



United States
Department of
Agriculture

NIFA

National Institute
of Food
and Agriculture



[https://nifa.usda.gov/
program/4-h-positive-
youth-development](https://nifa.usda.gov/program/4-h-positive-youth-development)



National Aeronautics
and Space
Administration

**EXPEDITIONARY
SKILLS** FOR LIFE

A FEDERAL PARTNERSHIP FOR **STEM** EDUCATION

LESSON PLAN: TEAMWORK ACTIVITY 1.11 ROCKET POWER CHALLENGE II

LESSON DETAILS

AGE/GRADE LEVEL

Elementary School

LEARNER OUTCOMES

Youth will identify ways to effectively communicate with members of a team, recognize that there are many ways to solve a problem, and define teamwork and team roles.

SUCCESS INDICATORS

Youth will demonstrate patience, respect and appreciation of team members; respect team member roles and responsibilities and assign tasks and understand workload.

LIFE SKILLS

Critical thinking and innovation, collaboration, social skills

NATIONAL STANDARDS

CCSS.ELA-Literacy.CCRA.SL.1
Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

21st Century Learning and Innovation Skills: Learning and innovation skills increasingly are being recognized as the skills that separate students who are prepared for increasingly complex life and work environments in the 21st century, and those who are not. A focus on creativity, critical thinking, communication and collaboration is essential to prepare students for the future.

PREP TIME

15 minutes for room set up

ACTIVITY TIME

50 minutes

MATERIALS LIST

- 1 lb. dry spaghetti
 - 10 oz. small marshmallows
 - 20 oz. gum drops
 - yard stick or tape measure
 - countdown clock or other timing device
- More supplies may be needed depending upon the size of the group

HANDOUTS

- Learner Assessment Questions

SUGGESTED SPACE

Indoors, one table or other flat surface for each team

SUGGESTED GROUP SIZE

4 youth per team, any number of teams can be involved.

REFERENCES

- It Takes A NASA Village
<http://astropeggy.tumblr.com/>
- Building Your Programs 20 Minutes at a Time — Leadership and Reflection Activities You Can Use!
www.extension.umn.edu/youth/research/quality/docs/building-your-programs-book-one.pdf
- 5 Ways Youth Can Be Good Team Members
http://msue.anr.msu.edu/news/five_ways_youth_can_be_good_team_members
- NASA Teamwork
https://science.nasa.gov/science-news/science-at-nasa/2005/10jan_teammeup

INTRODUCTION

It Takes a NASA Village...To Train an Astronaut is a blog by Commander Peggy Whitson to showcase some of the many people and jobs that support astronauts before, during, and after their missions. Each person has a role to play, working as a team for mission success

This blog highlights the larger story of NASA with a compilation of individual perspectives on what is currently taking place to propel space-flight forward. Like the many parts of a rocket, NASA couldn't exist without its passionate employees.

The goal is to inspire a younger generation to pursue education and future job potential in science, technology, engineering and math-related fields. This blog is an opportunity for future NASA villagers to get the inside scoop on how to achieve their dreams, see funny behind-the-story scenes and understand the complexity of the many projects the community works on.

Every villager has their own unique strengths and weaknesses that they bring to the team. Understanding these strengths and weaknesses can assist you in developing a balanced team of people.

Understanding the roles that people naturally tend to take will help you decide the responsibilities of each team member. Therefore, if you know which role each team member enjoys fulfilling, it can assist you in providing your team members with motivating tasks.

To effectively manage a team you need to have a clear understanding of the roles people play as members of the team.

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EXPEDITIONARY SKILLS FOR LIFE

ROCKET POWER CHALLENGE II, CONTINUED

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ACTIVITY INSTRUCTIONS

INTRODUCTION ACTIVITY (10 MINUTES)

Ask and discuss with youth:

1. Review: Why do people work on teams? What makes a good team member?
2. Do you know what a "role" is? Share with the youth this example about roles on a team:

Roles of team members might be determined by the skills of the people involved or because of the number of people needed to complete a task. A common example is a sports team, like football. The quarterback can't play all of the team roles. The quarterback can't throw the ball down the field and catch it in the end zone! To complete this task, there have to be at least two people on the team. Quarterbacks typically have special skills that are needed to do their role. The leader of the team - the coach - doesn't even touch the ball during a play but is an important part of the team.

3. Do you think the people at NASA have "roles" in their work? What do you think those roles might be?

ACTIVITY PART 1: ASSIGNED ROLES (15 MINUTES)

Explain that the youth will do a team engineering activity that involves roles.

The team roles for this project will be:

- e Team Leader - Gives team instructions, does not build
- e Builder 1 - Builds rocket model, listens to leader
- e Builder 2 - Builds rocket model, listens to leader
- e Supply Manager/Timekeeper - prepares supplies, updates team on time, assists building when asked by Team Leader

Explain that the youth will be working on a team to complete a task. Ask them to describe a good team player.

1. Assign youth into teams of four with each at their own table. Review the team roles. Randomly assign the four team roles to the team members.

2. Hand out the supplies to each team: 12 pieces of spaghetti, 10 marshmallows and 10 gum drops. Tell the youth not to touch the supplies or eat them.
3. Their goal is to work together to make an improved rocket from their Challenge 1 lesson that is free standing and as tall as possible.
4. Have the youth in their teams briefly discuss and make a plan of what their rocket might look like and the supplies that they'll use. The team leader leads this or asks for help from the team.
5. Announce that the teams have 12 minutes to complete the task. Display the countdown clock or other timing device for the timekeeper to watch. Allow the teams to begin to build. As the time clicks down, do not remind the youth about the time remaining - let the timekeeper for each team keep track.
6. Approximately half way through, do a temporary "pause." Allow 30 seconds for team leaders only to survey the other teams' building projects to gather ideas that might assist their team with their own construction. Allow teams to continue and finish up after this break.
7. Once time runs out, ask the teams to stop and move away from their tables/models.
8. Allow each team to showcase their final model design. Use the yardsticks to measure the height of each model. Use group applause to celebrate all of the teams' efforts.

DISCUSSION QUESTIONS (10 MINUTES)

Allow each team member to answer one of the following questions within their team. Allow 30 seconds for each response.

1. What went well?
2. What didn't work?
3. Did you work as a team?
4. Did your teammates follow their roles?
5. What did you like about this activity?
6. What did you dislike about this activity?

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EXPEDITIONARY SKILLS FOR LIFE

ROCKET POWER CHALLENGE II, CONTINUED

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DEBRIEF ACTIVITY: WHAT'S MY REFLECTION QUESTION? (5 MINUTES)

MATERIALS LIST

Puzzle pieces that can connect with others easily, can be drawn on, and pens, markers, or pencils.

Puzzle pieces that you can draw on are a wonderful tool. Using the reflection question that best meets your needs (see examples below) invite youth to draw or write on their puzzle piece. The discuss the following questions with the entire group.

1. Team Leaders - Was being the team leader hard or easy? Why?
2. Team Builders / Timekeepers - Did you like your roles? Why or why not? Was it difficult to only do what you were told to do?
3. Entire Team - What does it mean to work as a team.

Have youth put the puzzle together as they share the reflections they placed on the puzzle pieces. Save and mount the puzzle if the group will come together again.

Sample Reflection Questions

- What is a goals you have for the group?
- What strengths do you bring to the group?
- What surprised you about this activity?
- What was most challenging?

APPLY CHALLENGE: TEAMWORK SKITS OR COMIC STRIPS (10 MINUTES)

Tell the youth that they will be assigned to a team to act out in a skit or develop a comic strip that they will present to the large group that involves situations that require teamwork during their daily lives. Their team should plan a short skit or comic strip with a role for each person assigned by the instructor. Their skit or comic strip should include at least one negative teamwork strategy.

1. After they present, the large group will comment on the negative teamwork strategy. The team will then explain how they would fix the scenario with a positive teamwork strategy.
2. Assign teams (either by choice or another method).

3. Allow teams to prepare and practice.
4. Have each team present, following step #2.

Discuss:

Tell the youth they have 1 minute to call out as many positive teamwork strategies as they can. Count them up and suggest they try one they have never tried before the next time they are in a team situation.

FUN FACTS

There are a number of past and current astronauts and NASA employees who were 4-H members. In addition to Peggy Whitson, who was a 4-H member in Iowa, others include Allan Shephard (New Hampshire 4-H), the first American in space, and Charles Bolden (South Carolina 4-H), former astronaut and Administrator of NASA.

DID YOU KNOW

The International Space Station is a joint effort between Canada, Japan, the Russian Federation, the United States, and the 22 Member States of the European Space Agency. As of November 2016, 226 individuals from 18 countries have visited the International Space Station.

INSTRUCTOR'S NOTES



ACTIVITY 1.11: LEARNER ASSESSMENT

These questions are about things you learned during this activity. Please check the circle that best describes you.

Q1 I can describe what it means to have a team role.

- Not at all like me
- A little like me
- Somewhat like me
- A lot like me

Q2 I can describe why having team roles is important.

- Not at all like me
- A little like me
- Somewhat like me
- A lot like me

Q3 I can work with others to solve a problem.

- Not at all like me
- A little like me
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