Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Student Worksheet**

**How can traditional uses of plants be studied and used in a modern society?**

***A Study in Ethno Phenology***

**Safety**

Be aware of dangerous plants. Always be cautious of plants you do not recognize. The remedies listed are not intended to take the place of advice from a physician.

**Introduction**

Your team has been hired to investigate different plants used by indigenous peoples for their healing properties. Your task is to match a known use by a plant to a possible use in our modern world. You will be given a list of illnesses and a list of medicinal plants. Look at both lists and determine what plant or plants may be used to cure the given illnesses. Good Luck!

**Question:** How can you use traditional knowledge by indigenous peoples to determine a possible use of a plant by modern science? And how could you further the knowledge we already possess by experimenting to discover new uses for plants we know are medicinal and discover new plants that may cure illnesses we have no cure for today?

**Materials**

* List of illnesses
* List of remedies
* Pictures of Medicinal Plants
* Pencil
* Paper

**Resources:** http://www.usanpn.org/education

**Procedure**

1. Select an ailment from a list determined in advance by activity leader (e.g., headache, nausea, or wounds).
2. **Go to:** <http://www.bio.brandeis.edu/fieldbio/Sylvain/uses.html> or
3. Read the “treatment guides” provided by your activity leader to learn which plants – and most importantly, which of their structures – can help alleviate their symptoms.
4. Fill in the missing information in the following table using the information on the website given.

**Record Your Data**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Name | Scientific Name | Ailment | Plant Structure | Preparation | Other uses |
| **1.** |  | nervousness |  |  |  |
| **2.** |  | fever |  |  |  |
| **3.** Tree of Heaven |  |  |  |  |  |
| **4.** | Hypericum perforatum  |  |  |  |  |
| **5.**  |  | liver and kidney ailments |  |  |  |
| **6.** Tamarack |  |  |  |  |  |
| **7.** | Solidango canadensis |  |  |  |  |

**Design Challenge:**

Design an experiment that would make use of a traditional medicinal plant in a new way or for a purpose that is different than the traditional way.

1. Name and describe the physical appearance of the plant and the part of the plant you plan to use:
2. Name, appearance and plant part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_
3. Describe the preparation: \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Describe the way you could use it: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Why do you think this design will work?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Draw Conclusions**

1. What part of the plants you listed is most often used as a cure or medicine? Why do you think this is so? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Why would it be important to know the life cycles of medicinal plants?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Why do you think it is important save plants from becoming extinct?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If you knew that a particular plant was endangered and about to become extinct what would be the best way to save or preserve that plant? \_\_\_\_\_\_\_\_\_\_\_\_
2. Select a flowering tree around your school that can be observed on a regular basis. Place your data for your plant in the following table. This is how scientists observe and record changes that occur in the life cycle of plants. This exercise is for training purposes only.

**Species:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Nickname**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Location**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Date:** | **Date:** | **Date:** | **Date:** | **Date:** |
| **Do you see…?** | **Time:** | **Time:** | **Time:** | **Time:** | **Time:** |
| Young Leaves?How many? (#) | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Leaves?How many? (#) | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Flowers or Flower Buds?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Open Flowers?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Fruits?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Ripe Fruits?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Recent fruit or seed drop | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Comments: |  |  |  |  |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Student Worksheet (Answer Key)**

**How can traditional uses of plants be studied and used in a modern society?**

***A Study in Ethno Phenology***

**Safety**

Be aware of dangerous plants. Always be cautious of plants you do not recognize. The remedies listed are not intended to take the place of advice from a physician.

**Introduction**

Your team has been hired to investigate different plants used by indigenous peoples for their healing properties. Your task is to match a known use by a plant to a possible use in our modern world. You will be given a list of illnesses and a list of medicinal plants. Look at both lists and determine what plant or plants may be used to cure the given illnesses. Good Luck!

**Question:** How can you use traditional knowledge by indigenous peoples to determine a possible use of a plant by modern science? And how could you further the knowledge we already possess by experimenting to discover new uses for plants we know are medicinal and discover new plants that may cure illnesses we have no cure for today?

**Materials**

* List of illnesses
* List of remedies
* Pictures of Medicinal Plants
* Pencil
* Paper

**Resources:** http://www.usanpn.org/education

**Procedure**

1. Select an ailment from a list determined in advance by activity leader (e.g., headache, nausea, or wounds).
2. **Go to:** <http://www.bio.brandeis.edu/fieldbio/Sylvain/uses.html> or
3. Read the “treatment guides” provided by your activity leader to learn which plants – and most importantly, which of their structures – can help alleviate their symptoms.
4. Fill in the missing information in the following table using the information on the website given.

**Record Your Data**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Name | Scientific Name | Ailment | Plant Structure | Preparation | Other uses |
| **1.** Linden tree | Tilia americana | nervousness | Leaves, flowers or buds | Prepare a tea with leaves, flowers or buds | Headaches or digestion problems |
| 1. Quaking Aspen
 | Populus tremuloides | fever | bark | Salicin must be extracted | Anti-inflammatory |
| **3.** Tree of Heaven | Ailanthus altissima | Anti malarial | leaves | extracted compounds | various remedies |
| **4.** Saint John’s Wort | Hypericum perforatum  | anti-depressant | entire plants | extracted compounds | sedative |
| **5.** Sassafras | Sassafras albidum | liver and kidney ailments | leaves | tea  | liver disorders |
| **6.** Tamarack | Larix laricina | Swelling and burns | Bark or leaves | poltice or tea | antiseptic |
| **7.** Goldenrod | Solidango canadensis | hemorrhagic nephritis | Entire plant | entire plant | diuretic, antispasmodic |

**Design Challenge:**

Design an experiment that would make use of a traditional medicinal plant in a new way or for a purpose that is different than the traditional way.

Answers will vary.

1. Name and describe the physical appearance of the plant and the part of the plant you plan to use:

1. Name, appearance and plant part: Answers will vary\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe the preparation: Answers will vary\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Describe the way you could use it: Answers will vary\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Why do you think this design will work?

\_\_\_\_\_\_\_\_\_ Answers will vary\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Draw Conclusions**

1. What part of the plants you listed is most often used as a cure or medicine? Why do you think this is so? The leaves, because it is where photosynthesis takes place so there is more energy available for chemicals to be produced there.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Why would it be important to know the life cycles of medicinal plants?

 To know when the necessary parts will be more abundant and best harvested. \_\_\_\_\_\_

1. Why do you think it is important save plants from becoming extinct?

 Because once plants go extinct there may be no way of bringing them back and therefore we would lose all their possible beneficial applications.

1. If you knew that a particular plant was endangered and about to become extinct what would be the best way to save or preserve that plant? Identify the cause of the extinction then try to reverse it. Or preserve as many seeds and plants samples as possible for future study.
2. Select a flowering tree around your school that can be observed on a regular basis. Place your data for your plant in the following table. This is how scientists record and observe changes that occur in the life cycle of plants. This exercise is for training purposes only. Varied Data

**Species:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Nickname**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Location**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Date:** | **Date:** | **Date:** | **Date:** | **Date:** |
| **Do you see…?** | **Time:** | **Time:** | **Time:** | **Time:** | **Time:** |
| Young Leaves?How many? (#) | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Leaves?How many? (#) | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Flowers or Flower Buds?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Open Flowers?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Fruits?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Ripe Fruits?% | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Recent fruit or seed drop | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ | Yes No \_\_\_\_\_ |
| Comments: |  |  |  |  |  |