Mission / Purpose

The mission is to teach non-science majors scientific knowledge of plant biology, apply this knowledge to a scientific study involving analysis and interpretation of botanical data, work collaboratively to achieve a common goal, and communicate (written, oral and visual) how plants relate to human society.

Connected Documents
Foray to Supermarket Assessment
Term Project

Goals

G 1: Goals for Plants and Human Society

Understand botanical knowledge.
Comprehend the relavance of botanical knowledge to human society.
Collect, analyze, and critically interpret data collected on plants in human society.
Build teamwork and collaboration skills in performing a literature research project.
Communicate project information in writing, orally, and visually.

Connected Documents
Foray to Supermarket Assessment
Term Project

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Critical Thinking: Apply botanical knowledge to a scientific study

Outcome 1: Demonstrate an understanding of the botanical differences between fruits and vegetables by analyzing and critically interpreting data on produce collected by students at their local supermarkets.

Connected Document
Foray to Supermarket Assessment

Relevant Associations:

Standard Associations

New Core Component Areas
2 Life & Physical Science (L & PS)

New Core Objectives
1 Critical Thinking (CT)

General Education/Core Curriculum Associations

1 Critical Thinking: Students will apply critical thinking appropriately to identify, analyze and resolve complex issues.
2 Quantitative Thinking: Students will demonstrate mastery of quantitative reasoning and algorithms used to address applied problems

Strategic Plan Associations

Lamar University
13.1 Strategic plan reviewed but no clear match to the outcome exists
16.1 Develop and organize sustainable practices

Related Measures

M 1: "Foray to the Supermarket" a scientific study that applies botanical knowledge

Assessment of applying botanical knowledge to a scientific study: Foray to the Supermarket

Students will be given an assignment called "Foray to the Supermarket". The assignment is a list of 50 produce items that can be found at most supermarkets. If not at a supermarket, then the produce item can be looked up either in texts or online. The students are asked to complete a series of tables and construct graphs based on their interpretations.

Before the difference between a vegetable and a fruit is discussed in class, students will be asked to go through the list of produce items and mark whether they believe them to be a vegetable or a fruit based on their common knowledge. Students will be allowed to work in groups during this part of the exercise.

After the difference between a vegetable and a fruit has been discussed in class, students will have to demonstrate that they understand what a vegetable or fruit is based on botanical definitions by correctly assigning each produce item to the correct category. If a produce item is categorized as a vegetable, the student will also have to determine which part of the plant the produce item originates from (i.e. carrots are roots, spinach is a leaf, etc.). If a produce item is categorized as a fruit, the student will also have to determine the fruit type based on botanical definitions (i.e. an apple is a pome, a cucumber is a pepo, etc.).
After the students have completed the table, they will be asked to graph their results using three different graphs:

- **Graph #1**: Students will produce a frequency graph with the type of produce (x-axis) as vegetable or fruit versus the frequency of each type (y-axis) before and after the differences between a vegetable and fruit are discussed in class.

- **Graph #2**: Students will produce a frequency graph with the vegetable plant parts (roots, stems, leaves, flowers) (x-axis) versus the frequency of each plant part (y-axis) for the vegetables listed in the produce list.

- **Graph #3**: Students will produce a frequency graph with the fruit types (pome, pepo, etc.) (x-axis) versus the frequency each fruit type occurs (y-axis) in fruits listed in the produce list in the produce list.

Based on the data obtained in table and graphs, students will answer the following questions:

1. Based on the data in your tables and graph #1 did you identify items as vegetables or fruits that you had previously considered as another type of produce?

2. Explain why some vegetables or fruits may not be correctly identified based on common ideas about what a vegetable or fruit should be.

3. Is there a particular plant part (root, stem, leaves, flowers) that vegetables commonly consumed by human society come from according to graph #2?

4. Are there any fruit types that are more commonly seen in supermarkets based on your data in graph #3?

5. What are some possible explanations as to why some fruit types may be more common in supermarkets than others?

**Outcome: Critical Thinking Skills Rubric:**

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>Exemplary (Level 4)</th>
<th>Adequate (Level 3)</th>
<th>Near unacceptable (Level 2)</th>
<th>Unacceptable (Level 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are students able to distinguish between vegetables and fruits based on previous knowledge?</td>
<td>Students are able to correctly classify 45 or more produce items as vegetable or fruit BEFORE class discussion on differences between vegetables and fruits.</td>
<td>Students are able to correctly classify 30 to 44 produce items as vegetable or fruit BEFORE class discussion on differences between vegetables and fruits.</td>
<td>Students are able to correctly classify 15 to 29 produce items as vegetable or fruit before class discussion on differences between vegetables and fruits.</td>
<td>Students are able to correctly classify less than 15 produce items as vegetable or fruit before class discussion on differences between vegetables and fruits.</td>
</tr>
<tr>
<td>Are students able to distinguish between vegetables and fruits based on class discussion of differences and visiting a local supermarket?</td>
<td>Students are able to correctly classify 45 or more produce items as vegetable or fruit AFTER class discussion on differences between vegetables and fruits.</td>
<td>Students are able to correctly classify 30 to 44 produce items as vegetable or fruit AFTER class discussion on differences between vegetables and fruits.</td>
<td>Students are able to correctly classify 15 to 29 produce items as vegetable or fruit AFTER class discussion on differences between vegetables and fruits.</td>
<td>Students are able to correctly classify less than 15 produce items as vegetable or fruit AFTER class discussion on differences between vegetables and fruits.</td>
</tr>
<tr>
<td>Are students able to construct charts to visualize data obtained in tables?</td>
<td>Students construct all graphs as instructed with correct titles and/or labels.</td>
<td>Students construct all graphs, but some may not be in format as instructed and/or some titles and/or labels are missing.</td>
<td>Students construct at least two graphs as instructed with correct titles and/or labels.</td>
<td>Students construct fewer than two graphs as instructed or graphs without correct titles and/or labels.</td>
</tr>
<tr>
<td>Are students able to analyze information in tables and graphs to answer questions regarding assignment?</td>
<td>Students answer all questions correctly using complete sentences.</td>
<td>Students answer 4 or fewer questions correctly using complete sentences.</td>
<td>Students answer 3 or fewer questions correctly using complete sentences.</td>
<td>Students answer 2 or fewer questions correctly using complete sentences.</td>
</tr>
<tr>
<td>Are students able to formulate possible explanations to explain trends in data collected?</td>
<td>Students are able to answer question #5 with at least 3 logical explanations.</td>
<td>Students are able to answer question #5 with at least 2 logical explanations.</td>
<td>Students are able to answer question #5 with at least 1 logical explanation.</td>
<td>Students are unable to answer question #5 with any logical explanations.</td>
</tr>
</tbody>
</table>
SLO 2: Empirical & quantitative skills:
Students will construct graphic presentations of project results and interpret findings appropriately.

Relevant Associations:
Standard Associations
New Core Component Areas
2 Life & Physical Science (L & PS)
New Core Objectives
3 Empirical & Quantitative Skills (EQS)
Related Measures
M 2: Empirical & quantitative skills: building & interpreting graphs
Students will be given an assignment called “Foray to the Supermarket”. The assignment is a list of 50 produce items that can be found at most supermarkets. If not at a supermarket, then the produce item can be looked up either in texts or online. The students are asked to complete a series of tables and construct graphs based on their interpretations. Before the difference between a vegetable and a fruit is discussed in class, students will be asked to go through the list of produce items and mark whether they believe them to be a vegetable or a fruit based on their common knowledge. Students will be allowed to work in groups during this part of the exercise. After the differences between a vegetable and a fruit has been discussed in class, students will have to demonstrate that they understand what a vegetable or fruit is based on botanical definitions by correctly assigning each produce item to the correct category. If a produce item is categorized as a vegetable, the student will also have to determine which part of the plant the produce item originates from (i.e. carrots are roots, spinach is a leaf, etc.). If a produce item is categorized as a fruit, the student will also have to determine the fruit type based on botanical definitions (i.e. an apple is a pome, a cucumber is a pepo, etc.). After the students have completed the table, they will be asked to graph their results using three different graphs: 1. Graph #1: Students will produce a frequency graph with the type of produce (x-axis) as vegetable or fruit versus the frequency of each type (y-axis) before and after the differences between a vegetable and fruit are discussed in class. 2. Graph #2: Students will produce a frequency graph with the vegetable plant parts (roots, stems, leaves, flowers) (x-axis) versus the frequency of each plant part (y-axis) for the vegetables listed in the produce list. 3. Graph #3: Students will produce a frequency graph with the fruit types (pome, pepo, etc.) (x-axis) versus the frequency each fruit type occurs (y-axis) in fruits listed in the produce list. Based on the data obtained in table and graphs, students will answer the following questions: 1. Based on the data in your tables and graph #1 did you identify items as vegetables or fruits that you had previously considered as another type of produce? 2. Explain why some vegetables or fruits may not be correctly identified based on common ideas about what a vegetable or fruit should be. 3. Is there a particular plant part (root, stem, leaves, flowers) that vegetables commonly consumed by human society come from according to graph #2? 4. Are there any fruit types that are more commonly seen in supermarkets based on your data in graph #3? 5. What are some possible explanations as to why some fruit types may be more common in supermarkets than others?

See empirical & quantitative skills rubric in link below.

Source of Evidence: Project, either individual or group
Connected Document
Empirical & quantitative skills rubric
Target:
Achievement Target:
No less than 60% of students should score lower than a 3 in any particular dimension, and no less than 70% of students should have an overall score of 3 on average.

SLO 3: Teamwork: Literature research and presentation teamwork
Outcome 2: Students will use teamwork skills to choose a topic related to use of plants by human society and present to the class. Students will work in groups of 3 - 5 (depending on class size) to research and explain a topic that demonstrates how plants are used by human society.

Connected Document
Term Project
Relevant Associations:
Standard Associations
New Core Component Areas
2 Life & Physical Science (L & PS)
New Core Objectives
4 Teamwork (TW)
General Education/Core Curriculum Associations
3 Communication: Students will develop written and oral presentations that are clear, precise, organized, efficient and appropriately adapted to audience and purpose.
4 Teamwork: includes the ability to collaborate effectively, consider different points of view, and work with others
to support a shared purpose or goals.

5 Civic knowledge and engagement: includes both local and global intercultural knowledge and competence

**Strategic Plan Associations**

**Lamar University**

14.1 To offer undergraduate and selected graduate educational experiences of excellence, both curricular and co-curricular, which engage students with faculty and staff to meet their diverse needs. (Recruitment, retention, financial support, distance education, curriculum, academic excellence, student engagement, communication, and student life)

**Related Measures**

**M 3: Plant and Human Society term project teamwork**

Assessment of plants in society term project teamwork:

Students will be given a term project to research an example of how plants are used by human society. Students will work in groups of 3 to 4 students to complete the project. Groups will have to choose a unique topic that has not been chosen by another group and that is aligned with what will be discussed during the semester. Groups will look up references on their topic and write a paper explaining how their topic demonstrates how plants are used by human society. Groups will construct a poster that summarizes their topic in a visual format and give an oral presentation to the rest of the class using their poster. At the conclusion of the project, students will evaluate their group members using an evaluation survey at [http://www.catme.org](http://www.catme.org).

**OUTCOME: STUDENT USE OF TEAMWORK SKILLS RUBRIC**

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>Exemplary (Level 4)</th>
<th>Adequate (Level 3)</th>
<th>Near unacceptable (Level 2)</th>
<th>Unacceptable (Level 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students work together to choose a topic related to how plants are used in human society.</td>
<td>Students choose original topic related to use of plants in human society with no input from instructor.</td>
<td>Students choose topic related to use of plants in human society with some input from instructor.</td>
<td>Students choose topic related to use of plants in human society from list of topics provided by instructor.</td>
<td>Students are unable to come up with a topic on their own and are assigned a topic by instructor.</td>
</tr>
<tr>
<td>Group completes work on individual parts of term project in timely manner.</td>
<td>All stages of group project are turned in and complete by due dates.</td>
<td>No more than one stage of group project is turned in incomplete and/or late.</td>
<td>No more than two stages of group project are turned in incomplete and/or late.</td>
<td>All stages of group project are turned in incomplete and/or late. Some stages not turned in at all.</td>
</tr>
<tr>
<td>Presentation of term project to class as a group.</td>
<td>All group members equally participate in oral presentation of project to class.</td>
<td>Half or less of the group members do not equally participate in oral presentation of project to class.</td>
<td>More than half of the group members do not equally participate in oral presentation of project to class.</td>
<td>Only one group member participates in oral presentation of project to class.</td>
</tr>
<tr>
<td>CATME teamwork survey</td>
<td>Group member completes survey AND receives an average overall score of 4 or higher for all areas.</td>
<td>Group member completes survey AND receives an average overall score between 3 and 4 for all areas.</td>
<td>Group member completes survey AND receives an average overall score between 2 and 3 for all areas.</td>
<td>Group member does not complete survey OR receives an average score less than 2 for all areas.</td>
</tr>
</tbody>
</table>

Source of Evidence: Project, either individual or group

**Connected Document**

[Term Project](#)

**Target:**

**Achievement Target:**

No less than 60% of students should score lower than a 3 in any particular dimension, and no less than 70% of students should have an overall score of 3 on average.

**Connected Document**

[Term Project](#)

**SLO 4: Communication of literature research project**

Outcome 3: Students will use communication skills to present a topic related to use of plants by human society in written, oral, and visual formats. Students will choose a topic related to the use of plants by human society. Students will locate references to their topic of choice. A paper will be written explaining how their topic is related to the use of plants by human society. Students will construct a poster using photographs, figures, charts, and/or text that illustrates their topic to present in class. An oral presentation using the constructed poster will be given during class to convey how their topic demonstrates the use of plants by human society.

**Connected Document**

[Term Project](#)
**Relevant Associations:**

**Standard Associations**

*New Core Component Areas*
- 2. Life & Physical Science (L & PS)
- 2. Communication (COM)

**General Education/Core Curriculum Associations**

3. Communication: Students will develop written and oral presentations that are clear, precise, organized, efficient and appropriately adapted to audience and purpose.

**Strategic Plan Associations**

Lamar University
14.1 To offer undergraduate and selected graduate educational experiences of excellence, both curricular and co-curricular, which engage students with faculty and staff to meet their diverse needs. (Recruitment, retention, financial support, distance education, curriculum, academic excellence, student engagement, communication, and student life)

**Related Measures**

**M 4: Plants in society term project report and presentations**

Assessment of the plants in society term project report and presentations (oral and visual):

Students will be given a term project to research an example of how plants are used by human society. Students will work in groups of 4 to 5 students to complete the project. Groups will have to choose a unique topic that has not been chosen by another group and that is aligned with what will be discussed during the semester. Groups will look up references on their topic and write a paper explaining how their topic demonstrates how plants are used by human society. Groups will construct a PowerPoint presentation that summarizes their topic in a visual format and give an oral presentation to the rest of the class using their PowerPoint presentation.

**OUTCOME 3: STUDENT USE OF COMMUNICATION SKILLS RUBRIC**

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>Exemplary (Level 4)</th>
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<th>Near unacceptable (Level 2)</th>
<th>Unacceptable (Level 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>References related to group topic</td>
<td>5 or more references related to topic are chosen.</td>
<td>4 references related to topic are chosen.</td>
<td>3 references related to topic are chosen.</td>
<td>2 or fewer references to topic are chosen.</td>
</tr>
<tr>
<td>Written paper completed explaining and discussing group topic</td>
<td>Proper construction, complete sentences, proper grammar, and punctuation used with no errors.</td>
<td>Fewer than 5 errors in construction, complete sentences, and punctuation.</td>
<td>Fewer than 10 errors in construction, complete sentences, and punctuation.</td>
<td>Incomplete sentences, poor grammar, and/or improper punctuation use.</td>
</tr>
<tr>
<td>Presentation construction to visualize and convey topic</td>
<td>Figures, pictures, and/or text organized and used together to convey topic neatly without any one form dominating presentation.</td>
<td>Figures, pictures, and/or text used with little organization. Difficult to understand topic without explanation.</td>
<td>Only text or figures/pictures used in presentation. Topic is indiscernible without explanation.</td>
<td>Few figures, pictures, and/or text used. No organization of presentation. Presentation does not convey topic.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Presenter(s) use proper grammar and vocabulary while speaking at a level that can be heard by the entire classroom. Topic explained using presentation as visual aid. Presentation does not exceed 10 minutes.</td>
<td>Proper grammar and vocabulary used by presenter(s). Topic either not explained well or not understood by presenter(s). Presentation does not exceed 10 minutes.</td>
<td>Poor grammar, vocabulary, and/or volume used by presenter(s). Topic vague or not related to human society. Presentation does not exceed 10 minutes.</td>
<td>Poor grammar, vocabulary, and/or volume used by presenter(s). Topic vague or not related to human society. Presentation less than 5 minutes.</td>
</tr>
</tbody>
</table>

Source of Evidence: Presentation, either individual or group

**Connected Document**

Term Project

**Target:**

Achievement Target:
No less than 60% of students should score lower than a 3 in any particular dimension, and no less than 70% of students should have an overall score of 3 on average.