

Title Page

A Website of Agriculturally Related Activities for Elementary Grade Levels

By
Bailey M. Kirby

Abstract

The purpose of this project is to develop a website containing agriculturally-related activities designed for the elementary classroom, including kindergarten to fifth grade. This website was created in order to bring agriculture into the elementary classroom and introduce the topic to students at an earlier age because the subject is currently only taught at the high school level. Two activities were created for each grade level and fit into the current curriculums for those grade levels. The website was designed in a way that teachers will be able to continually submit activities to be added to the website at any time. The site is accessible to anyone. The overall goal of the project is to help students understand the importance of agriculture at a young age and develop an interest in the topic as their education progresses.

Table of Contents

Chapter One: Introduction	1
Statement of the Problem	1
Importance of the Project	2
Purpose of the Project	2
Objectives of the Project	2
Definitions of Important Terms	3
Summary	4
Chapter Two: Review of Literature	5
Agricultural Education in Elementary Schools	5
History	6
Current Success	7
Agricultural Education in High Schools	8
Background	8
Current Participation	8
Development of Website	9
Availability	10
Needs of Teachers	10
Development of Activities	10
General Elementary Activities	10
Agricultural Activities	11
Advertisement for Website	12
Potential Target Areas	12
Branching Out	13
Summary	13
Chapter Three: Methods and Materials	14
Consultations and Observations	15
Identifying Available References	17
Developing the Activities	18
Kindergarten	19
First Grade	19
Second Grade	20
Third Grade	22
Fourth Grade	23
Fifth Grade	24
Developing the Website	25
Summary	26
Chapter Four: Results and Discussion	27
Home Page	28
About Page	29
Kindergarten	30

First Grade	31
Second Grade	32
Third Grade	33
Fourth Grade	34
Fifth Grade	35
Contact Page.....	36
Chapter Five: Summary, Recommendations, and Conclusions.....	37
Summary	37
Recommendations	37
Conclusions.....	39
Works Cited.....	40

List of Figures

Figure 1: Home Page.....	28
Figure 2: About Page.....	29
Figure 3: Kindergarten.....	30
Figure 4: First Grade.....	31
Figure 5: Second Grade.....	32
Figure 6: Third Grade.....	33
Figure 7: Fourth Grade.....	34
Figure 8: Fifth Grade.....	35
Figure 9: Contact Page.....	36

Chapter One

Introduction

In the past, the subject of agriculture has been mainly taught only in the high school curriculum. Each high school throughout the state of California offers some form of agricultural education or opportunity to participate in agricultural activities such as 4-H and FFA. However, very few elementary schools offer this form of education. This results in students having no exposure to agriculture for the majority of their educational career. This senior project will attempt to correct this problem by developing a website that will introduce agriculture at the elementary level. With this, students will be able to obtain a better understanding of the industry at a younger level and make a more educated decision on whether or not they wish to learn more about or choose a career within the industry.

Statement of the Problem

The main problem being addressed with this project is that agricultural education is not being introduced to students at a young enough age. Agricultural education has developed immensely with the high school curriculum, but very few elementary and junior high schools teach anything that relates to agriculture. If the students were introduced to the industry at an earlier age it would affect their future decision to participate in the agricultural education offered at the high school level. When they are given more information on the topic, they are better able to develop their level of interest and make more informed decisions. Each student deserves to opportunity to learn about

agriculture before they commit their time to it in high school, when their time is far more limited.

Importance of the Project

The importance of this project is to increase student participation in agricultural programs at the high school level. If this can be achieved, then far more students will grow up to choose careers in the agricultural field. Agriculture is the number one industry in the United States and holds job opportunities for a vast majority of U.S. residents. With more people interested in the industry there will be more people that end up devoting their lives to the industry through their careers. This increase in workers will also increase the brainpower that goes towards improving the industry and its wide range of processes. Success in agriculture requires constant improvement, so the more minds dedicated to improving the industry, the more successful the entire industry will be.

Purpose of the Project

The purpose of this project is to create a website that contains agricultural activities for elementary classrooms in order to introduce the topic of agriculture to students at a younger age, as well as ultimately increase interest and future participation in the industry as a whole.

Objectives of the Project

The objectives of this project are to introduce agriculture at a younger age by:

- Generating multiple elementary level activities that involve agriculture

- Creating a website that contains agricultural activities that will be available to all elementary school teachers
- Conducting a survey that will determine which schools in the state are most interested in testing the website
- Advertising the website to elementary schools throughout the state
- Eventually advertising and administering the website and its activities throughout the nation

Definitions of Important Terms

4-H – an organization supported by the U.S. Department of Agriculture, created primarily to teach young people, initially in rural areas, of modern farming methods and other useful skills.

FFA – Future Farmers of America - FFA is an intra-curricular organization that implements the three-circle model of education – classroom instruction, hands-on learning and leadership development through FFA activities and programs. It also trains students for important leadership, personal growth and career success through agricultural education.

Smith-Hughes Act – an act of the United States Congress that encouraged vocational agriculture to train people "who have entered upon or who are preparing to enter upon the work of the farm," and offered federal funds for this purpose. As such, it is the foundation both for the advancement of vocational education, and for its separation from the rest of the curriculum in most school settings.

Agriculture – the science or occupation concerned with cultivating land, growing

crops, and breeding and raising livestock. Also generally referred to as 'farming'.

Summary

Overall, the goal of this project is to introduce the subject of agriculture to students at a younger age than they are currently being introduced to the topic. The hope of implementing this idea is that it will generate a higher level of interest in agriculture as an industry and will inspire a greater number of students to get involved in agricultural programs once they reach the high school level. In order to do achieve this, there will a website created that contains a multitude of small and simple agricultural activities that will be distributed and advertised to elementary schools throughout the state of California. This will allow many different elementary teachers to implement the activities and determine their success in order to decide if the project should expand further to other states across the nation. In the end, the main goal is to increase interest in agriculture at the elementary level through the activities posted on the website that will be created as the main part of this project.

Chapter Two

Review of Literature

The purpose of this project is to develop a website containing a variety of agricultural activities designed for elementary school students. This chapter will provide the background information necessary to support the existence of a need for agricultural education being introduced to students at an earlier age.

Agricultural Education in Elementary Schools

Elementary school teachers have stated that their students are in need of authentic learning experiences that include community-based topics in order for them to engage academic content beyond the framework of the classroom. This statement references “the study of food, agriculture, and natural resources in elementary classrooms” (Knobloch, 2008, p. 529). According to the study done by the Department of Youth Development and Agricultural Education at Purdue University, elementary teachers saw the importance of assimilating agriculture into their instruction. The general purpose of this study was to determine the factors underlying elementary teachers’ beliefs in relation to food, agriculture, and natural resources (FANR). The results of this study indicated, “97% of the teachers agreed agriculture would enhance the curriculum and 84% agreed agriculture could be taught in any subject matter” (Knobloch, 2008, p. 537). The majority of teachers also agreed that outside of the classroom agriculture has a positive future for people and businesses and was a sufficiently environmentally conscious industry (Knobloch, 2008). This study provides evidence that there is a need for the introduction of agricultural

education in elementary schools and that many elementary teachers would be willing to integrate it into their programs. Most students today are becoming further and further removed from the production of the food they are consuming. Economically, the process of food production has improved greatly, creating the opportunity for people to branch out and take employment in other industries. However, the result of this is a reduction in agricultural education at every level. Students, especially in urban areas, no longer know where their food truly comes from.

History

Over time there have been several attempts to integrate agriculture at an earlier stage in the education process. One case involved interviews with six different elementary teachers working at a charter school and stated “the lack of organizational structure, time, materials, and the delay of completing facilities for the new school hampered teachers’ curriculum development efforts” (Hikawa, 2010, p. 55). This particular attempt was unsuccessful and no curriculum integrating agriculture was ever created for that school. One of the main reasons for this school’s failure was the lack of support from the administration for curriculum innovation. Another limiting factor was the lack of time for the teachers to generate an adequate curriculum while still instructing the original one. There are many cases like this where the teachers attempt to create an entirely new curriculum in order to incorporate agriculture adequately in their classrooms. This project is an attempt to begin with a smaller goal that can be integrated easily and without the administration and then teachers can produce positive results in order to support their larger goal.

Current Success

Incorporating agriculture into elementary schools has been a struggle, but currently it has become a little simpler and more teachers are developing an interest in the subject. Lois Andre Bechely is an elementary school teacher who grew up in New York and teaches first and second graders in Los Angeles. Her knowledge of agriculture and its impacts on the world around her was very limited. Therefore, she went to the Summer Agriculture Institute for educators and was able to enhance her personal knowledge and interest in the industry as a whole (Andre, 1993). The Summer Agriculture Institute is an organization that spends several weeks out of the summer with K-12 level teachers who wish to learn more about agriculture and experience it first-hand, and takes place in Corvallis, Oregon. This particular teacher's inspiration came from when she "began to notice that many of the themes in the books [she] shared with [her] students had to do with foods and farming... [she] knew very little about agriculture" (Andre, 1993. p. 20). After attending the institute, however she was able to incorporate agriculture into her classroom by means of simple and small activities. She read specific books on farming and food, hatched chicks, grew different types of vegetables, observed lady bugs, and put on a play of the Little Red Hen with her students. This is just an example of how simple activities can be introduced to the elementary school classroom in order to expose children to agriculture at an earlier age. This was a successful case of incorporating agriculture in elementary schools, which is not very common. Success of incorporation in high schools, however, is much more common.

Agricultural Education in High Schools

Background

Agricultural Education was not formally introduced into high schools until the Smith-Hughes Act of 1917 (Camp, 2007). John Dewey was one of the educational reformers who helped to bring this Act about and he saw “vocational education as a means of humanizing education and making it relevant to students’ lives and as a means of helping students become industrially intelligent” (Camp, 2007, p.13). This was a perception that became the foundation of every agricultural teacher’s instruction. What each teacher taught was based solely around these ideals. It can be stated, however, that agricultural education was taking place for over two hundred years before the Smith-Hughes Act.

Informal education of agriculture dates back to the colony of Jamestown and when the Native Americans were able to teach the colonist how to grow and harvest crops. It was recorded that two full years before the Smith-Hughes Act was in place there were 90,708 students enrolled in 4,666 different schools throughout the country (Camp,2007). The Smith-Hughes Act was a landmark for the agricultural education industry, but the practice of educating people on agriculture has taken place from the very formation of this country.

Current Participation

Today the goals of agricultural teachers have changed from what they once were. According to the National Council for Agricultural Education “the mission of agricultural education today is to [prepare] students for successful careers and a lifetime of informed

choices in the global agriculture, food, fiber, and natural resources systems” (Camp, 2007, p.15). This is a considerable difference in comparison with the original mission of agricultural education. It is more promising than the first mission in that it focuses more on the well being of the student and sets them up for a successful future of their choosing rather than it being specifically focused on professional careers.

Development of Website

It has become increasingly apparent that use of the Internet as a teaching tool and resource is growing more and more common every day. Reliance on technology is incredibly prevalent in every day life and is already being incorporated into education. There have been multiple studies on this topic in order to find the best way to use this tool as well as what ways it should be incorporated. The University of North Carolina performed one of these studies specifically on developing mobile-based instruction. This form of instruction is accessible anywhere at anytime by both students and teachers. One critical point is that “Mobile delivery of instruction requires a very simple design so that content can take center stage” (Martin, 2012, p.49). This is important in any instruction based website because they are not designed for show, but for actual functionality. The conclusion of this study was very firm in the certainty that “The increasing use, availability, and low cost of equipment invites educators to begin finding ways to successfully use these devices in their classrooms” (Martin, 2012, p.51). Technology needs to be viewed by teachers as the incredible resource that it is. In developing this website for elementary school teachers, they will be able to access at all times a multitude of agricultural activities designed specifically for the grade they teach.

Availability

The idea for this project is to make it available only to elementary school teachers so that the activities cannot be used, manipulated, and repeated at higher grade levels. The goal is to present agriculture to children at an earlier age than the current age of introduction. These activities will be designed specifically for introduction to the industry at different grade levels and will also be intended to take place within the large group of a class.

Needs of Teachers

Not all elementary teachers will have much knowledge on the topic of agriculture and this will potentially decrease their interest in a website like this. The aim is to develop a questionnaire and send it to elementary schools throughout the state in order to gauge the level of interest in a website like this as well as what the degree of interest is in actually carrying out the available activities. This survey will determine what areas in the state have the greatest interest and will give the researcher a better idea of which schools would be interested in testing some of the activities before they are incorporated in the website. The questionnaire will also define what topics the teachers are specifically interested in and would be able to easily integrate into their current curriculum.

Development of Activities

General Elementary Activities

Elementary schools are continuously looking for new ways to introduce topics to their students and find new angles that interest the students best and spark their desire to

learn. Common activities in an elementary classroom would be art projects, science experiments, math contests, and much more. One example of this type of innovation is a lesson plan created by the Department of Secondary Education Programs at Coastal Carolina University. The lesson plan is called Native American History in a Box and consists of five days worth of activities and projects created to help the elementary student better understand the life and culture of a Native American. Each lesson includes step-by-step instructions and all of the necessary materials (Helms, 2010). The results of the implementation of this lesson plan were reported in an article in the Journal of Social Studies, which states “Students find the curriculum engaging because it provides tangible hands-on learning experiences that immerse them in Native Americans cultures” (Helms, 2010, p.165). These are the types of activities that will be available on this website. They will not all be so long and extensive, but they will all be interactive and specifically focused.

Agricultural Activities

Agricultural education is currently found in many elementary schools, in some small form or another. However, the student is not taught what falls under the umbrella of agriculture and, therefore, do not know how to link what they are doing to the larger forms of agriculture as an industry. It is a common trend that many of the teachers trying to incorporate agriculture into their elementary curriculum do not actually have any experience with or knowledge of agriculture as an industry. The Journal of Agricultural Education had a study performed that confirms this idea. The author of the article, Neil Knobloch, found that “Responses from 281 of 689 elementary teachers indicated they

had positive perceptions of the agriculture industry and integration of agriculture into the curriculum”, but that they did not know enough about the industry to come up with lesson plans on their own (Knobloch, 2000, p.15). It was also determined in this study that over 80% of teachers used agricultural activities in their classroom currently on topics such as the study of animals, plants, food, nutrition, environment, wildlife, and insects (Knobloch, 2000). This shows that agricultural studies in the elementary classroom already exist, but that teachers need support and help in developing different lesson plans to introduce the subject.

Advertisement for Website

Potential Target Areas

The first schools that would be informed of the creation of this website would be schools in California that are already incorporating agriculture into their curriculum in some way. These schools would be more willing to try the new lesson plans and the success rates from these schools can be used to help support the program when it is later introduced to schools without any agriculture in their curriculums. Birch Lane Elementary School in Davis, California is one of the schools that would be advertised to initially. In order to generate a desire to eat vegetables, teachers at Birch Lane decided to have their students grow their own vegetable garden (Morris, 2001). It was found that “this experience resulted in the children's increased willingness to taste those vegetables grown in the gardens” (Morris, 2001, p.45). Schools that are willing to come up with programs like this in order to help their students are the same schools that would be willing to try the new activities generated on this website.

Branching Out

The idea that elementary schools in California that are already implementing agriculture in their curriculum would be most willing to try new agricultural activities can also be applied to other states throughout the country. The key to branching out in the advertising is to find schools in other states that are already expressing interest in agricultural education. Professor Robert J. Birkenholz at the University of Missouri conducted a study to “assess secondary educators' knowledge of and attitude toward agriculture”(Birkenholz, 1996, p.63). This study consisted of teachers and administrators in 245 schools in Missouri that were already offering agricultural education in their curriculums (Birkenholz, 1996). It was determined in this study that more programs should be generated to help integrate agricultural concepts into other courses in the elementary school curriculum (Birkenholz, 1996). This is a positive sign for the future success of this website.

Summary

Agricultural education is a continually growing enterprise with excellent future prospects. The changes from its original practices to present day are surprisingly drastic. The study of agriculture has become relatively commonplace in many high schools throughout the nation. The study of agriculture in elementary and middle schools, however, is far more rare. The idea behind this website is to introduce agriculture to students long before they reach high school in order to better develop their interest in this expansive and important industry.

Chapter Three

Methods and Materials

The overall purpose of this project is to generate a website containing agricultural related activities that can be used in most California elementary school classrooms. The activities will be designed for grade levels ranging from kindergarten to fifth grade. Each activity will also only last one to two hours and will be connected in some way to that grade level's curriculum.

Several teachers were consulted in order to gain expert opinions on the content of the website. This was also to help the author be sure that the activities and the website were both age appropriate and agriculturally educational. The consultations consisted of not only formatting the website itself, but also in developing the individual activities to be posted on the website. Next, both the Templeton High School agricultural department and C. L. Smith Elementary School were visited in order to observe the classroom and merge agriculture with elementary school successfully

This website will initially contain twelve different activities – two for each grade level in an elementary school. The website will be designed to allow for more activities to be added over time as the popularity of the site grows. This will permit the website to be useful to a larger group of teachers and will also help in determining the success of the activities before more are developed.

Consultations and Observations

Contacting someone at both the elementary and the high school levels was necessary in order to design effective activities that successfully merge the grade level intended with agriculture. Jessica Patton, faculty advisor at C. L. Smith Elementary School, was consulted on the general dynamic of most elementary school activities. She was very informative, specifically on the matter of what is involved in each grade level's curriculum. Patton explained the lesson plans and the overall goal in the classroom as each different elementary grade level was visited and observed. Also, Brandi Crivello, agricultural teacher at Templeton High School, was consulted regarding the curriculum content in an agricultural classroom and which aspects of the overall content are most important for a student's overall success. Crivello explained what classes were required to be taught by her and what the students were expected to learn from those classes. With this information, the author was able to generate agriculturally related activities for an elementary school that would later be expanded upon at the high school level. Both were consulted and observed several times in order to experience multiple different lessons and find how each topic progresses throughout the course.

Four different observation periods occurred in a span of six weeks at C. L. Smith Elementary. These observations occurred on January 28, February 4, February 18, and March 4 of 2015. Each observation period had a duration of four hours and was used to identify the design of general elementary level activities.

The first observation day included both a third grade classroom and a kindergarten classroom. The third grade classroom consisted of thirty students and the topic being taught during observation was math, specifically fractions. The second

observation took place in Patton's classroom where students who are struggling with certain topics go to get extra help. On this occasion, there were four students working on reading exercises and being tested by Patton for comprehension and accuracy. The third observation day took place in both a third grade classroom and a sixth grade classroom. The third graders were in the process of practicing fractions and learning how to convert those fractions to fit on a number line. The teacher took a group of children who were struggling with the concept to a table to work with them while the author helped the rest of the class finish their assignment. The sixth graders were learning what a rubric is and what it entails. They were dissecting an example rubric in order to better understand what was expected of them and their writing. The final observation took place in the same third grade classroom as the previous observations and involved helping the students with their various reading assignments. All of these observations together helped to determine what it is like to conduct an activity in a classroom setting. With this knowledge, the author was able to better define what was needed to develop activities that could be used by a wide variety of teachers.

The rest of the observations took place at Templeton High School and consisted of five different visits. These observations occurred on January 16, January 21, February 11, February 25, and March 11 of 2015. Each observation, after the first, involved remaining in Crivello's classroom throughout the day as the students switched in and out according to what period they were scheduled in.

The first visit lasted one hour and involved a tour of the entire department and introduction to faculty members. This included visiting the metal shop, the wood shop, their horticulture facilities, and the school farm. The second visit lasted four hours and

entailed observation of several different classes, including two freshman agricultural biology classes and one veterinary science class. The agricultural biology classes contained roughly thirty students while the veterinary science class contained just fewer than twenty students. Each class period had a duration of fifty minutes and involved a short lecture that was followed by an interactive worksheet. The third visit consisted of observing the agricultural leadership class. This class contains all the Future Farmers of America (FFA) officers and committee members who are involved in organizing FFA events and running chapter meetings every month. The class period is provided specifically for them due to the large number of responsibilities they have and tasks that need to be done in a short period of time. This visit lasted two hours and included both the class period and the lunch period in which they continued to work. The fourth visit involved the same classes as the previous visits, but in each class the teacher played a promotional video that encouraged students to attend a leadership conference. There are many events like this available to students involved in the FFA and agriculture. The final visit lasted only one hour and did not differentiate from the previous visits. These observations were beneficial in determining what aspects of agriculture are commonly taught at the high school level. This helped to decide what points were most transferrable to the elementary level.

Identifying Available References

There exists in Stanislaus County, California a program for middle school students entitled Ag In Motion. This is a mobile tractor-trailer that travels from middle school to middle school throughout Stanislaus County to teach agricultural lessons. It was

developed in order to start introducing agriculture to the education process at a younger age, which is similar to the goal of this project. Each of the activities available in Ag In Motion last for the duration of one class period and the curriculums for each lesson was developed to match the curriculum of an average middle school science class (personal communication, Michaela Stone, January 23, 2015).

Ag in the Classroom is a website that was also viewed and referenced in the development of this project. This website was generated to provide lesson plans and activities for all grade levels, and each lesson or activity relates to agriculture in some way. They all follow the general curriculum for each grade level and pertain to each subject in a relevant way. These different activities were referenced and adapted in order to create the activities for the website this project is based on.

Developing the Activities

The website for this project will be designed to include two different activities for each grade level in an average elementary school. This includes kindergarten, first grade, second grade, third grade, fourth grade, and fifth grade. Each activity will relate in some way to agriculture and will fit the curriculum of that grade level. All of the activities include math, science, or English cores and find a way to integrate these subjects into agriculture. The specific activities to be included in the website are identified below.

Kindergarten

Activity One: Counting Your Chickens

This activity was designed to help Kindergarten level students practice their counting and addition skills. Each student will have their own egg carton and ten or less plastic Easter eggs. The teacher will then have the student practice placing a certain number of eggs in the carton and counting them as they add them in (Baker, 2011, p. 2). This activity can be used around Easter and will allow the teacher an opportunity to explain how eggs are made.

Activity Two: Agricultural Alphabet

This activity will help the students learn their alphabet by associating each letter with some sort of agricultural related object. The teacher will find an agriculture related object that begins with each letter of the alphabet and then find a picture of each of these objects. Then the teacher can go over them with the students until they can positively identify each object and the letter that it is associated with.

First Grade

Activity One: Farmyard Patterns

This activity will help the students learn how to identify what a pattern is and the different types of patterns that there are. The teacher will first explain to the class what a pattern is and give some verbal examples of patterns. Then the teacher will practice with their students and have them come up with patterns of their own. After the students seem to have grasped the concept, the teacher will create a few patterns on a bulletin board.

The objects creating the patterns will all relate to a farm and will include objects like tractors, horseshoes, hay bales, and barnyard animals. When the students can identify the patterns, the teacher will then have several students go up to the board to try and continue the pattern (Baker, 2011, p. 18). This lesson will help the students identify with farm objects as well as define different types of patterns.

Activity Two: Farm Vocabulary Scavenger Hunt

This activity will help with the student's reading skills, but will also help them learn and define different agricultural words. The teacher will give each student an agriculturally related magazine, a list of words to find, and a highlighter. The students will then go through the magazine to find each of the words on the list and highlight them (Fortune, 2015). They will then show their work to the teacher. Afterwards, the teacher can explain to the students what each word means and define the term 'agriculture' in a general context.

Second Grade

Activity One: Food Fractions

This activity will help the students practice identifying fractions as well as learning where certain foods come from in the process. Each student will be given a string bean still in the pod as well as a peanut. The teacher will explain how many beans/nuts should be in each and then ask the students about different fractions of each (Baker, 2011, p. 22). For example, if they only have three beans out of a total of four then

that would make a $\frac{3}{4}$ fraction. The teacher can then take this opportunity to explain to the students how peanuts and string beans are grown and harvested.

Activity Two: Color the Tractor

This activity will help the students to identify the value of numbers by tens in the form of coloring in different sections of a picture of a tractor. The teacher will section out a picture of a tractor, and in each section they will write a number with '2' in it somewhere (i.e. 127, 231, 21, 12, 2). The instructions will read that if the '2' has a value of 200 then the student should color that section black, if the '2' has a value of 20 then the student should color that section green, and if the '2' has a value of 2 then the student should color that section yellow. At the end, the tractor will be completely colored and the teacher can review the numbers and their values with the students.

Third Grade

Activity One: Watermelon Fractions

This activity is similar to the second grade level fractions activity, but the complexity of the fraction is increased. The teacher will color seven different paper plates to look like watermelon and cut them into multiple fractions (halves, thirds, fourths, fifths, sixths, eighths, tenths). The teacher will then create scenarios on the board where several pieces of the watermelon have been eaten and have the students identify what fraction of the whole is missing (Baker, 2011, p. 35). They can also identify what fraction of the whole is left over. The teacher can do this with each of the seven plates. When the activity is over, the teacher can pass out real pieces of watermelon and explain to the students how it is grown.

Activity Two: Color the Multiplication Barn

This activity will allow the students to have a little fun while practicing their multiplication tables. The teacher will section out a picture of a barn and place a multiplication equation within each section. In the key of the picture, the teacher will write directions that read if the answer is 1, 4, 6, or 8 then color that section black. They will do the same for the colors red and white. At the end the barn will be completely colored and the teacher will be able to tell what multiplication problems the student is struggling with based on the accuracy of their coloring.

Fourth Grade

Activity One: From Farm to Table

This activity was designed to help students learn how to accurately read a map and measure distances on a map. It will also help them to learn and appreciate the major process involved in getting their food to the grocery store on a daily basis. First, the teacher must explain where food comes from and give an example of the multiple places a product can travel to before reaching the grocery store. Next, the teacher will give the students a map of California and its multiple cities. The students will then be given a worksheet that details the travel route of a particular product and what different cities that product has to go to along the way. The student will be asked to measure the distances between each city and add up the miles to determine how far the product had to travel before actually reaching the grocery store near them (Baker, 2011, p. 54). This is a good way for teachers to explain that food is not made at the grocery store, but is instead involved in a very long and complex process.

Activity Two: Agriculture in Vocabulary

This activity will define certain agricultural words and help the students gain a better understanding of their meaning. The teacher will generate a list of fifteen different vocabulary words that are all related to agriculture, and will provide a definition for each word. They will then give this list to each student and help him or her to create an agricultural vocabulary book. Each page will contain the word, its definition, and an illustration of the word. This will help the students to really focus on the word and

understand it enough to be able to draw their own picture of the word based of the definition given.

Fifth Grade

Activity One: Build Your Own Lung

This activity was developed during observation of Crivello's agricultural biology class and designed in a step-by-step process. The children use two balloons, a straw, a clear, plastic cup, some tape, and some play dough to make a replica of a functioning lung (personal communication, Brandi Crivello, February 11, 2015). One balloon becomes the lung, the other is cut and stretched around the bottom of the cup in order to create the diaphragm, and the straw represents the trachea. When the diaphragm is pulled on it displays what happens when a human inhales and the lung expands, which is shown when the balloon becomes filled with air. This activity falls under science and could be used to replicate a human or animal lung per the teacher's choice. After the lung is built the students would fill out a work sheet describing what each piece of the project represents in a real body (i.e. the balloon represents the lung).

Activity Two: Coordinating Crops

This activity will teach students how to identify coordinates on a grid as well as what the x-axis and y-axis are. The teacher will create a large grid on a piece of butcher paper and have the students gather around it while the teacher explains which axis is which and what a coordinate is. Then the teacher will place an agriculturally related object on a particular coordinate and write that coordinate on the board as they explain to

the students how they generated said coordinate. The teacher will then ask the students to identify the coordinates of other objects that have been placed on the grid (Baker, 2011, p. 70). For more practice, the teacher can empty the grid and give the class a coordinate that they need to find and place an object on.

Developing the Website

Weebly.com is a website designed to help users generate their own website based off of a set of offered templates. This is the site the author used to develop this project. The templates offered are all designed for specific categories such as photography, restaurant, clothing store, or education. The education category was selected and a template from that category was used for the development of this website. The title for the website is Elementary Agriculture, which is included at the top of each page on the website. The site contains two introductory pages and then six separate pages to accommodate each grade level individually. The introductory pages include the home page and the about page which include an accumulation of information about the basic goals of the site, what it contains, and how to contact its author. The contact information page also includes parameters for what can be submitted and how activities should be submitted to the author. Each of these three pages contains one agriculturally-related picture.

Each page for the grade levels was designed to contain the two designated activities as well as four pictures. This means that the website as a whole includes twelve activities and twenty-seven pictures. Each activity is described and explained in a step-by-step process and provides a list of needed materials as well as some helpful tips. The

site is designed in a way that activities could be added to the site in the future if more were to be created. The site is also designed to be public and easily accessible, but is categorized for use by teachers specifically. The pictures on the site were taken in San Luis Obispo County and Nevada County in California by the author and uploaded to the site to add creativity and are all agriculturally-related.

Summary

Agriculture as an industry is essential to the survival of society. It provides all the resources necessary for day-to-day life, but is also widely taken for granted. Agricultural education is essential in keeping this industry alive and should therefore begin at an earlier age than high school. Currently, most high school freshman come to their school knowing very little about agriculture as a whole and this project is designed to change that. The development of a website is to help students be better informed about their resources at a younger age and therefore be able to develop an interest in the agricultural industry as well as understand its importance in their lives.

Chapter Four

Results and Discussion

This project consisted of the development of a website and twelve different activities that were designed to be used by teachers in elementary grade level classrooms ranging from kindergarten to fifth grade. The general goal of the project was to bring agriculture into the classroom at a younger age and to emphasize the importance of agriculture in all aspects of education. Each activity matches the guidelines of the curriculum for that particular grade level, but they also integrate agriculture into each of the commonly taught subjects like math, science, and English. Also, each activity lists a step-by-step process of how to conduct the activity as well as any required materials that will be needed. The website was designed to contain eight different pages and was entitled Elementary Agriculture. The first two pages are introductory and contain information about the site as a whole and describe what the site is providing its users. The next six pages are designated for each grade level and contain two activities per grade level. The current website can be found at <http://elementaryagriculture.weebly.com/> .

Home Page

The Home page was created to be the first page that shows up when a user types in the website domain. See figure 1. It consists of the title, which is later found at the top of every consecutive page, and a short description of what the website has to offer as well as an agriculturally related picture. There is also a link provided that will lead the user to the 'About' page which gives a more detailed description of the site and its contents.



Figure 1: Home Page

About Page

This page is linked to the 'Home' page through the 'Learn More' tab in order to help the user find more information on the website in general. See figure 2. It contains a short paragraph describing the goals of the website as well as what it provides to the user. There is also a picture provided on this page to add character and give a visual aid to the term 'agriculture'.



This website was created in order to help elementary school teachers bring agriculture into their classrooms. Several activities were developed for each grade level from Kindergarten up to 5th grade. The activities were designed to fit the curriculum for that grade level, but also to incorporate agriculture in a unique and fun way. The purpose of this site is to introduce agriculture to students at an earlier age and to increase the level of knowledge about agriculture among the general population.

Figure 2: About Page

Kindergarten

The page for Kindergarten is the first of the six grade levels provided on the website and contains two activities and four agriculturally related pictures. See Figure 3. The first activity is entitled “Counting Your Chickens” and involves the kindergarteners learning how to count by taking plastic eggs in and out of an egg carton according to the number given to them by their teacher. The second activity is entitled “Agricultural Alphabet” and is a way for the children to learn their alphabet by relating each letter to an agricultural animal or object.



ELEMENTARY AGRICULTURE

HOME ABOUT **KINDERGARTEN** 1ST GRADE 2ND GRADE 3RD GRADE 4TH GRADE 5TH GRADE

Activity 1: Counting Your Chickens
Materials Needed - 1 egg carton per student, 10 plastic eggs per student
STEP 1: Have an empty carton in front of each student
STEP 2: Ask them to count out 5 eggs by placing them one at a time into the carton
STEP 3: Have them add 2 more eggs and then re-count all the eggs to see how many are now in the carton
STEP 4: Repeat steps 2 and 3 several times with different numbers of eggs, always start with an empty carton
STEP 5: Explain where eggs come from, show the class pictures of hens and how they lay eggs
Suggestion - find a story book with a hen who lays eggs such as From Egg to Chicken by Gerald Legg

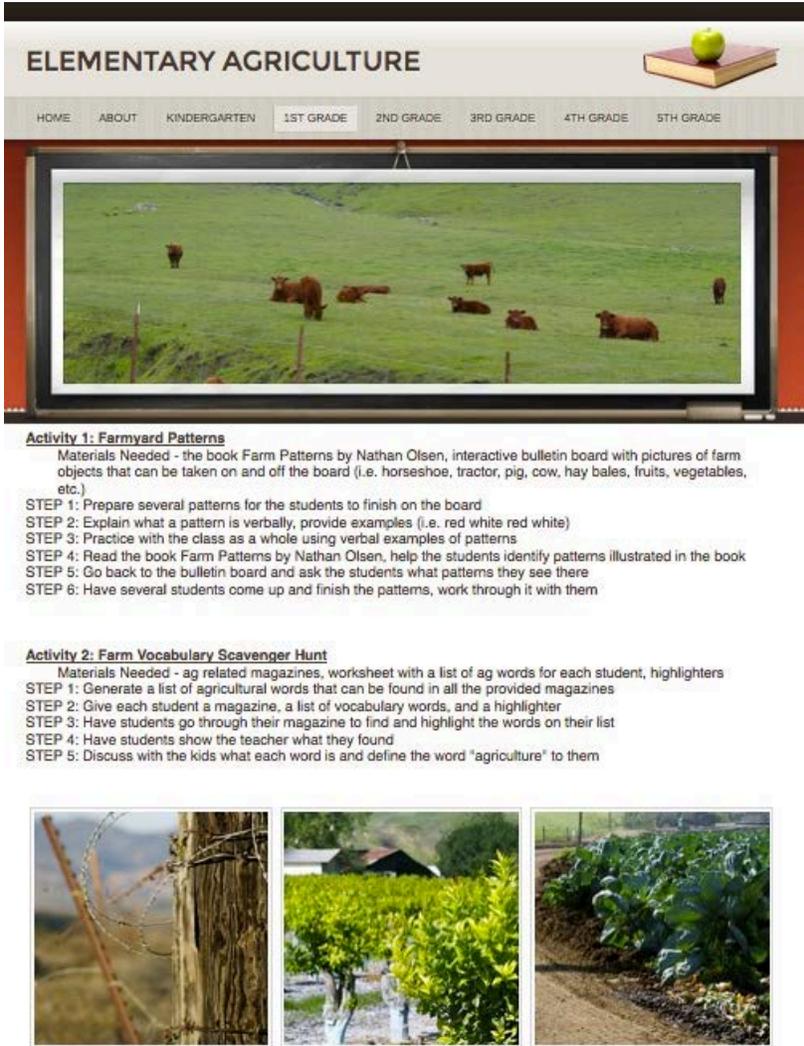
Activity 2: Agricultural Alphabet
Materials Needed - pictures of each letter in the alphabet, pictures of each ag related object/animal that will go with the letters of the alphabet
STEP 1: Find an ag related object or animal who's first letter matches a letter of the alphabet, find one for all 26 letters of the alphabet
STEP 2: Go over all the letters and their objects/animals with the students multiple times as they practice their alphabet



Figure 3: Kindergarten Page

First Grade

The page for First Grade includes four pictures and two activities designed to fit the first grade level curriculum. See Figure 4. The first activity is called “Farmyard Patterns” and involves teaching the students how to identify a pattern and define the differences between several patterns with the use of agricultural objects. The second activity is named “Farm Vocabulary Scavenger Hunt” and involves the students finding agricultural vocabulary words within different magazines.



ELEMENTARY AGRICULTURE

HOME ABOUT KINDERGARTEN **1ST GRADE** 2ND GRADE 3RD GRADE 4TH GRADE 5TH GRADE

Activity 1: Farmyard Patterns

Materials Needed - the book Farm Patterns by Nathan Olsen, interactive bulletin board with pictures of farm objects that can be taken on and off the board (i.e. horseshoe, tractor, pig, cow, hay bales, fruits, vegetables, etc.)

STEP 1: Prepare several patterns for the students to finish on the board
STEP 2: Explain what a pattern is verbally, provide examples (i.e. red white red white)
STEP 3: Practice with the class as a whole using verbal examples of patterns
STEP 4: Read the book Farm Patterns by Nathan Olsen, help the students identify patterns illustrated in the book
STEP 5: Go back to the bulletin board and ask the students what patterns they see there
STEP 6: Have several students come up and finish the patterns, work through it with them

Activity 2: Farm Vocabulary Scavenger Hunt

Materials Needed - ag related magazines, worksheet with a list of ag words for each student, highlighters

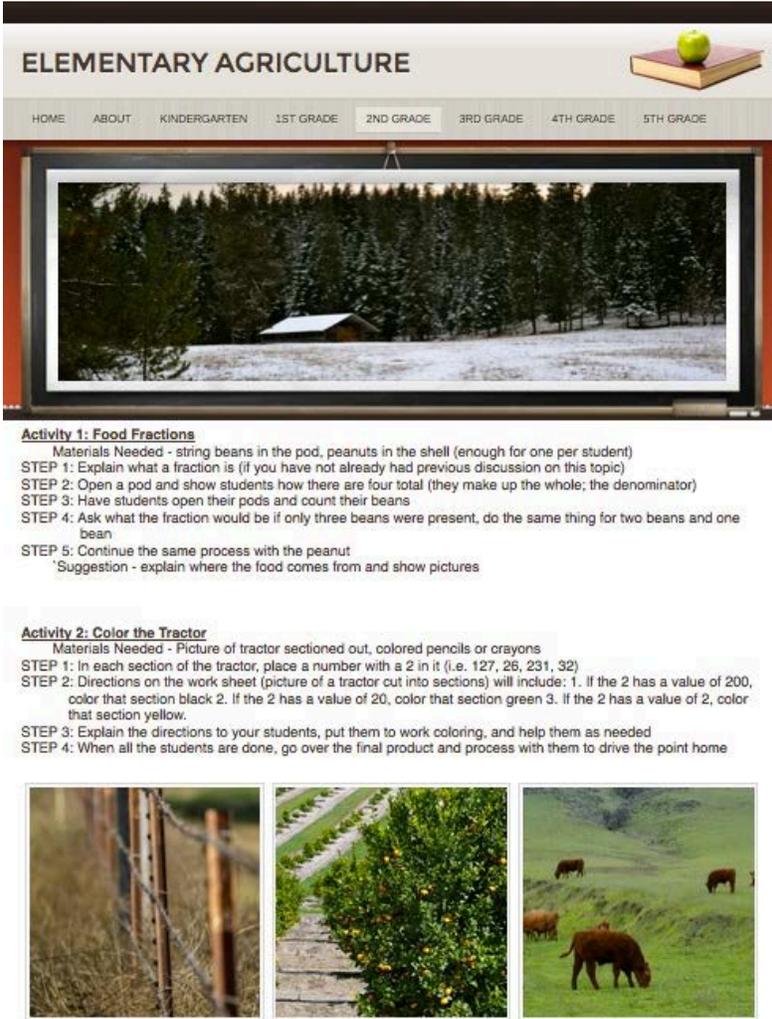
STEP 1: Generate a list of agricultural words that can be found in all the provided magazines
STEP 2: Give each student a magazine, a list of vocabulary words, and a highlighter
STEP 3: Have students go through their magazine to find and highlight the words on their list
STEP 4: Have students show the teacher what they found
STEP 5: Discuss with the kids what each word is and define the word "agriculture" to them



Figure 4: First Grade Page

Second Grade

The page for Second Grade includes four agricultural pictures and two activities as well, but both of these activities are more closely related to the subject of math. See Figure 5. The first activity is titled “Food Fractions” and comprises of the students using string beans in the pod and peanuts to help them understand the concept of fractions. The second activity is named “Color the Tractor” and has the students defining the value of a number in order to figure out what color that section of the tractor is supposed to be. They then get to color in the tractor.



ELEMENTARY AGRICULTURE

HOME ABOUT KINDERGARTEN 1ST GRADE **2ND GRADE** 3RD GRADE 4TH GRADE 5TH GRADE

Activity 1: Food Fractions
Materials Needed - string beans in the pod, peanuts in the shell (enough for one per student)
STEP 1: Explain what a fraction is (if you have not already had previous discussion on this topic)
STEP 2: Open a pod and show students how there are four total (they make up the whole; the denominator)
STEP 3: Have students open their pods and count their beans
STEP 4: Ask what the fraction would be if only three beans were present, do the same thing for two beans and one bean
STEP 5: Continue the same process with the peanut
Suggestion - explain where the food comes from and show pictures

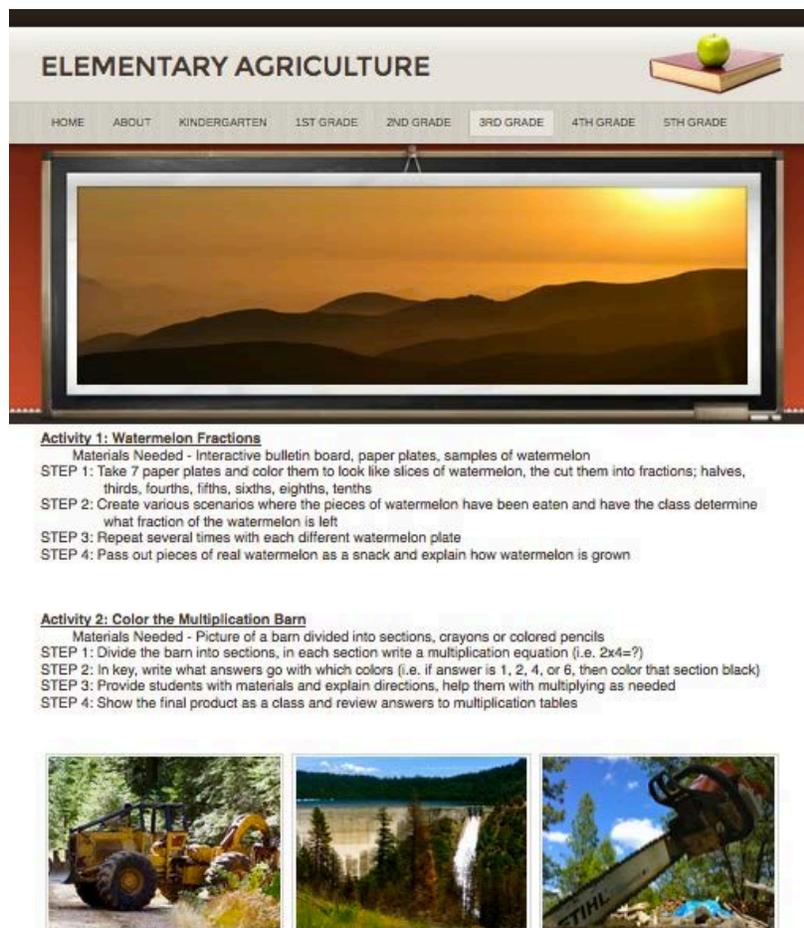
Activity 2: Color the Tractor
Materials Needed - Picture of tractor sectioned out, colored pencils or crayons
STEP 1: In each section of the tractor, place a number with a 2 in it (i.e. 127, 26, 231, 32)
STEP 2: Directions on the work sheet (picture of a tractor cut into sections) will include: 1. If the 2 has a value of 200, color that section black 2. If the 2 has a value of 20, color that section green 3. If the 2 has a value of 2, color that section yellow.
STEP 3: Explain the directions to your students, put them to work coloring, and help them as needed
STEP 4: When all the students are done, go over the final product and process with them to drive the point home



Figure 5: Second Grade Page

Third Grade

The page for Third Grade, like the previous grade levels, includes four agricultural pictures and two activities that relate to the curriculum. See Figure 6. These two activities are also focused on mathematics. The first activity is called “Watermelon Fractions” and involves a paper plate colored to look like a watermelon and then cut into slices. The teacher then pretends some of the slices were eaten and the students have to decide what fraction of the whole is left over. The second activity is labeled “Color the Multiplication Barn” and has the students solving multiplication equations in order to find what color that section of the barn should be.



ELEMENTARY AGRICULTURE

HOME ABOUT KINDERGARTEN 1ST GRADE 2ND GRADE **3RD GRADE** 4TH GRADE 5TH GRADE

Activity 1: Watermelon Fractions
Materials Needed - Interactive bulletin board, paper plates, samples of watermelon
STEP 1: Take 7 paper plates and color them to look like slices of watermelon, the cut them into fractions; halves, thirds, fourths, fifths, sixths, eighths, tenths
STEP 2: Create various scenarios where the pieces of watermelon have been eaten and have the class determine what fraction of the watermelon is left
STEP 3: Repeat several times with each different watermelon plate
STEP 4: Pass out pieces of real watermelon as a snack and explain how watermelon is grown

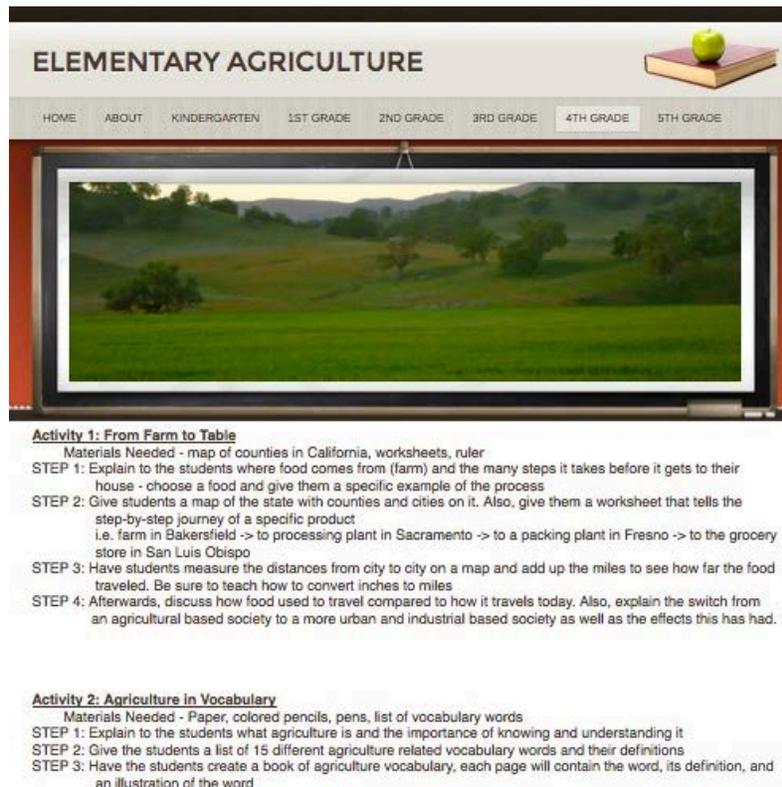
Activity 2: Color the Multiplication Barn
Materials Needed - Picture of a barn divided into sections, crayons or colored pencils
STEP 1: Divide the barn into sections, in each section write a multiplication equation (i.e. $2 \times 4 = ?$)
STEP 2: In key, write what answers go with which colors (i.e. if answer is 1, 2, 4, or 6, then color that section black)
STEP 3: Provide students with materials and explain directions, help them with multiplying as needed
STEP 4: Show the final product as a class and review answers to multiplication tables



Figure 6: Third Grade Page

Fourth Grade

The page for Fourth Grade contains activities designed to fit the fourth grade curriculum as well as four agriculturally related pictures. See Figure 7. The first activity is named “From Farm to Table” and involves the students learning about how far their food travels from the farm to their own table as well as mapping out the route. The second activity is called “Agriculture in Vocabulary” and consists of the students creating a small book with pictures and definitions of fifteen different agricultural vocabulary words.



ELEMENTARY AGRICULTURE

HOME ABOUT KINDERGARTEN 1ST GRADE 2ND GRADE 3RD GRADE 4TH GRADE 5TH GRADE

Activity 1: From Farm to Table
Materials Needed - map of counties in California, worksheets, ruler
STEP 1: Explain to the students where food comes from (farm) and the many steps it takes before it gets to their house - choose a food and give them a specific example of the process
STEP 2: Give students a map of the state with counties and cities on it. Also, give them a worksheet that tells the step-by-step journey of a specific product
i.e. farm in Bakersfield -> to processing plant in Sacramento -> to a packing plant in Fresno -> to the grocery store in San Luis Obispo
STEP 3: Have students measure the distances from city to city on a map and add up the miles to see how far the food traveled. Be sure to teach how to convert inches to miles
STEP 4: Afterwards, discuss how food used to travel compared to how it travels today. Also, explain the switch from an agricultural based society to a more urban and industrial based society as well as the effects this has had.

Activity 2: Agriculture in Vocabulary
Materials Needed - Paper, colored pencils, pens, list of vocabulary words
STEP 1: Explain to the students what agriculture is and the importance of knowing and understanding it
STEP 2: Give the students a list of 15 different agriculture related vocabulary words and their definitions
STEP 3: Have the students create a book of agriculture vocabulary, each page will contain the word, its definition, and an illustration of the word



Figure 7: Fourth Grade Page

Fifth Grade

The page for Fifth grade contains two fifth grade level activities and four agricultural pictures. See Figure 8. The first activity is called “Build Your Own Lung” and is a science related activity that involves the students creating a replica of a functioning lung out of a plastic cup, a straw, and some balloons. The second activity is titled “Coordinating Crops” and is designed to teach the students how to plot coordinates on a graph using a large graph made on butcher paper and some agricultural objects that can be placed across the graph.



The screenshot shows the 'ELEMENTARY AGRICULTURE' website. At the top, there is a navigation menu with links for HOME, ABOUT, KINDERGARTEN, 1ST GRADE, 2ND GRADE, 3RD GRADE, 4TH GRADE, and 5TH GRADE. Below the menu is a large image of a field of tall grasses. The main content area features two activities:

Activity 1: Build Your Own Lung
Materials Needed - Clear plastic cup, 2 balloons, a straw, scissors, tape, and some playdough
STEP 1: Cut a hole big enough for the straw through the bottom of the cup
STEP 2: Stretch one balloon and tape it over the bendy end of the straw
STEP 3: Put the straw in the hole with the balloon on the inside of the cup, add playdough around the hole to seal it
STEP 4: Blow up the second balloon and then let it deflate, tie the open end of the balloon and then cut the tip off the other end of the balloon
STEP 5: Stretch the balloon around the bottom of the cup
STEP 6: Once all the students have followed this process, show them how the lung works by pulling on the second balloon (diaphragm) while the inner, first balloon (lung) inflates
Suggestion - Create a worksheet with each part of the project labeled and have the students identify what part of the project symbolizes which part of the human body. Straw = trachea, balloon 1 = lung, balloon 2 = diaphragm, cup = rib cage, space inside the cup = chest cavity

Activity 2: Coordinating Crops
Materials Needed - Large graph on butcher paper, x-axis with letters and y-axis with numbers, items to be placed on various points of the graph (i.e. apple, tomato, egg, spool of yarn, orange, cotton ball)
STEP 1: Create a large version of a coordinate plane on butcher paper (grid)
STEP 2: Gather students around the grid and explain the axis' then place several items at different points on the grid
STEP 3: On the board, name an item and explain how to define its coordinates on the grid, x-axis first and y-axis second
STEP 4: Ask your students to then identify the coordinates of the other objects on the grid
STEP 5: Remove objects, give a set of coordinates and ask the students to place items on those coordinates

At the bottom of the page, there are three small images: a pig eating grass, a close-up of a purple flower, and a farm scene with a barn and a water tower.

Figure 8: Fifth Grade Page

Contact Page

The contact page was added at the end of the website to open up opportunity for further development on the website. The page includes information on how to properly send in activities, what types of activities are acceptable, and the review process of activities before they can be posted to the website. The page is designed to allow other professional to email in their ideas to the author and for the ideas to be considered for posting, but other teachers cannot post directly on the site. There is also a disclaimer on this page that informs other teachers that their name will be attached to whatever activities they send in that the author decides to post to the website.

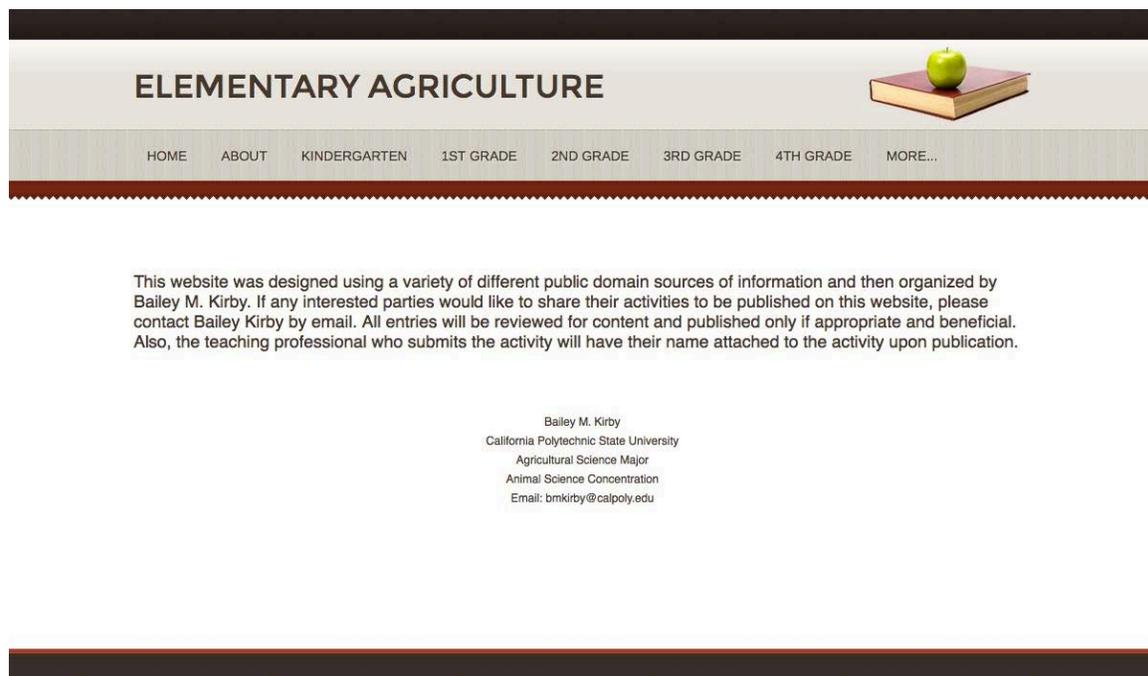


Figure 9: Contact Page

Chapter Five

Summary, Recommendations, and Conclusions

Summary

This project was created with the desire to introduce agriculture to students at the elementary level. Currently, most students do not learn about agriculture until the high school level. The project consists of a website that can be used by elementary school teachers and includes two activities for each grade level from kindergarten to fifth grade. Each activity can fit easily into the curriculum for that specific grade level and integrates core subjects such as English, science, and math while focusing on agriculture as a theme. This site was also designed to be added to as more activities are created. The project was designed with California's curriculums as a reference and could later be expanded to include other states if their curriculums will allow it. The overall goal of the project is to help students understand the importance of agriculture at a young age and develop an interest in the topic as their education progresses.

Recommendations

The following recommendations should be considered prior to developing more activities for this website:

1. Have a thorough understanding of the California State Curriculum, also known as the Common Core.
 - This recommendation is based on the fact that an activity that does not fit into the state's curriculum will never be used by the desired teachers. It is

essential that the activity fits the curriculum so as to persuade teachers to use it in their own classroom. If one teacher is willing to try the activity, then it can be considered a success and will be passed on to other teachers if they like it.

2. Keep the focus on targeted audience. The activity should be for a specific grade level.
 - If too many activities are being designed at once then there are more opportunities for mistakes and an overall lower quality of each activity. The goal is to create an effective and useful activity rather than a large amount of activities. Also, if the activity is designed with too many users in mind then it can become too ordinary and general to achieve the original goal of the activity. Not all activities can be used by every possible teacher.
3. Learn how lesson plans and activities are developed.
 - Most people have never created an activity or lesson plan before and when faced with the task they do not know where to start. Consult experienced teachers on the topic and learn their methods and practices for developing a general activity. This will help in compiling a set of needs that must be met by each activity.
4. Consult with as many teachers as possible.
 - Every teacher has their own philosophies, methods, and goals within their own classroom. All of them have differences that need to be considered when developing an activity. Each teacher's practices can be drawn upon

in some way and in taking several pieces from each teacher one can develop an activity that fits the needs of a larger group of teachers. The more opportunities for observation mean more chances for learning.

Conclusions

Completing the development of agricultural related activities designed to the elementary level, as well as the website that contains these activities, was a success. The website met the objectives established at the beginning of this project. The project as a whole was able to meet the goal of bringing agriculture to the elementary classroom via an elementary website.

One negative aspect to developing this project was the lack of feedback on the design of the activities and their content. The project could have been slightly improved if feedback from elementary school faculty were given on each of the activities. This would enhance the credibility and effectiveness of the activities.

Works Cited

- Andre, L., Linder, M. P., Linder, B. (1993). Ag Ed in Elementary Schools: Time to Celebrate Our Independence. *Agricultural Education Magazine*, 65 (12), p. 19-21.
- Baker, K. (2011) Mathematics Ag-tivities. *Ag in the Classroom*, p. 2, 18, 22, 35, 54, 70. Retrieved from: <http://www.agintheclassroom.org/Teachers/LessonPlans.aspx>
- Birkenholz, R. J., Harris, C. R. (1996). Agricultural Literacy of Missouri Secondary School Educators. *Journal of Agricultural Education*, 37 (2), p. 63-71.
- Camp, W. G. (2007). Agricultural Education: Looking Around. *Agricultural Education Magazine*, 80 (3), p.13-15.
- Fortune, R., Kwatinetz, M., Hanna, W. (2015). *First Grade Vocabulary Activities*. Retrieved from: www.education.com/activity/first-grade/vocabulary
- Helms, E. C., Hitt, A. M., Jones, A., Schipper, J. (2010). Native American History in a Box: A New Approach to Teaching Native American Cultures. *Social Studies*, 101 (4), p. 160-165.
- Hikawa, H., Trexler, C. J. (2010). Elementary and middle school agriculture curriculum development: an account of teacher struggle at countryside charter school. *Journal of Agricultural Education*, 42 (3), p. 54-64.
- Knobloch, N. A. (2008). Factors of teacher beliefs related to integrating agriculture into elementary school classrooms. *Agriculture and Human Values*, 25 (4), p. 529-539.
- Knobloch, N. A., Martin, R. A. (2000). Agricultural Awareness Activities and Their Integration into the Curriculum as Perceived by Elementary Teachers. *Journal of Agricultural Eduaction*, 41 (4), p. 15-26.
- Martin, F., Pastore, R., Snider, J. (2012). Developing Mobile Based Instruction. *Tech Trends: Linking Research and Practice to Improve Learning*, 56 (5), p. 46-51.
- Morris, J. L., Neustadter, A., Zindenberg-Cherr, S. (2001). First Grade Gardeners More Likely to Taste Vegetables. *California Agriculture*, 55 (1), p. 43-46.