

THROUGH



THE

GRAPEVINE

A Viticulture Curriculum for Grades 1-6

Tina Hansen McEnroe, M.A., Hon. L.H.D.

Courtney Gillespie, B.S.

Tina Hansen McEnroe



Having grown up as the fourth generation in a John Steinbeck country farming family, Tina's teaching career and private life have embodied agriculture. As an Education Specialist (Reading, Special Ed, and Middle School Language Arts), she has enjoyed incorporating agriculture into her classrooms, winning state recognition for the curriculums *Ancient Civilizations Farmers Market* and *Home On The Range*, both published in the AITIC Teacher Resource book.

Tina's leadership skills have resulted in a bountiful school garden program, student success in promoting the CFAITIC *Imagine This* story writing contest and a Community Outreach Educational Program for the farm worker parents of her Latino students. A Foundation donor, Tina has also attended and presented at the AITC State Conferences, has worked directly with the U.C. Cooperative Extension and has frequently collaborated with Cal Poly's School of Agriculture. Tina is a member, and has presented to the Santa Barbara County's Farm Bureau and CCA Cattle Women organizations. She was invited to Sacramento to help create agriculture-based curriculum, and was featured on the Santa Barbara Superintendent of Schools Comcast TV show highlighting her involvement with agriculture.

Tina's accomplishments have been recognized in numerous awards including the USDA's National Excellence in Teaching About Agriculture Award, California's Outstanding Educator of the Year Award from the CFAITIC, the Santa Barbara County Farm Bureau's GAATE Foundation Outstanding Educator of the Year and has been inducted into their Teacher Hall of Fame. She is also the 2008 Cal Poly School of Education Honored Alumna.

After receiving a B.S. in Education from USC, Tina earned a Master's Degree from UCSB as well as four credentials, two of which were earned at Cal Poly in Special Education. She works as the Associate Director and Master Teacher at the McEnroe Reading and Language Arts Clinic at UCSB, which she co-founded with her husband Paul. She also teaches Living History Days (an immersion curriculum she created to take children back in time to experience school life in a bygone era) in the 1869 Pleasant Valley Schoolhouse. This building of Historic Merit now sits in front of the newly planted vineyard on a hill overlooking part of the Santa Ynez Valley.

Tina and Paul own and operate Rancho La Purisima where they run cattle, breed horses, grow hay and have recently planted a small teaching vineyard. Tina also owns a farm in the Salinas Valley. Both properties have been preserved for agriculture through Conservation Easements. Cal Poly has recently awarded Tina an Honorary Doctorate in Arts and Humane Letters.

Courtney Gillespie



Courtney is third generation currently involved in agriculture in Madera, California, growing primarily raisins, as well as wine grapes, almonds, pomegranates, and prunes. As a recent graduate of the Wine and Viticulture department at California Polytechnic State University, San Luis Obispo, with a concentration in Viticulture and an Agribusiness minor, Courtney completed courses in Viticultural Practices, Viticulture I, Soil Science, Botany, Irrigation Water Management, and Advanced Viticulture. She completed her senior project working on a bud fruitfulness experiment, which examined the influence of physiological factors upon bud fruitfulness. Alongside her coursework, Courtney studied abroad in Adelaide, Australia winter of 2014 with the focus of the program on the wine and grape industry.

INTRODUCTION

OBJECTIVES:

1. The students will understand and be able to define the characteristics of a grapevine in a 20-minute duration as observed by the teacher.
2. The students will understand the life cycle of a grapevine in a 20-minute session as observed by the teacher.
3. The students will understand basic photosynthesis during a 20-minute duration as observed by the teacher.
4. The students will demonstrate the vast uses of grapes as a food source and its rise as a prominent industry in California in a 20-minute session as observed by the teacher.

Main Concepts To Know:

1. Grapes begin as a seed, grow into a vine that then produce berries.
2. Plants require photosynthesis to grow leaves and produce grapes. This means the plants need light from the sun to create "sugar-food" in their leaves that is then transported throughout the vine to feed the plant.
3. Every part of the vine has a specific name and function. Example: The leaf is where the vine undergoes photosynthesis. The berries are sweet and hold the seeds, etc. (See vocabulary words and definitions later in this section.)
4. Table grapes, raisins and grape juice are all products of the same berry.

California State Content Standards

1st – 3rd Grade:

Disciplinary Core Ideas:

Structure and Function

- Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
- The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)

Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow. (2-LS2-1)

Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to 2-LS2-2)

Growth and Development of Organisms

- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)

4th – 6th Grade

Disciplinary Core Ideas:

Structure and Function

- Plants have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)

Organization for Matter and Energy Flow in Organisms

- Plants acquire their material for growth chiefly from air and water. (5-LS1-1)

Structure and Function

- All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1)
- Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)

LS1.B: Growth and Development of Organisms

- Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4)

Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)



LESSON 1

Lesson Goal: Vine Characteristics

Students will identify various characteristics of the grapevine.

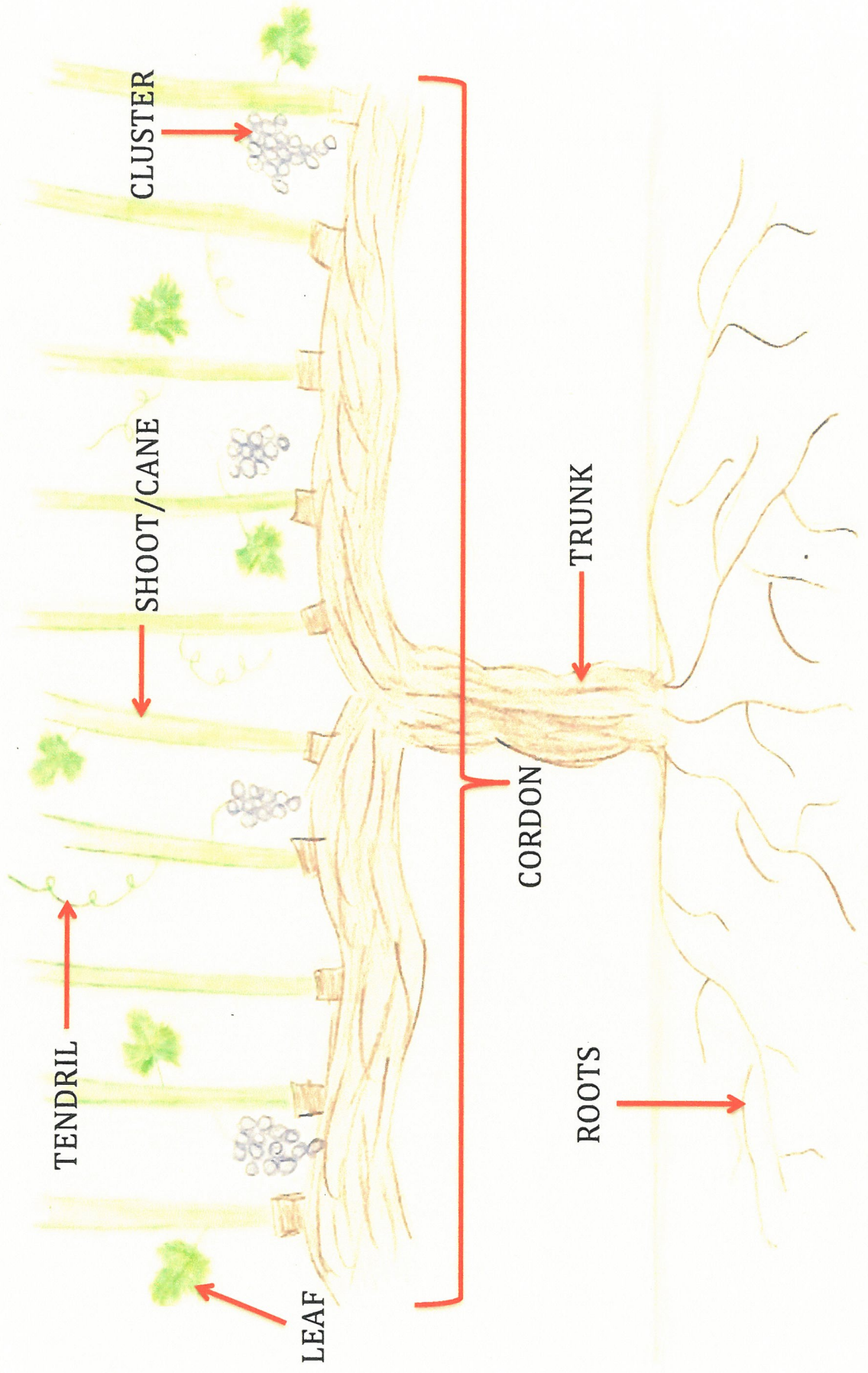
Activity:

1. **Scavenger Hunt:** Teacher will choose 5-8 items located in the vineyard for students to discover. Discussion of items to follow the activity. (Note: depending upon time of year, many vine characteristics may not be present. Items are marked on Vocabulary Terms list with an *)
2. **Spelling Bee:** Students will spell vocabulary words in a Spelling Bee format (See vocabulary terms located later in this section).

Materials:

Small collection baskets, teacher diagram of vine characteristics

DIAGRAM OF A VINE





LESSON 2

Lesson Goal: ***Life Cycle***

Students will understand how a seed turns into a grapevine during a season.

Activity:

1. **Life Cycle**: Students will be shown the basic life cycle of a grapevine along with the written handout that can be read aloud in class (See handouts located later in section). Students will then draw and label their own diagram based upon the examples.
2. **Creative Oral Story**: Students will sit in a circle and add a sentence to the previous student statement, creating a story around the life cycle of a grape. (Ex: Student #1: Tom is a seed. Student #2: Tom lives in the ground. Student #3: Tom drinks water to begin to grow.)
3. **Spelling Bee**: Students will spell vocabulary words in a Spelling Bee format (See Vocabulary Terms located in Lesson 1).

Materials:

Diagram of the life cycle, life cycle of a grapevine handout, paper, crayons/colored pencils

What is the life cycle of a grapevine?

A grapevine begins as a seed. With proper sunlight, nutrients and water, the seed will germinate and begin to grow into a seedling. The seedling will grow tall and produce leaves for **photosynthesis**, which will provide food for the plant to keep growing. This process of growth will continue for a few years until the plant is large enough and strong enough to produce fruit. This typically takes about 5 years. Then the vine will keep growing leaves to keep feeding the plant, but will also begin growing grape clusters. These clusters require a lot of food to grow. Located inside the grape are 2-3 seeds. Once the berries are mature and sweet, animals will hopefully come by and eat the berries and spread those seeds around. When those seeds finally reach the ground, they will begin the process all over again as their own plant.

Grapevine Life Cycle



1 SEED



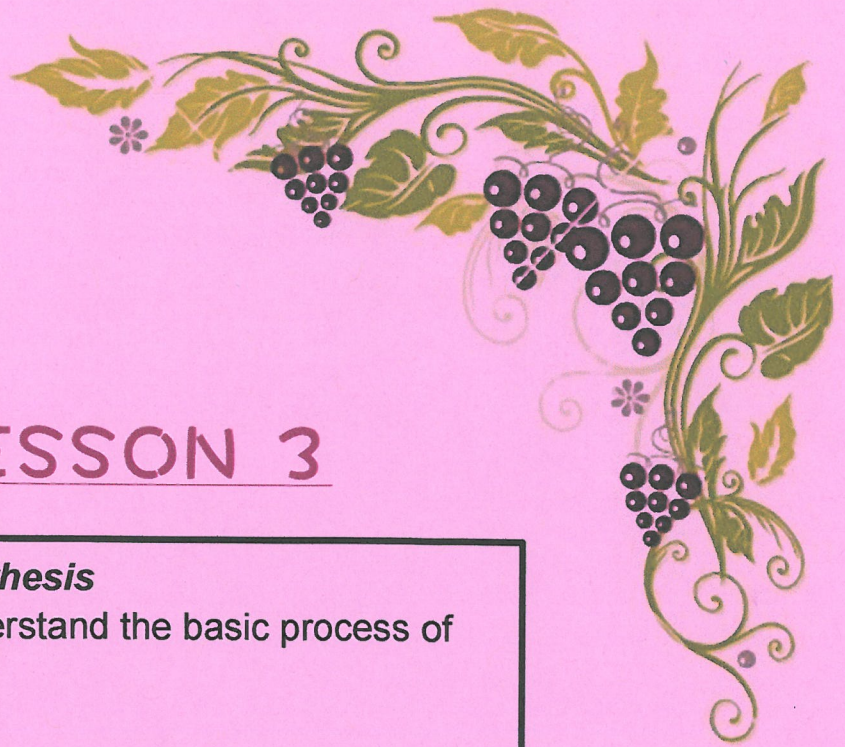
2 SPROUT



3 PLANT



4 VINE



LESSON 3

Lesson Goal: *Photosynthesis*

Students will understand the basic process of photosynthesis.

Activity:

1. **Photosynthesis:** Students will be shown a diagram of Photosynthesis along with the written handout that can be read aloud in class (See handouts located later in section). Students will then draw and label their own diagram based upon the examples.
2. **Song:** Students will learn a song about Photosynthesis to the tune of Frozen: "Let It Go"

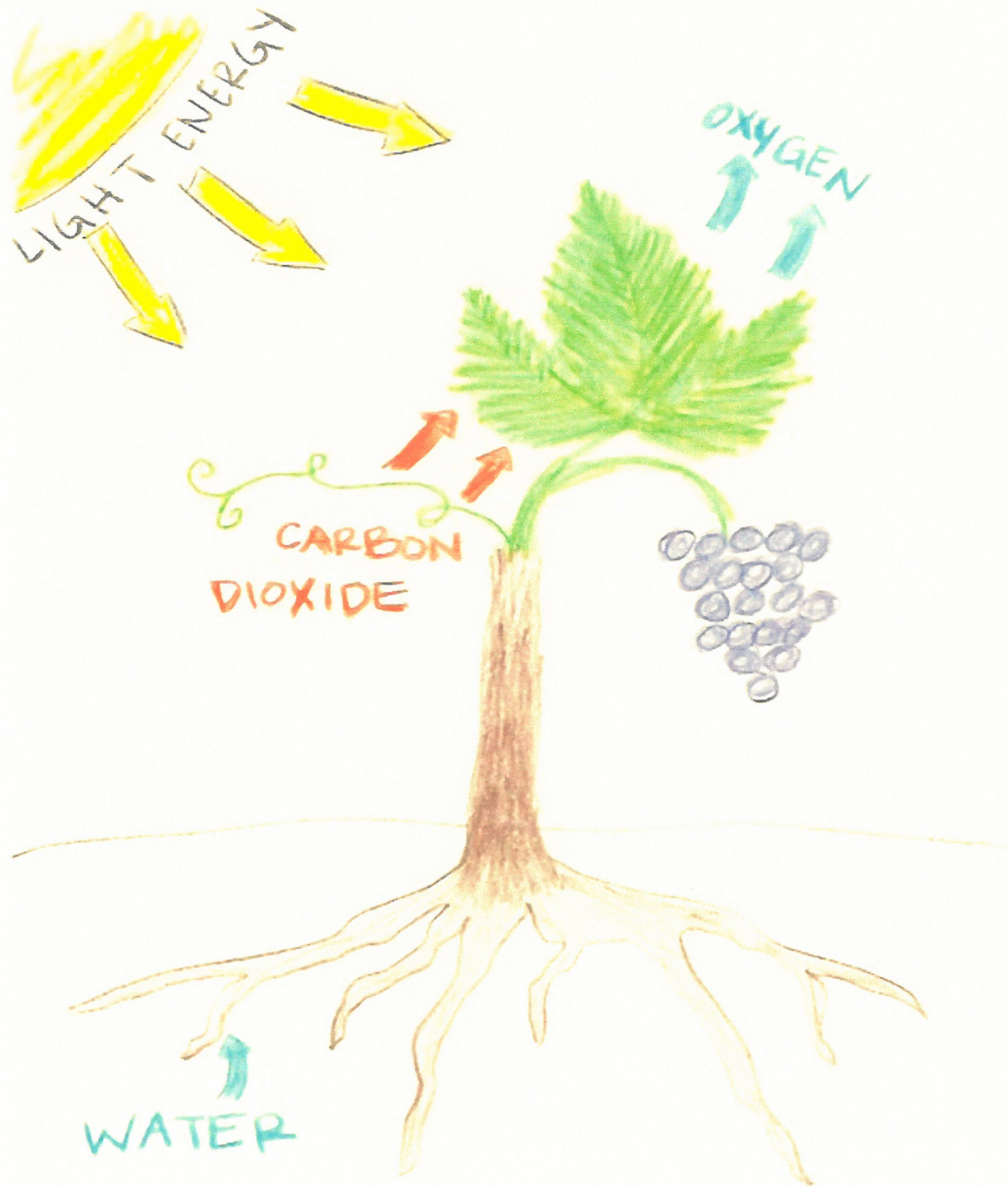
Materials:

Handout of photosynthesis, written photosynthesis handout, paper, crayons/colored pencils, song lyrics and sheet music

How does Photosynthesis Work?

Plants make their own food in their leaves during the process of photosynthesis. The green in the leaves is caused by chlorophyll and that is where photosynthesis occurs. The leaves use sunlight, carbon dioxide and water to produce the food, which is sugar, also known as glucose. This glucose gives the plant the energy it needs to grow. They store extra glucose created during the day in other parts of the plant for times when it does not receive enough sunlight. A side product of photosynthesis is oxygen.

PHOTOSYNTHESIS



Let It Grow

(Tune: "Let it Go" from Frozen)

All plants need food,
but they can't eat
It all must be made
Somewhere within their leaves
Chloroplast, are small
They can't be seen
Hidden in the leaves

Let it grow, let it grow
Its called PHOTOSYNTHESIS
Let it grow, let it grow
Sunlight, carbon dioxide and water

Here it's made
To feed the plant
Sugar is produced
They call this Photosynthesis

Let It Go - Easy Piano Version

From Disney's "Frozen"

25

D F# A A D D A A E E

All plants need food But they can't eat

27

C E D E E D E F# G F# F#

It all must be made Somewhere within their leaves

29

D A A D D D A A E E C

Chloroplasts, are small They can't be seen .

32

D E F# G E F# G

Hidden in the leaves Let it grow

35

G D D A D G Em E E E E F# G

Let it grow It's called PHOTO SYNTH E SIS ,

76

C E F# G G D B A D G A B

Let it grow let it grow sunlight

Em B C B A G C A G G D B A

carbon dioxide and water Here it's made

D G G Em D B G C G G

to feed the plant, sugar

Bm D D Bb G C C B C B C C

is produced they call it Photo synth e

50 B G G C G C B G G D/F# A G F# G

sis



LESSON 4

Lesson Goal: ***Functionality of the Grape and its Impact on California.***

Students will learn the differences between grape processing and interesting facts about the industry.

Activity:

1. **Blind Taste Test:** Students will sample the three different types of grape products and compare and contrast the different textures in a group discussion.
2. **Fun Facts About Viticulture:** Students or teacher will read these facts aloud in a Readers Theater format (See handouts located later in section).

Materials:

Grapes, raisins, grape juice, bandanas, Fun Facts about Viticulture handout

Fun facts about Viticulture

- Grapes can be grown almost anywhere
- California produces greater than 99% of the US raisin grapes
- More than 8,000 grape varieties that come from 60 different species
- Grapes can be green, pink, yellow, red, black, and purple
 - o "White" grapes is another name for green grapes
- Grapes appear on the top 10 list for world's favorite fruits
- Oldest grapevine in America is 400 years old and is in North Carolina
- The grape growing industry is the largest food industry in the world producing over 72 million tons or 144 million pounds of grapes per year
- Grapes can be seeded or seedless

VOCABULARY TERMS

(Recommended for grades 1-3)

1. **Vine/Grapevine**: climbing plant that wraps its tendrils around objects for support
2. ***Grape**: a berry that is either red or white that is grown in clusters (synonym: berry)
3. ***Seed**: found inside grapes and will grow into another plant someday; reproductive structure
4. **Leaf**: where photosynthesis occurs on the plant
5. **Bark**: protective outer layer of the plant
6. **Trunk**: the strongest part of the vine that connects the roots to the canopy
7. ***Skin**: Protective layer of the berry
8. **Roots**: the anchor of the plant which also allows water and nutrient uptake
9. **Shoots/Cane**: branches that are attached to the cordon and hold the leaves and clusters
10. **Tendrils**: assists the vine in climbing
11. ***Rachis**: skeleton of the cluster
12. ***Berry/Berries**: contains the seed (synonym: grape)
13. **Cordon**: the arms of the vine that attach the trunk to the shoots/cane
14. **Farmer**: a person who cares for the plant and provides it the necessary nutrients and water to grow
15. ***Cluster**: many berries/grapes attached to the rachis

* only identifiable in summer and fall

VOCABULARY TERMS

(Recommended for grades 4-6)

16. **Viticulture**: the study of grape growing
17. **Nutrients**: vitamins and minerals that are necessary for plant growth
18. **Seasons**: times of the year when the weather changes, resulting in different stages of growth
19. **Dormant/Dormancy**: during the winter months after harvest, in which the vine “sleeps”
20. **Harvest**: when the grapes are mature and ready to be picked
21. **Sugar**: food for the vine that is created by photosynthesis
22. ***Juice**: result of squeezing the berry
23. **Photosynthesis**: the process of transforming sunlight, Carbon Dioxide and water into sugar-food for the vine and releasing oxygen
24. **Cell**: the building blocks of all living organisms
25. **Canopy**: leaves and clusters that are grown above the cordon
26. **Trellis**: structural system that holds the vine in place
27. ***Raisin**: dried grape
28. ***Pulp**: the fleshy part of the berry

* only identifiable in summer and fall

THROUGH THE GRAPEVINE EVALUATION FORM

This is your opportunity to tell whether or not you enjoyed the project and what things you would or would not change. Please rate the following questions on a scale of 1-10, (1 being that you disagree strongly and 10 being that you agree strongly). Also, there are some questions that will not be scored 1-10, but rather by your opinion.

1.) The information presented interested me, and kept my

attention. 1 -2 -3 -4 -5 -6 -7 -8 -9 -10 (Circle One)

2.) I learned a lot about the Viticulture Industry that I did not

know before. 1 -2 -3 -4 -5 -6 -7 -8 -9 -10 (Circle One)

3.) What was your favorite part of the THROUGH THE GRAPEVINE lesson/lessons?

4.) What would you change, if anything, about the THROUGH THE GRAPEVINE lesson/lessons?

5.) What was the most interesting thing you learned?

6) What was the one thing you will take from this lesson/lessons?

7) How will you use what you have learned in the future?