

Preface

What is NSP?

The National Science Partnership for Girl Scouts and Science Museums (NSP) establishes partnerships between Girl Scout councils and science-strong institutions across the nation to promote science interest and knowledge in young American girls. Through the National Science Partnership, led by The Franklin Institute and Girl Scouts of the U.S.A., seven hands-on science activity kits and accompanying training workshops are offered to Girl Scout leaders across the country, assisting them in conducting science activities directly linked to the Girl Scout recognition requirements for Brownie and Junior Girl Scouts.

NSP Workshops and Activity Kits

NSP workshops provide an opportunity for leaders to explore hands-on science activities with other leaders. Although leaders will not necessarily have time to try every activity in the kit during a workshop, activities found to be the most enjoyable or challenging have been included in each workshop. Ideally, each leader should receive the kit for the workshop in which she is participating. Each science activity kit includes the appropriate “Leader Guide” and a box of hard to find materials. (The materials in the kit are meant to be consumed, since many of the activities will result in projects the girls can take home to share with their family and friends.) Activities in the Leader Guide are organized by “week” and are designed to be completed in sequential order during a course of 5 to 7 weeks of troop meetings. However, recognizing the different needs of troops and leaders, the program is also designed to allow for flexibility. The NSP activities can be tailored to suit a variety of models, needs, audiences and situations, such as “Girl Scouting in the School Day,” large events for girls, science theme days, and summer camp programs.

Space Explorer

Preparing to do the Workshop

The purpose of the Space Explorer Try-It workshop is to familiarize Brownie Girl Scout leaders with the activities in the Space Explorer kit by having them do many of the activities themselves. This outline is to be used in conjunction with the Space Explorer Leader Guide and the Space Explorer Master Kit which provide all the instructions and materials to conduct this workshop.

Background

Leaders who attend these training workshops are generally mothers of Girl Scouts or community volunteers. They have a common desire to strengthen their troop’s science program. They are not paid to attend the workshops and most have juggled busy schedules to be with you. Some of the leaders may say that they were “not good at science in school” and some may even admit to being afraid of science. However, some may have science-related jobs or backgrounds and will be more confident in their science abilities. It is important not to let these

individuals overshadow the rest. The aim of this workshop is to familiarize leaders with the activities and concepts presented in the kit in a non-threatening, cooperative environment.

Set-Up

The optimal number of participants in the training workshops is 15-25. Since this is a “hands-on” experience, work tables or areas will be needed for the participants. A demonstration table on which to set up materials is desirable if it can be arranged. Use this outline and the attached materials list to set up work areas. For the Space Explorer workshop, you will need the use of a VCR and a room that can be darkened. Get in touch with the group’s contact person prior to the workshop to find out what the setting will be like.

It is important to familiarize yourself with the entire outline and kit, and to do each of the activities before conducting the workshop.

Materials

The “Space Explorer” Master Kit consists of materials from two “Space Explorer” activity kits (✓ on list) plus perishable or grocery store items as detailed below.

Enough workshop materials are suggested for five groups of five participants or less; i.e. a maximum of 25 participants per workshop. The Master kit will need to be checked prior to each training workshop, and refurbished if necessary.

The following is suggested as a way to organize and supply the Master Kit.

Group materials can be placed in large self-sealing plastic bags or baskets and labeled “Group #1” through “# 5.”

Group Bags (assemble 5 sets).

Each bag should contain the following:

- ✓ 1 set of star patterns
- 1 tennis ball or orange
- 1 flashlight with batteries
- 1 hole punch
- 2-5 scissors
- 1 roll of transparent tape
- ✓•5 sundials
- ✓ 1 copy, rocket assembly directions
- 5 sheets of black construction paper
- ✓ 1 paper Girl Scout doll on card stock
- 5 film canisters (35mm) without lids
- 5 pushpins
- ✓•5 pieces of diffraction grating (leaders cut small piece from grating supplied in activity kit)
- 1-5 toothpaste boxes

Folder/Envelope

√“Workshop Folder”contains copies of: Bingo, Training Outline, Leader Guide, Evaluation.

Balloon Rocket Set-Up (optional)

string or nylon line

long balloon

straw

brown lunch bag

KEY

√=in activity kit;

•=replace regularly;

§=leaders take from
their individual kits

Miscellaneous Items

1 “Reach for the Stars” videotape

√ 2 telescopes, assembled

√ 1 Shadow Book

1 spectroscope

√ 1 launch pad & controller

√ 1 rocket, assembled

√ 1 rocket, not assembled

√ 2 engines with wadding

√ glue

4 AA batteries

√ 2 compasses (if 5 available, add
directly to group bags)

Some prior preparation of materials is required:

- Notify workshop participants that they will need to bring one family size toothpaste box (8.4 oz.) to the training.

- Cut out 5 paper dolls for use during the “Shadows and the Sun” demonstration.

- Assemble 2 sample telescopes (five if available so that there is one per group).

- Assemble 1 sample spectroscope.

- Assemble a rocket, launch pad and controller to display to the leaders.

Workshops
leaders are encouraged to practice launching a rocket even though a live demonstration of a rocket launch may not be a part of the training. (The hands-on experience will be invaluable in answering leader’s questions.

Additional rockets are available through most hobby stores.)

- Learn or arrange how your council will loan out the launch pad and controller to leaders. Leaders will not be able to do the “Gnome Rocketeering” activity without access to a launch pad and controller.

Conducting the Workshop (Total time - 2 hours)

Introduction (7 minutes)

- Give out an “ice breaker activity”(see attached Bingo) and a workshop evaluation form to each leader as she arrives.
- Give the leaders a brief history of the National Science Partnership (see Preface), as well as your own personal background and training.
- Have the participants introduce themselves if the group is small enough.

Invite

participants to share their feelings about science, and what they hope to learn or accomplish as a result of the workshop.

- Divide the leaders into groups (4-5) that will share materials during the workshop.
- Give out one Space Explorer kit and Leader Guide of instructions to each leader or leader/co-leader team.
- Explain that each kit contains all the instructions for 6 weeks of science activities and supplies of the harder to find materials needed to do the activities.

Other needed

materials can be purchased at the grocery store. By completing the kit, the girls earn a Space Explorer Try-It patch.

- Discuss the format of the kit. Each activity consists of the following: a list of materials, a step-by-step procedure, a helpful hints section, a background section called “Hows and Whys” and a list of extension ideas.

VIDEO “Reach for the Stars” (5 minutes)

- Explain how the video will be used. (2 minutes)
- It includes 4 of the Space Explorer activities.
- Leaders will first do the activity, and then they will observe as the girls do the activity in the video.

Icons will appear on the video that indicate when each section of the tape ends. This should make it easier for the trainer to know when to stop and start the tape.

Show the beginning of the videotape with the introduction by Millie Hughes-Fulford, astronaut. Stop the tape at the first icon. (3 minutes)

Note: Be sure to consult the Leader Guide for detailed instructions for each activity.

WEEK #1 “SHADOW TIME” (25 minutes)

1. Light and Shadow (3 minutes)

- Discuss shadows.
- Hold up and describe The Little Book of Hand Shadows.

2. Shadows and the Sun (5 minutes)

- Darken room
- Demonstrate making shadows using the paper dolls.

- Let each group of leaders try using the dolls from materials at stations.

3. Sunsational Sundials (12 minutes)

- Have the leaders take a sundial out of their kits.
- Conduct activity as described in the Leader Guide.

Show the videotape of "Sunsational sundials."

Stop at the icon. (5 minutes)

WEEK #3 "STAR MAKER" AND "THE NIGHT SKY" (10 minutes)

1. Star Pattern Planetaria (10 minutes)

- Explain that the "Constellation Creation" will precede this activity when they work with their troop.
- Conduct the activity as described in the Leader Guide.
- You may want to show leaders a sample star finder if you have one available.

Note: A star finder has not been included as part of the leader kit.

WEEK #2 "THE MOON" (26 minutes)

1. Phases of the Moon (20 minutes)

- Review leader knowledge about the earth, sun and moon.
- Ask the leaders to offer reasons they have heard for the phases of the moon or ask them if they have ever heard reasons such as the earth blocks the light from the sun, or clouds block the moon, or the position of the moon relative to the sun causes the phases.
- Explain that they are going to figure out what the real answer is in the next activity. Stress that no one should feel embarrassed if they held a misconception. This activity should promote logical thinking, not low self-esteem!
- Conduct the activity as described in the Leader Guide.
- Discuss misconceptions and the importance of experiencing an often misunderstood concept in a hands-on way in order to challenge previously held beliefs.

Show videotape of "The Phases of the Moon" activity. (6 minutes)

WEEK #4 "STAR SCOPES" (20 minutes)

1. Spectroscope (10 minutes)

- Conduct the activity as described in the Leader Guide using the toothpaste boxes the leaders have brought from home. Use your already assembled example "spectroscope" as a guide.

2. Telescope (3 minutes)

- Give each group of leaders an assembled telescope to try.

- Discuss how this activity should be conducted with the troop.
Show videotape of the “Spectroscope” activity. Stop at the icon. (7 minutes)

WEEK #5 & 6 “SPACE SLEUTH” AND “LIFT-OFF” (25 minutes)

1. Balloon Rocket Lift-off (2 minutes)

- Briefly describe this activity

2. Gnome Rocketeering (15 minutes)

- Give a general overview of the rocket activity.

Show videotape of “Lift-off” and conclusion . (8 minutes)

- Walk through the assembly of the rocket with the leaders. Have the leaders read the directions and carry out each step, without glue, along with you.
- Schedule and announce rocket launch times, if possible, when leaders can participate in a rocket launch, either as a training component or a troop event.
- Explain launch pad and controller and display for leaders.
- Discuss arrangements for borrowing the launch pad and controller.
- Discuss questions and encourage leaders to share their concerns.

Conclusion (2 minutes)

- Thank the leaders for their participation and ask them to fill out their evaluation questionnaire.
- Announce any upcoming training workshops for Junior and Brownie Girl Scout Badges and Try-Its.