



## **JMG® Level 2 Overview Training**

### **Operation WATER Emphasis**

*Developed for 2hr training workshop, 15-45 attendees*

### **Activity Talking Points**

Read each featured lesson to prepare for workshop. The lighter text provides tips for conducting the lesson for the workshop, and the darker text is a specific script per activity.

*After INTRODUCING ACTIVITY, divide audience into three separate teams, and assign each team the task of completing one the three activities.*

### **SESSION ONE**

*Indoor Botanical Garden of Art (JMG Level 2 Operation Thistle, p.20)*

*Survivor Seedling (JMG Level 2 Operation WATER, p.20)*

*Up Down & Sideways Shout (Operation WATER, p.116)*

### **SESSION TWO**

*Quick Draw Flower (JMG Level 2 Operation Thistle, p.43)*

*Plant Makeover (Operation WATER, p.28)*

*2 liter compost capsule (Operation WATER, p.49)*

### **LARGE GROUP ACTIVITY**

*Reverse Soil Erosion Challenge (JMG Level 2 Operation WATER, p133)*

## SESSION ONE ACTIVITIES:

### **Indoor Botanical Garden of Art** (*JMG Level 2 Operation Thistle, p.20*)

(PDF DOWNLOAD OF THIS LESSON IN ONLINE WORKSHOP KIT)

(Gather materials and conduct activity as described in the lesson. Place a section of bulletin board paper on the wall for groups to work on as they create their plant.)

#### ● INTRODUCING ACTIVITY

- This is one more lesson that would be a great supplement to the Operation WATER study. This lesson *Indoor Botanical Garden of Art*, is from the other JMG Level Two curriculum, Operation Thistle that focuses on plant growth and development concepts.
- Who is familiar with cordate-shaped leaves, or whorled leaf arrangement, or what a fibrous roots system is? Plant terminology can be dry and what students learn will oftentimes not stay with them for long. But *this* lesson not only allows students to become very familiar with plant characteristics but also let's kids work together and show creativity by building paper sculptures.
- I'm sure everyone in your group is very familiar with all of these terms but just in case, everyone gets a "cheat sheet" that includes an illustration of all terminology. **(YOU WILL PROVIDE COPIES OF CHART P.21, OPERATION THISTLE, AS A REFERENCE)**
- Your group will be "growing" an *Indoor Botanical Garden of Art*. For every 3-5 people in your group, you will create one plant using paper, balloon, raffia, or any other craft supplies you have available to make the plant as described in your botanical garden place card. Each plant will be attached to a section of bulletin board paper **(CUT ONE OF THE CARDS FROM PAGE 136 FOR EACH GROUP OF 3-5 PEOPLE IN THIS TEAM.**

#### ● FOLLOWING ACTIVITY

- Let me have one member from each group read your card and point out how that is demonstrated in your plant sculpture.
- Imagine a whole section of a hall way full of dozens of artistic plant sculptures that accurately portray all of these plant terms. It can be quite impressive and beautiful. The kids enjoy this and these plant terms will stick with them as they use them while creating "scientifically accurate art!"
- Some of the most attractive displays include all the pots that make up the *Botanical Garden of Art* all uniformly lined up along the wall. The pots are uniform but the plants coming from them are, of course, beautifully diverse. The pot themselves are only actually attached to the wall on one edge. So the pot make only be held in place by glue at the top edge of the pot. This allows the pot to be lifted so the roots can be seen.

## **Survivor Seedling**(JMG Level 1 Teacher/Leader Guide , p.12 )

(Gather materials and conduct activity as described in the lesson – except given time constraints, skip the gathering and passing around of seed types and instead begin by reviewing seed parts in slides #-#.)

- **INTRODUCING ACTIVITY**

- There are 3 main parts to a seed and each part serves a specific function – let’s take a look at these (REVIEW SLIDES). In the Survivor Seedling lesson, students are going to create 3-D models of a seed and a seedling that are especially adapted to survive extreme environmental conditions.
- Depending on the conditions in which a seed lands, certain specific adaptations will give a seed and seedling a greater chance to germinate and grow. For example, a seed’s coat may be especially thick to protect from temperature extremes, or camouflaged to prevent animals from eating them, or may have a special mechanism for them to be dispersed far away from the parent plant.
- On page 63 the group will be able to use information covering adaptations of seed size, seed coats, dispersal, speed of germination, size of cotyledons and more that can be adapted for surviving one of three extreme environments.

(PROMPT GROUP TO MAKE ONE SEED AND SEEDLING FOR EVERY THREE PEOPLE IN THE GROUP)

- **FOLLOWING ACTIVITY**

(ASK GROUP TO BRING THEIR PRODUCTS IN AND POINT OUT THE ADAPTION THEY’VE CREATED IN THEIR SURVIVOR SEEDLINGS)

## **Up Down & Sideways Shout** (*Operation WATER, p.116*)

(Gather materials and conduct activity as described in the lesson. You will need to have a copy of the *Up, Down & Sideways Shout* for each member of this group. It's a good idea to let the group to go out into the hall way or a nearby room to prepare for their sharing time. As a tip – when the attendees are breaking into smaller groups during the *Secret Smells* activity, look for the small group that has those extroverted, outgoing personalities to be selected for this activity! Read through the song a few times before the workshop.)

- **INTRODUCING ACTIVITY**

- This last group will be performing for us! There are many “rhythms” throughout the JMG curricula that are songs, poems, raps, etc that are used to teach garden-related concepts.
- This rhythm called *Up, Down & Sideways Shout* can be performed as a rap and I will go out with this group to help them get started.
- When its time for us to come back together, they'll be sharing the *Up, Down & Sideways Shout* with us. **USHER THIS GROUP OUTSIDE THE ROOM AND EXPLAIN THEY HAVE 10 MINUTES TO PREPARE TO SHARE IT BACK TO THE GROUP.**

- **FOLLOWING ACTIVITY**

- This is a part of the lesson titled *Water Wicking*, page 112, that covers concepts of water movement related to capillary action, cohesion, and adhesion.
- Its great fun and some kids are really motivated by being able to learn with movement and music. There have been some very entertaining groups of kids that have been given several days to prepare for a performance and have not only memorized the lyrics and used props for the performance but also integrate a bit of choreography!

## **SESSION TWO ACTIVITIES:**

### **Quick Draw Flower** (*JMG Level 2 Operation Thistle, p.43*)

(This is an activity from the independent study kids pages of the book. All you'll need to gather is a copy of the activity, 2 decks of cards, pencils and paper. )

- INTRODUCING ACTIVITY
  - Quick Draw Flower is an activity from the Plant Parts Mission Options so students will do this one outside of class. As kids are playing and drawing cards, a key on their mission options pages prompts them to draw, or erase a specified plant part depending on the card they draw.
  - While the other groups are working hard, this group gets to play cards!
- FOLLOWING ACTIVITY
  - Who was the winner?

How many of you have learned, and forgotten the parts of a flower? This activity will be a way for them to play cards with a friend or family member to sketch and learn plant parts and reinforce what is taught in the classroom.

## **Plant Makeover** (*Operation WATER, p.28*)

(Gather materials and conduct activity as described in the lesson. For this activity two people in your group will become plants – one sickly and one healthy. This lesson demonstrates symptoms caused by nutrient deficiencies in plants..)

- **INTRODUCING ACTIVITY**
  - Just like people, plants require certain nutrients. The soil serves to provide most nutrients via the plant's roots.
  - But when a plant lacks a certain nutrient, the plant's health is affected and it will show certain symptoms.
  - Your group's assignment is to use the cards on page 31 to find the symptoms of a Manganese deficiency. Then your job is to pick two people in you group to become plants – one that shows the sickly "before" plant with nutrient deficiency and then someone else will become the "after" plant that shows the healthy plant after the deficiency has been corrected.
  - Your group will read though the content in the lesson, prepare their plants and be ready to share what the *Plant Makeover* activity is all about.
  
- **FOLLOWING ACTIVITY**
  - This is a lesson your student will have fun with. The lesson conveys that nutrients found in soil contain provide for plant needs and specific nutrient deficiencies will cause specific identifiable problems for plants.
  - Do you think after "becoming" a sickly plant, that students will remember the specific nutrient deficiencies and the indicators of the deficiencies? If a teacher was to just explain soil nutrients and deficiencies, students may remember it for a couple days but this lesson creates a fun experience that will be with them for some time!

## **2 liter compost capsule** (*Operation WATER, p.49*)

(Gather materials and conduct activity as described in the lesson. You will need to gather - at least one empty 2 liter bottle person in the group, 2 utility knives/box cutters, and several push pins. Your teachers in this group can explore the outdoor area around the building to fill the containers once they are prepared.)

### ● INTRODUCING ACTIVITY

- How many of you compost? What are some of the conditions for ideal for composting? What would you guess is a mixture of materials will provide for the quickest decomposition of organic matter?
- With this lesson students will experiment with a host of variables that affect the composting process.
- Your group will divide into teams of 3-4 to cut and prepare their bottles as described in the lesson on pages 50 and 51. The containers will be cut and punched with 60 push pin holes and formed together to make a capsule with spouts on each end.
- The group will then go outside to fill the container with a combination of organic matter and soil and consider other variables that they feel will make compost in the quickest way possible.
- Your group will read though the content in the lesson, use three bottles to prepare their capsules and base as shown on page 52, and be ready to share what 2 liter compost capsules are about.

### ● FOLLOWING ACTIVITY

- Describe the contents of each capsule your group created. What were the push pin holes made for? (to allow air circulation through the decomposing matter)
- The lesson also includes materials for students to monitor and record results.
- Additional lessons in this section cover additional concepts related to soil organisms that are a part of the value of “living” soil and details on having students compost above and below the ground.

## **Reverse Soil Erosion Challenge** (*Operation WATER, p.49*)

(Gather materials and conduct activity as described in the lesson. It's good to have at least 2 of each small, medium and small-sized balls, such as tennis ball, basketball & beach ball. Ideally, you'd have at least 6-7 teachers on each side of the line for the best result. )

- **INTRODUCING ACTIVITY**

- It can also be used as a great ice-breaker experience that prompts kids to work together in meeting a challenge.
- Before we start with the challenge, let's make some predictions, What's going to happen? How many balls do you think will make it all the way down to the end of the line?
- And before we start, let's do a practice with just one large ball.

- **FOLLOWING ACTIVITY**

- This is a challenge that is a fun way to connect water and soil science.
- When you do this with your students reiterate the correlation with each ball size and the corresponding soil particle.
- To confirm their understanding, call on several students to share why this challenge shows the reverse of what actual water/soil erosion looks like.