A RECOMMENDED UNIT OF STUDY IN CALIFORNIA AGRICULTURE EDUCATION
FOR THIRD GRADE

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A RECOMMENDED UNIT OF STUDY IN CALIFORNIA AGRICULTURE EDUCATION
FOR THIRD GRADE

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Abstract

A RECOMMENDED UNIT OF STUDY IN CALIFORNIA AGRICULTURE EDUCATION FOR THIRD GRADE

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A unit to teach basic agricultural education to third grade students was piloted to evaluate effectiveness. The first topic of this unit, which is an introduction to agriculture, was piloted and evaluated in a third grade class. Revisions were made to improve the topic including adding an activity and deleted foothills from another activity. The first topic was successful because it taught students what agriculture is and that it is an important part of their daily lives. This unit was deemed to be an effective way to teach agriculture to third grade students in California.

Dr. Mark A. Rodriguez, Committee Chair

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>List of Tables</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>vii</td>
</tr>
</tbody>
</table>

## Chapter

1. **INTRODUCTION**…………………………………………………………………………1
   - Purpose of the Study……………………………………………………………………1

2. **REVIEW OF LITERATURE**…………………………………………………………………4
   - History of Agriculture Education……………………………………………………4
   - Importance of Agriculture Education………………………………………………7

3. **METHODOLOGY**…………………………………………………………………………19

4. **RESULTS AND RECOMMENDATIONS**…………………………………………………..23

Appendix Agricultural Education Unit for Third Grade…………………………………27

References……………………………………………………………………………………69
LIST OF TABLES

1. Table 1 Results............................................................................................................. 25
Chapter 1

INTRODUCTION

Students in schools today get little to no agricultural education. Agriculture is the backbone of our country, yet the general public is so far removed that they have a very faint idea of where their food and fiber comes from. “Most Americans know very little about agriculture, its social and economic significance in the United States, and particularly, its links to human health and environmental quality” (Committee on Agriculture Education in Secondary Schools, 1988, p. 9). Agriculture has become such a productive industry and has enhanced the standard of living in the United States so much that “the vast majority of citizens take food, its production and availability for granted” (Birkenholz, 1992, p. 3).

Purpose of the Study

This study will evaluate the effectiveness of a unit to teach agricultural education to third grade students. This unit will introduce third grade students to basic agriculture knowledge which will build a foundation of agricultural literacy. In this unit students will be introduced to agriculture using five Categories: farming, food, fabric, forestry, and flowers (Utah Agriculture in the Classroom, 2009). Many people think of agriculture as a food industry, but it is much more than that and the variety of the agriculture industry is important for students to learn. The evaluative results from this study will be used to modify the unit.

Significance of the Study

While there are lessons available that incorporate agriculture concepts and teach California Content Standards, the available lessons do not provide a complete sequenced unit teaching the foundation of agricultural literacy.

Limitations of the Study
While the goal of this project is to make the agriculture unit accessible at a third grade level for California schools, it is not intended to provide a complete education in agriculture. The agriculture unit is intended to provide agriculture literacy to third grade students.

Theoretical Framework

Students learn best when they are able to make connections to their lives and what they are learning (Williams, 2008). “The brain responds best in a learning environment when it can make the connection between the learning going on and real-life applications” (Williams, 2008, p. 25). Agriculture is a means for connecting students’ lives to the classroom because agriculture is in every student’s life.

Organization of the Study

This study is organized into four chapters and an appendix. Chapter one is an introduction to the study. Chapter two is the review of literature. Chapter three is methodology of the study and chapter four is review of data and recommendations. The appendix is the unit on agricultural education for third grade students.

Background of the Researcher

A favorite childhood memory of the author was planning and taking care of her plot in the family garden every summer. She was active in 4-H as a child where she raised and showed poultry and dairy goats and was a Chapter Officer. In high school, her parents chose not to send her to her local high school and sent her to a school with vocational agriculture classes instead. She was very active in her FFA chapter showing both dairy goats and market lambs. She also
attended conferences and was a Chapter Officer. While agriculture was a very important part of her life she knew that she wanted to pursue a career in elementary education.

The researcher graduated from California State University, Sacramento with a B.A. in Liberal Studies and again with her multiple subjects teaching credential. An observation during her first year of teaching was that her class told her that cows were imaginary animals because they had never seen one. Wanting for her class to gain some agriculture knowledge she made an “Agriculture Wall” which was a wall in her classroom that was devoted to helping her students learn about agriculture. Each week a new agriculture commodity was showcased including facts, pictures, and at the end of the week a taste test. Her first wall showcased almonds. She was incredibly proud of it and how much her students were learning about almonds. One day after school a student from another classroom came into the room, looked at the almond wall and said “Peanuts, I love peanuts!” These observations lead to the realization that a unit of study must be developed for agricultural education.
Chapter 2

REVIEW OF LITERATURE

History of Agriculture Education

The start of American education began in colonial times with parents teaching their children how to read and write, if they were lucky, and how to live off of the new land. Agriculture and education have been closely related for most of the early days of the United States. During this time most Americans lived and worked on farms or in small communities doing farm chores as a part of their daily lives (Agriculture in the Classroom, n.d.). “Old school books are full of agricultural references and examples because farming and farm animals were a familiar part of nearly every child’s life” (Agriculture in the Classroom, n.d). The school year was determined by the farm schedule (Agriculture in the Classroom, n.d).

During the 1920’s, 1930’s, and 1940’s the population of families living on farms decreased rapidly due to advances in agricultural technology and industrialization. It was not the norm for people to live in small towns; instead they now lived in growing cities working at jobs far removed from agriculture. The agricultural emphasis in schooling was no longer there. School books, educational materials, and educators no longer focused on agricultural knowledge (Agriculture in the Classroom, n.d). “Agriculture education was mainly offered to those few students wanting to make a career of agriculture” (Agriculture in the Classroom, n.d).

High School Agricultural Education
“Before the Smith-Hughes Act was passed, more than 30 states had adopted legislation providing agriculture education of less-than-college grade in the local public schools or in specialty schools” (Hamlin, 1962, p. 24). In 1907 a bill proposing a national vocational education program was introduced to congress. After ten years of development, the Smith-Hughes Vocational Education Act was passed by congress in 1917 which established vocational agriculture courses in high schools across the nation (Hamlin, 1962; National FFA Foundation, 2009). Funding from the federal government was provided to schools with vocational agriculture courses offered.

The Future Farmers of America (FFA) was founded in 1928 which “brought together students, teachers and agribusiness to solidify support for agricultural education” (National FFA Foundation, 2009). Since 1928 countless individuals, mainly those going into an agricultural vocation, have been a member of the FFA. In 1988 the name was changed from Future Farmers of America to National FFA Organization to reflect the expanding career opportunities in the agricultural industry (National FFA Foundation, 2009). “The organization is expanding the nation’s view of ‘traditional’ agriculture and finding new ways to infuse agriculture into the classroom” (National FFA Foundation, 2009).

High school agriculture education programs include classroom instruction, FFA Leadership, and Supervised Occupational Experience projects (California Department of Education, 2009). Classroom instruction includes a variety of course offerings including animal science, agriculture leadership, agriculture, agriculture mechanics, agriculture science, forestry,
and floriculture. FFA leadership includes being a Chapter Officer and other leadership opportunities such as conferences and contests. Supervised Occupational Experience projects are projects in which the student keeps records of all money spent and received which can include animals or a business. Vocational agriculture and National FFA chapters are not offered at all high schools nor are the programs standardized.

Elementary School Agricultural Education

“There were many school districts that undertook independently the teaching of agriculture from 1858, when it was introduced in two elementary schools in Massachusetts, until their states began to take an interest in it” (Hamlin, 1962, p. 24).

“Almost 100 years ago educators, both those with an agricultural background and those without such a background, had found that the subject matter of agriculture was a wonderful delivery system for instruction at the elementary level” (Hillison, 1998, p. 17). Teachers and the general public valued agriculture and wanted it taught and explored in the elementary school system. Back then, agriculture was too important of a topic to be left out of the lives of children.

After the decline in families living and working on farms, elementary schools did not teach agriculture as an integrated part of the curriculum. Agriculture references decreased in school books and every child did not get education in agriculture (Agriculture in the Classroom, n.d.).
In 1981 an agricultural literacy program, primarily for the elementary level, called Agriculture in the Classroom was developed. John Block, who was the United States Secretary of Agriculture at the time, supported this program because he was a strong advocate of agricultural literacy (Hillison, 1998). Agriculture in the Classroom has provided countless opportunities for educators to teach their students about agriculture and deepen their own understanding of agriculture and is still going strong today. Agriculture in the Classroom programs provide lesson plans and resources to teachers wanting to teach agriculture in their classrooms.

In elementary schools today, math and reading are the focus. Students do not get an education in agriculture unless their teacher seeks out opportunities to teach it. This is a disservice to students and society.

Importance of Agricultural Education

“Americans need to recognize the agricultural abundance they have and the reasons for it. They need also to realize that it could end and that it will end unless public provisions for agricultural research and education appropriate to the times are maintained” (Hamlin, 1962, p. 8). Hamlin (1962) stated that there are two ways of viewing the need for agriculture education. The first being; “Making agriculture an efficient industry, capable of producing cheap food in abundance” (p. 10). The first view has been successful in our society. The agricultural industry has made huge strides over the last decade and is producing large amounts of quality food very
efficiently. Farmers and ranchers have educational opportunities that were not available to previous generations including vocational education at the high school level and colleges across the country specializing in agriculture education. The second way of viewing agriculture education according to Hamlin (1962) “emphasizes agricultural education as a means of developing good American citizens and good human beings” (p. 10).

“Agriculture is too important a topic to be taught only to the relatively small percentage of students considering careers in agriculture” (Committee on Agriculture Education in Secondary Schools, 1988, p. 1). Every person is involved in agriculture to some degree and should have some degree of agriculture knowledge to make informed decisions about their daily lives. “If you eat food and wear clothes, you are involved in agriculture!” (California Women for Agriculture, 2008). In a study analyzing the status of agricultural awareness efforts in the elementary grades in central Iowa titled “Agricultural Awareness Activities and their Integration into the Curriculum as Perceived by Elementary Teachers,” Knobloch and Martin (2000) stated that 93 percent of teachers in their study agreed or were neutral to the statement “Every elementary school student should be taught agriculture no matter what career they want to pursue.” Also in this study 89 percent of teachers agreed to the statement “Basic knowledge of agriculture is important to make daily decisions.” Knobloch and Martin (2000) concluded that, “The whole agricultural awareness issue is critical and needs to be taken seriously by agricultural and educational leaders at every level” (p. 24).
In 1962, Hamlin discussed the need for the general public to have some degree of agricultural knowledge when he wrote:

. . . public policy which governs and controls agriculture is policy they [the voters] make, not policy which farmers make. They [the people] must be sufficiently aware of the revolution in agriculture and its implications to approve policies which will sustain and improve agriculture and be fair to the people who engage in it, recognizing that in their blindness they could “kill the goose that laid the golden egg” (p. 58).

Agriculture has become such a productive industry and has enhanced the standard of living in the United States so much that “the vast majority of citizens take food, its production and availability for granted” (Birkenholz, 1992, p. 3). Hamlin recognized the disconnect between the producer, the farmer, and the consumer which is so great the general public has the power to make blind decisions that effect the farmers in a negative way. Many negative beliefs on farming and the agriculture industry are results of biased or inaccurate information (Birkenholz, 1992).

Citizens of our country should have the right to make informed decisions in all aspects of their lives. Our schools may not be preparing our citizens to make informed decisions when choosing food to nourish their bodies. “Most Americans know very little about agriculture, its social and economic significance in the United States, and particularly, its links to human health and environmental quality” (Committee on Agriculture Education in Secondary Schools, 1988, p. 9). An agriculturally literate person might spend more time in the produce isle of their local
grocery store or at the local farmer’s market than they do sitting in the drive through line at their local fast food restaurant. They would know the link between their food choices and the size of their waistlines.

“Only a century ago, a majority of workers in the Unites States were engaged in farming. Now, because technology has so greatly increased the efficiency of agriculture, only a tiny proportion (only about 2 percent) of the population is directly involved in production” (American Association for the Advancement of Science, 1989, p. 91). The Agriculture Committee of the United States House of Representatives reports that four out of ten nonfarm employees in the United States have jobs that are directly related to agriculture such as processing, transportation, marketing, and manufacturing agricultural commodities (Gasior, 1975). Every person is involved to some extent or another in agriculture.

From an early age children need to have an understanding of our agriculture system and its significance in their lives, especially in California. “California is the nation’s top agriculture state, and has been for more than 50 years” (Agriculture in the Classroom, n.d). “California remained the No. 1 state in cash farm receipts in 2007, with its $36.6 billion in revenue representing 12.8 percent of the U.S. total” (California Department of Food and Agriculture, 2009, p. 17). Agriculture is part of California’s culture and history. The students need to know our rich agricultural heritage and be aware of its future in our state. “California grows more than half of the nation’s fruits, vegetables, and nuts from less than four percent of the nation’s farmland” (Agriculture in the Classroom, n.d). “California’s agricultural abundance includes
more than 400 commodities. The state produces about half of U.S.-grown fruits, nuts, and vegetables. Many crops are produced solely in California” (California Department of Food and Agriculture, 2009, p. 17). Agriculture education should be taught in schools because it is a part of our history and culture.

Available Agriculture Programs

There are a few agriculture programs available to elementary school educators including the California Foundation for Agriculture in the Classroom, County Cooperative Extension Offices, and the school garden movement.

California Foundation for Agriculture in the Classroom

The California Foundation for Agriculture in the Classroom is the strongest program that helps teachers get connected with resources to allow them to incorporate agriculture lessons into their school year. “We believe that today’s students deserve to know where their food really comes from” (California Foundation for Agriculture in the Classroom, 2009). The mission of the California Foundation for Agriculture in the Classroom is “to increase awareness and understanding of agriculture among California’s educators and students” (California Foundation for Agriculture in the Classroom, 2009). Their vision is “an appreciation of agriculture by all” (California Foundation for Agriculture in the Classroom, 2009). To accomplish their mission and see their vision come to life, the foundation provides many free resources to California’s educators. Some of their resources include; lesson plans which use agriculture concepts to teach
California content standards, an agriculture newspaper for students, commodity fact sheets which provide information about commodities produced in California, and a teacher resource guide full of useful resources for educators to use to teach agriculture in their classrooms.

Dairy Council of California

The Dairy Council of California provides nutritional education materials that are interesting for the students and are ready to use for California educators. They provide lesson plans, electronic interactive games, and other resources for teachers, administrators, and food service workers (Dairy Council of California, 2009). The Dairy Council also sponsors the Mobile Dairy Classroom, which is a classroom on wheels complete with a lactating cow and her calf. The instructor teaches students in an assembly the connection between a live cow and the food students eat. The Mobile Dairy Classroom is a favorite resource among those who have experienced it (Dairy Council of California, 2009).

Cooperative Extension

“The Cooperative Extension Service, specializing in education in agriculture and home economics, reaches an estimated ten million each year and provides an educational agency in every agricultural county of the United States” (Hamlin, pg 6). The county cooperative extension “provides meaningful, learn-by-doing educational activities to children in 4-H clubs and to children in school enrichment and after-school programs” (University of California Agriculture and Natural Resources, 2009). 4-H is a youth organization that includes traditional clubs such as
cooking, sewing, and poultry or other animals, but it can also include new clubs such as computer science or rocketry (University of California Agriculture and Natural Resources, 2009). “The University of California 4-H Youth Development Program engages youth in reaching their fullest potential while advancing the field of youth development” (Regents of the University of California, 2009). 4-H clubs go beyond just teaching and practicing agricultural activities and projects to develop good citizens of our state and our nation. This aligns perfectly with Hamlin’s second way of viewing agriculture education, which “emphasizes agricultural education as a means of developing good American citizens and good human beings” (p. 10). This is exactly what 4-H clubs around the country and in our own backyard are doing.

4-H clubs offer school age children the opportunity to become agriculturally literate. However, parents and children have the choice to attend and to what aspects of agriculture they will participate. 4-H does not offer a standard curriculum for all students.

School Gardens

There are many programs available for schools that are interested in starting or maintaining a school garden. “A garden leaves an indelible mark on a child’s mind. It broadens their view of the world, breathes life into their imagination, and respect for the earth into their hearts” (Brynjegard, 2001, p. 25). School gardens can be a fantastic opportunity for students to learn about agriculture in a way that is fun for them. “Everyone has some connection to plants.” “They eat them, they see them every day. As vehicles for education, they’re ideal,” says Chura
from Learning Gardens (p. 3). A garden’s impact on a community can be monumental, according to “Learning Gardens,” they can even prompt civil change (p. 2). Gardens offer extremely relevant lessons in mathematics, history, literature, nutrition, art, science, and mythology which provide the interest and the drive for learning that can easily be extended into the library (Kuzyk, 2007) and also into the classroom and school environment.

Although school gardens provide excellent means to an agriculture education, there are several difficult obstacles to overcome if they are to become a successful part of the school’s curriculum. They require large upfront costs that many schools simply cannot afford. There are many grants schools and teachers can apply for which can be found at the California Foundation for Agriculture in the Classroom’s website. These grants can eliminate or drastically reduce the costs of starting a garden. However, school gardens also require an amount of work that many teachers shy away from. Gardens require constant upkeep with pulling weeds, looking for and deterring pests, and utilization to make the effort worth the reward. “We really can’t sustain a garden unless enough people are dedicated to keeping it” cautions Kate Chung in “Learning Gardens” (p. 2). Gardens also require space with plenty of sun and a water supply that many schools do not have. A garden would be an ideal place to learn if schools, teachers, and the community surrounding the garden were committed to keeping up the garden.

In the article School Gardens: Raising Environmental Awareness in Children written by Shira Brynjegard, the author discusses the need and the reasoning behind having a school garden. “The classroom is an excellent place to introduce the concept of environmental awareness to
Brynjegard’s focus question for this paper was “In the course of working in the garden, do children gain unique insights into some environmental issues (including conservation and sustainability) faced by the world today?” (p. 5). The author was the leader of The Watershed Program which involved a school in Napa, California. The Watershed Program’s objective was to use a service learning project, a school garden, to teach elementary school children about environmental awareness (p. 14). The article explained the details of beginning a school garden and also the challenges of doing so. The author worked full time for one year at the school developing a garden. Brynjegard’s implications were; “The ultimate goal of any garden project is to develop a set of long term environmental values for the child to carry through life. It may effect the way they vote for environmental legislation, or discover a career path they might not have taken” (p. 25).

Limitations of Available Agriculture Programs

While each program offers different opportunities for educators and community members to bring agriculture into the classroom, educators have to go out of their way to want to teach agriculture in order to use these programs. If parents want their child exposed to agriculture they will have to enroll their child in a local 4-H chapter. If teachers want to teach agriculture education, they have to seek out the California Foundation for Agriculture in the Classroom or the California Dairy Council. None of the available programs provide a comprehensive unit that teachers are able to use without any agriculture knowledge and without large amounts of
preparation time. Thus, providing an unequal education in agriculture to students across California.

Standards

“Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level” (California Department of Education, 2009). The California content standards were designed to hold educators accountable for the content they should be teaching their students at any given grade level and subject area. Many teachers are concerned with teaching the standards and only the standards, which was not the intention. Their intention was to set the minimum standard for what students learn at each level (California Department of Education, 2009). There are no standards for agriculture education at the elementary level, however, there are many standards that can lend to ways to integrate agriculture education into already existing California Content Standards. Here are two examples.

An example of a Third Grade Science standard that relates to agriculture is 3.a: Students know plants and animals have structures that serve different functions in growth, survival, and reproduction. Agriculture education could be integrated by having students learn the different parts of plants (root, stem, leaves, flower, and seeds) and identify fruits and vegetables that are the different parts. For example carrots and radishes are roots, celery and asparagus are stems, lettuce and brussel sprouts are leaves, artichokes and broccoli are flowers, and corn and sunflower
seeds are seeds. Most fruits are a little more in depth because fruits are formed after a flower is pollinated and we eat the seed coating, but could be discussed with this standard as well.

Another example integrating agricultural education into the curriculum might be accomplished utilizing third grade Health standard 1.1.G: Describe the cycle of birth, growing, aging, and death in living things. Living things include plants and animals and this standard should cover both plants and animals. Dealing with animals, students could learn about the life cycle of production animals such as beef cattle or chickens. Cattle are mammals and go through the same life cycle as all other mammals such as humans, pigs, goats, and cats. Their life cycle could be discussed and would include that cattle give live birth and then nurse their young with milk from the mother. Young cows, called calves grow up reproduce and die. Among the cow’s life cycle are many different aspects of various agriculture industries. People drink milk from dairy cows and students could discover the milk industry and how it works. Some young cows, called calves are slaughtered for human consumption. Cows under a year old produce a special form of meat called veal. Beef cattle are raised for their meat, called beef. Students could explore the meat industry. Cattle are used for many uses other than just milk and meat and those industries could be explored as well, such as the leather industry. Using the plant side of Health standard 1.1.G the forestry industry could be explored. The life cycle of trees from seed to decomposing tree and every stage in between could be taught. Students could also explore all the different by-products trees produce.
A teacher without an agricultural background might not be able to make the connection between current content standards and agricultural education. The unit will support the third grade content standards without the teacher having to make the connections.

Literature Review Conclusion

An educator’s job is to prepare their students for careers that do not exist and cannot even be imagined, especially in elementary school when their career is at least ten to fifteen years away. “This can be done only by teaching people how to learn, by giving them the kind of intellectual discipline and the depth of understanding that will enable them to apply man’s accumulated wisdom to new conditions as they arise” (Hamlin, 1962, p. 43). Agricultural literacy is timeless. One will need to know the basics of agriculture no matter their career, lifestyle, or what the future has in store for them. Agricultural literacy is a basic need that will prepare all students to understand and thrive in the world around them.

Agriculture education is an immensely important topic to teach to our elementary age children in order for them to have a solid foundation for the rest of their lives. But, there exists no easy method to instruct elementary students on basic agricultural knowledge. This project is a method all teachers can use to develop a basic understanding of agriculture for their students and provide third graders the opportunity to reinforce various content standards with an agricultural theme.
Chapter 3

METHODOLOGY

Project Description

The project is a unit of study that will give third grade students the opportunity to learn basic agriculture knowledge, consisting of five areas of agriculture education including farming, food, fabric, forestry, and flowers. See appendix. The unit is designed to be a six week unit in which students complete one lesson each day for six weeks. The first week of the agriculture unit is an introduction to agriculture that includes the commodities in which California leads the nation in producing and California’s varying landscapes. The next five weeks cover introductions to the five categories of agriculture: farming, food, fiber, forestry, and flowers. The second week describes farming and the many jobs that a farmer performs. The third week includes food. Edible parts of a plant are addressed and the food groups in the USDA’s food pyramid are introduced. The fourth week introduces the processes that cotton and wool go through to make articles of clothing. The fifth week is forestry. This includes types of trees and the forest as a habitat. The sixth and final week is focused on flowers, the floriculture industry. In this week students learn parts of a flower, the three main types of flowers, and that the floriculture includes nursery goods. Only the first week is being piloted to evaluate its effectiveness.

There are five lessons in the first week of study that introduces agriculture to the students. See appendix, pages 28-33. During lesson one, students will read a short introduction explaining what agriculture is and where they can find it in their daily lives. They are then to list everything they can think of that is a product of agriculture. In lesson two students will use the list from
lesson one and categorize the agriculture products as food items or non-food items and will make a bar graph with the information. Lesson three shows the five commodities, which generate the most income for California, and has students order them from greatest to least. It then shows a figure with many more commodities including some which California solely produces. In lesson four, a topographical map of California is introduced and students color each region a different color. They then learn that each region specializes in growing different commodities. During the fifth lesson students learn about the five main categories of agriculture through a coloring activity.

During the course of topic one, students are expected to learn that the clothes they wear, the food they eat, and many other items they encounter daily are agricultural products. Students will also learn the agriculture abundance surrounding them in California.

Overview of Sample Population

The school is a public charter school with approximately 600 students in grades K-5. The school is 99 percent English Language Learners with most students speaking Russian or Ukrainian as their home language. Paraeducators and many staff members speak Russian and English.

The teacher is a second year third grade teacher with very little agricultural knowledge. She has twenty-one students in her class, and she teaches Language Arts, Mathematics, Social Studies, and Science. Students in her class range in reading abilities from one that reads at an early first grade level, simple sentences with decodable words, to the majority reading at an early to late third grade level, complex sentences with many sight words, prefixes, and suffixes. She
has one student reading at a fourth grade level. The class as a whole is better at articulating their ideas verbally than in a written way.

Study of Pilot Project

Study of the pilot project focused on data collection and analysis of the first week’s introduction to agriculture. Data was collected on both the teacher and the students participation during the lessons. The teacher was asked to answer the following questions after each lesson, (1) Did you enjoy teaching the lesson? (2) How do you think your students felt about the lesson’s activities? (3) Were any students frustrated with the lesson activities, and if so, why were they frustrated? (4) Do you think the lesson is useful in the classroom? Based on the teacher’s feedback the researcher will consider making changes to the other lessons in the unit of study.

Student learning will be assessed based on their completion of the daily worksheets. Worksheets in which students got at least eighty percent of the answers correct will be counted as correct. Less than eighty percent correct will not be correct. The teacher will have the option of teaching the lesson again for mastery or moving on to the next lesson.

In the pilot, student learning was evaluated for appropriate reading levels, student interest in the material presented, the amount of class time for each lesson, and content learning. The evaluation of student reading levels was evaluated through an informal assessment based on observations of the student’s ability to read and comprehend each day’s lesson and complete the task for the lessons. Lesson reading material grade level appropriateness was determined not to be at grade level if the students needed to ask the teacher for help in reading. Student interest levels were also made through observations based on students outward expression of willingness
to complete the lessons’ tasks. The amount of time it takes to complete the lessons in class is important because agriculture does not have its own standards therefore it is looked upon as extra and needs to be short enough for teachers to do despite all the time they must spend on language arts and math instruction. If students were actually learning from the lessons then they would be able to complete the tasks correctly. The reason for making this project is to teach third grade students basic agriculture concepts and these four criteria were selected to see that those concepts are being taught in an effective way.

Topic one was piloted because the topic was an overview of the topics to come and the basic introduction to the entire unit. Topics two through six have a similar format and can be altered based on the feedback and recommendations for topic one. Anticipated changes to the unit are length and reading level of text students must read.
Chapter 4

RESULTS AND RECOMMENDATIONS

The academic purpose of the pilot of the project was successful. See data in table 1: Results. The reading level was determined to be appropriate for these third grade students, the students demonstrated interest in the lessons’ activities, the lessons took about fifteen minutes each, and the students learned that agriculture is in their daily lives.

In lesson one, see appendix page 29, students were excited to share their answers to what agriculture products they have touched, eaten, or used. Students were able to read and understand what they read. No students asked the teacher for help reading and all students completed the task. The teacher pointed out the word “agriculture” to the students and told them how to read the word, which was a word the author anticipated the students having trouble with. The lesson took fourteen minutes from start to finish. Students learned that many of the items they use, eat, and touch in their daily lives are agricultural products. Students shared responses, which helped to spark ideas for other students.

During lesson two, see appendix page 30, students graphed on a bar graph the data from lesson one. The reading level was appropriate because the students were able to read without asking the teacher for help. This lesson was not as interesting to the students as lesson one, but students were still interested and completed the bar graph. Lesson two took seventeen minutes, which is longer than the fifteen minutes the author had anticipated, but is still not long for a lesson. Students did learn in lesson two, although most people associate agriculture with only
food, these students came up with more non-food items which means that lesson one was very effective in teaching that agriculture is food, farming, forestry, fabric, and flowers.

Lesson three, see appendix, page 31, was not as successful as lessons one and two because there was not as much to do for the students. The reading level was appropriate. The teacher introduced the words “California” and “commodities” and reviewed the word “agricultural”. Students were more interested in the list of products than ordering the top commodities. The lesson only took seven minutes, which means it could be expanded a little. The list of the commodities in which California leads the nation in producing was interesting for the students and helped the students learn that California produces a wide variety of agricultural products, many of which they use at home on a daily basis.

In lesson four students learned that California has different regions, which specialize in producing different commodities. There was very little reading for lesson four, see appendix, page 32, and students had no trouble reading it. This was apparent because they completed the assignment correctly. Students were interested in lesson four because it was a lesson in which they got to color the regions different colors and students enjoy coloring. The lesson took thirteen minutes to complete.

During lesson five, see appendix, page 33, students reviewed the different categories of agriculture by coloring a coloring page, which showed the five categories and pictorial representations of them. Students were interested in completing this lesson. The lesson took fourteen minutes. The concept of agriculture having five categories was reinforced during this lesson.
### Table 1: Appropriateness of Reading Level

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Appropriateness</th>
<th>Student Interest</th>
<th>Lesson Time</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 1</td>
<td>Appropriate</td>
<td>high</td>
<td>14 minutes</td>
<td>Agriculture variety and categories</td>
</tr>
<tr>
<td>Lesson 2</td>
<td>Appropriate</td>
<td>mild</td>
<td>17 minutes</td>
<td>Comparison of food and non-food items</td>
</tr>
<tr>
<td>Lesson 3</td>
<td>Appropriate</td>
<td>high</td>
<td>7 minutes</td>
<td>Ordering commodities</td>
</tr>
<tr>
<td>Lesson 4</td>
<td>Appropriate</td>
<td>mild</td>
<td>13 minutes</td>
<td>Regions of California</td>
</tr>
<tr>
<td>Lesson 5</td>
<td>Appropriate</td>
<td>high</td>
<td>14 minutes</td>
<td>Revisiting agriculture categories</td>
</tr>
</tbody>
</table>

**Changes**

The pilot of topic one was very helpful because some changes to improve topic one were noted and completed. The teacher expressed a concern about lesson three being too short. The other problem she had was that she didn’t know the difference between mountains and foothills which lead to another change in lesson four.

Two minor changes and two larger changes were made. The student pages had no spot for students to write their names, which was added. In topic one, lesson three the lines were not big enough for students to write the commodities, which were lengthened to accommodate this. Also in topic one, lesson three the time was only seven minutes. To make it about the same length as the other lessons another activity in which students will highlight the commodities from...
the list that they use at home was added. The addition of this new activity will connect agriculture to their lives because they will highlight the commodities they use at home. In topic one, lesson four the teacher did not know the difference between the mountain region and the foothill region. For the purpose of this unit, third grade students do not need to know the difference between foothills and mountains, therefore foothills and mountains were combined in topic one, lesson four.

Conclusion

The teacher was happy implementing these lessons in her classroom. She felt that the lessons complemented what her students were learning in Social Studies and were a good addition to her classroom. Overall, she enjoyed teaching these lessons and would use them again in her classroom.

This pilot of the agriculture unit revealed that it is an effective way to teach third grade students basic agriculture knowledge. The agriculture unit should be used in every classroom in California in order to make California an agriculturally literate state.
APPENDIX

Agricultural Education Unit for Third Grade
Topic 1, Teacher’s Guide

Lesson 1:
Students will understand that agriculture is in their everyday lives.
- Students will read the introduction and the directions.
- They will then write a list of agricultural products.

Lesson 2:
Students will understand the difference between food items and other agricultural items.
- Students will count the number of food items from their list from lesson 1 and write the number in the table.
- They will then count the number of non food items and write them in the table.
- Then they will put the two values into the bar graph.
- Students should notice that the bar for the food items is much taller than the bar for the non food items.

Lesson 3:
Students will understand that California is the nation’s top agriculture producing state. This means that California makes more money on agriculture products than any other state in the United States.
- Students will order the top five commodities from greatest money to least money.
- They will then look at the table to see what other commodities California produces.

Lesson 4:
Students will understand that California has a diverse landscape including valleys, mountains, coastal areas, and deserts.
- Students will color the valleys green, the mountains brown, the coastal areas blue, and the deserts yellow.

Lesson 5:
Students will understand that agriculture includes farming, food, fabric, forestry, and flowers.
- Students will color the coloring page.
What is agriculture?
Agriculture is everywhere. We use agriculture products while we sleep (cotton sheets), when we get dressed (clothes), when we take a bath (soap), when we eat (food), when we use paper (tree crops), and even when we stop to smell the roses (floriculture). One of the best ways to remember what agriculture means is to remember the 5 f’s. **Agriculture is farming, food, fabric, forestry, and flowers.** In the space provided below write down all the things you have touched, eaten, or used that are agriculture products:

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

Remember that agriculture is everywhere!

Note. From “What is Agriculture,” by Utah Agriculture in the Classroom. Adapted with permission of Utah Agriculture in the Classroom, Utah State University, [online] www.agclassroom.org/ut.
Count the number of food items on your list from day 1 and write the number in the table to the right.
Count the rest of the items from day 1 and write that number in the table to the right.

Now make a bar graph to show the number of each group of items on your list:
California is the nation’s top agricultural state. This means California produces more agricultural products than the other 49 states! The number in parenthesis is the amount of money each product produce. Order the following commodities from greatest money to least money:

Almonds (2.1), Nursery and Greenhouse products (3.0), Milk and Cream (7.3), Lettuce (2.2), and Grapes (3.1)

______________________________, ______________________________, ________________________________, ________________________________, ________________________________

These are the products in which California makes the most money selling annually. California is home to more than 350 specialty crops many of which are grown only in California. In the list below, color any products you use at home yellow.

**Crop and Livestock Commodities in which California Leads the Nation**

<table>
<thead>
<tr>
<th>Almonds</th>
<th>Eggplant</th>
<th>Lettuce, Romano</th>
<th>Pecans</th>
<th>Pistachios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apricots</td>
<td>Escarole/Tatsoi</td>
<td>Melons, Cantaloupe</td>
<td>Plums</td>
<td></td>
</tr>
<tr>
<td>Artichokes</td>
<td>Figs</td>
<td>Melons, Honeydew</td>
<td>Plums, Dried</td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td>Flowers, Bulbs</td>
<td>Milk</td>
<td>Pomegranates</td>
<td></td>
</tr>
<tr>
<td>Avocados</td>
<td>Flowers, Cut</td>
<td>Milk</td>
<td>Raspberries</td>
<td></td>
</tr>
<tr>
<td>Beans, Dry Baby Lima</td>
<td>Garlic</td>
<td>Potted Plants Nectarines</td>
<td>Rice, Sweet</td>
<td></td>
</tr>
<tr>
<td>Beans, Dry Large Lima</td>
<td>Grapes, Raisins</td>
<td>Nursery, Bedding Plants</td>
<td>Safflower</td>
<td></td>
</tr>
<tr>
<td>Beans, Green Lima</td>
<td>Grapes, Table</td>
<td>Nursery Crops</td>
<td>Seed, Alfalfa</td>
<td></td>
</tr>
<tr>
<td>Bedding Garden Plants</td>
<td>Grapes, Wine</td>
<td>Olives</td>
<td>Seed, Bermuda Grass</td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td>Greens, Mustard</td>
<td>Onions, Dry</td>
<td>Seed, Cantaloupe</td>
<td></td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>Hay, Alfalfa</td>
<td>Onions, Green</td>
<td>Seed, Sudan Grass</td>
<td></td>
</tr>
<tr>
<td>Cabbage, Chinese</td>
<td>Herbs</td>
<td>Parsley</td>
<td>Seed, Vegetable and Flower</td>
<td></td>
</tr>
<tr>
<td>Cabbage, Fresh Market</td>
<td>Jojoba</td>
<td>Passion Fruit</td>
<td>Spinach</td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td>Kale</td>
<td>Peach, Clingstone</td>
<td>Strawberries</td>
<td></td>
</tr>
<tr>
<td>Cauliflower</td>
<td>Kiwifruit</td>
<td>Peaches, Freestone</td>
<td>Tomatoes, Processing</td>
<td></td>
</tr>
<tr>
<td>Celery</td>
<td>Kumquats</td>
<td>Pears, Bartlett</td>
<td>Turnips</td>
<td></td>
</tr>
<tr>
<td>Chervil</td>
<td>Limes</td>
<td>Peas, Chinese</td>
<td>Vegetables, Greenhouse</td>
<td></td>
</tr>
<tr>
<td>Cotton, American Pima</td>
<td>Lemons</td>
<td>Peppers, Bell</td>
<td>Vegetables, Oriental</td>
<td></td>
</tr>
<tr>
<td>Daikon</td>
<td>Lettuce, Head</td>
<td>Persimmons</td>
<td>Walnuts</td>
<td></td>
</tr>
<tr>
<td>Dates</td>
<td>Lettuce, Leaf</td>
<td>Pigeons and Squabs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

California is the sole producer (90% or more) of the commodities in bold. 
Source: USDA, NASS, California Agricultural Commissioner’s Reports 2006-2007

California has many diverse regions; valleys, mountains, coastal areas, and deserts. Each region specializes in growing a variety of crops.

Color the valleys green.
Color the mountains.
Color the coastal areas blue.
Color the deserts yellow.

Note. Used with permission from Karen Pietz.
Color this page showing the 5 fs!

Agriculture

Farming

Food

Fabric

Forestry

Flowers
Topic 2, Teacher’s Guide

Lesson 1:
Students will understand the words farm, farmer, and farming.
  • Students will read the directions and the dictionary entry.
  • They will then answer the questions.

Lesson 2:
Students will understand what a farmer does and what a rancher does.
  • Students will read the introduction.
  • They will then answer the questions.

Lesson 3: (A metal clasp (brad) is needed for this activity)
Students will understand that a farmer must do many jobs.
  • Students will cut out and assemble “How many hats does a farmer wear?”
  • They will then match the hat to the description of the job.
  • Then they will answer the questions.

Lesson 4:
Students will understand the steps it takes to get corn to their table.
  • Students will read the directions and then the steps.
  • They will answer the questions.
  • Then they can illustrate each step.

Lesson 5:
Students will understand that food comes from farms and ranches.
  • Students will color “From farm . . . to table.”
  • They will then cut it out and follow the folding directions.
Use the dictionary entry below to answer the following questions:

farm (n) 1. land used for growing crops or raising animals. 2. such land and the buildings on it.
farmer (n) person who operates a farm
farming (n) the cultivation of crops and the raising of livestock; agriculture.

What is the second definition of farm? ______________________________________________________

____________________________________________________________________________________

What is the definition of farming? ________________________________________________________

____________________________________________________________________________________

Farming is how people all over the world get their food, clothing, and shelter.
What does a farmer do?
A farmer raises crops (plants) and a rancher raises animals. Both farmers and ranchers have many jobs.

What does a farmer raise? ________________________________
What does a rancher raise? ________________________________

What do you think a farmer or a rancher must know to do what they do? ______
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Tomorrow we will check our thoughts!
Cut out and assemble “How many hats does a farmer wear?”

Write in your own words what a farmer does when he or she wears each hat (farmer in this lesson also means rancher):

Mechanic: ________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Nutritionist: ______________________________________________________________
________________________________________________________________________
________________________________________________________________________

Business manager: __________________________________________________________
________________________________________________________________________
________________________________________________________________________

Take the activity home to show your family the hats a farmer wears!

Note. From “How many Hats Does a Farmer Wear,” by Utah Agriculture in the Classroom. Reprinted with permission of Utah Agriculture in the Classroom, Utah State University, [online] www.agclassroom.org/ut.
How many hats does a farmer wear?
How Many Hats Does a Farmer Wear?

Must be able to recognize early signs of disease in animals; assist at birth of animals; administer medicine to sick animals.

(veterinarian)

Must know how to plan and construct fences and buildings; build irrigation ditch and control the flow of water.

(engineer)

Must be able to: plan and control land; determine the flow of water; grow products. (scientist)

Must understand weather and how it affects crops. (weather forecaster)

Must understand nutrition and determine the best fertilization of crops. (nutritionist)

Must understand soil composition and determine the best fertilization of crops. (scientist)

Must understand the use and proper application of equipment. (technician)

Must be able to operate and maintain both simple and complicated machinery. (mechanic)

Must be able to: plan and control land; grow products; make repairs and keep machinery in good working order. (mechanic)

Must know how to prepare feed for livestock. (nutritionist)
How does a farmer get their food to you? Here is an example using corn:

First the farmer plants and cares for the crop.

Once the corn is mature it is harvested using a machine.

The ear (the part we eat) is removed from the stalk.

Whole ears of corn are shipped to the grocery store where we can buy them.

Stalks are processed and feed to animals such as cows.

Corn ears can also be processed into tortillas, canned corn, and cereal.

How is the corn harvested? ________________________________

What part of the corn plant do we eat? ____________________

Illustrate each step the farmer takes to get food to your table.
Color the "pop-open" picture then fold back on the dotted lines. Next bring the folds of the building roof tabs together until they meet.

From Farm . . .

To You
"Growing Tomorrows"

Note. From “From Farm to You,” by Utah Agriculture in the Classroom. Reprinted with permission of Utah Agriculture in the Classroom, Utah State University, [online] www.agclassroom.org/ut.
Topic 3, Teacher’s Guide

Lesson 1:
Students will understand there are five food groups and the names of the food groups.
  • Students will look at MyPyramid then write the names of the five food groups.
  • They will then look at “MyPyramid for Kids” to learn more about MyPyramid and how to use it.

Lesson 2:
Students will understand what is in the grain group and how much they should eat from the grain group everyday.
  • Students will read how many servings to eat each day and color the triangle orange.
  • They will then match the names of food from the grain group to pictures of that food.
  • Then they will answer some questions.

Lesson 3:
Students will understand what fruits and vegetables are and how much they should eat each day.
  • Students will read how many servings they should eat of fruits and vegetables and color the vegetable triangle green and the fruit triangle red.
  • They will then read the list of what parts of plants fruits and vegetables come from
  • Finally, they will list their three favorite fruits and vegetables.

Lesson 4:
Students will understand what belongs in the milk and meat & beans group.
  • Students will read the daily servings and color the milk triangle blue.
  • They will read examples of items in the milk group and learn what they all have in common.
  • Then they will read and color the meat & beans group
  • Finally, they will answer some questions about each group.

Lesson 5:
Students will understand that the MyPramid has five food groups and what foods go in each group.
  • Students will write the name of each food group.
  • They will then draw pictures of foods that belong in each group.
What we eat and how much of it we eat determine how healthy (or unhealthy) we will be.

Using the MyPyramid from the USDA (mypyramid.gov) we will learn what we should be eating and how much of it we should eat.

The five food groups are grains, vegetables, fruits, milk, and meat & beans.

What are the five food groups? 1. ____________ 2. _______________ 3. _______________
4. ________________ 5. ______________________

Turn this page over to take a closer look at MyPyramid for kids.

A Close Look at MyPyramid

MyPyramid for Kids reminds you to be physically active every day, or most days, and to make healthy food choices. Every part of the new symbol has a message for you. Can you figure it out?

Be Physically Active Every Day
The person climbing the stairs reminds you to do something active every day, like running, walking the dog, playing, swimming, biking, or climbing lots of stairs.

Eat More From Some Food Groups Than Others
Did you notice that some of the color stripes are wider than others? The different sizes remind you to choose more foods from the food groups with the widest stripes.

Choose Healthier Foods From Each Group
Why are the colored stripes wider at the bottom of the pyramid? Every food group has foods that you should eat more often than others; these foods are at the bottom of the pyramid.

Every Color Every Day
The colors orange, green, red, yellow, blue, and purple represent the five different food groups plus oils. Remember to eat foods from all food groups every day.

Make Choices That Are Right for You
MyPyramid.gov is a Web site that will give everyone in the family personal ideas on how to eat better and exercise more.

Take One Step at a Time
You do not need to change overnight what you eat and how you exercise. Just start with one new, good thing, and add a new one every day.

Topic 3, Lesson 2      Name: _________________________________________________

Grain Group:

Color the triangle orange

Foods included in the grain group:

Popcorn
Rice
Bread
Pasta
Crackers
Oatmeal
Cereal
Tortillas

Match the picture to the name of the food item above.

What is your favorite item from the grain group? ______________________

How much should you eat from the grain group each day? ______________________

Eat 6 oz. each day
Make half your grains whole!
Topic 3, Lesson 3      Name: _________________________________________________

Vegetables:

Color the triangle green

Fruits:

Color the triangle red

Eat 2 ½ cups each day

Eat 1 ½ cups each day

Turn this page over for an edible plant parts activity to see what parts of a plant you like to eat.
Edible Plant Parts

1. List your three favorite fruits and your three favorite vegetables in the spaces below.

My three favorite fruits are:
1. ______________________
2. ______________________
3. ______________________

My three favorite vegetables are:
1. ______________________
2. ______________________
3. ______________________

2. Now see if you can find your favorite fruits and vegetables in the lists below. When you find them, circle them.

FRUITS
Apples
Apricots
Avocados
Bananas
Bell peppers
Blackberries
Blueberries
Cantaloupe
Cherries
Cranberries
Cucumbers
Dates
Eggplant
Figs
Grapes
Kiwifruit
Kumquats
Lemons
Mangoes
Oranges
Papayas

More FRUITS
Peaches
Pears
Persimmons
Pineapple
Plums
Pomegranates
Pumpkin
Raspberries
Strawberries
Squash
Tangelos
Tangerines
Tomatoes
Watermelon

LEAVES
Basil
Brussels sprouts
Beetgreens
Cabbage
Chard
Chinotto
Endive
Kale
Lettuce
Mustard greens
Onions
Parsley
Spinach
Turnip greens
Watercress

ROOTS
Beets
Carrots
Parsnips
Radishes
Rutabagas
Sweet potatoes
Turnips

SEED PODS
Chili peppers
Green beans
Okra
Snap pea pods
Snow pea pods
Wax beans

STEMS
Asparagus
Celery
Leks
Green onions
Rhubarb

TUBERS
Pumpkin seeds
Parsley
Spinach
Turnip greens
Watercress

SEEDS
Black beans
Corn
Limas beans
Kidney beans
Peanuts
Sunflower seeds

FLOWERS
Artichokes
Broccoli
Cauliflower

3. Are you surprised to learn how many different plant parts you like to eat? Which do you like best — flowers, fruits, leaves, roots, seeds, seed pods, stems or tubers? __________

Milk

Color the triangle blue

Included in the milk group:
cheese       milk       yogurt       ice cream    cottage cheese    sour cream

Everything from the milk group is made from milk!

Meat & beans

Color the triangle purple

Everything from the meat & bean group has lots of protein!

<table>
<thead>
<tr>
<th>Meat items:</th>
<th>Bean items:</th>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ham</td>
<td>Peanut butter</td>
<td>eggs</td>
</tr>
<tr>
<td>Chicken</td>
<td>Almonds and other nuts</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>Dried beans</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Get 3 cups each day.  
(2 cups for ages 2-8)

Get 5 oz each day.

What are all items from the milk group made from? _____________________

All items from the meat & beans group have what in common? _________________
Write the name of each food group and draw in food that belongs in each group.
Topic 4, Teacher’s Guide

Lesson 1:
Students will understand that their clothing comes from plants and animals.
- Students will read the introduction paragraph.
- They will then answer the questions about the paragraph.

Lesson 2:
Students will understand the steps it takes to make cotton clothing.
- Students will read and understand each step in making cotton clothing.
- Students will then sequence three of the steps to making cotton clothing.

Lesson 3:
Students will understand the steps it takes to make cotton clothing.
- Students will draw a picture, using the information they learned in lesson 2, for each step.

Lesson 4:
Students will understand how wool clothing is made.
- Students will read and look at the pictures explaining each step.
- They will then answer the questions.

Lesson 5:
Students will understand the steps and sequence of making wool clothing.
- Students will color and sequence the steps to making wool clothing.
Have you ever wondered where the clothes you wear come from?

The shirt and pants you may be wearing are probably made from cotton, a plant. Your warmest sweater might be made from wool, the fleece of a sheep. Leather boots and leather coats are made from animal hide. Some shirts and socks are even made from bamboo, a woody grass.

What is cotton? ____________________________

What is wool? ____________________________

Leather boots are made from ____________________.
Cotton “White Gold”
from the field to the rack

1. A cotton seed is planted in a seedbed. The field is irrigated (watered), fertilized, and weeded until the plant is full grown.

2. When ready to be picked the cotton bolls open and the leaves dry and fall off. A mechanical harvester picks the cotton.

3. The cotton is taken to the gin where the seeds are separated from the cotton and the cotton, now called lint, is cleaned.

4. The lint is taken to a textile mill where it is carded (combed until all the fibers run parallel). It is then spun into thread.

5. The thread is then woven in a tight criss-cross pattern which makes cloth.

6. The cloth is sold to clothing makers who cut the pattern and sew the pieces together to make the article of clothing.

7. The article of clothing is then transported to a store where you, the consumer, can buy it.

Sequence these steps to making a cotton shirt.
Draw a picture for each step below:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cotton is planted and cared for.</td>
<td></td>
</tr>
<tr>
<td>2. Mechanical harvester harvests the cotton.</td>
<td></td>
</tr>
<tr>
<td>3. Gin separates seeds and cleans cotton.</td>
<td></td>
</tr>
<tr>
<td>4. Lint is carded and spun into thread.</td>
<td></td>
</tr>
<tr>
<td>5. Thread is woven into cloth.</td>
<td></td>
</tr>
<tr>
<td>6. Pattern is cut and sewn together.</td>
<td></td>
</tr>
<tr>
<td>7. Transported to a store and sold.</td>
<td>You wear your clothing.</td>
</tr>
</tbody>
</table>
Now that we know how cotton is made into clothing, let’s take a look at the similar process for wool.

1. Sheep, which are raised for their wool, are sheared once a year. Shearing is like cutting your hair and does not hurt the sheep.

2. The fleece (sheep’s wool – in one piece) is washed and rinsed. During this process the wool loses 30-70% of its weight due to lanoline (natural grease) and soil.

3. Wool is then carded (combed until the fibers run parallel).

4. The wool is then spun into yarn.

5. The yarn is put onto a loom which weaves (looms) the yarn together to make a loose cloth. To tighten the weave, moisture and heat are applied to shrink the cloth making a tighter weave.

6. The cloth is sold to clothing makers who cut and sew together the pattern to make an article of clothing.

7. The article of clothing is then transported to a store where it can be purchased by the consumer, you.

Which comes first; carding or looming?

Note. From “From the Farm to My House,” by California Wool Growers Association. Reproduced with permission.
Topic 4, Lesson 5      Name:__________________________________________

Color and sequence the cards below:

From the Farm to My House

Note. From “From the Farm to My House,” by California Wool Growers Association. Reproduced with permission.
Topic 5, Teacher’s Guide

Lesson 1:
Students will understand that 1/3 of California is covered in forests and the forestry industry in California is large.
- Students will read the introduction paragraph and answer the questions.
- Students will then read the second paragraph and answer the questions.

Lesson 2:
Students will understand the parts of a conifer tree and the function of those parts.
- Students will look at the conifer and read the parts and functions of the parts
- Then students will answer the questions.

Lesson 3:
Students will understand a habitat is where an animal lives.
- Students will read and answer the questions.
- Then students will think of an animal that shares the forest as a habitat and draw a picture of that animal in their habitat.

Lesson 4:
Students will understand that forestry products are much more than just trees and wood.
- Students will circle the products they think are made from trees.
- They will then count the number of items they circled and learn that all the items are products from trees.
- On the reverse is a partial list of products made from trees. They will read the list.

Lesson 5:
Students will understand that habitats are where animals live.
- Students will color the animal habitat.
Nearly 1/3 of California is covered in forests. A large number of trees in our forests are conifers. Conifers are trees that bear cones, which hold the tree’s seeds. They are also evergreen and have needles instead of leaves.

How much of California is covered in forests? ____________

What type of trees bear cones? ________________

California is the 3rd largest producer of forest products in the nation. The forestry industry uses about 1 100-foot tree per person in forestry products every year. About one seedling (small tree) per person per year is planted to replace the tree that was used.

What is California’s rank in forestry product production? __________
What are the 5 main parts of a conifer?
1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________

- **Trunk** – The trunk keeps the tree upright and transports water and nutrients from the roots to the needles.
- **Needles** – Needles use energy from the sun and nutrients to help the tree grow and make seeds.
- **Branches** – Branches transport water from the trunk to the needles.
- **Cones** – Cones are where seeds are grown.
- **Roots** – Roots hold the tree into the ground and get water and nutrients from the soil. Draw this tree’s roots.
Forests provide a habitat (home) to many animals. California forests are home to almost 650 species of fish and wildlife.

How many fish and wildlife live in California forests? ________________

A habitat provides the animal with food, water, and shelter.

The California Grizzly Bear’s habitat is the forest. They find their food, water, and shelter in the forest.

Name another animal whose habitat is a forest: __________

Draw a picture of the animal in their habitat:
Trees and the forestry industry provide many more products than most would think. Circle the products that you think come from trees.

Paper, furniture, crayons, toilet paper, baby cereal, toothpaste, nail polish, plastic, pine oil, cosmetics, cinnamon, musical instruments

How many items did you circle? ________

All of the items above and many more are produced from trees! Amazing, isn’t it?

See reverse for more products!
Topic 5, Lesson 4 (continued)

**Solid wood products:**
- Lumber
- Furniture
- Baseball bat
- Musical instruments
- Wooden toys and games

**Paper Products:**
- Paper
- Kites
- Postage stamps
- Books
- Newspaper
- Toilet paper
- Milk/food cartons

**Tree Bark:**
- Cork
- Shoe polish
- Candle and crayon wax
- Cinnamon
- Cosmetics

**Cellulose and other chemicals:**
- Rayon
- Toothpaste
- Artificial vanilla flavoring
- Hair spray
- Cellophane wrap (Saran Wrap)
- Plastic packaging
- Nail polish
- Pine oil
- Turpentine

**Other products:**
- Fruit
- Mistletoe
- Nuts
Color this forest habitat:

Yosemite Park – Forest Habitat

Note. From “Coloring Page, Bears in Yosemite” by bluebison.net.
Lesson 1:
Students will understand California has a strong fresh cut flower industry.
  • Students will read the introduction and answer the questions.
  • They will read about the key holiday months when most flowers are sold and answer the questions.
  • Then they will read why floriculture is so labor intensive and answer the question.

Lesson 2:
Students will understand the parts of a flowering plant.
  • Students will look at the diagram of the flowering plant.
  • They will then answer the questions.

Lesson 3:
Students will understand nursery products.
  • Students will solve the word problems using the price list.

Lesson 4:
Students will understand the three types of flowers used for a bouquet; line, mass, and filler.
  • Students will read and look at the diagram to understand what line, mass, and filler flowers are.
  • They will then answer the questions.

Lesson 5:
Students will understand line, mass, and filler flowers make up bouquets.
  • Students will color the line, mass, or filler flowers different colors.
California dominates the fresh cut flower industry because of a climate that allows year round production.

If California grows flowers year round, how many days each year are flowers grown? ________

Most cut flowers are purchased during four key holiday months; February, April, May, and December from a shop that sells cut flowers called a florist shop.

What holiday is in February? _________________________
April? _______________________
May? ________________________
December? ___________________

The flower (floriculture) industry is very labor intensive due to flowers being cut by hand and carefully boxed and cooled to prevent damage to the flowers.

Why is the flower industry so labor intensive? ________________________________
_____________________________________________________________________

Parts of a flowering plant

**Flower:**
The flower produces the seed

**Leaf:**
A leaf uses energy from the sun and nutrients to make food.

**Stem:**
The stem holds the plant upright and moves water and nutrients from the roots to the leaves.

**Roots:**
Roots hold the plant in the ground and get water and nutrients from the soil.

What are the two functions of the stem?

1. 
2. 

Which part of the flowering plant is not sold with the fresh cut flower?

______________

The floriculture (flower) industry also includes nursery products. Nursery products are potted plants which people buy to plant in gardens, yards, and pot indoors.

Fred goes to Ned’s Nursery to buy plants for his garden. He needs to buy 3 roses and 2 shrubs. Using the price list to the right how much money will he spend?

Ned’s Nursery
- Trees ........... $55.00
- Shrubs .......... $15.00
- Roses ............ $20.00
- Flowering plant .... $5.00
- Ground cover ....... $5.00

If he gives the cashier a one hundred dollar bill how much change does Fred get back? ________
An arrangement of flowers is called a bouquet. Flowers used for a bouquet are broken down into 3 categories: line, mass, and filler flowers.

What are the 3 categories of flowers used for a bouquet?
1. ______________ 2. ______________ 3. ___________________

- **Line Flowers**
  - gladiolus, liatris, snapdragon, delphinium, veronica, curly willow

- **Mass Flowers**
  - rose, camation, sunflower, lily, iris, zinnia

- **Filler Flowers**
  - baby’s breath, Queen Anne’s Lace, ferns, statice, eucalyptus, aster

Which type of flower gives the bouquet height and width? ________________________

Which type of flower is the focal point of a bouquet? ____________________________

Color the line flowers yellow, the mass flowers red, and the filler flowers green.
Color the vase your favorite color.
REFERENCES


