

National Assessment of Educational Progress Update

William Ward
National Center for Education Statistics

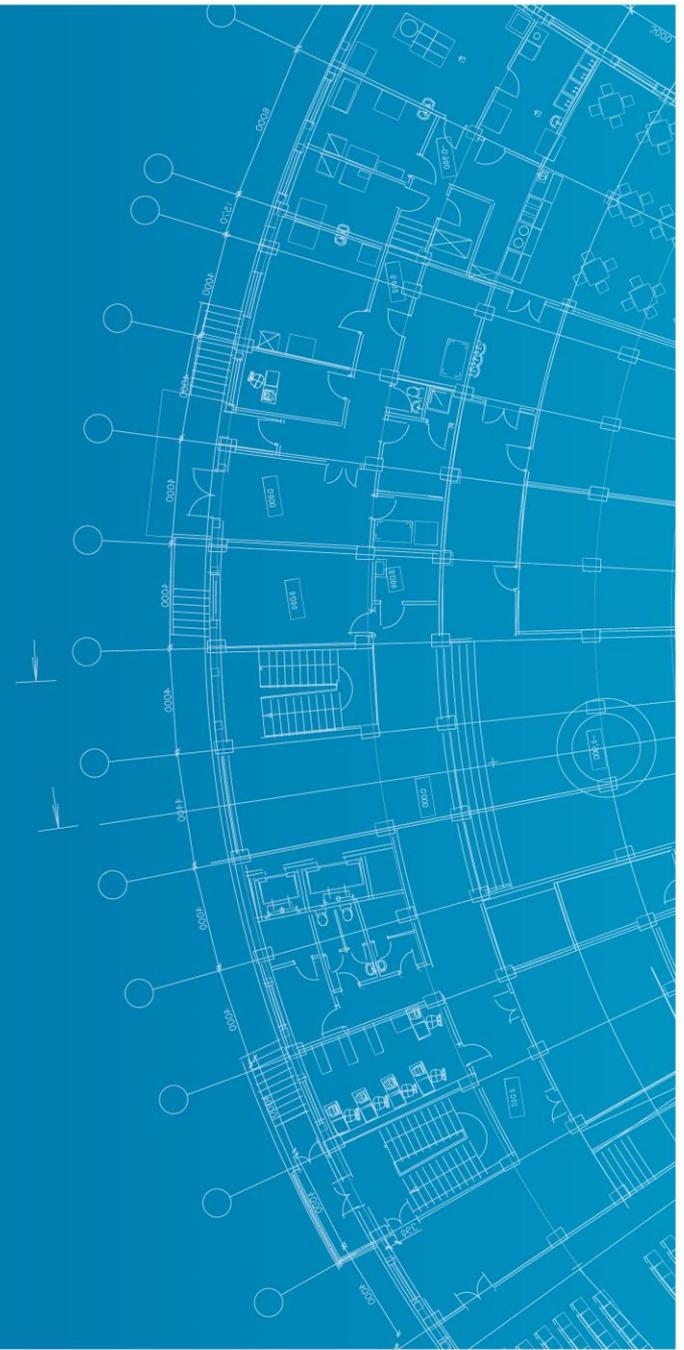
National Forum on Education Statistics
July 12, 2016

NAEP 2016 and 2017

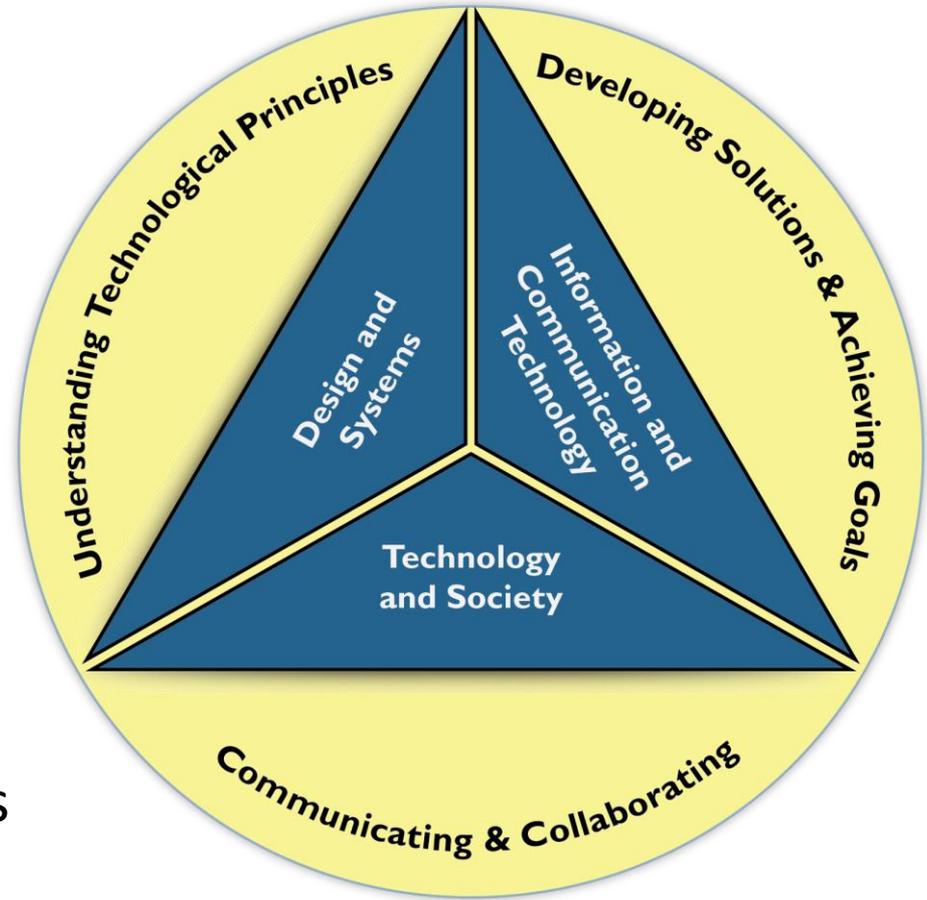
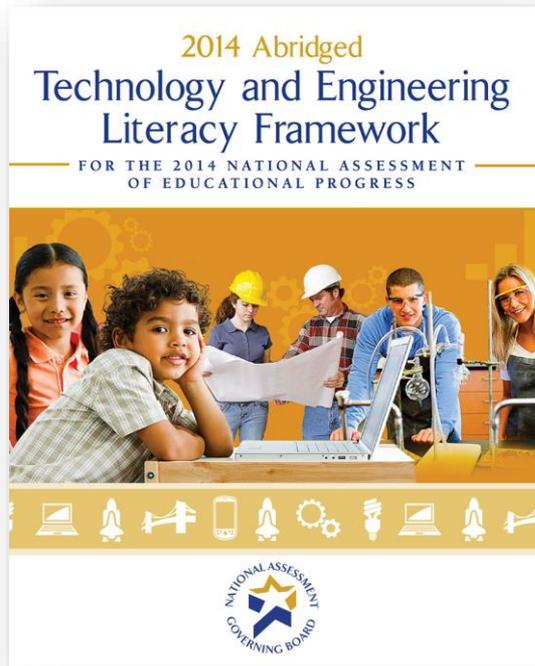
- **NAEP 2016**
 - Arts (grade 8)
 - Mathematics and Reading (grades 4 and 8)*
- **NAEP 2017 (predominately digitally-based)**
 - Over 900,000 students in 19,000 schools
 - Mathematics and Reading (state-level; grades 4 and 8)
 - Writing (national-only; grades 4 and 8)
 - U.S. History, Civics, and Geography (grade 8)*

* Pilot tests

Technology and Engineering Literacy Assessment



Grade 8 Assessment Objectives



- Three Assessment Areas
- Three Practices

Overview of the TEL Assessment

- **Administered on laptop computers**
 - January – March 2014
- **National samples**
 - 21,500 eighth-graders
 - 840 public and private schools across the nation
- **Performance reported as:**
 - Average scale scores (0–300 scale)
 - Overall scale
 - Subscales for content areas and practices
 - Achievement levels set on overall scale only

- In total, 20 scenario-based tasks and 97 discrete tasks
- Each student assessed for 60 minutes
 - Two 30-minute segments
- Survey questions were administered to:
 - Students
 - School administrators



Highlights of The Nation's Report Card Card Website

Explore the results online

www.nationsreportcard.gov/tel_2014/

The screenshot shows the website interface for the 2014 Technology & Engineering Literacy (TEL) assessment. The header includes the logo for 'The Nation's Report Card' and navigation links for Reports, Dashboards, Data Tools, News Room, and Sample Questions. A search bar is also present. The main navigation bar highlights 'Home' and includes links for Overall Results, Sample Tasks, Student Experiences, TEL Profile Tool, and About the TEL Assessment. Social media icons for Email, Print, Twitter, and Facebook are also visible.

An Innovative Assessment in an Era of Rapid Technological Change

In 2014, the National Assessment of Educational Progress (NAEP) administered the first-ever nationally representative assessment of technology and engineering literacy. Eighth-grade students were presented real-world scenarios involving technology and engineering challenges. Students were asked to respond to questions aimed at assessing their knowledge and skill in understanding technological principles, solving technology and engineering-related problems, and using technology to communicate and collaborate. Students also were surveyed on their opportunities to learn about technology and engineering in and out of school.

Highlights of what we learned about eighth-grade students include the following:

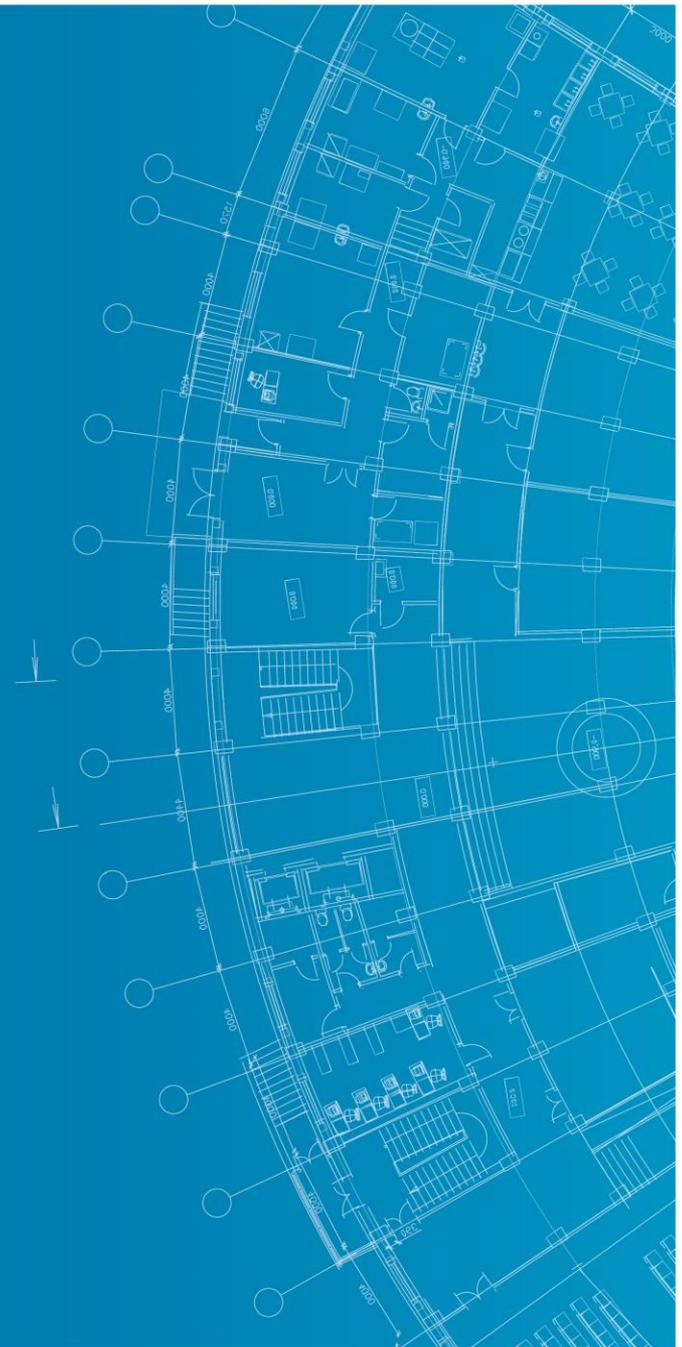
- Female students scored 3 pts higher than male students.**
- NSLP¹ not eligible students scored 28 pts higher than eligible students.**
- 87%** reported **figuring out why something was not working in order to fix it** outside of their school work.
- 50%** reported **using a computer to create, edit, or organize digital media** at least once a month in school.

¹ NSLP = National School Lunch Program.

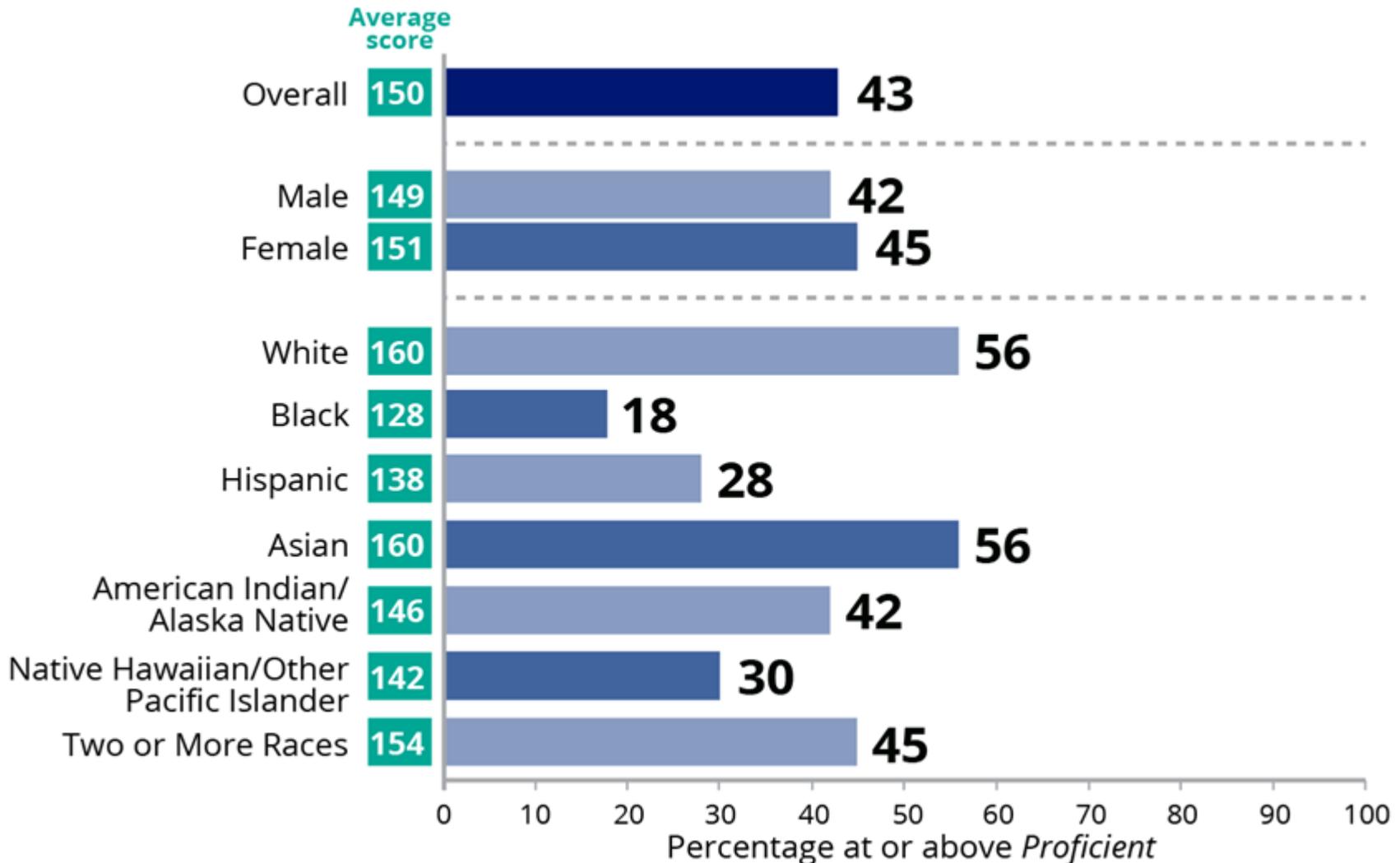
[Read more about TEL](#)

- Tour the tasks
- Try the TEL tasks yourself
- Explore student experiences and achievement
- Investigate profiles of students in TEL

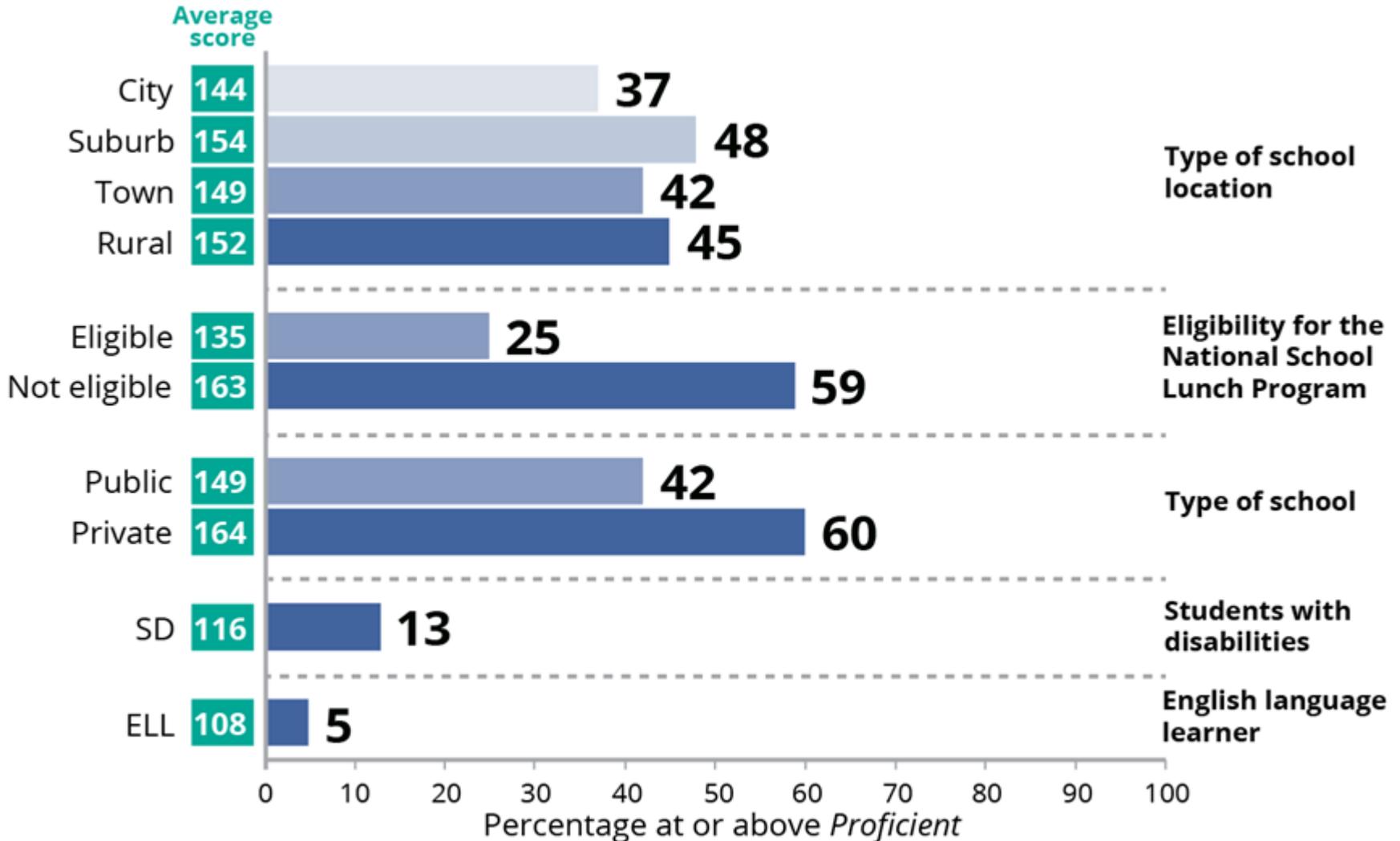
Selected Results



Average Scores and Percentages at or above *Proficient*

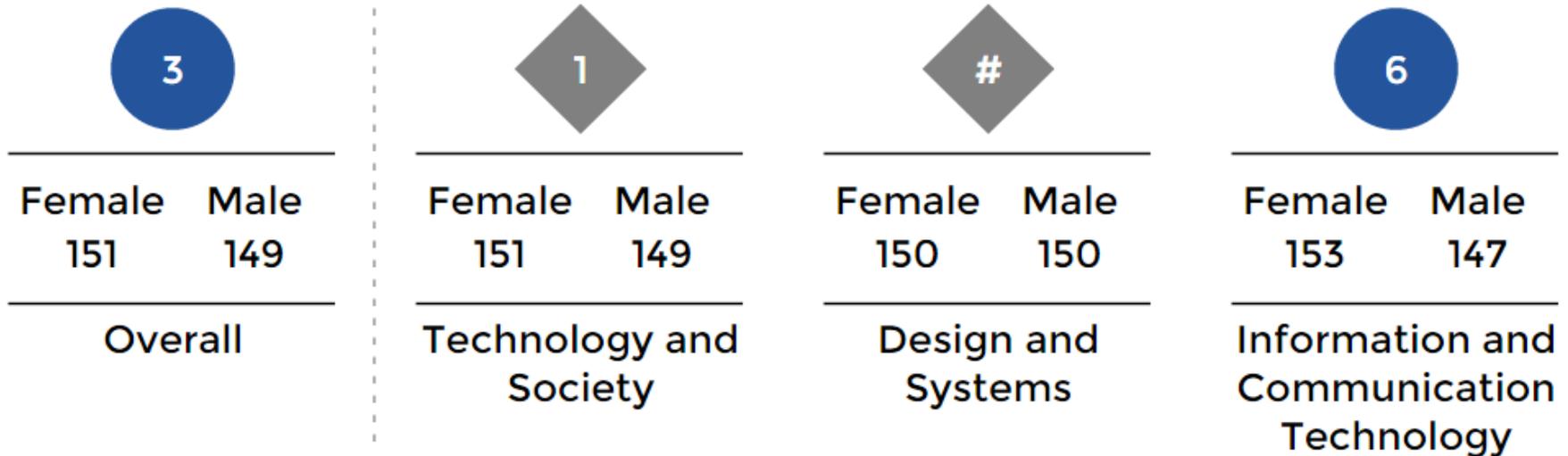


Average Scores and Percentages at or above *Proficient*



Gender Score Differences by Content Area

Females outperformed males overall



 **Statistically significant**

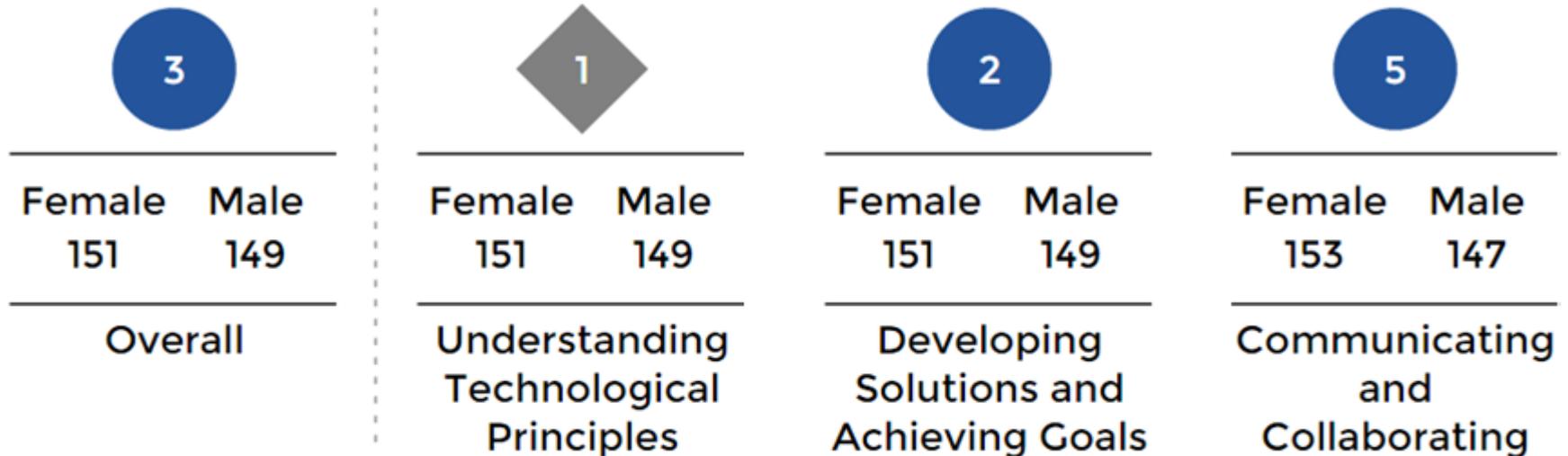
 **Not statistically significant**

Rounds to zero.

NOTE: Score differences are calculated based on the difference between unrounded average scores.

Gender Score Differences by Practice

Females performed better than males in two of the three practices



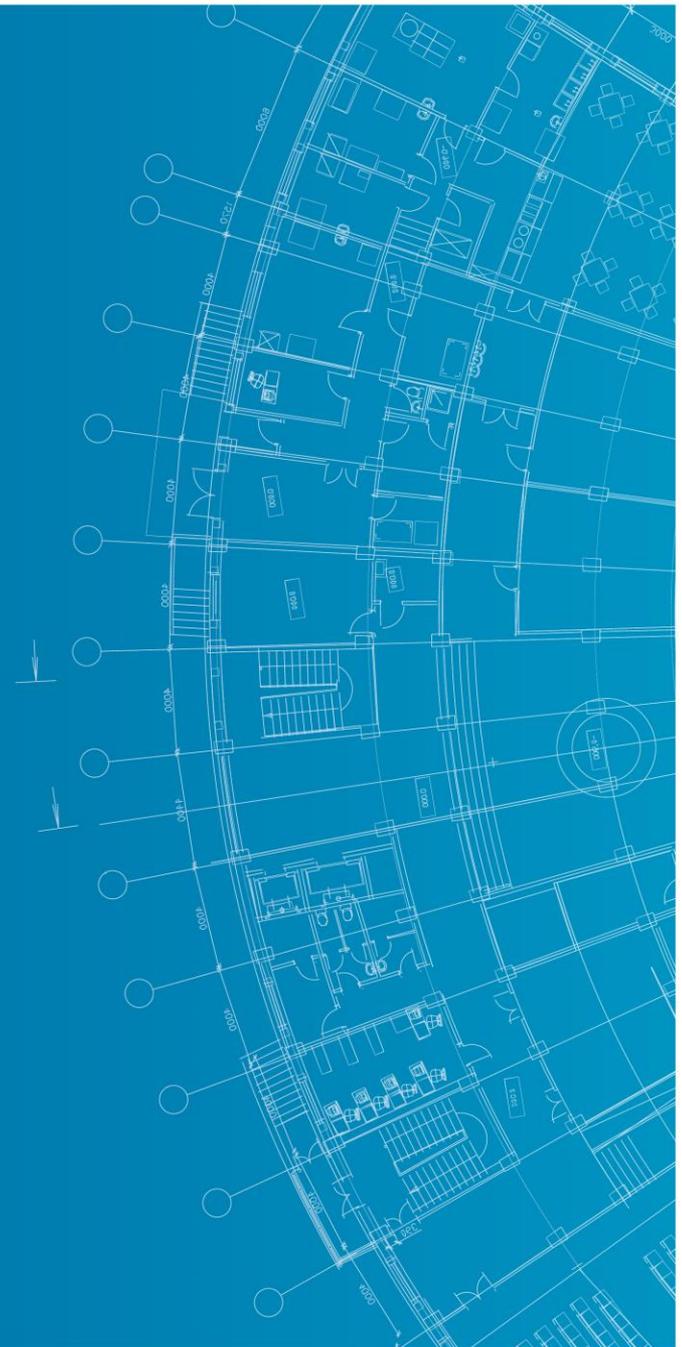
Statistically significant



Not statistically significant

NOTE: Score differences are calculated based on the difference between unrounded average scores.

Sample Scenario-Based Task: Iguana Home

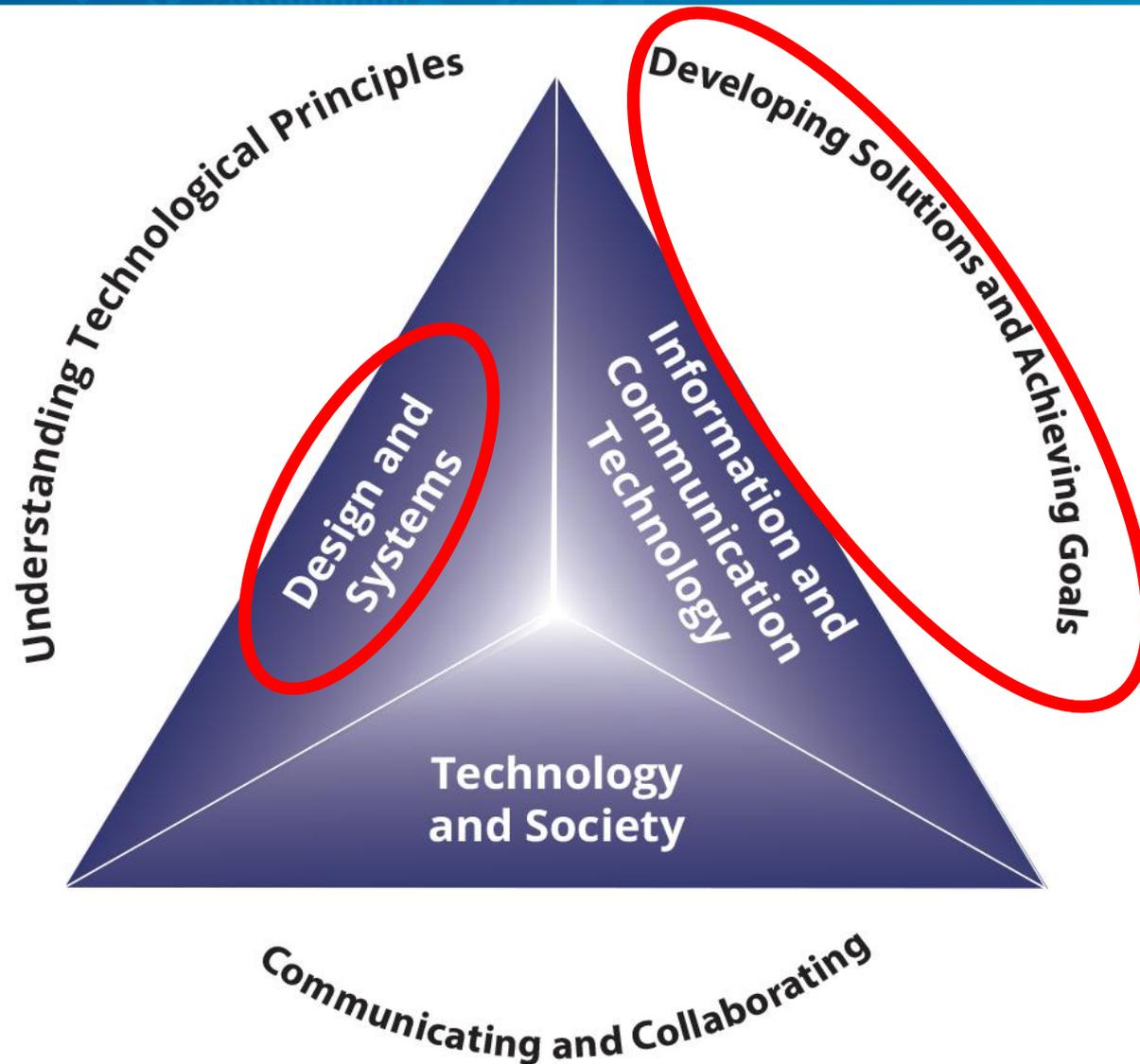


In the *Iguana Home* task, students:

- Learn about iguanas and their basic needs
- Help troubleshoot and fix the habitat for a classroom iguana named "Iggy"



Content Area & Practice



Task Steps

STEP 1 Evaluate cage design causing Iggy to be too cold

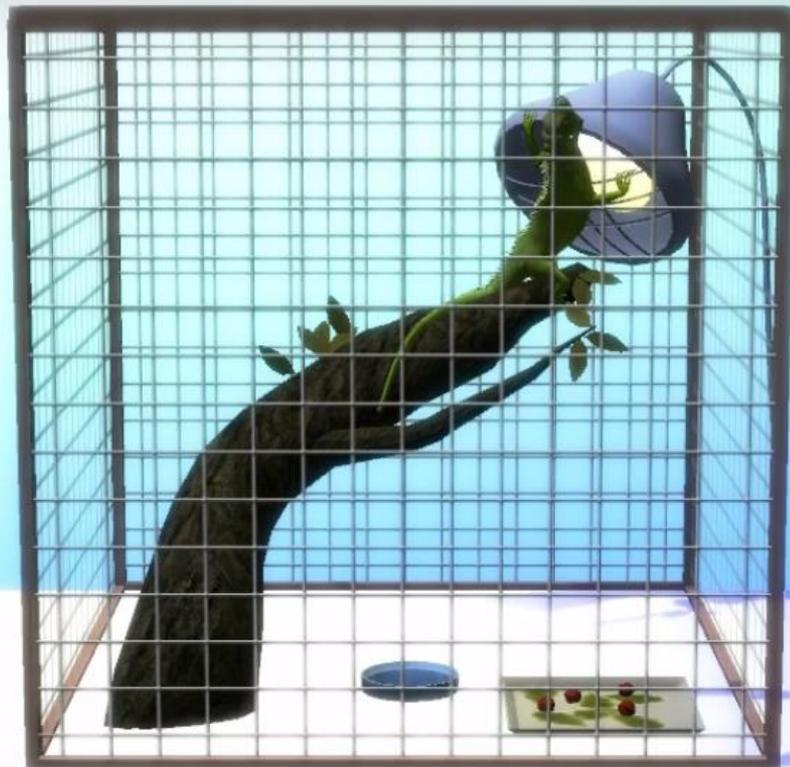
STEP 2 Evaluate cage design causing Iggy to stay awake and active at night

STEP 3 Test a new design and evaluate alternative solutions

STEP 4 Redesign the cage to prevent dehydration

Task Steps

STEP 1 Evaluate cage design causing Iggy to be too cold



Let's start by trying to solve problem 1.

Iggy is always hanging on to his heat lamp! He does not want to be anywhere else.

Based on the iguana facts, what is the most likely reason Iggy is hanging on to his heat lamp?

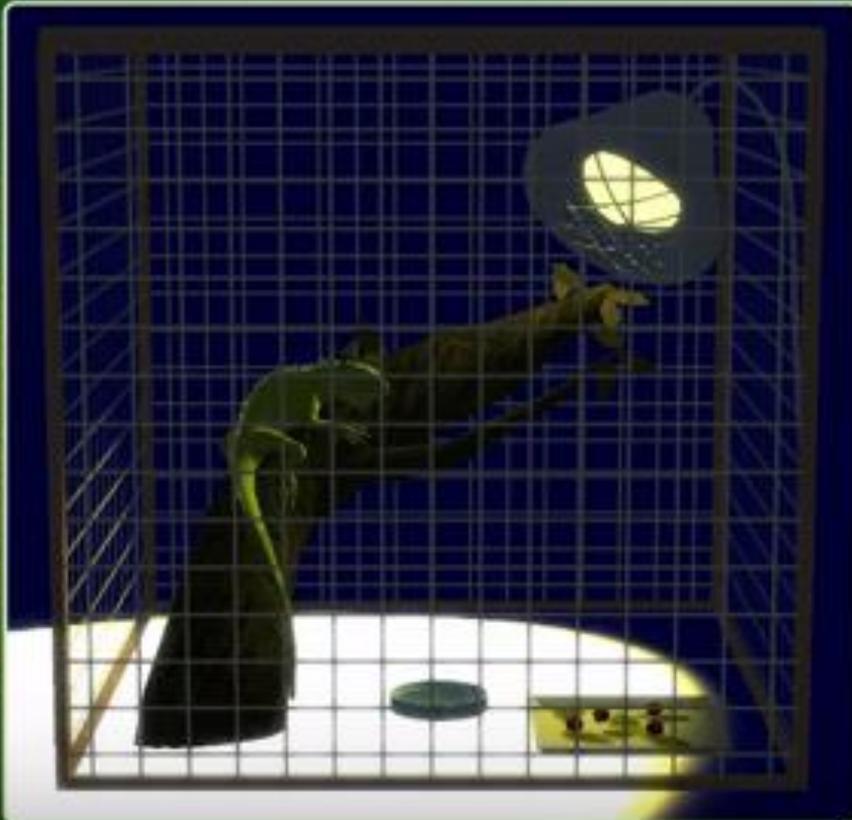
- Iggy likes being high up in his cage.
- Iggy's home lacks moisture.
- Iggy's home is too cold for him.
- Iggy is not getting enough to eat.



Answer the question and click Submit.
Click Iguana Facts to review facts about iguanas.

STEP 2

Evaluate cage design causing Iggy to stay awake and active at night



Based on your observation of Iggy's behavior, what fact about iguanas is related to Iggy's second problem (Iggy is awake and active at night)?

- Iguanas need very moist air.
- Iguanas absorb heat from above.
- Iguanas need to move in and out of warmer and cooler areas.
- Iguanas need 12 hours of light and 12 hours of darkness.



Answer the question and click Submit.

STEP 3

Test a new design and evaluate alternative solutions



Based on Iggie's behavior, does option 1 work to solve Iggie's cold home?

- Yes, this will work.
- No, this will not work.

Explain your answer based on what you observed.

It doesn't solve the problem because Iggie is still clinging to the|

! Answer the question and click Submit. You may click Run to observe Iggie's behavior again.

Task Steps

STEP 4 Redesign the cage to prevent dehydration



One of your classmates has done some research about iguanas and is worried that Iggy may get dehydrated, meaning his body will not get enough moisture.

Based on what you have learned in this task about iguanas, which of these two items is best at preventing Iggy from getting dehydrated?

- Another bowl of water in his new home
- An automatic water-misting system in his new home

Explain your answer.

Type answer here.



Answer the questions and click Submit.

STEP 2

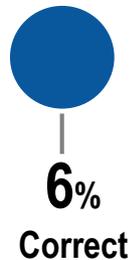
Evaluate cage design causing Iggy to stay awake and active at night

Multi-part task step

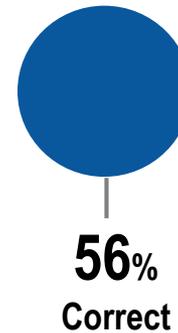
- Analyze a design and identify an unmet requirement
- Predict the possible outcome of a proposed design change
- Explain how modifying the system could solve a problem by meeting design requirements

Focus on Step 2

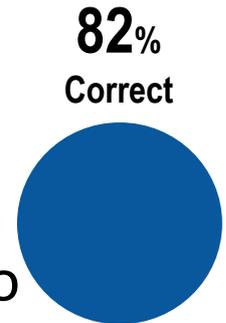
Identify an unmet requirement, predict the outcome of a change, AND explain how those solve a problem



Identify an unmet design requirement AND predict outcome of proposed design change



Analyze Iggy's behavior to identify an unmet cage design requirement



Questions?

