OKLAHOMA Aeronautics

TOOLKIT 12

CONSTRUCT A ROTOR MOTOR

OKLAHOMA CareerTech

Overview: Students construct a rotor motor from a template and redesign the motor to make it descend more slowly.
Source: *Aeronautics* module, NASA Out-of-School Learning Network
Grade Levels: 6-8
Location: https://www.nasa.gov/stem-ed-resources/aeronautics-module.html

1 Student Activity	2 Lesson Plan or Procedure	3 Activity Evaluation or Rubric	4 Suggested Activities	5 Glossary	6 Teacher Background or Concepts	7 Student Background or Concepts	8 Standards Alignment
x	x					x	x

Notes:
- States specific learning objectives addressed.
- Includes a materials list.
- Includes a student worksheet.

KEY:

1. Student Activity: This is the focus of the toolkit. It is at least one complete activity or lab for students to complete that relates to a topic relevant to aviation/aerospace. It may include related worksheets.

2. Lesson Plan or Procedure: These are the steps or instructions for the teacher to use to deliver the activity.

3. Activity Evaluation or Rubric: These are answers to the activity or a rubric or other tool for evaluating students' results.

4. Suggested Activities: These are additional or extension strategies for the teacher that relate to the topic/activity.

5. Glossary: This is a list of the vocabulary terms and their definitions that relate to the activity and/or associated concepts.

6. Teacher Background or Concepts: This is any background information for the teacher that explains key concepts relating to the topic/activity, provides the aerospace context for the activity or otherwise helps prepare the teacher for the topic/activity.

7. Student Background or Concepts: This is any background information for the student about theory and concepts related to the topic/activity. It may be separate handout files or a text section within the larger topic/activity.

8. Standards Alignment: These are education or industry standards that align with the topic/activity.

SUPPLEMENTAL RESOURCES

General Resources

- *Pilot's Handbook of Aeronautical Knowledge,* Federal Aviation Administration, 2016. Free to download at https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/.
- Airport Acronyms and Abbreviations, Federal Aviation Administration, https://www.faa.gov/airports/resources/acronyms/
- Find an Airport, Oklahoma Aeronautics Commission, https://oac.ok.gov/airports
- K-12 Student/Teacher Resources, NASA, https://www.nasa.gov/aeroresearch/resources/k-12-resources
- *Aeronautics Educator Guide*, NASA, https://www.nasa.gov/stem-ed-resources/aeronautics.html
- Science Takes Flight With Paper Airplanes, Edutopia, https://www.edutopia.org/article/science-takes-flight-paper-airplanes

Instructional Practice Resources

- *60 Formative Assessment Strategies*, Natalie Regier, 2012. Free to download at https://www.okcareertech.org/educators/resource-center/teacher-trainer-tools.
- *Student Learning That Works: How brain science informs a student learning model,* McREL International, 2018. Free to download at https://www.mcrel.org/student-learning-that-works-wp/.

Career Planning Resources

- OK Career Guide. Free to Oklahoma educators. For more information, see https://www.okcareertech.org/educators/career-and-academic-connections/ok-career-guide.
- Aviation Organizations, Oklahoma Aeronautics Commission, https://oac.ok.gov/media-outreach/aviation-organizations
- *Careers in Aerospace,* American Institute of Aeronautics and Astronautics. Free to download at https://www.aiaa.org/get-involved/students-educators/Careers-in-Aerospace.
- Flying for a Career, AOPA, https://www.aopa.org/training-and-safety/learn-to-fly/flying-for-a-career
- Oklahoma Aerospace: Building on a Rich Tradition, Oklahoma Department of Career and Technology Education, https://www.okcareertech.org/business-and-industry/aerospace-and-aviation

Activity-Specific Resources

- What Is A Helicopter?, NASA, https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-a-helicopter-58.html
- How Helicopters Work, HowStuffWorks, https://science.howstuffworks.com/transport/flight/modern/helicopter6.htm

TEACHER ACTIVITY REFLECTION WORKSHEET

• What instructional objectives were met? How do I know?

• Were students actively engaged? How do I know?

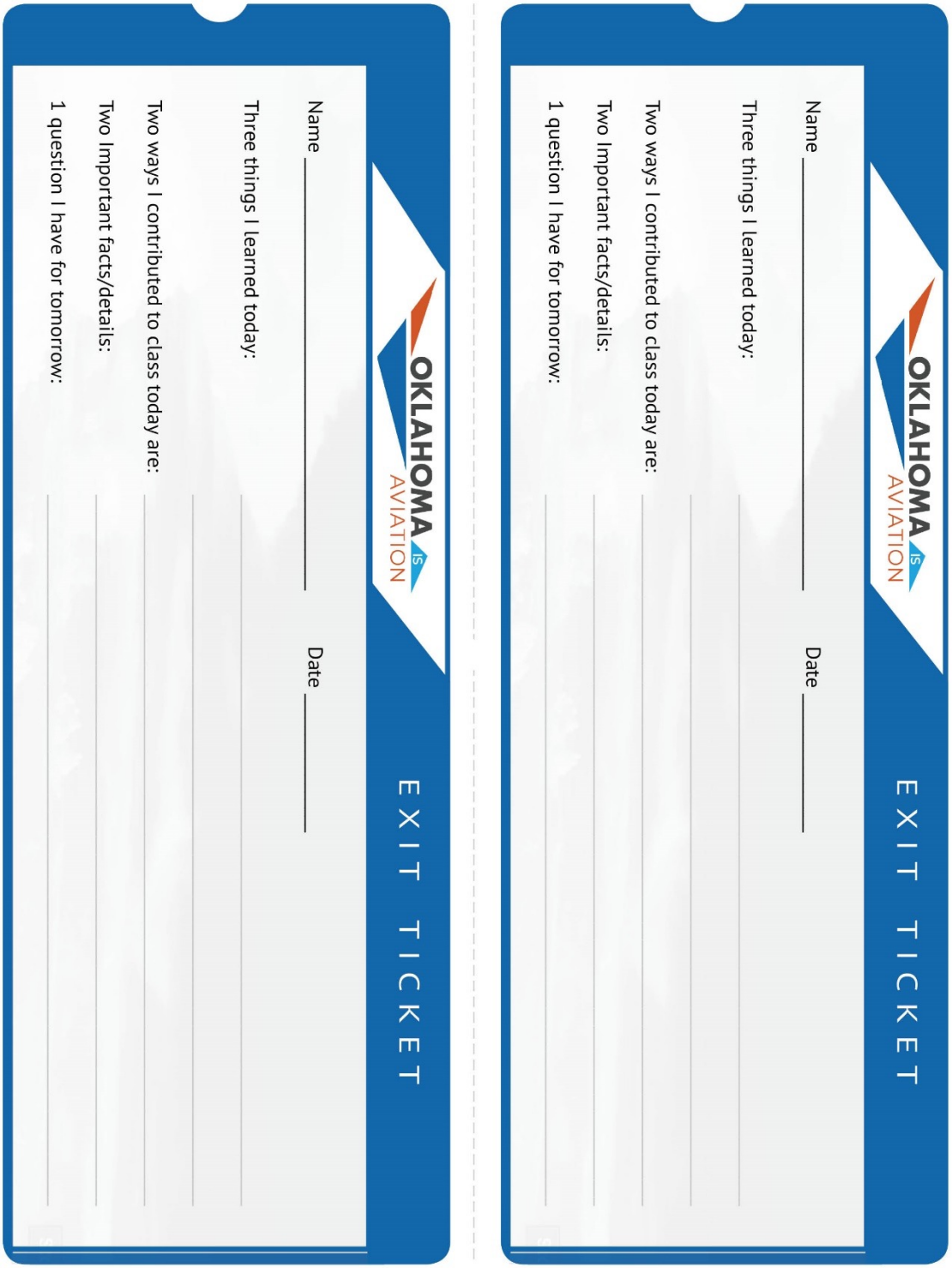
• Did I alter my instructional plan? How and why?

• What formative assessment(s) did I use?

• What would I do differently the next time?

• What additional resources and/or support would enhance this activity?

EXIT TICKET


OKLAHOMA IS AVIATION
EXIT TICKET
Name
Date
Three things I learned today:
Two ways I contributed to class today are:
Two Important facts/details:
1 question I have for tomorrow:
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CAREER REFLECTION WORKSHEET

Name:_____ Date:_____

Instructions

- Many factors go into deciding what career might be a good fit for you. You can be proactive and start researching careers to help you decide a career path.
- Choose 1-3 careers in Aviation & Aerospace Pathways that interest you. Use the career pathways videos and other resources that your instructor provides. Answer the questions below for each career.

1. List the career. Why does this career interest you?

2. What tools and technology does this career use? How would they make the job easier?

3. What knowledge is important to have for this career? Why is it important?

4. What skills and abilities are important to have for this career? Why are they important?

5. What work activities in this career might relate to things you already do at school, at home or at a job?

6. What about the work environment for this career would interest you?

7. Where can you develop the skills and abilities for this career?