A Goal Monitoring Conversation:

Keystone Biology, First Time Test Takers



Dr. Wayne N. Walters & Leadership Team

February 19, 2025

Pittsburgh Public Schools

Students first
Always, in all ways.

Biology, First-Time Test Takers

Why?

9th grade biology is pivotal as it marks the beginning of Keystone exams for graduation proficiency. The focus on first-time test takers is essential since our science continuum traditionally advances students from biology to chemistry and then physics, all requiring specific certifications. Keystone exams can be taken annually until Grade 11, but support for students in biology diminishes once they progress to chemistry and physics. Our new instructional materials aim to create a significant impact on first-time test takers, given the limited support available beyond 9th grade.

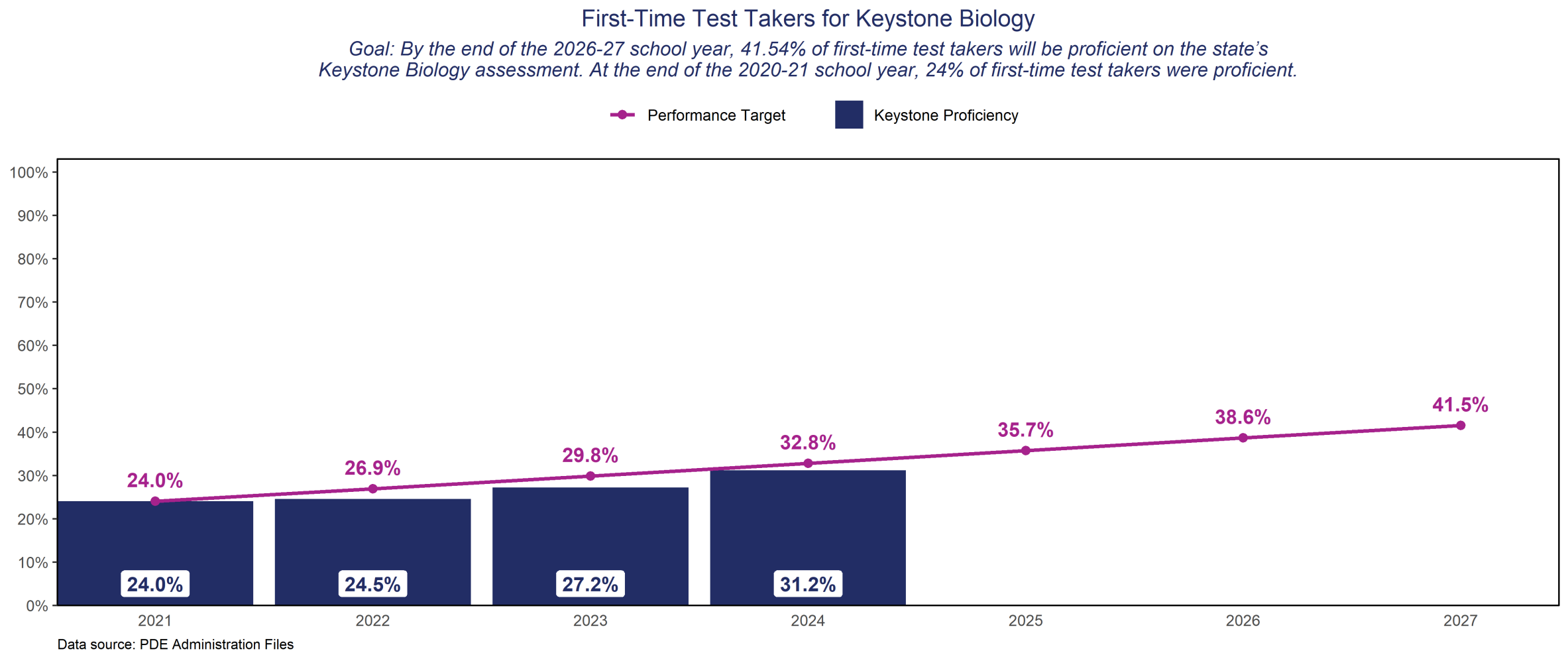
What?

By the end of the 24-25 school year, 32.8% of first-time test takers will be proficient in Biology. At the end of the 20-21 school year, 24.0% of first-time test takers were proficient in Biology , establishing the baseline for our 5-year goal of achieving a 41.5% graduation rate for 12th Grade Students by 2027.

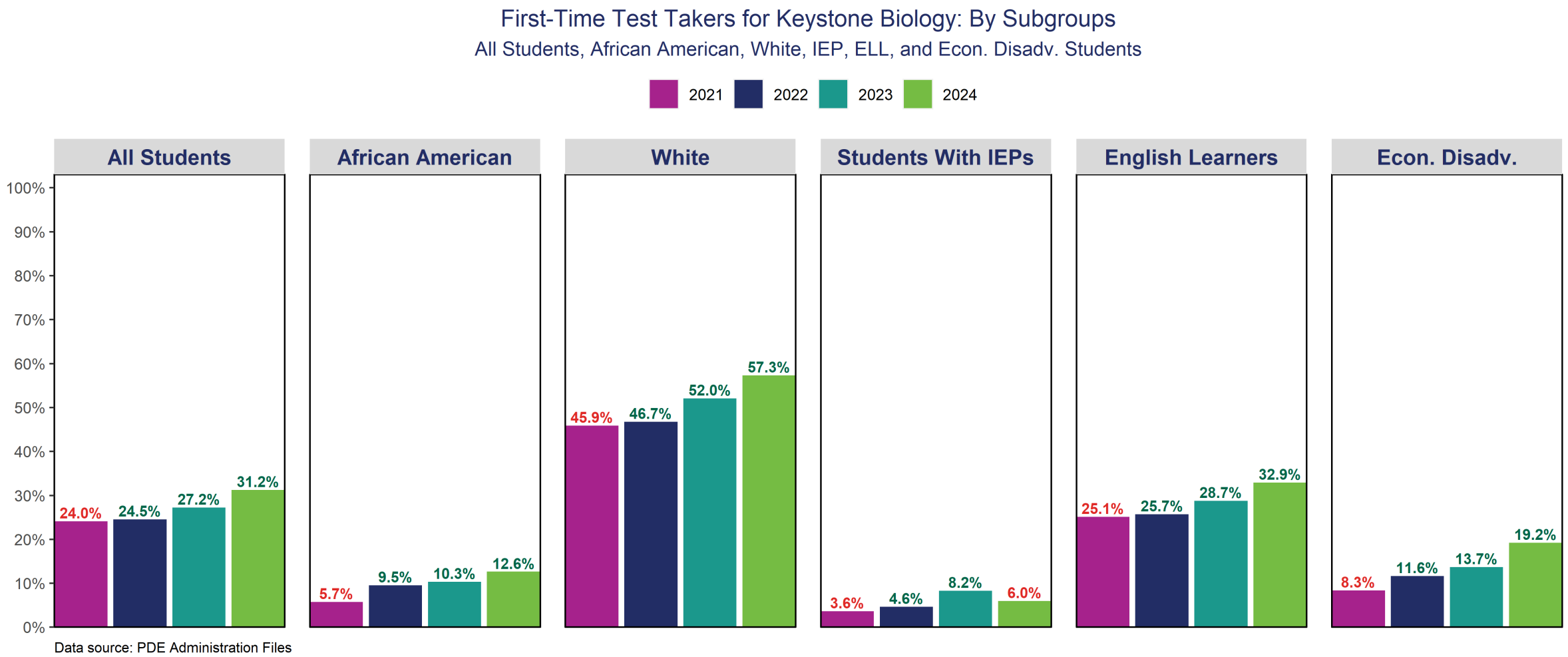
How?

Keystone Biology and PA Classroom Diagnostic Tool (CDT)

Goal – Biology Proficiency (By Year)



Biology (By Subgroups)



The Significance of Attendance

TRUANCY

Counts only UNEXCUSED absences

Emphasizes individual compliance with school rules

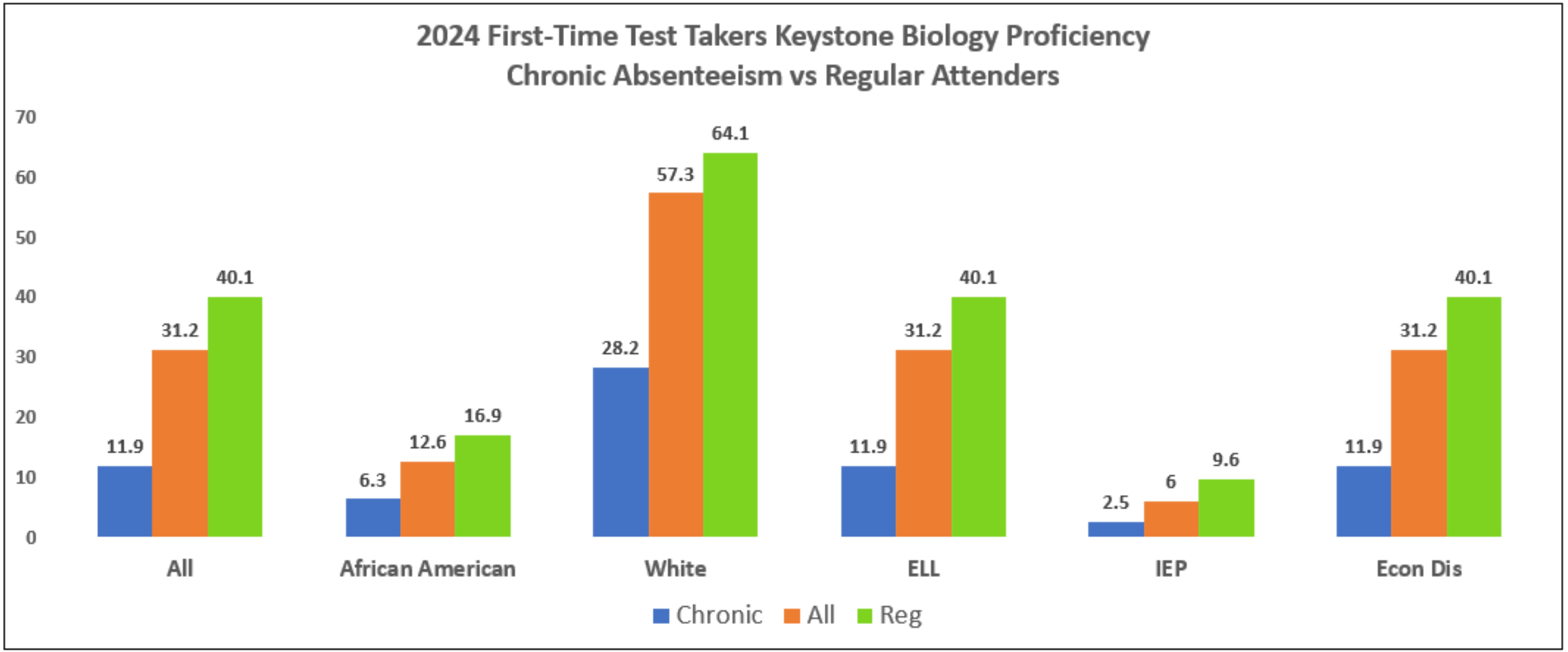
May result in legal ramifications

CHRONIC ABSENTEEISM

Missing 10% of the year and counts ALL absences (excused, unexcused, and suspensions)

Emphasizes the impact of missed days and the benefits of being present

Biology (2024 Subgroup Attendance Impact)



Researching our Investments

- **Philosophical Shifts in Science Teaching and Learning**
- **Professional Learning**
- **Keystone Exam Preparation**
- **Instructional Materials and Implementation**

Researching our Investments

- **Philosophical Shifts in Science Teaching and Learning**
- **Professional Learning**
- **Keystone Exam Preparation**
- **Instructional Materials and Implementation**
- **Aligned Curriculum Development**

What is Keystone Accountability?

The Biology Keystone Exam is a state-mandated assessment required for high school graduation in Pennsylvania, measuring proficiency in core biological concepts. Unlike PSSA exams, the Biology Keystone Exam is taken at the completion of the Biology course, typically in 9th grade for first-time test takers and can be taken in consecutive years until the end of Grade 11. For state accountability purposes, only the highest Keystone score is used, meaning students who retake the exam will have their best score counted.

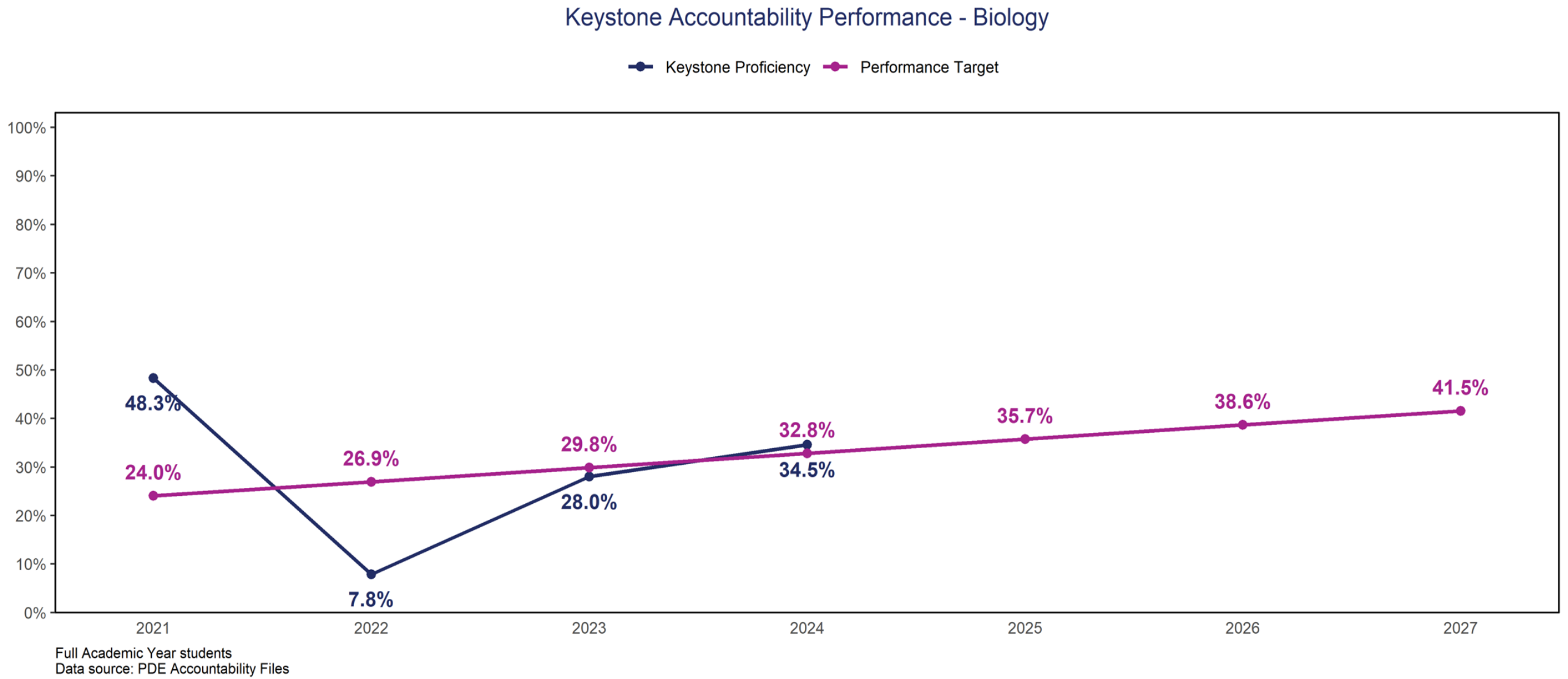
•The COVID-19 pandemic led to exam waivers for students in the 2019-2020 school year who passed the course; these students are excluded from accountability calculations.

•The number of students included in Biology Keystone accountability calculations has steadily increased post-pandemic, reflecting a return to pre-pandemic testing norms:

- **2022:** 294 students
- **2023:** 1,137 students
- **2024:** 1,190 students

•First-time test takers make up a significant portion of those included in Keystone accountability, making it essential to improve initial proficiency rates to reduce the need for retesting and remediation.

Keystone Accountability (All)

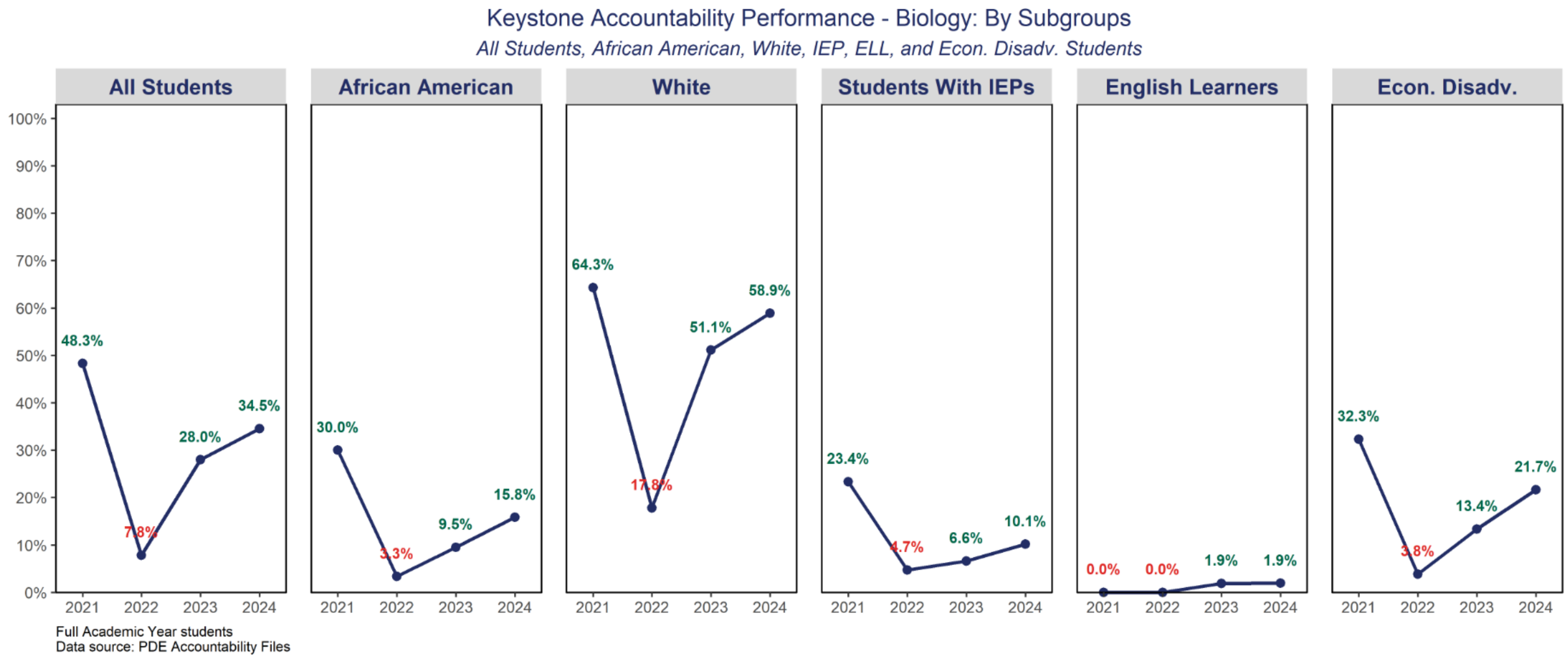


Full Academic Year students
Data source: PDE Accountability Files

Pittsburgh Public Schools

Students first
Always, in all ways.

Keystone Accountability (By Subgroups)



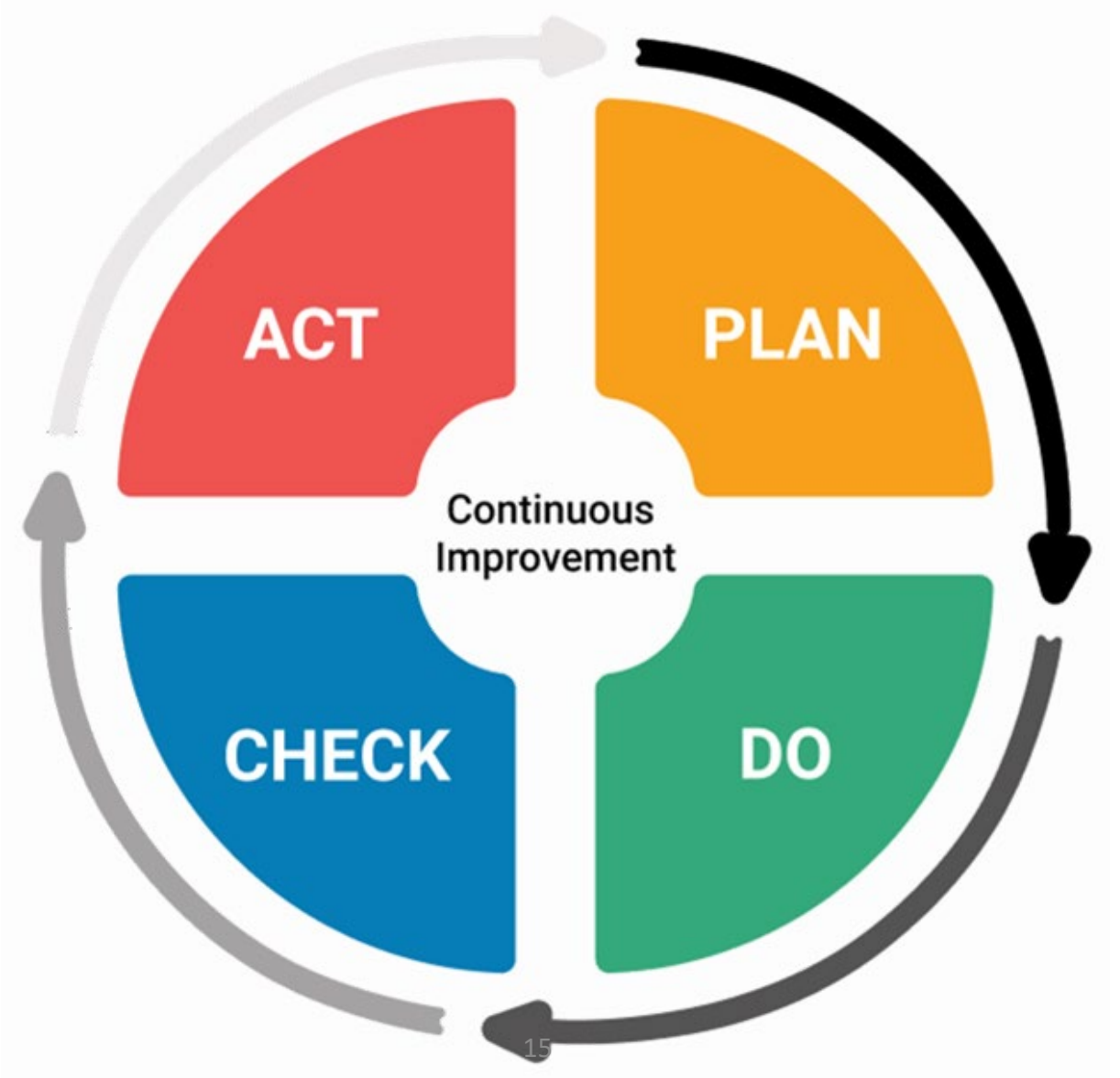
Biology CDT Results – Fall & Winter

CDT Results by Grade										
Assessment	Assessment Window	Assessment Completion			Red Range	Green (Below Midpoint)	Green (Above Midpoint)	Blue Range	Likely Proficient or Advanced	Increase/Decrease in % of Students Performing At/Above Grade Level
		Completed	Required	Rate						
Grade 9 Biology	Fall	1023	1309	78.2%	83.4%	11.4%	4.3%	0.9%	5.2%	
	Winter	1066	1294	82.4%	75.5%	12.4%	6.6%	5.5%	12.1%	7.9%

Biology CDT Subgroup Results – Fall & Winter

CDT Results by Subgroup											
Assessment	Sub Group	Assessment Window	Assessment Completion			Red Range	Green (Below Midpoint)	Green (Above Midpoint)	Blue Range	Likely Proficient or Advanced	Increase/Decrease in % of Students Performing At/Above Grade Level
			Completed	Required	Rate						
Grade 9 Biology	Black	Fall	452	638	70.8%	94.7%	4.0%	0.4%	0.9%	1.3%	
	Black	Winter	494	642	76.9%	89.3%	5.9%	1.6%	3.2%	4.9%	5.4%
	White	Fall	358	398	89.9%	69.0%	21.2%	8.7%	1.1%	9.8%	
	White	Winter	337	367	91.8%	55.8%	22.3%	14.2%	7.7%	22.0%	13.2%
	IEP	Fall	142	203	70.0%	93.7%	4.9%	1.4%	0.0%	1.4%	
	IEP	Winter	146	204	71.6%	88.4%	6.8%	2.7%	2.1%	4.8%	5.3%
	ELL	Fall	130	180	72.2%	93.1%	3.8%	1.5%	1.5%	3.1%	
	ELL	Winter	157	185	84.9%	86.0%	3.2%	1.9%	8.9%	10.8%	7.1%
	Econ Dis	Fall	568	794	71.5%	92.8%	4.9%	1.6%	0.7%	2.3%	
	Econ Dis	Winter	638	809	78.9%	87.0%	6.6%	2.2%	4.2%	6.4%	5.8%

Strategy and Plan



Strategy #1: Curriculum-based Professional Learning

Curriculum-based professional learning will ensure that all teachers and school leaders have a **deep understanding of the standards and instructional practices,** necessary to deliver high-quality, biology instruction. This strategy will equip teachers and school leaders with the knowledge and skills to:

- Deepen their understanding of high-quality, standards-aligned curriculum to increase student engagement.
- Understand how to design and facilitate **inquiry-based lessons** that center around real-world phenomena, promoting student curiosity
- Master strategies to **connect science content to students' lived experiences**, making the curriculum more relevant and affirming for students who have been historically underserved.
- Recognize and promote **inclusive instructional strategies** that close opportunity gaps.

Key Components of this Strategy:

- Implement a cohesive series of virtual professional learning opportunities to ensure teacher understanding of anchoring phenomena and pedagogy to make curriculum connections to students' lived experiences.
- Utilize the March 7, 2025, professional learning half-day to support all biology teachers with understanding of labs prior to implementation with students.
- Provide ongoing professional learning and support for principals to be delivered through monthly LLI meetings, Network Meetings, and other individualized support.
- The Science Supervisor will conduct weekly classroom walkthroughs, using an observation tool to track the fidelity of anchoring phenomena and lab integration. Walkthrough data will be shared with principals and Assistant Superintendents to monitor implementation trends.

Rationale: Curriculum-based professional learning is essential to ensure the successful implementation of the newly adopted biology curriculum. It provides teachers with the skills and support needed to deliver standards-aligned, phenomena-driven instruction while addressing the needs of all students, particularly African American students. For school leaders, it builds capacity to monitor, guide, and ensure access to high-quality science experiences.

Strategy #2: Access to Standards-Aligned Resources

Access to standards-aligned resources and intentional practice with Keystone-style items ensures that both teachers and students are fully prepared for the expectations of the Biology Keystone.

Key Components of this Strategy:

- **Curriculum Mapping**: Provide a clear guide for teachers that aligns the biology curriculum with eligible content tested on the Biology Keystone Exam. This resource will provide a clear mapping of key concepts, standards, and curriculum materials that correspond to assessed content, enabling teachers to intentionally connect daily instruction with Keystone expectations. It will serve as a guide to ensure that students have consistent exposure to essential content and skills needed for success on the exam.
- **Released Items:** Provide teachers with a comprehensive resource bank of released multiple-choice and constructed response items, scoring rubrics, and sample responses. Professional learning sessions focused on how to analyze item structure, identify common student misconceptions, and integrate test items into daily instruction will be offered.
    - Use released items as warm-ups, exit slips, and formative assessments. Incorporate constructed response prompts in discussions and assignments to strengthen reasoning and writing. Analyze student responses to address misconceptions. Guide students in reviewing sample answers and revising their own using rubrics.
    - Use small-group or peer tutoring to break down complex questions and refine responses. Scaffold academic language with sentence frames and discussions.

Rationale: Access to standards-aligned resources ensures teachers can intentionally connect daily instruction to the Biology Keystone Exam by integrating high-leverage content and skills into their practice. It provides students who have been historically underserved with regular exposure to test formats, reducing anxiety and building familiarity with standardized assessments. This strategy equips both teachers and students with the tools needed to improve performance and close opportunity gaps.

Strategy #3: Data-driven Instruction

Implement data-driven practices to analyze student performance, identify learning gaps, and provide targeted instructional support that accelerates student growth and achievement, particularly for historically underserved students.

Key Components of this Strategy:

- **Data Literacy Training:** Equip teachers and school leaders with the skills to analyze multiple data sources (e.g., classroom assessments, Biology CDT results, Keystone practice items) and identify trends, gaps, and strengths in student performance.
- **Comprehensive Data Analysis:** Create and offer a structured data analysis protocol that analyzes CDT data to inform instructional decisions tailored to diverse student needs.
- **Differentiated Support:** Use data to provide differentiated instruction, small instructional groups for targeted interventions and enrichment.
- **Instructional Resources:** Create instructional resources aligned to data insights, including intervention guides, and sample assessments.

Rationale: Implementing data-driven practices ensures that instruction is **responsive**, allowing educators to meet the needs of all students, particularly historically underserved students. By equipping teachers and school leaders with the skills to analyze and act on student performance data, this strategy **identifies learning gaps early and provides precise instructional support** that fosters growth and achievement. A structured approach to data analysis ensures that instructional decisions are **informed, intentional, and aligned** with student needs, ultimately improving proficiency rates and closing opportunity gaps.


LET'S
HAVE
A
Conversation