PITTSBURGH BOTANIC GARDEN

Raising horticultural standards.

Educating our visitors.

Inspiring people to grow.

Lesson Planning Guide

Pittsburgh Botanic Garden

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1 Lesson 1: Planning a Lesson

Time:

Materials:

- This section contains a bulleted list of all materials necessary for the lesson.
- Quantities should be listed per student or per group of students.
- Handouts should be included if necessary.

Overview

This section provides a broad overview of the lesson and how it relates to educational standards and organizational goals. It provides a list of the broad topics of the lesson. The overview may be helpful for those who are using the lesson plan to show the benefits of the Botanic Garden's educational program and for fund raising purposes.

Content Background

This section provides background information that may be helpful for the instructor/guide. This may include an overview of specific processes or vocabulary.

Learning Goals

This section explains the essence of the lesson. What should students learn and remember about this lesson weeks, months or years from now? This is a broad statements that may include many specific learning objectives.

This section should also list any Pennsylvania Academic State Standards and any applicable national standards. Standards or goals for individual member groups that the Botanic Garden is supporting could also be listed here (i.e. Boy/Girl Scouts, YMCA groups, elderly groups, classes for merchants such as plant nurseries, etc.).

Pennsylvania Academic State Standards are public statements regarding what all students should know and be able to do in academic subjects (mathematics, science, English, history, geography, arts and second languages). Teachers align their lessons to these standards to make sure that they are meeting the requirements for their subjects. When writing a lesson plan, try to think how the lesson could fit in to multiple subject areas. For instance, a science lesson on plants could require a kindergarten-age child to listen and respond

appropriately. This meets both science standards and reading, writing, speaking and listening standards.

Also consider how the lesson fits in to the STEM fields of study. These include the areas of science, technology, engineering and mathematics. How can the lesson further these areas of study?

Objectives

This section lists the specific objectives to attain the learning goals. The objectives should be written using measurable and observable verbs (such as "describe," "explain," "demonstrate," etc. instead of "knowing," "learning," or "understanding." Also consider how these objectives will be connected to the assessment technique. How will you know the learners will take away from the lesson what you want them to? What do you want them to learn as a result of the lesson?

A learning objective focuses on student performance and the final behavior and/or product. It is a statement describing the competency or performance capability of the learner.

To write a learning objective, first identify the behavior. This is where your action verbs will come in. The behavior must be observable. How will you be able to tell the learner is understanding the lesson? Bloom's taxonomy can help with this step. Bloom's taxonomy is a classification of thinking according to six levels of complexity ranging from the simplest forms of remembering and understanding to the most complex forms of analyzing, evaluating and creating.

The second step is identifying the criterion for the objective. How well must a learner perform to be judged adequate? This can be done with a statement that indicates a degree of accuracy or a quantity or proportion of correct responses.

The third step is describing the conditions under which the learner will be expected to perform. The conditions should list what tools, reference or other aids will be provided or denied.

Examples of Learning Objectives:

1. Learners will be able to identify at least two ingredients of air pollution.
2. Learners will be able to define what a native plant is.
3. Learners will be able to identify all plant parts: leaf, flower, roots and stem.

Logistics

This section explains the logistics of the lesson including:

- How will the instructor facilitate the movement of the learner (will all students start out as one group, will they break in to smaller groups, will groups be divided among tour guides, etc.)
- How will materials be distributed.
- How will learner engagement be maintained.
- How will technology be employed?

Motivational Techniques

This section explains how the lesson begins. It lays the groundwork for the lesson and engages the learners. One of the best ways to do this is by accessing prior knowledge. What do the learners know about the topic? Do they have any personal experiences? Can past learning scenarios, everyday examples or life skills be used? Does the instructor/guide have a personal story that is relevant? Try using open-ended questions and questions that creates a conflict in the learner (cognitive dissonance).

An example of cognitive dissonance is to ask a child what they like about animals. Do they like birds, foxes and rabbits? Do they think that forests are good? Then ask them if they like riding in a car. How does the car help them get places? Explain how a car can create pollution that can affect wildlife. There is now a conflict in the child's thinking. Are cars bad if I like animals? The lesson can then go on to discuss ways to minimize pollution and protect wildlife.

Procedures

The procedures section lists the steps or progression of the lesson in a logical sequence. Include steps used to transition learner action or thoughts between parts of the lesson. Are you moving to a different part of the garden? Are you returning to a classroom to start a project?

Also include how key concepts or main ideas will be developed by the procedure. Are vocabulary words being introduced? Are there key questions asked to start a discussion? Will the instructor be modeling a behavior? Keep in mind ways to maintain active learner engagement and minimize learner management issues.

Closure

This is the wrap-up section of the lesson. What important points should the instructor review? How can the lesson be concluded so that the learners will integrate the new information presented in the lesson in to what they already knew about the topic? This section also provides the opportunity to check for learner understanding.

Extension Activities

Will learners be taking anything home with them to extend their thinking? Are there any activities that can be shared with a teacher or group leader to reinforce the lesson? This section can also be used to list additional simple activities that can be easily implemented without a lot of preparation. These activities are useful if the lesson finishes earlier than expected, a group or learner finishes earlier than the rest of the group, if re-teaching is needed or if learner understanding, ability and interest warrants more in-depth study.

Assessment

This section explains how the instructor will show evidence of learner understanding related to the lesson's objectives. What type of assessments were included throughout the lesson. How will the instructor assess how well the learners met the objectives? Is there an assessment for each objective? Is there an assessment tool available such as a rubric (scoring guide), checklist or review sheet available?

When designing the assessments, keep in mind different types of assessments: diagnostic, formative, and summative. Diagnostic assessments assess a learner's strengths, weaknesses, knowledge and skills prior to instruction. Formative assessments are used to strengthen memory recall and assess a learner's performance during instruction. These types of assessments usually occur regularly throughout the lesson (quizzes, observations, question and answer, discussion, etc.) Summative assessments measure learner achievement at the end of instruction. Some examples of summative assessments are a final paper or project, test or exam.

Modifications and Adaptations

This section explains ways the lesson can be adapted to teach special audiences such as learners with learning or physical disabilities, gifted or talented children or English language learners. Consider individual learning needs such as visual, hearing,

physical, mobility, attention, reading levels, etc. How can you change the lesson to meet the developmental and physical needs of all learners in the class? Would the space be difficult to navigate with a wheelchair? Is there more than one way to deliver the content? Could students work together?

Modifications should explain what audience they are intended for, list specific activities for this audience and provide possible alternative assessments.

Diversity

This section includes ways for instructors to include diversity in the lesson. How can the instructor connect to the learners' cultural experiences? How can multiple perspectives be introduced to the learners?

Resources

This section lists any additional resources that may be helpful for the instructor/guide to develop background knowledge on the subject as well as resources that may be used by teachers and group leaders to extend the lesson after leaving the Botanic Garden. It can also include resources for learners to reference content knowledge, enhance their understanding, and encourage them to continue to learn independently about the topic. Resources can include books, periodicals, videos, podcasts and websites.

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