



# PROPEL and Level Up

## Research, Assessment & School Improvement

January 2025

# Program Description

The mission of PROPEL and Level Up is to provide enrichment for high-achieving elementary and middle school students who are underrepresented in the STEM fields. The program goals are to:

- Develop high-level reasoning skills in students,
- Provide students with opportunities to enhance behaviors associated with high achievement and demonstration of the 5Cs,
- Assist students with planning and preparing for academically rigorous coursework in middle and high school and for entry into competitive academic programs, and
- Provide opportunities for parents to share as educational partners.



# Program Description

- The programs support Strategic Action 1.2 (Multiple, Accessible Pathways to Success) of the One LCPS: 2027 Strategic Plan because students who are underrepresented need additional opportunities to participate in authentic STEM experiences, prepare for academically rigorous coursework, and develop their critical thinking, computational thinking, problem solving and collaboration skills.
- In the 2023-24 school year, PROPEL activities were provided weekly to 260 Grade 4-5 students after school in 10 schools. Level Up was offered to 203 Grade 6-8 students in 5 schools during the school day or after school.



# Research Questions

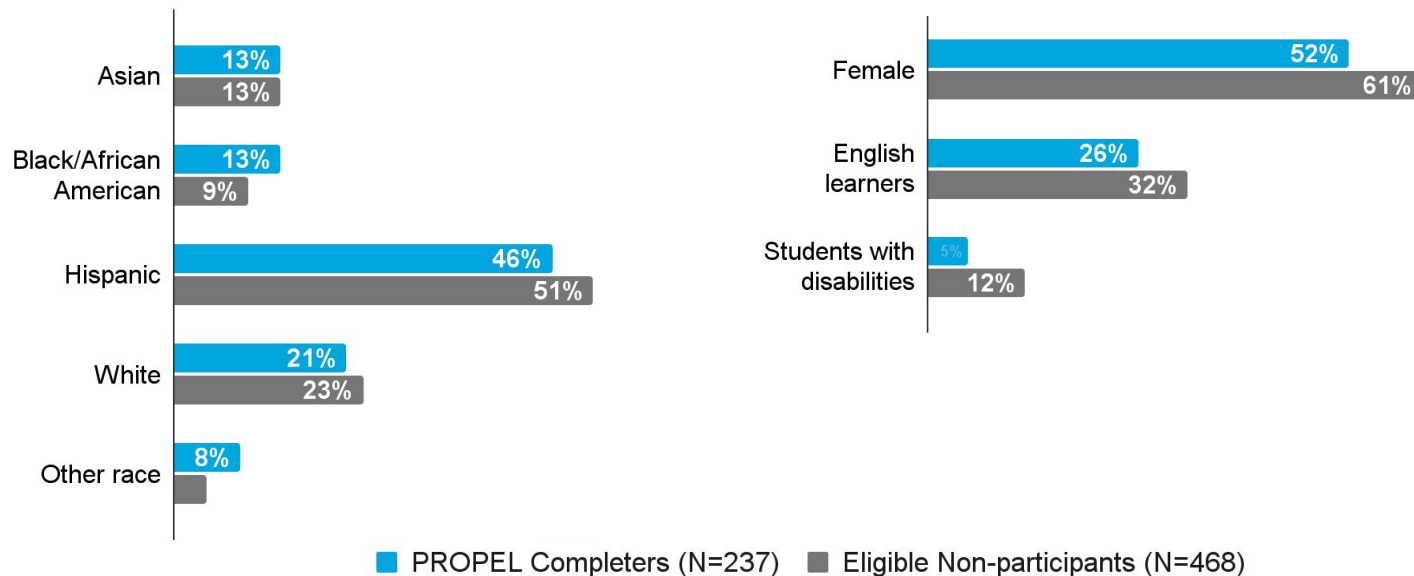
1. What were the demographics of the students who completed the program?
2. What were the experiences of the teachers in implementing the program?
3. Did the students' perceptions of their own academic ability and skill level improve after participating in the program?
4. Did the students' interests in math and science change after participating in the program?
5. How are the students progressing in math and reading relative to their peers?
6. How are eligible students represented in applications to the Academies of Loudoun?
7. To what extent did the students enroll in advanced math and science courses?



# Implementation



# What were the demographics of the *PROPEL* students who completed the program?

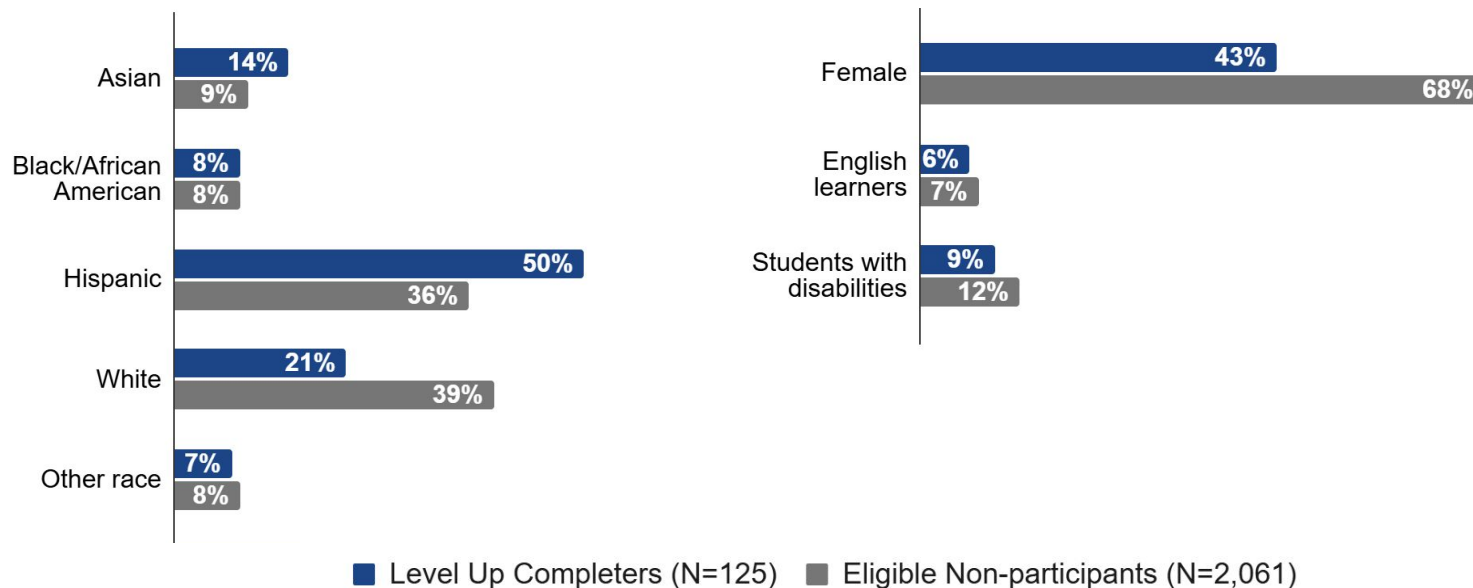


Source: *Phoenix student information system*

Note: *Completers had at least 80% attendance in the Fall or Spring*



# What were the demographics of the *Level Up* students who completed the program?



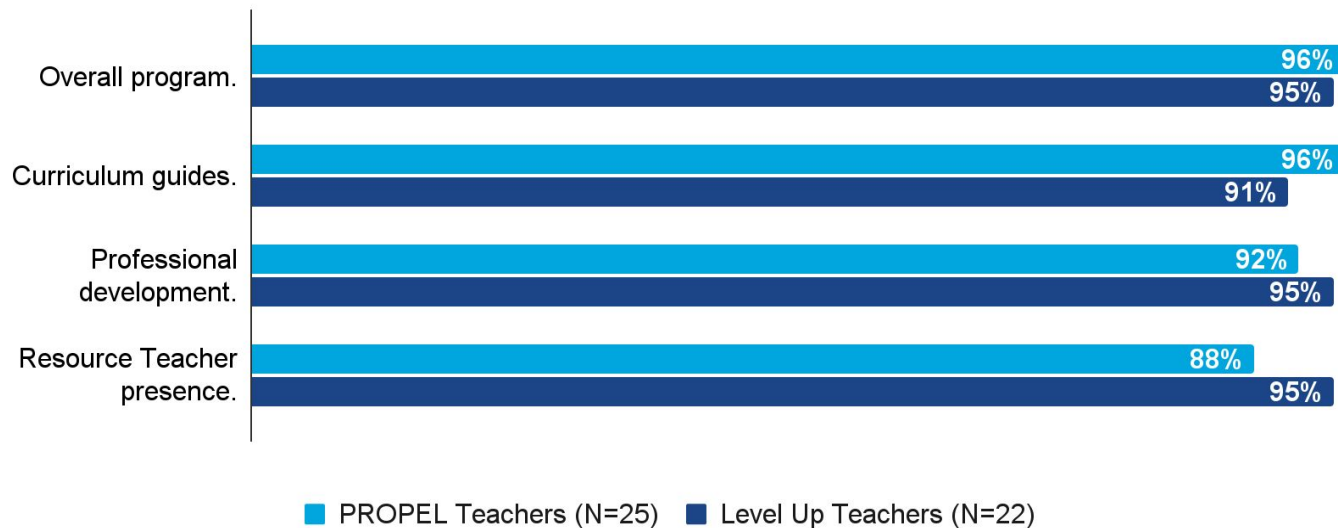
Source: *Phoenix student information system*

Note: *Completers had at least 80% attendance in the Fall or Spring*



# What were the experiences of the teachers in implementing the program?

*How satisfied are you with:*



Source: *Teacher satisfaction survey*

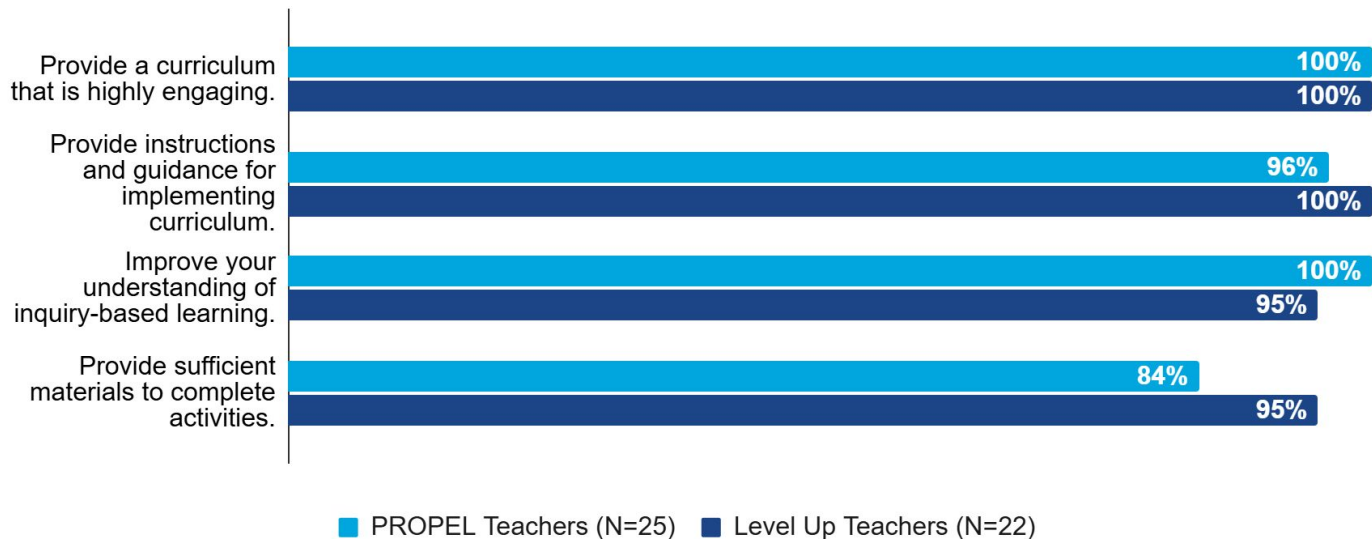
Note: *Percent Satisfied or Somewhat Satisfied*





# What were the experiences of the teachers in implementing the program?

*How well does the program:*



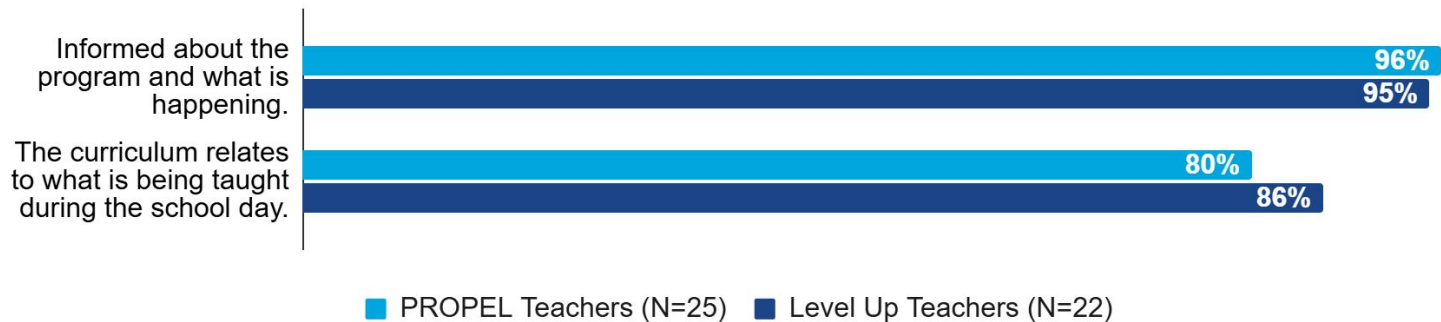
Source: *Teacher satisfaction survey*

Note: *Percent Satisfied or Somewhat Satisfied*



# What were the experiences of the teachers in implementing the program?

*To what extent do you feel:*

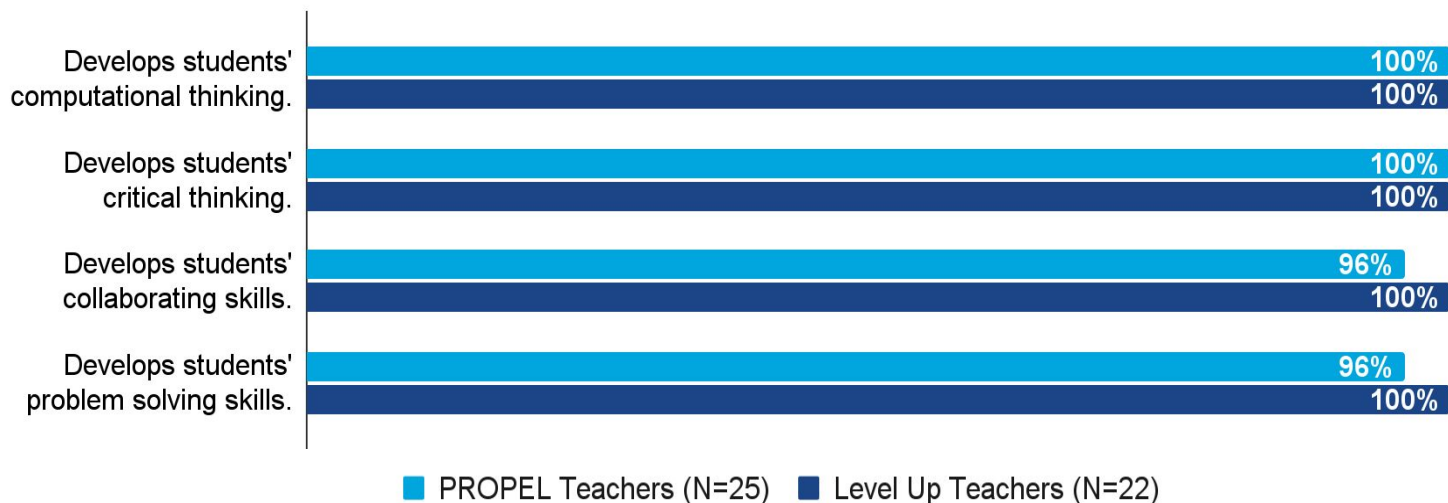


Source: *Teacher satisfaction survey*  
Note: *Percent Strongly Agree or Agree*



# What were the experiences of the teachers in implementing the program?

*To what extent do you agree that the program:*

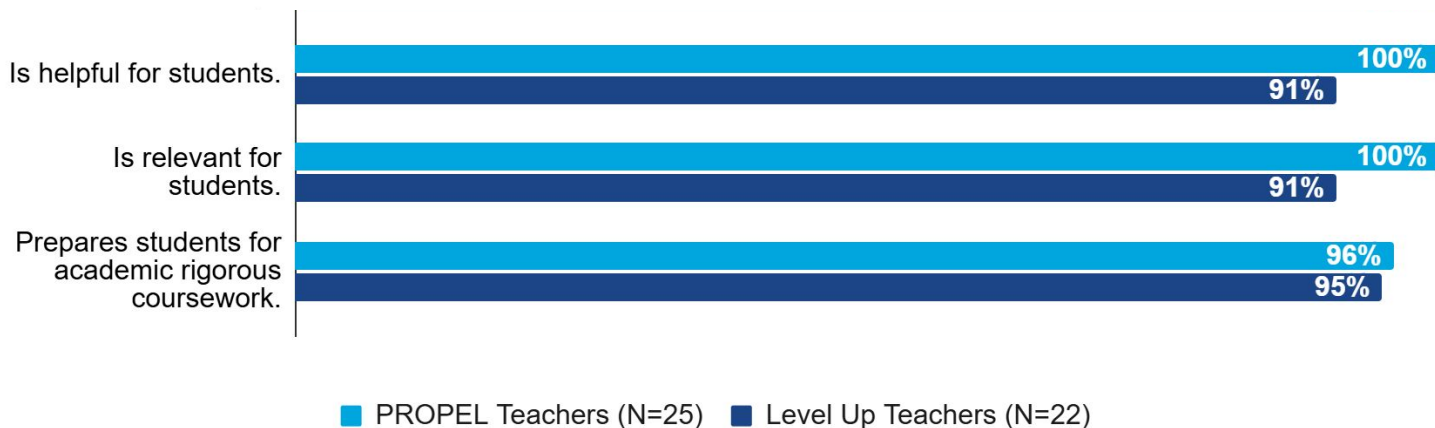


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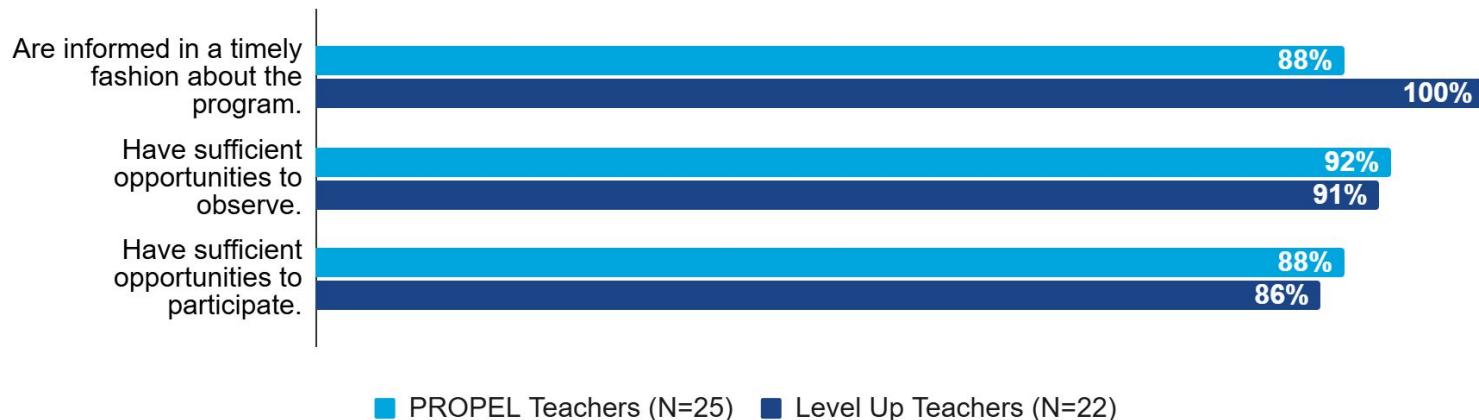


Source: *Teacher satisfaction survey*  
Note: *Percent Strongly Agree or Agree*



# What were the experiences of the teachers in implementing the program?

*To what extent do you agree that parents:*



Source: *Teacher satisfaction survey*  
Note: *Percent Strongly Agree or Agree*

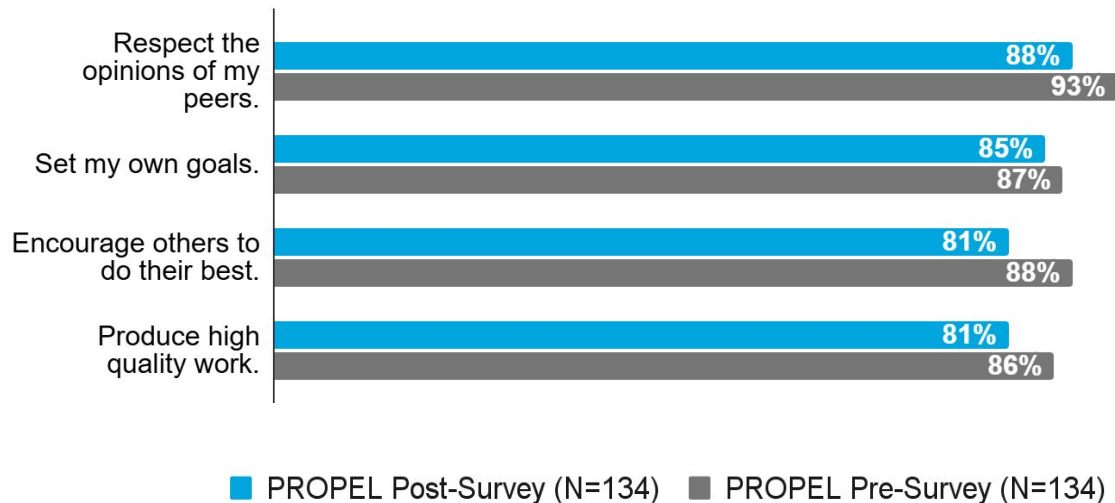


# Outcomes



# Did the *PROPEL* students' perceptions of their own academic ability and skill level improve after participating in the program?

*I am confident that I can:*

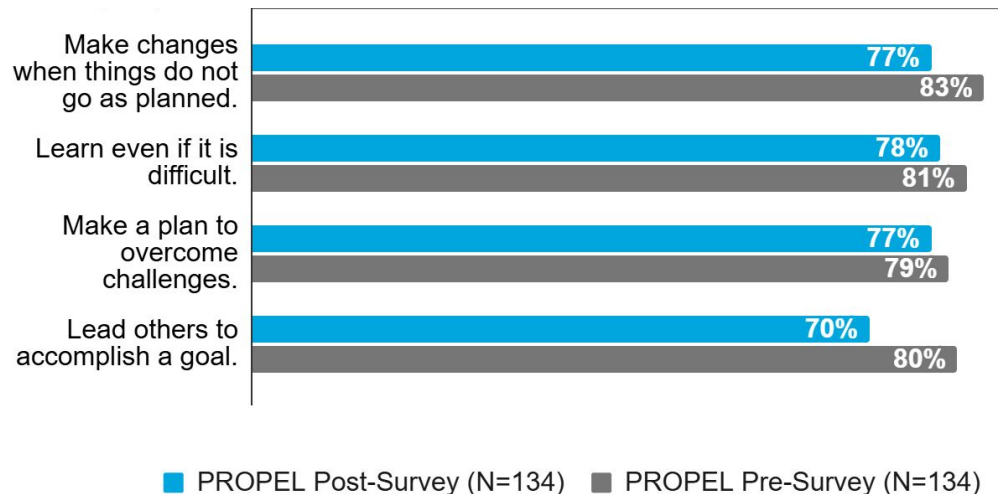


Source: *Student pre-/post-surveys*

Note: *Percent Strongly Agree or Agree*

# Did the *PROPEL* students' perceptions of their own academic ability and skill level improve after participating in the program?

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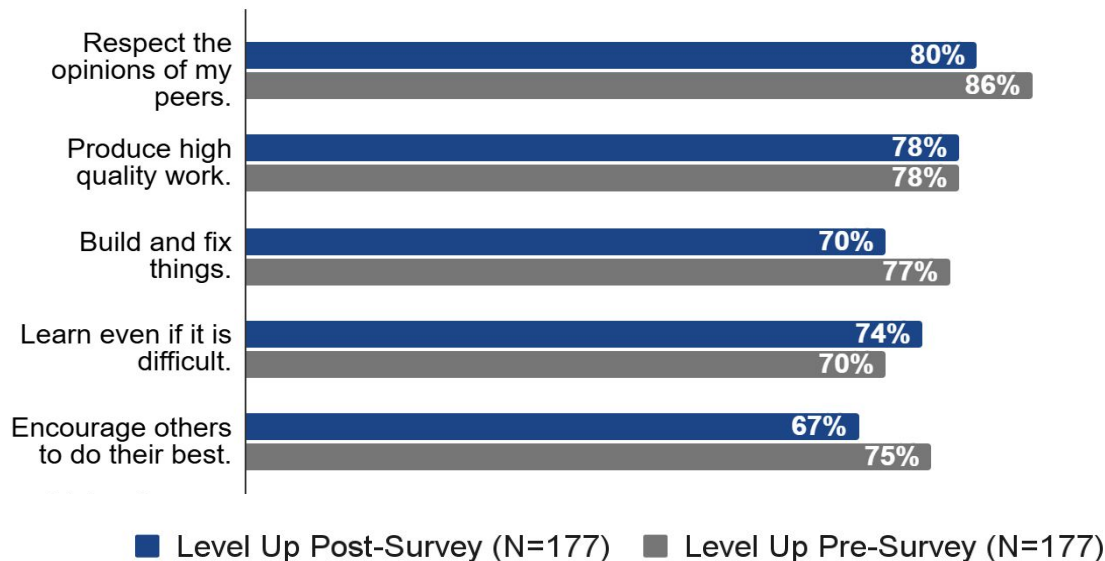
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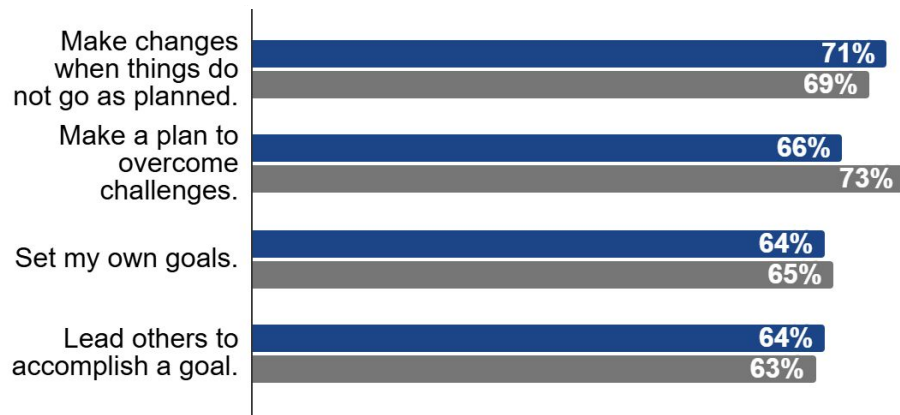


Source: *Student pre-/post-surveys* | Note: *Percent Strongly Agree or Agree*



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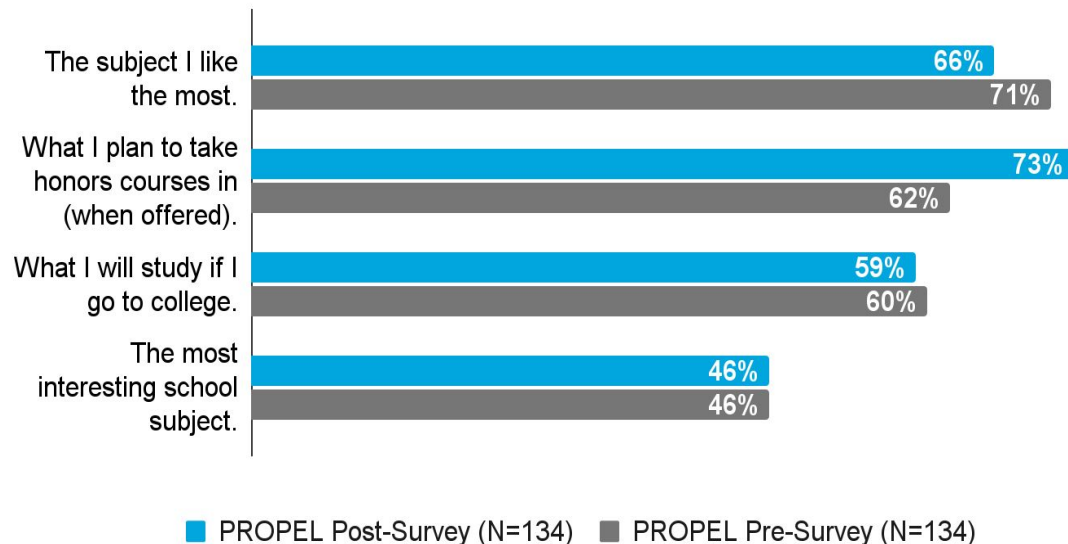
■ Level Up Post-Survey (N=177) ■ Level Up Pre-Survey (N=177)

Source: *Student pre-/post-surveys* | Note: *Percent Strongly Agree or Agree*



# Did the *PROPEL* students' interests in math and science change after participating in the program?

## *Math is:*

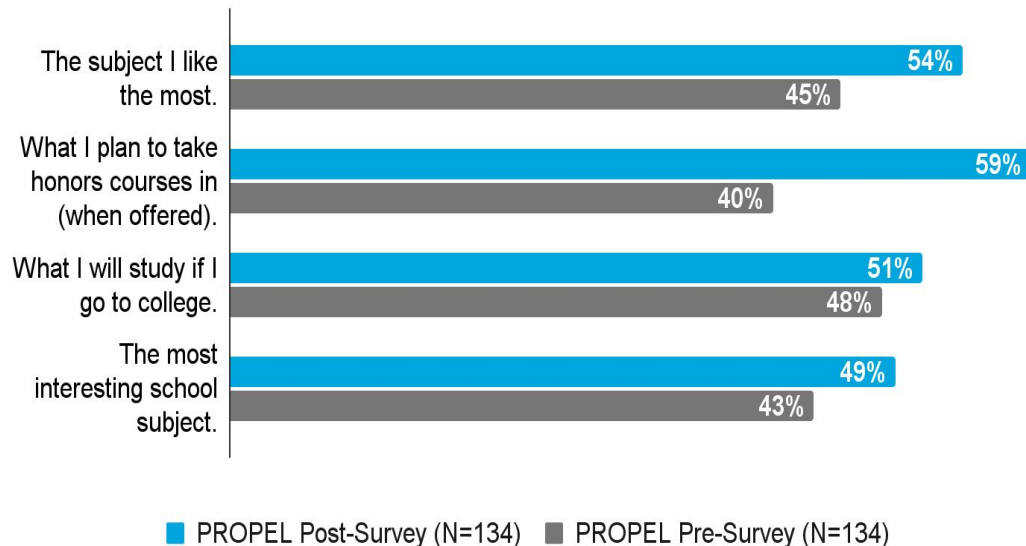


Source: *Student pre-/post-surveys* | Note: *Percent Yes*



# Did the *PROPEL* students' interests in math and science change after participating in the program?

## Science is:

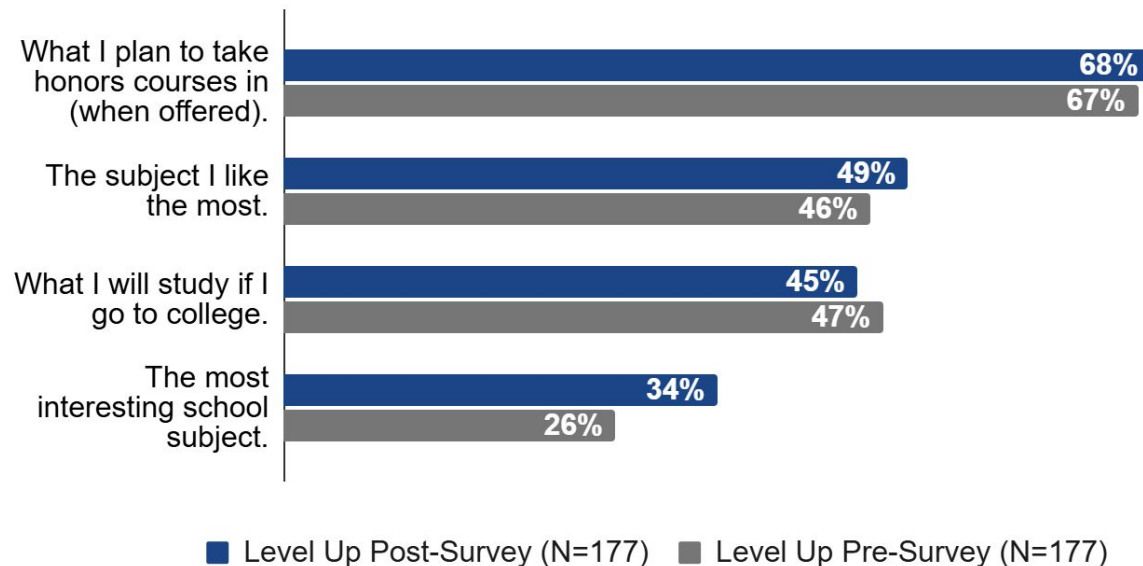


Source: *Student pre-/post-surveys* | Note: *Percent Yes*



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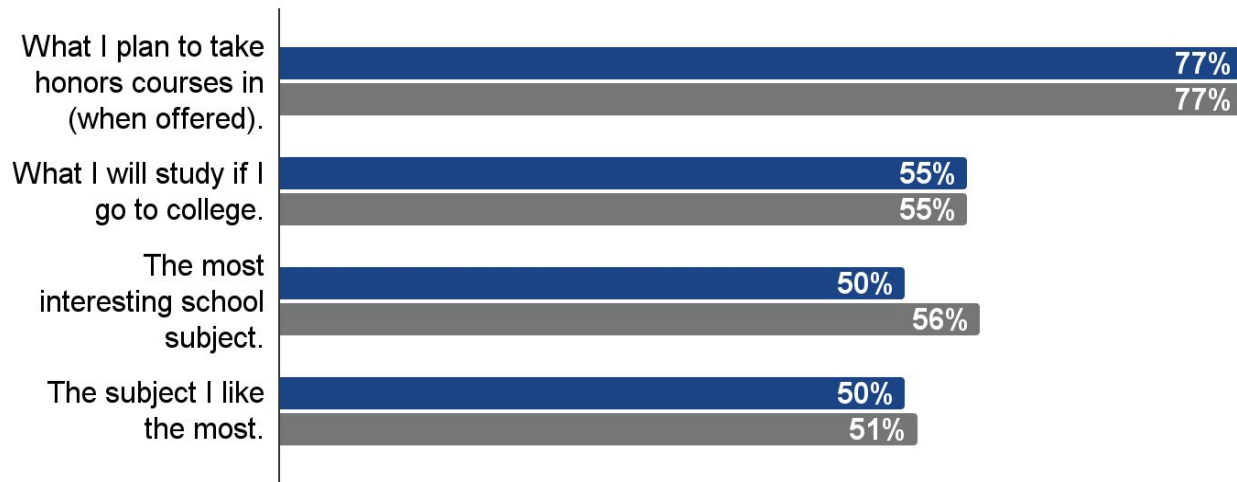


Source: *Student pre-/post-surveys* | Note: *Percent Yes*



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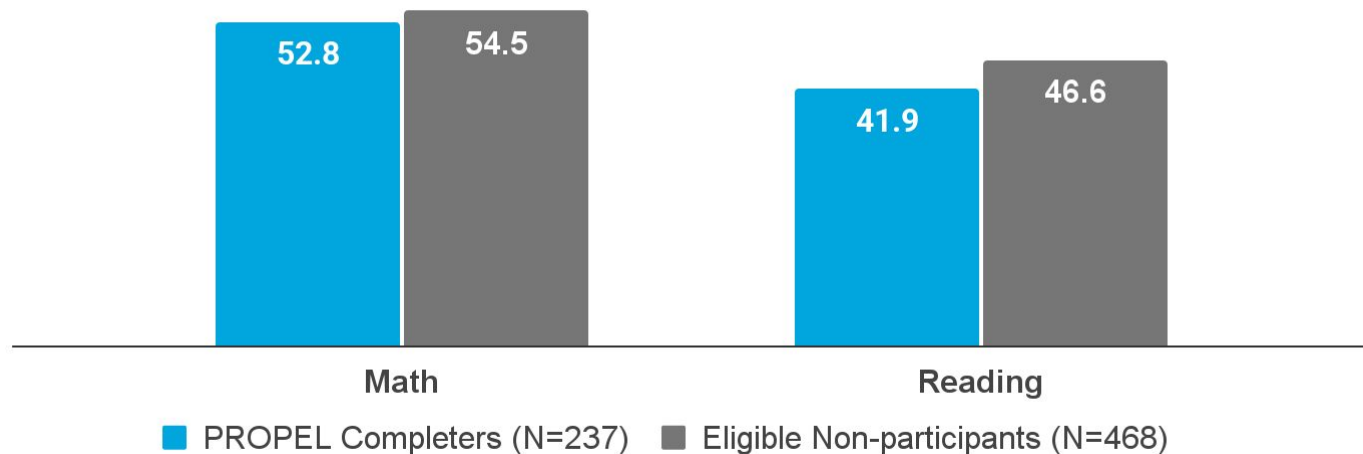


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Source: *Student pre-/post-surveys* | Note: *Percent Yes*



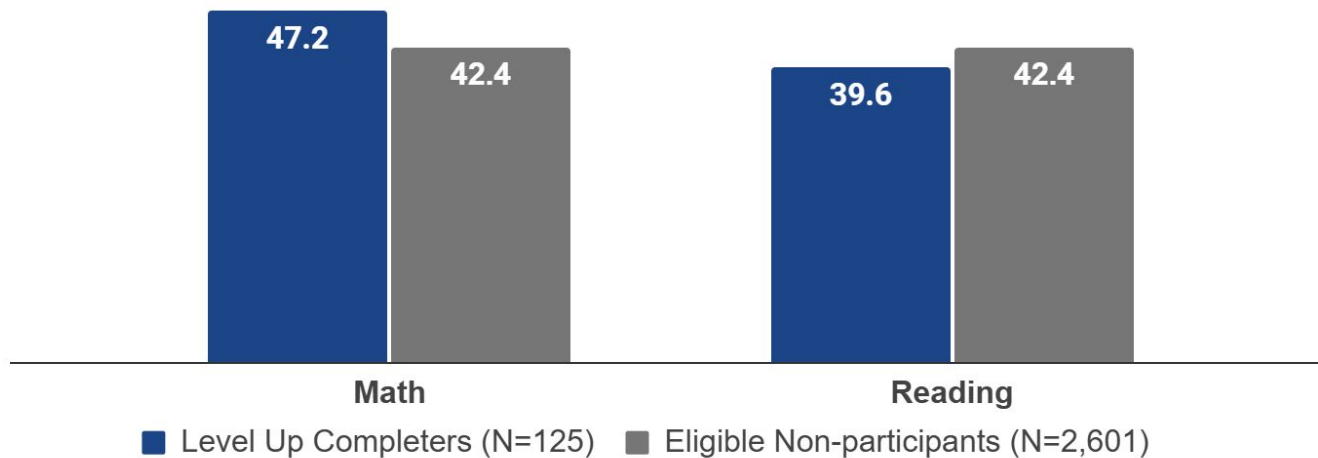
# How are the *PROPEL* students progressing in math and reading relative to their peers?



Source: NWEA MAP conditional growth percentiles from Fall 2023 to Spring 2024



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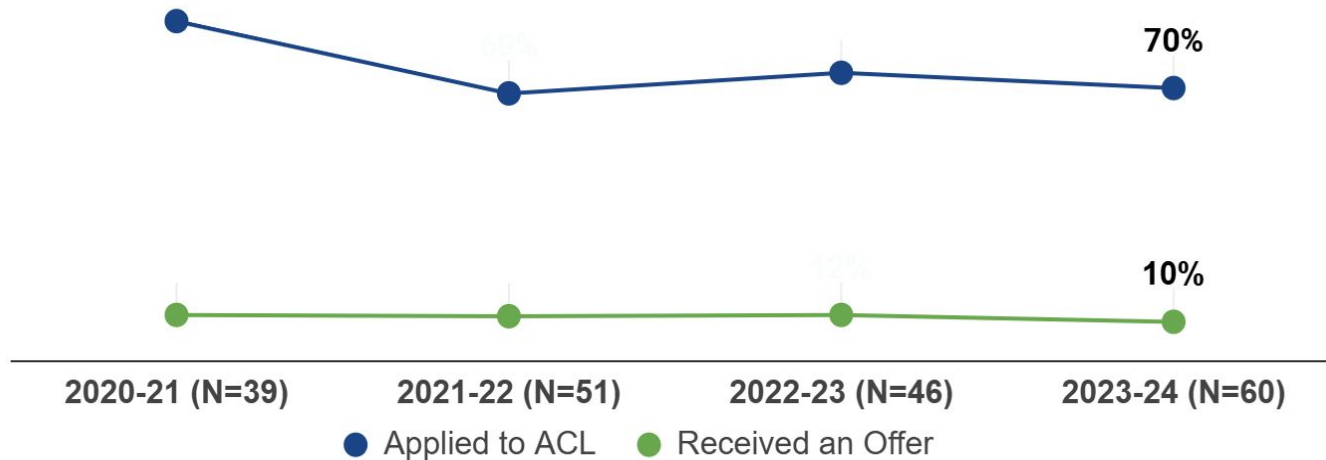


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# How are eligible *Level Up* students represented in applications to the Academies of Loudoun?

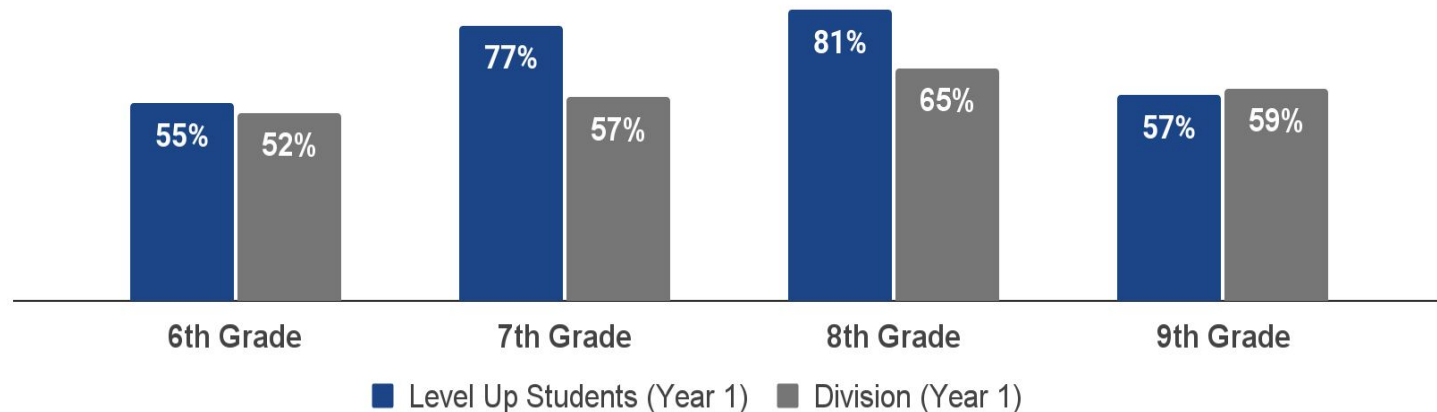


Sources: ACL admissions database, Phoenix student information system



# To what extent did the *Level Up* students enroll in advanced math courses?

2021-22 Cohort

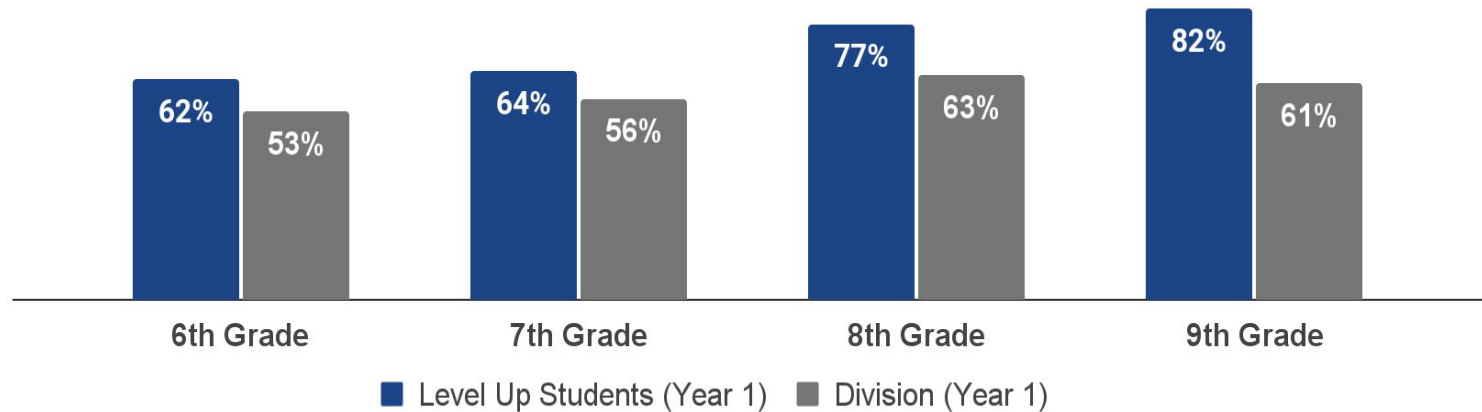


Source: *Phoenix student information system*



# To what extent did the *Level Up* students enroll in advanced math courses?

2022-23 Cohort

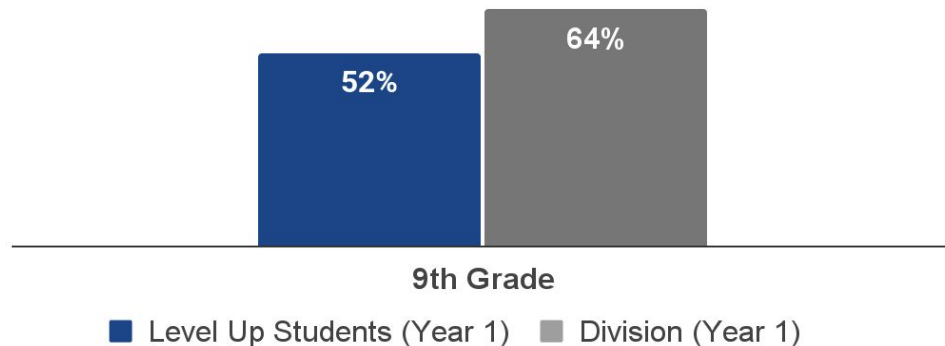


Source: *Phoenix student information system*



# To what extent did the *Level Up* students enroll in advanced science courses?

*2021-22 Cohort*

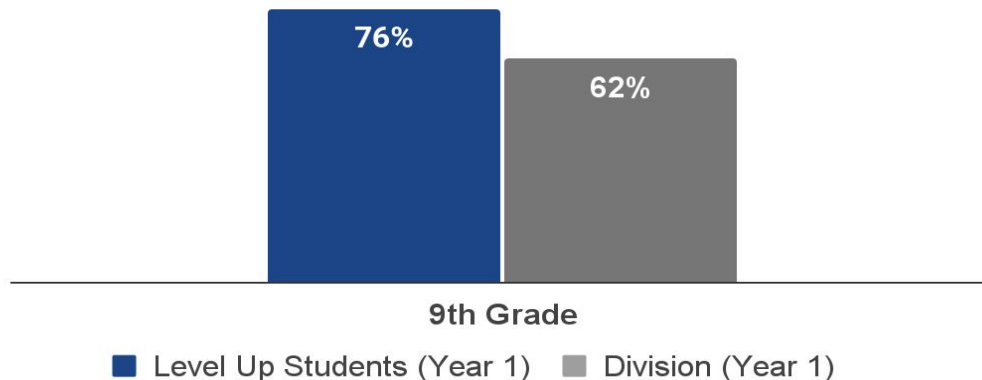


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# To what extent did the *Level Up* students enroll in advanced science courses?

*2022-23 Cohort*



Source: *Phoenix student information system*



# Conclusions and Recommendations



# Conclusions: Strengths

- Emphasis on enrollment of Hispanic students
- High levels of teacher satisfaction with the curriculum materials, professional development, and guidance from staff
- Perceived improvement to the students' STEM skills
- Sufficient opportunities for parent communication and engagement
- Increased student interest in science (PROPEL) and math (Level Up) and continued plans to take these advanced courses in both programs
- Relatively high percentages of Level Up students enrolled in advanced math courses
- Improvement in enrollment of Level Up students in advanced science courses



# Conclusions: Areas of Improvement

- Underrepresentation of females in both programs
- Need for sufficient materials for PROPEL teachers to complete the activities
- Curriculum gap between the lesson content and the teachers' daily instruction
- Decreased student self-efficacy across most targeted activity domains





# Recommendation #1

## Add More Challenging Reading Material

Incorporate advanced STEM-related reading materials to:

- Build comprehension and analytical skills.
- Prepare students for rigorous academic coursework.
- Strengthen critical thinking and problem-solving abilities.



# Recommendation #2

## Increase Collaboration Between Program Leaders and Classroom Teachers

- Invite content teachers to attend PROPEL and Level Up professional development sessions.
- Align STEM activities with classroom instruction for a cohesive learning experience.
- Improve communication with parents by presenting a unified approach to education.



# Recommendation #3

## Raise Early Awareness of Honors Courses

- Inform parents about honors opportunities starting in 4th grade.
- Highlight how PROPEL activities align with honors coursework.
- Use success stories of alumni excelling in honors classes to inspire students and families.



# Recommendation #4

## Increase Representation of Girls in STEM

- Partner with community organizations like the Children's Science Center and Latina Sci Girls.
- Offer mentorship, hands-on workshops, and exposure to female STEM professionals.
- Create an encouraging and inclusive environment for young girls to thrive.



# Recommendations: Why These Changes Matter

- Align with LCPS One LCPS: 2027 Strategic Plan for Excellence:
  - Enhance rigor in education.
  - Foster collaboration across programs.
  - Promote equity, inclusion, and access to advanced opportunities.
- Ensure PROPEL and Level Up remain impactful, inclusive, and aligned with district goals.





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