**Student as Researcher Camp – Day 1**

***Day 1 Topic: Getting to Know Each Other and Basic Research Skills***

**Summary:** Students will spend the first day of camp getting to know each other, learn some basic research skills and identification of organisms

**Duration:** 1 camp day – 3 hours in the morning and 3 hours in the afternoon

**Vocabulary:** characteristic, mammal, ungulate, carnivore, rodent, lagomorph, pace, independent variable, dependent variable,

**Objectives—Students will:**

* Participate in “Get to Know You” games to facilitate friendships within the group
* Set up field notebook
* Learn basic research skills
* Understand characteristics to identify different mammals
* Determine their pace and practice mapping an area

**Schedule and Times for Morning Activities (3 hours):**

**Introduction (15-20 minutes)**

**Get To Know You Game (25-30 minutes)**

**Setting up Field Notebooks (20-25 minutes)**

**Break / Morning Treat (15 minutes)**

**How to Identify Mammals (30-35 minutes)**

**Mapping Activity—Part 1 (50-55 minutes)**

**Schedule and Times for Afternoon Activities (3 hours):**

**Film Canister Rockets (55-60 minutes)**

**Get to Know You Game (15-20 minutes)**

**Break / Afternoon Treat (15 minutes)**

**Research Projects—Brainstorm ideas (25-30 minutes)**

**Learning Walk / Journaling (50-55 minutes)**

**Day 1 Activities**

***Day 1 Topic: Getting to Know Each Other and Basic Research Skills***

***Focus Question: What do you wonder about in the natural world around you?***

***Magic Words: “I wonder…”***

**Morning Activities:**

**Introduction:** The instructor will cover areas of importance that the students should know in order to have a successful camp. Topics could include: Welcome to Science Researcher Camp; Introduction and Background of Instructors; Logistics—outline of week, paperwork, bathrooms; Medical—any allergies / medical issues; Dietary restrictions (if providing lunch and snacks); Establish Camp Rules, additional safety concerns or issues

*Supplies needed: varies depending on class needs*

**Get To Know You Game:** Students will participate in different get-to-know you games to facilitate interactions and friendships within the group. There are many games to play that can be easily found in books or on the Internet. “Toss the Ball” is just one option. Other ideas can be found at: <http://youthgroupgames.com.au/top-ten-get-to-know-you-games/> or <http://insight.typepad.co.uk/40_icebreakers_for_small_groups.pdf> or search the internet for “get to know you games”.

**Toss the Ball:** Instructor needs three balls of different sizes and materials. First, go around the circle and have each student state their name and give a topic they hope to learn more about during the upcoming week. After everyone has stated their name, the instructor will start the game by saying “Here you go \_\_\_(name of student)\_\_\_\_\_” and toss the ball to one participant using their name. That person will say “Thank you \_\_(name of ball tosser)\_\_\_\_” and continue with “Here you go \_\_\_\_(new student)\_\_\_\_\_\_” and toss the ball to a new person. Before tossing the first ball, the instructor should tell the students to remember from whom they got the ball from and to whom they are tossing the ball. Continue the pattern so that everyone has an opportunity to toss and throw the ball. Practice a couple times with one ball that is easy to toss and catch following the same pattern as the first round. For a challenge, the instructor will start by throwing one ball and then starting a second and third ball so that all are moving around the circle at the same time. Practice and try to get all three balls through all students in the circle without dropping any of the balls. During the activity, take time to process and have students give ideas how to make this activity go smoothly and complete the challenge. Give all students a chance to voice their opinion in a nonjudgmental way.

*Supplies Needed: 3 toss able balls of different sizes and materials*

**Setting up Field Notebooks:** The instructor will hand out field notebooks. Field notebooks can be simple lined notebooks, composition books, or even all weather paper notebooks. The instructor will have students put name on the front with a permanent marker, and explain and create a table of contents. The notebooks will be organized by day of the week with each day’s activities. The last five pages of the notebooks are kept for listing animals or plants seen during the week. Writing in pencil is always preferable in case the notebooks get wet.

*Supplies Needed: field notebooks, permanent marker, pencils*

**How to Identify Mammals:** The instructor will talk about four major mammal orders using the PowerPoint 1, “Science as Researcher Camp 1: Four Major Orders of Mammals” or copy off the slides on paper and laminate to show in the field. The information focuses on the identifying characteristics of four common major mammal orders: ungulates, carnivores, rodents, and lagomorphs. If available, have mammal identification books to pass around for students to look at or actual animal artifacts (skins, skulls, or mounts). Students should take notes in their field notebooks on the major groups and their characteristics.

*Supplies Needed: Mammals PowerPoint or copy of slides, mammal field guides, animal artifacts (skins, skulls, or mounts)*

**Mapping Activity- Part 1:** Scientists need to have a basic understanding of their study area and the features within that area. This mapping activity starts to give students an idea of distance and an awareness of different features that are important in their surroundings. The instructor will explain to students how to calculate their pace using at least a 50-foot measuring tape. After practicing their pace, students will draw a map of an area designated by the instructor in their field notebooks.

1. Students will need to know their pace in order to map the area. Using their natural walking pace is much easier than counting steps and usually more accurate. Students determine their pace by walking along a 50-foot measuring tape and counting their number of paces. One pace is not the same as one step. Most people consider a pace equivalent to two steps. For example: when walking a pace is the measurement from the back of the left foot until the back of the left foot touches the ground again. The students must take the distance of the premeasured out area and divide by number of paces to know the length of their pace. The instructor should make sure that students are walking at a natural gait. To give further practice, the instructor may set up a couple of practice lines. Here is a website to help with pacing: <http://sci.gallaudet.edu/GLOBE/MeasuringPace.html>

2. When deciding on a mapping area, it would be best if there are many different features that students would have to add to their maps: trees or vegetative area, water source, rocky areas, or manmade features. The more features that students need to add to their maps, the greater the comprehension of making a map of an area. An area of approximately 150-200 foot per side is a reasonable area for most middle school students. Depending on the age of the student, it might be preferable to have a map already drawn to scale showing the outline of the area or set up flags at 50 or 100-foot increments around the area to help students visualize the space. Group collaboration and comparing of measurements is always a good thing in this activity to encourage accuracy in measuring.

3.Once the students have sketched a general outline of the area, then they should be instructed to add key features to the map. The instructor should direct students to be careful about proportion and should give feedback as the students work so that students can make corrections in the field. Students should include any man-made features, trees, vegetation, water features, grassy areas, fences, or large rocks. After the features are sketched in, the students should color-code them using traditional map colors: green—vegetation; blue—water; black—man-made features; brown—rocky/dirt areas. The students should be instructed to make a key identifying these features, north directional arrow, scale, and title.

*Supplies Needed: flags to mark area, 50 or 100 foot measuring tape, calculators for figuring pace, field notebooks, pencils, colored pencils*

**Afternoon Activities:**

**Film Canister Rockets:** Students will learn about variables and how to control them by changing the amount of effervescing antacid tablets and water to get the film canister rocket to stay aloft the longest time. Students should be instructed in the correct way to make a data table and what should be included in it. This long-standing experiment is always fun for students to do outdoors—canisters can launch higher than a building—do not do indoors. For further information, there are many websites with information. Here is one from Science Bob: http://sciencebob.com/build-a-film-canister-rocket

*Supplies Needed: Fuji and Kodak film canisters, effervescing antacid tablets, water, timing device, measuring devices (optional): graduated cylinders, triple beam balances, measuring tapes*

**Get To Know You Game:** Students will participate in different get-to-know you games to facilitate interactions and friendships within the group. There are many games that can be easily found in books or on the Internet. “Have You Ever…” is just one option. Other ideas can be found at: <http://youthgroupgames.com.au/top-ten-get-to-know-you-games/> or <http://insight.typepad.co.uk/40_icebreakers_for_small_groups.pdf> or search the internet for “get to know you games”.

**Have You Ever:** Everyone makes a circle facing inward. One student is in the middle and completes the phrase “Have you ever………….”. The phrase can be completed with anything—…been to Colorado? …swam in the ocean? …hit a homerun? Students for which the statement is true, must leave their spots in the circle and take an empty spot left by another person for whom the statement is true. Students must move at least two spots from their original position. The person left without a spot is now in the middle asking the question. (Play is similar to musical chairs.)

*Supplies Needed: None*

**Research Projects—Brainstorm ideas:** To get students to think about possible research topics, the instructor should provide topic ideas and show different types of equipment that the students might be able to use. The instructor will print and show pages with major topic areas possibly including rivers, plants, animals, soil, rocks, water, weather, natural disasters, invertebrates, or humans/nature. The instructor will show equipment that students will be able to access for their research. No decisions need to be made yet about partners or topics—this is just about brainstorming and ideas.

*Supplies Needed: Pages with major topics, field equipment choices, identification books*

**Learning Walk / Journaling:** The students will take a short nature walk pointing out any identifying characteristics of any animals seen and identifying some plants for the students’ week list. If time, the students should sit and journal about the following statement (or any other applicable quote), then draw one plant or animal:

“When you have seen one ant, one bird, one tree,

you have not seen them all.”

--[E. O. Wilson](http://www.brainyquote.com/quotes/authors/e/e_o_wilson.html)

E. O. Wilson is a biologist, researcher, and author (1929 –today)

*Supplies Needed: field notebook, pencils, water bottle*

**Day 1 Resources**

"E. O. Wilson Quote." *BrainyQuote*. Xplore, 2015. Web. 27 June 2015. <http://www.brainyquote.com/quotes/quotes/e/eowilson112872.html>.

"Measuring Your pace." *Measuring Your pace*. Ed. Mary Ellsworth. Gallaudet Univ-Clerc Center GLOBE Training Center, n.d. Web. 06 July 2014. <<http://sci.gallaudet.edu/GLOBE/MeasuringPace.html>>

Pflugfelder, Bob. "Build a Film Canister Rocket - ScienceBob.com." *ScienceBobcom*. N.p., 26 July 2014. Web. 21 June 2015. <http://sciencebob.com/build-a-film-canister-rocket/>