Power Up: Science ACT Prep, Week 7

Teresa Lansford, Keiana Cross, Matthew McDonald
Published by *K20 Center*

This work is licensed under a Creative Commons CC BY-SA 4.0 License

Time Frame 35

Essential Question(s)

How can I increase my ACT score?

Summary

In this seventh science ACT prep activity, students consider the steps of the scientific process to evaluate scenarios in experiments. First, students recall the steps of the scientific process by playing Fiction in the Facts to identify problems in how sample experiments are performed. They will then apply this knowledge to a sample ACT scenario in which they compare two scientific arguments to determine which disagreements are caused by not following the scientific method. Students then independently apply the skills they have been learning across the series of activities to two ACT-style passages and question sets. Finally, they reflect on their ACT goal sheet and adjust their goals as needed. This is the seventh activity in a10-week "Power Up" series for ACT Prep.

Learning Goals

- Identify steps in the scientific method
- Evaluate experiments for whether they follow the scientific method

Attachments

- Activity Slides—Science ACT Prep, Week 7.pdf
- Activity Slides—Science ACT Prep, Week 7.pptx
- It's Electrifying—Science ACT Prep, Week 7.docx
- It's Electrifying—Science ACT Prep, Week 7.pdf
- Practice Passages (Teacher Guide)—Science ACT Prep, Week 7.docx
- Practice Passages (Teacher Guide)—Science ACT Prep, Week 7.pdf
- Practice Passages—Science ACT Prep, Week 7.docx
- Practice Passages—Science ACT Prep, Week 7.pdf

Materials

- Activity Slides (attached)
- It’s Electrifying handout (attached)
- Practice Passages handout (attached; 1 per student)
- Practice Passages (Teacher Guide) document (attached; for teacher use)
- pencil/pen

10 minutes

Introduction

Teacher's Note: ACT Enhancements

The following resource has been updated to better align with the test changes that began in April 2025 for the online test and in September 2025 for the paper-pencil test. Some outside resources linked are based on the previous version of the ACT. Learn more about enhancements to the ACT in 2025.

Use the attached **Activity Slides** to introduce the activity. Use **slides 1-4**, which includes the title for the activity and can be used to share the essential question and learning objectives. Next, use **slide 5** to review the scientific method. Ask for volunteers to share what the order should be for the steps. Show **slide 6** to check that the class was correct. Then ask students why it is important to do the steps in this order.

Sample Student Responses

- Without a question, you can't make a hypothesis.
- You have to have a hypothesis to understand what to test in the experiment.
- If you don't follow the same method, you can't trust the results.
- It is easier to compare if the steps are the same.

Move to **slide 7**. Explain that each of these slides explain an experiment, and they have to find the Fiction in the Facts, or where the experiment stopped following the scientific method. They are looking for the first place a mistake happened in following the scientific method. Have students vote for the part where the experiment stopped following the scientific method. Ask volunteers why they voted like they did, and then display the correct answer on **slide 8**. Repeat the process, showing each scenario on **slides 9-12**, locating the mistake and justifying answers. Let students know that there are times on the ACT where they will need to be able to identify problems with methods to answer questions about experiments or scientific arguments. Next, they will apply what they just did on these slides to a sample that is similar to what they will see on a real ACT passage.

15 minutes

Activity

Display **slide 13**. Hand out the **It's Electrifying** handout. This slide shows an experiment on electrical currents. Read the passage as a class. Then have students answer the questions on their own. Provide each student with a partner to compare answers. Then show **slide 14** to check their work. Ask which types of methods questions were the most confusing and why. Explain that they may have to use the tables and not just the passage to accurately answer the questions.

10 minutes

Wrap-Up

Let students know that for the last 10 minutes of class, they will be working independently to practice the skills they have been learning for the Science section of the ACT. Give them time to return to their desks.

Explain that they will have 10 minutes to read and answer questions about two different passages. They may notice that there are more passages than last week, but they are still given the same amount of time. Explain that this practice is closer to the timing they will have on the actual ACT, and that they are working on building testing stamina in order to keep a pace similar to what they will have on the test. Share that you will give a two-minute warning.

At that time, they should first fill in a guess on any unanswered questions, and then return to those questions and try to find the answers if they have time. Explain this is a good ACT strategy for when they hear the five-minute warning because the ACT does not lower your score for incorrect answers. That means it is always better to guess than leave a question blank. Provide each student with the **Practice Passages** handout. Show **slide 15** and start the 10-minute timer. Watch the timer and give a verbal two-minute warning. At the end of the time, collect the papers as a formative assessment. Use the attached **Practice Passages (Teacher Guide)** document, as needed. Display **slide 16** to celebrate unlocking another achievement!

Research Rationale

Standardized testing in high schools has long been used as a metric for assessing college readiness and school accountability (McMann, 1994). While there has been debate surrounding the accuracy of such metrics, as well as concerns regarding fairness, many institutions of higher education continue to make these scores part of the admissions process (Allensworth & Clark, 2020; Black et al., 2016; Buckley et al., 2020). In addition to admissions, it is important to keep in mind that standardized test scores can also provide students with scholarship opportunities they would not otherwise have (Klasik, 2013). Although the topic of standardized testing continues to be debated, effective test preparation can ensure that our students are set up for success.

With several benefits to doing well on college admissions tests, it is important to consider how best to prepare students for this type of high-stakes test. Students from groups that may historically struggle to find success, such as those in poverty or first-generation college students, especially stand to benefit from effective test preparation (Moore & San Pedro, 2021). The American College Test (ACT) is one option students have for college admissions testing that is provided both at national centers and school sites. Taking the time to understand this test, including the timing, question types, rigor, and strategies for approaching specific questions, can help prepare students to do their best work on test day and ensure their score is a more accurate representation of what they know (Bishop & Davis-Becker, 2016).

Resources

- Allensworth, E. M., & Clark, K. (2020). High school GPAs and ACT scores as predictors of college completion: Examining assumptions about consistency across high schools. *Educational Researcher*, 49(3), 198-211.
- Bishop, N.S. & Davis-Becker, S. (2016). Preparing examinees for test taking: Guidelines for test developers and test users. 2nd edition. Crocker, L. (Ed). In *Handbook of Test Development* (pp. 129-142). Routledge.
- Black, S. E., Cortes, K. E., & Lincove, J. A. (2016). Efficacy versus equity: What happens when states tinker with college admissions in a race-blind era? *Educational Evaluation and Policy Analysis*, 38(2), 336–363. http://www.jstor.org/stable/44984542
- Buckley, J., Baker, D., & Rosinger, K. (2020). Should state universities downplay the SAT? *Education Next*, 20(3).
- Klasik, D. (2013). The ACT of enrollment: The college enrollment effects of state-required college entrance exam testing. *Educational Researcher*, 42(3), 151–160. http://www.jstor.org/stable/23462378
- K20 Center. (n.d.). Fiction in the facts. Strategies. https://learn.k20center.ou.edu/strategy/60
- McMann, P. K. (1994). The effects of teaching practice review items and test-taking strategies on the ACT mathematics scores of second-year algebra students. Wayne State University. https://www.monroeccc.edu/sites/default/files/upward-bound/McMannP.-the-effects-of-teaching-practice-review-items-ACT-mathematics-second-year-algebra.pdf
- Moore, R., & San Pedro, S. Z. (2021). Understanding the test preparation practices of underserved learners. *ACT Research & Policy*. Issue Brief. ACT, Inc. https://files.eric.ed.gov/fulltext/ED616526.pdf