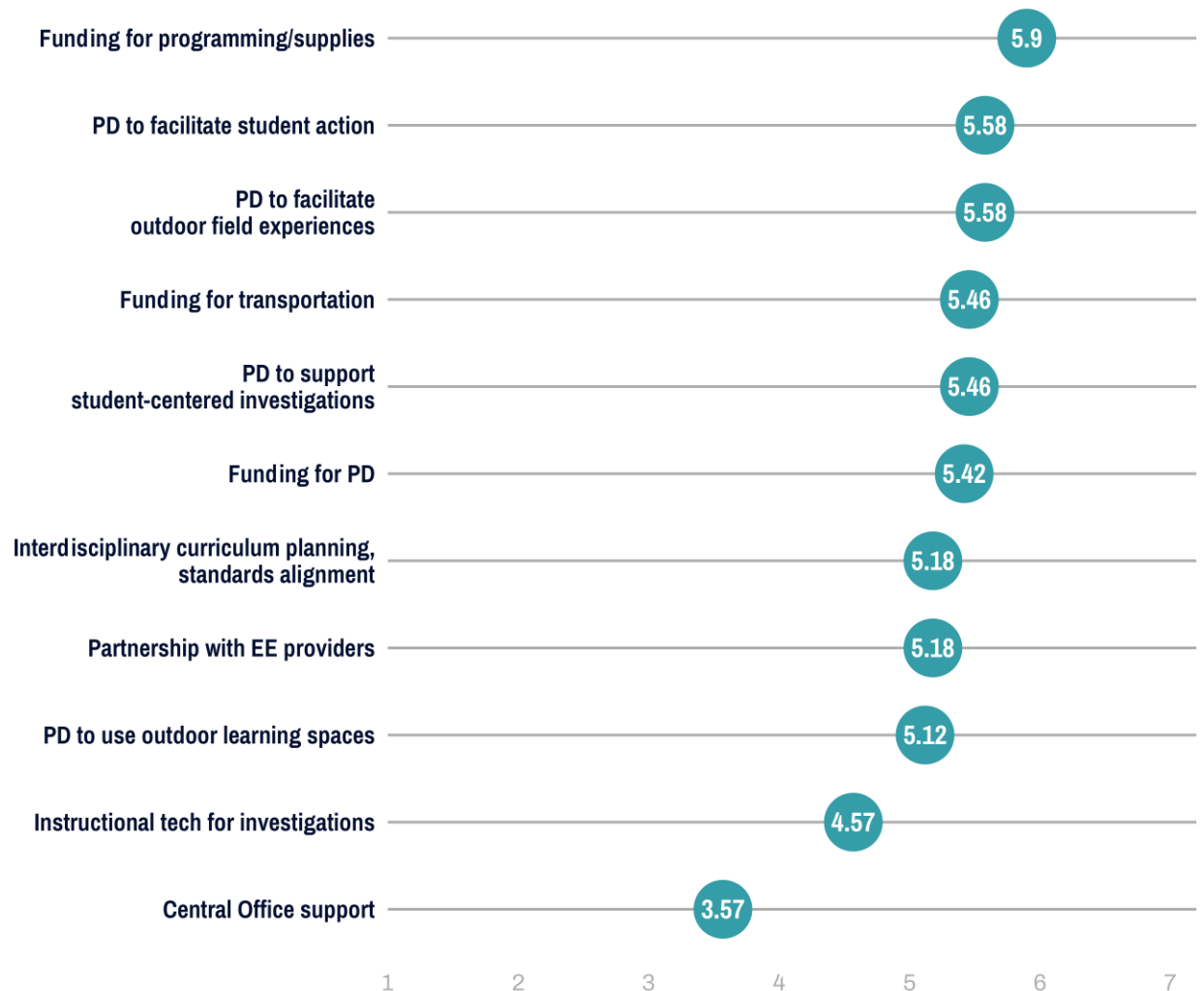
"Time" (multiple mentions)

"Time to provide PD"

"Support from the Board of Education"

"Changes to the accountability system to allow for more diverse priorities to be emphasized"

"Time/opportunities to collaborate with outside organizations for possible educational opportunities."

Average Ratings of Need for Support in Each Area Statewide

Responding LEAs rated their level of need for support in each area from 1 to 7, with 7 being the greatest need. Number of respondents to each item varies because some LEAs skipped items (n=124-125).

Area	Rating
Funding for programming/supplies	5.9
PD to facilitate student action	5.58
PD to facilitate outdoor field experiences	5.58
Funding for transportation	5.46
PD to support student-centered investigations	5.46
Funding for PD	5.42
Interdisciplinary curriculum planning, standards alignment	5.18
Partnership with EE providers	5.18
PD to use outdoor learning spaces	5.12
Instructional tech for investigations	4.57
Central Office support	3.57

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