

Shasta County Agriculture Activity Book Project

A Senior Project

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Bachelor of Science

By

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Introduction

Agricultural education has been implemented in many secondary schools around the state of California. Agricultural education in elementary school classrooms is just as important as teaching fundamental skills such as reading. Research reports there is a need to "...provide for a systematic infusion of agricultural concepts into the basic subject areas of the curriculum, and to provide in-service training to teachers of the basic subject areas in order to provide necessary background information for incorporation of agricultural knowledge into their respective subject areas," (Pense, S. L., Leising, J. G., Portillo, M. T., & Igo, C. G., 2005). By instilling an appreciation for the agricultural industry at an early age using strategic curriculum tactics, agricultural educators have the opportunity to cultivate an interest in young minds to pursue a path that could potentially lead to a career in agriculture.

By bringing agricultural education into elementary schools, specifically at the kindergarten level, it will provide students with an "outside of the classroom" learning environment as well as hands-on experience. This concept reflects what's known as perceptual-motor skills; Or the process of recognizing and interpreting sensory information obtained from one or more environments, as well as the ability of the brain to engage with the world outside through the senses to subsequently provide meaning to these sensory stimuli (Loubser, Pienaar, Klopper, & Ellis, 2016). The goal of this project is to create an activity book based off Shasta County commodities that links the local agriculture industry to the Next Generation Science Standards for a kindergarten classroom.

Background

Based off of the Shasta County Crop and Livestock Report of 2017; wild rice, timber, grass hay, and cattle/calves are top commodities produced throughout the region. In total, the cattle and calves yield \$10,306,000, wild rice brings in \$6,107,000, and timber totals an impressive \$39,645,935 for the county alone (Kjos, 2017). The direct need to reel in new agriculture students in order to continue to educate the world on such an irreplaceable industry is becoming increasingly relevant (Russell, 1993). Common Core Standards were implemented in school systems across the United States in 2010. The objective of these standards has been to create consistency within classrooms across the country in order to maintain a universal educational system (California, 2018). The Next Generation Science Standards aim to help students formulate answers to questions such as "where do animals live and why do they live there?"

Disciplinary Core Ideas among the Next Generation Science Standards are direct guidelines for teachers to reference in their process of lesson planning (Next, 2013). Agricultural education invites a wide variety of lesson topics. Studies have shown that infusing agricultural education with basic subject areas provides students with basic knowledge with the valuable addition of agricultural knowledge (Pense, Leising, Portillo, & Igo, 2005).

Disciplinary Core Idea LS1.C requires students to grasp the concept of Organization for Matter and Energy Flow in organisms. Curriculum can be crafted to provide educational materials to answer questions such as "what animals need for food in order to live and grow", while also addressing how they obtain their food from plants or from other animals and how the subject applies to cattle and calves in this particular county of Northern California.

Another standard utilized is the ESS2.D (Earth Systems Science) pertaining to the lesson of Weather and Climate, guides student insights as to how weather and climate are used to successfully grow crops; specifically, wild rice and grass hay for the Shasta County area.

Another valuable standard is ESS3.C which refers to Human Impacts on Earth Systems, outlining the importance of the things people do to live comfortably and how that affects the world around them, focusing specifically with timber in Shasta County. Incorporating this standard can lead to increasing students' awareness of how they can impact the plants and animals around them.

Methodology

With the development of an agricultural activity book for the kindergarten level, the authors have selected the top commodities produced in Shasta County and have directly applied them to Next Generation Science Standards. The reasoning behind creating a parallel between science lessons and a students' immediate environment is to allow teachers to utilize their allotted time for teaching for state-mandated subjects while appointing agricultural topics as a vehicle for understanding these lessons. "The critical role of higher education in creating a sustainable future to live off nature's interest," (Cortese, 2003).

Using the Life Science Standard including the organization of matter and energy in organisms (LS1.C) with the commodity cattle and calves, the agricultural curriculum connections will be demonstrated through an activity involving visual aids of a cow along with essential nutrient sources as well as food sources that would not be in the animal's typical diet.

For the timber commodity, the Earth System Science standard covering human impact on nature, the activity book prompts the teacher to bring in different samples or pictures of timber environments that have been exposed to the positive and negative impacts of humans. For grass hay the Earth Systems Science Standard covering weather and climate would be applied. The teacher will plant grass seeds and experiment with different lightings in which the plants will thrive. For example, one plant will be located in the closet, one in direct sunlight, and one housed in a mixture of both.

For wild rice, the activity will also be based on the Earth System Science Standard covering weather and climate. For this lesson, the students become the makeshift farmer for the day; creating a timeline in which they indicate when the weather changes and when they believe the wild rice crop should be planted, fertilized, and harvested.

The activity book includes guided lesson plans, along with printable materials and scannable copies to make for easy distribution to students. These materials aim to educate kindergarten students through the senses to create lasting learning experiences. The overarching goal is to use Shasta County as the pilot example of agricultural education in schools. The pilot could serve as an example for other counties to embrace their commodities as curriculum lessons with high impact.

The activity book could be uniquely-developed to showcase a specific county's top commodities and implemented in the kindergarten school system for a dual purpose; allowing a holistic sensory learning experience and carrying out valuable science lessons that coincide with the county's most prominent agricultural production. This book will be created using Microsoft Word then printed as a spiral bound book. It will also be made available as a digital PDF version available to the Fall River Joint Unified School District.

Results

This activity book is a 20-page document created in Microsoft Word that is available for teachers in the Fall River Joint Unified School District via the district website in an easy-to-download PDF file. Any teacher can access this file. The book was also emailed to the Modoc County School District and Farm Bureau. Although the file was written to kindergarten standards, teachers instructing students at a higher-grade level can use these lessons as a guide and increase the difficulty to meet higher standards.

Objective one: This activity book will provide teachers with easy-to-access lesson plans that meet the Next Generation Science Standards. By using these standards teachers will not need to set aside extra time to teach agriculture in their classrooms.

Objective two: This activity book is applicable to the agricultural commodities ground in Shasta County to follow the Common Core Standards shift to incorporate a balanced amount of literary and informational texts. By using commodities in Shasta County students are provided real world application in the agricultural industry.

Objective three: This activity book will provide students agricultural knowledge they can use on a day-to-day basis.

Conclusion

Agricultural education in elementary school classrooms is just as important as teaching fundamental skills such as reading. Research reports show there is a need to provide for a systematic infusion of agricultural concepts into the basic subject areas of the curriculum, and to provide necessary background information for incorporation of agricultural knowledge into their respective subject areas (Pense, S. L., Leising, J. G., Portillo, M. T., & Igo, C. G., 2005).

The authors completed this project successfully and were able to provide teachers access to developed lesson plans with the materials included. Furthermore, these lessons are tailored to the Next Generation Science standards allowing teachers to include agriculture into their science curriculum. This project provides a template for other counties to adopt and help teachers infuse their curriculum with agricultural education.

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