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INTEGRATED AGRISCIENCE AND CAREER AWARENESS CURRICULUM FOR ELEMENTARY AND MIDDLE SCHOOL UTILIZING SCHOOL GARDENS

A Project

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Education:

Career and Technical Education

---

by

Lorie Susan Suntree

June 2002

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Approved by:

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5/6/02

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ABSTRACT

Agriculture is a one hundred billion dollar industry in the state of California, yet science and agriculture are over-looked in elementary and middle schools. Instead, an emphasis is placed on writing, reading, and math, subjects that are tested at the state level. As a result, fourth and eighth graders in California placed 38th out of 41 in a National Science Assessment Test.

In the spring of 2003, science will be included in the statewide test; therefore, elementary and middle schools will have to address the subject of science and its impact on the school day. In 2002 the California State Board of Education approved a new California Science Framework, which suggests implementing an integrated approach to teaching science in the classroom.

The purpose of this project was to create an integrated agri-science curriculum with an emphasis on career awareness. With input from faculty and staff at participating elementary and middle schools, community businesses, University of California Cooperative Extension and the Master Gardeners, this project introduces science and agriculture to students along with the careers behind the garden. Coordination of this project established funding sources, community partnerships, parent

participation and project volunteers. This formed a strong collaboration on the project, resulting in student participation before, during and after school.

ACKNOWLEDGMENTS

I would like to acknowledge my professors, Dr. R. Pendleton, Dr J. Scarcella, Dr. D. Stine and Dr. D. Schnorr, and Timothy Thelander for their dedication and hard work towards providing a comprehensive and pertinent education. I would also like to acknowledge the California State University at San Bernardino for hiring a fabulous staff dedicated to excellence both in education and the enrollment process.

I would be remiss if I did not thank my friends and family for their patience and support. Without their encouragement I would have had a much harder time and a bumpier road to completion.

To Timothy Thelander a special note of thanks, I shake my head in disbelief at his unselfish giving and timeless energy, I am grateful; without him, this thesis would not be the same.

DEDICATION

I would like to dedicate this thesis to those students who are lost; in the garden you will be found.

TABLE OF CONTENTS

CHAPTER ONE

BACKGROUND

Introduction

The content of Chapter One presents an overview of the project. The contexts of the problem are discussed followed by the purpose, significance of the project, and assumptions. Next, the limitation and delimitation that apply to the project are reviewed. Finally, definitions of terms are presented.

Context of the Problem

Agriculture in the state of California is a one hundred billion dollar industry, when production and support industries are considered (California Agricultural Education [CAE], 2001). Yet, the United States ranks among the lowest in achievement in science education (Roark, 1990, as cited in Mabie & Baker, 1996). Unfortunately, most of the American population lacks knowledge or understanding of the significance of agriculture in the world today (CAE, 2001). Since 1917 and the passage of Smith-Hughes Act, agricultural education has been considered part of the Vocational Education branch of the United States Department of Education rather than under the Department of Agriculture (Hillison, 1996). In 1988

the National Research Council suggested "agriculture is too important to be taught to those only in vocational education" (as cited in Trexler & Suvedi, 1998,p. 28). With pressure from Government mandates and organizations, schools are facing the daunting task of implementing the various standards, a task that could take a competent student an additional nine years to gain competencies in all the recommended standards (Vars & Beane, 2000).

The California Science framework for Public Schools states "science teaching be hands-on investigations and experimentation" (California Department of Education [CDE], 2002, p. 270). The American Association for the Advancement of Science in 1989, asked for a softening of traditional subjects and a creation of integrated curriculum with agricultural education, which would blend the disciplines, technology and society (as cited in Trexler & Suvedi, 1998). While elementary school teachers are searching for ways to introduce experimental science components into the classroom, Anderson (1994) contends that elementary school teachers are not prepared for implementation of such a curriculum (as cited in Mabie & Baker, 1996).

Furthermore, students, especially minority students, have preconceived ideas regarding agriculture and the lack

of opportunities available through agricultural education (Talbert & Larke, 1995). Talbert and Larke recommend an introduction to agricultural education awareness and activities in the elementary school, thereby fulfilling a goal of the National Council of Agricultural Education "To serve all people and groups equally and without discrimination" (as cited in Talbert & Larke, 1989, p. 4).

Purpose of the Project

The purpose of the project was to develop an Agriscience curriculum that incorporates a thematic career awareness curriculum integrated with core curricular lessons for elementary and middle school students utilizing the school gardens located at each site. By providing curriculum enriched with career enhancing skills that meet the State Academic Content Standards, teachers are relieved of the burden of designing lessons in an unfamiliar area.

Significance of the Project

The significance of the project was to relieve teacher stress as regards to student performance on tests, enhance student interest, participation, and provide a connection between schoolwork and employment opportunities. With the introduction of Agriscience

careers normally not discussed at the elementary and middle school levels, students were exposed to pathways broad in scope within the field of Agriculture.

Assumptions

The following assumptions were made regarding the project:

1. The assumption was made that elementary and middle school teachers would implement the curriculum.
2. The assumption was made student test scores would improve because student awareness towards the importance of schooling would be evident through the curriculum presented.

Limitation and Delimitation

During the development of the project, a limitation and delimitation were noted. The limitation and delimitation are presented in the next section.

Limitation

The following limitation applies to the project:

1. The career awareness curriculum was developed for the students attending elementary and middle Schools in Moreno Valley, California.

Delimitation

The following delimitation applies to the project:

1. Any elementary and middle schools, regardless of the demographics, may utilize the career awareness curriculum whether or not a school garden exits.

Definition of Terms

The following terms are defined as they apply to the project.

Academic Content Standards - the California State Board of Education has adopted core academic content standards in five curriculum areas for kindergarten through grade 12:English-language arts, mathematics, history-social science, science and visual-performing arts (California State Board of Education, 2001).

Acts - Legislation enacted into Law. A bill that has passed both houses of the legislature, has been enrolled, ratified, signed by the governor or passed over the governor's office and printed. It is a permanent measure, having the force of law until repealed (National Conference of State Legislature, 2001).

Academic Performance Index (API) - The Academic Performance Index is the assessment section of the California's Public Schools Accountability Act (PSAA) of 1999. The purpose of the API is to measure the academic performance and growth of the schools. The score range is 200 to 1000 with the target range for schools at 800 (California Department of Education, 2001e).

Agriscience - the teaching of agriculture and science in combination to meet the needs of the advancement of agriculture and technology, along with meeting academic standards (Hillison, 1996).

Career awareness - activities that generally take place at the Elementary school level. They are designed to make students aware of the broad range of careers and/or occupations in the world of work, including options that may not be traditional for their gender, race or ethnicity (National School-to-Work Office, 1996).

Career Pathways - a coherent sequence of courses or a field of study that prepares a student for a first job (National School-to-Work Office, 1996).

Contextual Learning - a conception of teaching and learning that helps teachers relate subject matter

content to real world situations and motivates students to make connections between knowledge and it's applications to their lives as family members, citizens, and workers engaged in the hard work that learning requires (U.S. Department of Education Office of Vocational and Adult Education and the National School-to-work Office, 1999).

Curriculum - the planned interaction of students with instructional content, instructional resources and instructional processes for the attainment of educational objectives (National School-to-Work Office, 1996).

Curriculum Alignment - academic and vocational curricula are linked so that course content and instruction dovetail across and/or within subject areas. Horizontal alignment is coordination of instruction across a specific grade level. Vertical alignment subject matter is connected between grade levels, in a cumulative manner, to build comprehensive, increasingly complex instructional programs (National School-to-Work Office, 1996).

Integrated Curriculum - academic and career subject matter, normally offered as separate courses, are taught in a manner that emphasizes relationships

among the disciplines (National School-to-Work Office, 1996).

Thematic Curriculum - organizes learning around questions or problems within the school-to-work program's occupational theme, which students then address from the perspectives acquired from both academic and workplace learning (National School-to-work Learning and Information Center, 1996).

Organization of the Thesis

The thesis portion of the project was divided into four chapters. Chapter one provides an introduction to the context of the problem, purpose of the project, significance of the project, limitation and delimitation and definitions of terms. Chapter Two consists of a review of relevant literature. Chapter Three documents the steps used in developing the project. Chapter Four presents conclusions and recommendations drawn from the development of the project.

Finally, the Appendix contains the project: It consists of five sections.1) contains the introduction to the Agriscience Career Awareness curriculum, and the career awareness curriculum and workability skills, 2) contains integrated agri-science curriculum by grade level

5) contains thematic garden curriculum 4) contains the State Academic Content Standards and SCANS 5) contains references for the curriculum.

CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

Chapter Two consists of a discussion of the relevant literature. Specifically, the impact of agriculture on the State of California economy, state and national government mandates on education, agricultural education and career awareness in elementary and middle school environments. The techniques for successful implementation of experimental activities and the integration of curriculum are explained.

A correlation between low socioeconomic areas, under-performing schools, and the disenfranchisement of students is discussed. The characteristics of student success under adverse conditions are detailed. An inclusive curriculum that meets teacher and students needs, while incorporating state and national standards, is outlined.

References used for this research-include journals, books, and governmental publications. Information was also gathered from electronic journals and research websites.

California Agriculture

California Agriculture is a one hundred billion dollar business when production and support industries are considered (CAE, 2001). The growth of the agricultural industry has been propelled by scientific research, development and technology (Hillison, 1996). According to the Future Farmers Association (2001) there is a minimum of three hundred and thirty-seven employment opportunities in six areas of the business sector. The majority of these opportunities require college education and advance degrees (Future Farmers Association, 2001). Yet the United States ranks among the lowest in the industrialized world in achievement in science education with California's forth and eighth graders posting the lowest science scores, among 41 states, in a recent national assessment test (Roark, 1990,as cited in Mabie & Baker, 1996 and CDE, 2001c).

Since 1917 and the passage of the Smith-Hughes Act, agricultural education has been relegated to vocational status, attracting and educating students generally not college bound (Conroy, Scanlon, & Kelsey, 1998). In California, science framework and content standards have been neglected in a concentrated effort to improve

Academic Performance Index (API) scores in language arts, reading and math (CDE, 2001c).

Educational Mandates

Since the early 1900's, state and federal governments have been establishing guidelines and standards for various components of education. These mandates have addressed academic standards, educational goals, career development, vocational education performance standards and workplace skills.

National

Smith-Hughes Act. With the passage of Smith-Hughes Act in 1917, agricultural education has been considered part of the Vocational Education branch of the United States Department of Education rather than under the Department of Agriculture (Hillison, 1996). This Act replaced a previous Act, Hatch 1887, which implemented the first agriscience programs in the United States and established experimentation and scientific research (Hillison). The major differences between the Hatch and Smith-Hughes Acts are: the Hatch Act

> diffused practical information on subjects with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under the direction of the college or colleges or

> agricultural colleges in each State or Territory a department known and designated as an experiment station (Hillison, 1996, p. 9).

Whereas the Smith-Hughes Act re-designated the direction of agricultural education,

> the controlling purposes of such education shall be of less than college grade and be design to meet the needs of the persons over fourteen of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home (Hillison, 1996, p. 10).

America 2000. In 1990, then President Bush and the governors of the United States developed a vision of how education would appear in the year 2000. The goals were: all children will start school ready to learn: ninety percent of high school students will graduate: students will be competent in basic subjects and exhibit responsible citizenship; U.S. students will lead the world in mathematics and science: every American adult will be literate; and schools will be drug-free and safe. The public and school libraries also adopted the National goals of America 2000 because research showed fifty percent of a child's intellectual development occurs before the age of four. These facilities would support early development by providing services, activities and materials for preschool children (Brennan, 1992).

The Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). In 1990 Secretary of Labor Elizabeth Dole established SCANS in conjunction with America 2000. The Commission looked to answer particular questions pertaining to the skills required of youth for employment in the workforce. These skills addressed two areas, foundational skills and competencies. Foundational skills were divided into two categories, academic and behavioral. These categories included: basic academic skills - reading writing, speaking listening and mathematical concepts; thinking skills - reasoning, creative thinking, problem-solving, and visualization; personal qualities - responsibility, self-esteem, integrity, effective communication. The competencies listed in the report were divided into five categories: 1) resources - identifying, organizing, planning and allocating money materials and workers; 2) interpersonal skills - communication, customer service, leadership, training others and teamwork; 3) information skills - processing information using computers, along with the acquiring, interpreting and evaluating communication information; 4) system skills - understanding, monitoring improving and designing systems; 5) technology utilization

skills - selecting, applying, maintaining and troubleshooting technology (Whetzel, 1992).

Carl D. Perkins Vocational Education Act. The Carl D. Perkins Act was legislated in 1990 and re-authorized in 1998. In 1990 the Act was focused on the integration of academic and vocational proficiencies. In 1998 the emphasis was broadened to include the development of rigorous academic standards and accountability, overseen by the Secretary of Education (Academic Innovations, 2000)

Goals 2000 Act. This Federal legislation was into law by President Clinton in March of 1994. It provides financial support and resources to states and communities so educational reform can be implemented and developed. These National Goals are the six goals from America 2000 with two others added: teacher education and professional development and parent participation (National School-to-Work Office, 1996).

School-to-Work Opportunities Act. Signed into law in May of 1994 by President Clinton, this act provides money to states to develop customized programs according to the needs of the state. There are three elements to the law: 1) school-based learning - high academic and business defined skill standards; 2) work-based learning - career exploration, work experience, training and mentoring at

job sites; 3) connecting activities - integrating classroom and on-the-job instruction, building bridges between school and work (National School-to-work, 1996).

National Skill Standards Act. This initiative established the National Skills Standard Board with the purpose of developing a national system of voluntary skill standards and certification. Representation on the Board includes business, labor, education, government, and civil rights organizations. The objective of the Board was to establish occupational clusters with shared skill standards, promote voluntary partnerships that will develop standards and support these partnerships and standards (National School-to-Work Learning and Information Center, 1997a).

National Career Development Guidelines. These guidelines were developed in 1989 by the National Occupational Information Coordinating Committee, in response to the growing concern of parents, educators and community members about the preparedness of students entering the workforce. Twelve competencies were developed in three areas of career development - self-knowledge, educational and occupational exploration, and career planning. The objective of these guidelines was to accomplish the following: strengthen and enhance

achievement of career development competencies by students and adults; improve career development programs through review and evaluation; enhance the ability of counseling personnel to deliver competency-based programs and facilitate assessment of comprehensive career development programs.

These guidelines were designed for each growth segment in the educational process, from elementary school to post-secondary education, with each stage individualized to the level of its students (Lankard, 1991).

State

Public Schools Accountability Act. Signed into California law in 1999, this act creates new educational accountability for the California public school system. "The primary goal is to improve academic achievement of all students" (CDE, 2001a, para. 1).

Academic Performance Index (API). This Index is the measurement tool of the Public Schools Accountability Act. It was developed by the Superintendent of Public Instruction and approved by the California State Board of Education. The Index measures "content, skills and competencies that can be taught and learned in school and that reflect the state standards" (CDE, 2001f, para. 8).

API examines schools progress through statewide testing and scores schools according to the results, 200-1000 with 800 being the target range for schools to meet. Those schools not improving at a designated rate are labeled under-performing (CDE, 2001f).

Standardized Testing and Reporting (STAR) Program. Designed by the State Board of Education, all school districts are to test students using a single standardized test, the Stanford 9. Second grade through eighth grade students are tested in basic skills of reading, writing, mathematics, written expression, while ninth grade through eleventh grade students have additional testing in history-science, science and visual and performing arts. Additionally, English learners with fewer than twelve months enrollment in a public school, are tested using the Spanish Assessment of Basic Education [SABE/2] (CDE, 2001d).

State Content and Performance Standards. Adopted by the State Board of Education, districts utilize these standards in grade kindergarten through twelfth grade. The standards reflect the frameworks of English-language arts, history-social science, science and visual and performing arts (CDE, 2001b).

High School Exit Exam. Education Code Section 60850-60856, requires the Superintendent of Public schools, with the approval of the State Board of Education, to develop and implement a test aligned with the State Content Standards. After completion of twelfth grade, as of 2003-04 school year, students must successfully pass this test in order to receive a high school diploma. This legislative mandate was approved in October 2000. A trial exam was given to ninth graders in spring of 2001, less than forty percent of those tested passed the exam (CDE, 2001f).

Agricultural Education

In November of 2001, the U.S. Department of Education's National Center for Education Statistics released the 2000 National Assessment of Educational Science Progress science scores and California's fourth and eighth graders ranked 38th among the 41 states tested (CDE, 2001c). In response to the data released the Superintendent of Public Instruction, D. Eastin put the scores in perspective. Although a small number of California students participated in the testing, approximately thirty-three hundred, the Superintendent expressed concern in several areas of the test. The

demographics of California is rapidly changing, this is reflected through the ethnic background of the students recently tested, twenty-six percent being English Language Learners, and that students are not state tested in science until the ninth grade.

This is about to change, according to D. Eastin, with testing of science content beginning in 2003, following the approval of the new science framework by the State Board of Education in early 2002 (CDE, 2001c). Superintendent Eastin summed up her disappointment in the scores with two statements:

> I'm concerned that the subject of science has not received the attention in our schools as have reading and math, especially in the grades two through eight...these scores reflect the reality that in California the study of science has not been formalized into the daily lesson plan in many of our schools (CDE, 2001c, para. 4)

and

> Perhaps the saddest aspect of these results is that our nation generally is not doing well and that this state, home of Silicon Valley and a leader in biotechnology, is not doing more to improve our education in science, we are short teachers, labs and a real sense of urgency about science. (CDE, 2001c, para. 12)

The California Agriculture Education Department recommends student learn the important role agriculture plays in the state and national economies along with the understanding of the wide variety of employment

opportunities associated with the industry. The California Agriculture Education Department recommends an integration of math, reading, science, history, and social science with the understanding of agriculture and its importance in society. One program supported by the department is A Garden in Every School, established in 1995 by the California Department of Education (CAE, 2001h).

D. Eastin, the Superintendent of Public Instruction, established A Garden in Every School initiative in 1995. The program was created to "provide dynamic environments that support student mastery of educational standards" (CDE, 2001h. para. 1).

Students who participate in school garden projects "develop a deeper appreciation for the environment, the community and each other" (California Department of Education, 2001h. para. 1).

Although the history of the culturally diverse city of Moreno Valley is steeped agriculture, the Moreno Valley Unified School District has only five out of thirty-four schools participating in garden projects. The schools with gardens are in high-risk areas of the city and they are considered under-performing schools with regards to state testing (Moreno Valley Unified School District, 2001).

Student Failure and Resiliency

In low socio-economic areas, students are considered high risk because of their demographics, family dynamics and lack of prospects for the future. Students from these areas have low-test scores, which results in the establishment of remedial instruction and the replacement of inventive lessons, creating a more hopeless environment to the already high-risk student. With student disenchantment, social behavior changes and disruption occurs in and out of the classroom. Students whom are disconnected, spin out of control in a continuous spiral of failure without hope for the future.

Student Failure

Student failure, behavior and disengagement form barriers to programs being successfully implemented (Fatuzzo & Greenfield, 1999; McEnvoy & Welker, 2000; Pittman & Cahill, 1993). There is a direct link between academic failure and antisocial behavior that creates the belief of futility in both the student and school (McEnvoy & Welker). This futility is further enhanced through the grouping of students according to the ability, conduct level and academic levels (McEnvoy & Welker). Yet behavior is not the only connection to failure; a strong

correlation between demographics and disengagement is apparent in high-risk areas (Fantuzzo & Greenfield, 1999).

A change in demographics or living in an impoverished area, contributes to the feeling of disengagement among students (Pittman & Cahill, 1993). The U.S. Department of Education (1996) study found, high failure and low-test scores in neighborhoods with disproportionately high risk factors such as poverty and urbanization (as cited in Fantuzzo & Greenfield, 1999). The lack of connection to family, school, community and society form barriers that prevent youth from gaining needed social skills (Pittman & Cahill). Students are not the only members of the school community that feel disconnected from the school environment; parents, especially in impoverished areas, feel left out of the educational process (Fantuzzo & Greenfield).

Disenfranchised Parents

Lack of parent involvement varies with each family, from single young mothers struggling to raise a family to language barriers among minorities, making a set program to gain parent interest impossible for schools to implement (Alva & de Los Reyes, 1999; Inger, 1992; Lewis, 1992). Ingelis (1992) argues "It is essential that we begin by asking families what they want, rather than

providing them only those services which are immediately at our disposal," (as cited in Lewis, 1992, p. 2). Lewis (1992) also discovered a lack of participation common among young parents who had limited education because of an insecurity and lack of self-worth in regards to their ability to contribute to the educational environment. With minority families, where there is a language barrier and economic hardship, participation was low to nonexistent (Inger, 1992). Although it is proven that with parent involvement grades improve, attendance increases and dropout rates are decreased, Flaxen and Inger (1991) believe parent involvement will improve if it is easy for parents to participate at a pace that is comfortable for them (as cited in Inger, 1992). This can be made easier for the schools, as well, with an understanding of the dynamics of minority families (Kerka, 1998).

To understand the family dynamics of high-risk students and their parents, educators need to comprehend the cultural salience of the minority community the school system serves (Kerka, 1998). Along with defining the importance an individual places on life roles, such as study, work, service, home/family, leisure, and cultural salience is becoming an important tool for explaining career maturity and career beliefs (Kerka). With the

mandates from Washington many states and districts have used career maturity and belief tests to assess the potential of a student, thus setting a student up for failure if the cultural salience is not considered (Kerka). Although many factors are involved in the failure of high-risk students and the disengagement of their parents and families, there are students striving to meet the demands of school and community that are under the same constraints as those students that fail (Benard, 1995).

Resilient Children

The adaptability of some students to overcome adversity is a phenomenon to be considered when developing programs for students of high-risk (Benard, 1993). Characteristics of these resilient children are: an optimistic outlook, self-righting tendencies, caring relationships, high expectations, opportunities for meaningful participation. In order for schools to develop programs using these same resiliency characteristics a "Systemic Change" and "Paradigm Shifting" need to occur (Benard, 1993, p. 15). According to Herbert Kohl a problem arises when labeling children at-risk, therefore it would suit the purpose of education by researching the strengths of the children, their families and communities rather

than further define their environment in a negative connotation as cited in Benard, 1993). Therefore the resiliency approach to teaching and supporting students requires a shift in the way we think about ourselves as educators, at-risk students, impoverished families and intervention programs (Benard). Lofquist (1992) describes this perspective as "seeing people as resources, as experts in their own lives, as possessing innate mental health and well-being, instead of identifying and labeling them a problems", (as cited in Benard, 1993, p.15). By evaluating the difference between resilient children, their families, communities, school and the same environment for children who receive intervention later on a proactive program can be installed earlier on in children's life (Benard).

Career Awareness in Elementary and Middle Schools

School Involvement

To reduce stereotypes commonly held in certain occupations Steinberg (1989) and Harter (1990) believe career awareness and educational programs must provide factual information about careers (as cited in Conroy, Scanlon & Kelsey, 1998). By an early age, children develop their likes and dislikes and what they can do along with

what others expect them to do, according to Super and Bohn (1970) (as cited in Conroy, Scanlon & Kelsey).

One strategy for the introduction to careers is the U.S. Department of Labor's School-to-Work format. The Department of Labor (2000, para. 1) explains School-to-Work strategies as "providing students with learning opportunities that integrate career awareness into classroom learning as well as educational activities that teach them to apply their academic knowledge in school-based, business and/or community service settings." The Department of Labor (2000) recommends activities at the elementary and middle school level to include field trips and job shadowing excursions.

Elementary School

In elementary school career education begins with the process of career awareness. The exposure to careers allows student knowledge to expand and a connection between careers and academic learning to be recognized (Brown, 1999). The creation of a classroom environment that is both academically strong and career savvy, is the main challenge to elementary school teachers today (Brown). The connection between the workplace and academics can be met, though, by using strategies such as,

integrating curriculum, establishing business-community partnerships and contextual learning experiences (Brown).

Middle School

The primary purpose of Middle School is to "support and counsel students as they further develop intellectual capabilities, cultivate social skills and define personal values" (National School-to-Work Learning and Information Center, 1997b, para. 2). Therefore, the opportunity to refocus programs towards proactive prevention, formulate parent-school collaborations and rethink student assessment practices can be realized while progressing towards the Educational Goals (U.S. Department of Education, 1992). With the adaptation of Resiliency Approach teaching Benard (1993, p. 15) maintains that "a sense of purpose and a belief in future, including goal direction, educational aspirations, achievement motivation, persistence, hopefulness, optimism and spiritual connectedness", will occur.

Integrated Curriculum

The State Academic Content Standards, Federal Acts and government mandates (SCANS, 1991; U.S. Department of Education, 1992; STWOA, 1994; PSAA, 1999) have made it almost impossible to introduce new curriculum into the

classroom. The only exception is if the curriculum provides an easy administration for the teacher, interests the students and meets the grade level standards in the core curricular subjects.

Beane (1998, p. 12) states the purpose of curriculum "should inspire our children, not to punish them". Fogarty and Stoehr (1991, para. 2) write, "integration as a curriculum design technique builds and reinforces both general and vocational education", with the most important factor being "the learner". The National School-to-Work Learning and Information Center (1996, para. 2) espouses the need for a "meaningfully integrated, experimentally grounded education that continually demonstrates to students how education applies to real life."

Summary

The literature important to the project was presented in Chapter Two. Information to successfully educate California youth and prepare them for future employment was discussed. Considerations of the educational process, teaching and learning strategies, along with characteristics of a positive learning environment were investigated. An introduction to integrated curriculum, career awareness in elementary and middle schools, state

content standards and federal mandates was detailed. Concerns about teacher stress and student participation were addressed. The correlation between student disruption and student understanding of the importance of education was established. The need for career education in elementary and middle school curriculum was presented.

CHAPTER THREE

METHODOLOGY

Introduction

Chapter Three documents the steps used in developing the project. Specifically, the population being served is presented. The process for the development of the integrated curriculum, along with content validation is included. An outline of curriculum specifics conveys an overview of the project. A summary of the chapter reiterates the process presented.

Population Served

This project was developed for elementary and middle school students in Moreno Valley Unified School District. The two schools that participated in the project were establishing school gardens at the time of implementation of the curriculum. The curriculum was designed with the students from Bear Valley Elementary and Mountain View Middle School taken into consideration. Faculty from both schools along with faculty from Valley View High School, University Cooperative Extension, master gardeners and the Career Development Department at Moreno Valley Unified School District were consulted regarding the design and implementation of the curriculum.

Curriculum Development

In this section the development process is reviewed and validation for the project is supported. Consideration of the State Content Standards, SCANS, agricultural careers and workability skills was given during the process of curriculum development.

Content Validation

The Moreno Valley Unified School District is comprised of a diverse population of cultures. Nineteen percent of the thirty-one thousand students are English Language Learners. The ethnic background of Bear Valley Elementary and Mountain View Middle School is fort-three percent Hispanic, thirty percent African American, twenty percent White and seven percent Asian and other ethnic groups. The mean score for second through eight grades in the STAR 9 test scores range from 571 to 682 with 700 considered the minimum passing score (Moreno Valley Unified School District, 2001a, 2001b).

With demographics slightly different than the ethnic backgrounds of the schools presented, the city of Moreno Valley is steeped in agricultural history. For one hundred years, before corporation, Moreno and surrounding towns grew exotic fruit trees and after the drought: grains and grapes. Moreno Valley still hosts the University of

Riverside's agricultural experimentation station and one third of the city is stilled zoned for agricultural purposes.

Once a year and within a thirty mile radius, three county fairs and two local fairs exhibit various aspects of agriculture. The University of Riverside and its extension offer courses in agriculture including biotechnology. The University of California Cooperative extension has a Master Gardner program along with other certification programs in the field of Agriculture.

The Future Farmers Association maintains there are three hundred and thirty seven employment opportunities in six areas of interest within the field of agriculture. Yet minority students are underrepresented in the area of agriculture (Talbert & Larke, 1995). Marinez & Ortiz de Montellano (1988) believe by encouraging cultural relevance in curriculum, especially mathematics and science, minority students will sense a connection and feel a greater degree of individual interest in those subjects.

Beane (1998, p.12) states the purpose of curriculum "should inspire our children, not to punish them." Fogarty and Stoehr (1991, para. 1) write, an integrated "curriculum design technique builds and reinforces both

general and vocational education", with the most important factor being "the learner". To reduce stereotypes commonly held in certain occupations, Steinberg (1989) and Harter (1990) believe career awareness and educational programs must provide factual information about careers (as cited in Conroy, Scanlon & Kelsey, 1998). By an early age, children develop their likes and dislikes and what they can do along with what others expect them to do, according to Super and Bohn (1970) (as cited in Conroy, Scanlon & Kelsey).

Curriculum Design

The National School-to-Work Learning and Information Center (1996, para. 2) describes integrated curriculum as "a meanfully integrated, experimentally grounded education that continually demonstrates to students how education applies to real life." The center recommends collaborative planning as a method of curriculum development. With that in mind, the following outline and curriculum were developed in joint meetings with faculty and staff from: Bear Valley Elementary and Mountain View Middle School Valley View High School, University Cooperative Extension, Master Gardeners and the Career Development Department at Moreno Valley Unified School District.

I. Introduction

A. Overview

B. Objective of project

II. Career Awareness and Workability Skills

A. Research/Inquiry

B. Letter writing

C. Interview

D. Resume

E. Portfolio

F. Journal Keeping

G. Documentation

H. Evaluation

I. Presentation

J. Assessment

III. Integrated Agriscience Curriculum

A. Introduction

B. Kindergarten

C. First Grade

D. Second Grade

E. Third Grade

F. Fourth Grade

G. Fifth Grade

H. Sixth Grade

I. Seventh Grade

J. Eighth Grade

IV. Thematic Curriculum

A. Potatoes

B. Corn

C. Wheat

D. Cotton

E. Grapes

F. Lettuce

G. Tomatoes

H. Seeds

I. Water conservation

J. Hydroponics

K. Composting

L. Beneficial Insects

M. Organic Gardening

V. Standards

A. State Content standards

1. core subject by grade

B. SCANS

VI. References

Summary

In this chapter the project was presented starting with the population served. Next the curriculum development process was described in three parts:

curriculum validation, curriculum design and an outline of the key areas of the project. Resources used during the development phase of the project include textbooks, manuals, articles, State Content Standards, SCANS and information from various participating partners in the project.

CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Included in Chapter Four is a presentation of the conclusions gleamed as a result of completing the project. Further, the recommendations extracted from the project are presented. Lastly, the Chapter concludes with a summary.

Conclusions

The conclusions extracted from the project follows.

1. Although there have been many enthusiastic participants for this project, the unforeseen occurred extending the project beyond integrated curriculum development: vandalism, lack of monetary funds, teacher transfers, year-round scheduling vs. traditional scheduling.
2. Student enthusiasm energized the project and teachers into overcoming some very difficult obstacles that jeopardized the implementation of the project.
3. Through brainstorming with the participants of the project adaptations for implementation of the project were made: Indoor gardening labs, A

resource/lab located in classrooms and alternative fundraising were developed.

Recommendations

The recommendations resulting from the project follows.

Select a project coordinator that will implement the following:

1. Establish teams of participants that include but do not solely consist of teachers on the same school schedule. This ensures garden maintenance throughout the year.
2. Have funding sources secured and a means of raising funds for emergencies planned.
3. Seek approval from school and district administration.
4. Present the concept and project to various community organizations in order to gain potential presenters and resources.
5. Invite parent participation through students showcase of work, weekend fundraising and after school events. Parents are a great resource for gardens and project volunteers.

6. Showcase student work through: plant sales, newsletter, classroom yearbook, newspaper articles, and community project.

Summary

Chapter Four reviewed the conclusions extracted from the project. Lastly, the recommendations derived from the project were presented.

APPENDIX

An

Integrated

Agriscience

Career Awareness

Curriculum

TABLE OF CONTENTS

INTRODUCTION

The National School-to-Work Learning Information Center describes integrated curriculum as "meanfully integrated, experimentally grounded education that continually demonstrates to students how education applies to real life" (1996, para. 2). This curriculum was developed to enhance student learning through research, inquiry, documentation, and experimentation. At every grade level, in any subject, the state academic standards can be achieved through the utilization of the thematic curriculum presented. No matter what subject is being studied, the history and careers behind agriculture can be explored through the garden.

The objective of this project is to present an integrated curriculum with a thematic design which incorporates the state content standards and SCANS, while allowing for teacher creativity and adaptation.

Each component of this curriculum can be adapted to the grade utilizing the format presented without jeopardizing the concept or integrity of the curriculum design. Although not all the content standards are used with every section, the standards obtained through the completion of this curriculum are listed in the following section.

The format presented in each section allows for teacher-guided inquiries to develop student voice and student research on topics presented. Integrated in each component are workability skills with the theme of agriculture and the garden. With the incorporation of several standards, students will be able to create presentations that are informative and relative to future careers.

SECTION ONE:

CAREER AWARENESS

Introduction

Objective:

To establish communication with an agricultural business and develop a presentation with information gained through the communication process.

Students will:

1) Research businesses in the agricultural area pertaining to gardens
2) Research address and contact person for business
3) Develop questions surrounding business
4) Write a letter of inquiry to contact person in the business researched
5) Ask for further opportunities of communication-possible classroom speaker
6) Develop Interview questions with regard to career opportunities, education needed, salary, benefits
7) Develop a resume
8) Create a portfolio
9) Create a journal
10) Document in the journal
11) Write an evaluation
12) Present information to class and develop display of project
13) Create a class quiz based on presentation material

Skills:

1) Research
   a. Research Agricultural businesses
   b. Research a contact person
   c. Develop questions
2) Write a letter
3) Interview Techniques
4) Resume
5) Portfolio
6) Journal
   a. Graphic Design
   b. Documentation
7) Evaluation
8) Presentation
9) Assessment

Research

Part One

Objective:

Research businesses in the agricultural area pertaining to gardens.

Material:

Telephone book, computer and Internet access, trade magazines, items with packaging.

Teacher:

1) Ask students where information for businesses can be found?

2) Lead students to discover the telephone book, Internet, addresses on packaging, and advertisement.

3) Decide on an area of student research (this can coincide with the life science component in the science framework).

4) Have students research the area decided upon.

Part Two

Objective:

Research the address and contact person for agricultural business chosen.

Material:

Student handbook, District Board Minutes, City URL, Computer with Internet access, telephone book.

Teacher:

1) Ask students if someone wanted to know about a business who would you ask?

2) Lead students to discover personnel managers, product managers, presidents, public relation officers and owners etc…you can relate this to the school environment (Board members, Superintendent, Principal, Assistant Principal counselors etc…).

3) Have students discover the person of importance at the business they have found, the person that is most likely to respond to a letter.

4) Write down name, address, email and fax information.

Part Three

Objective:

Develop questions surrounding the agricultural business selected.

Material:

Information from a agricultural business as an example.

Teacher:

1) Ask students what questions would they want to ask about the business?

2) Lead students to ask questions about the various employment opportunities and aspects of the business (i.e. -seed company: graphic artist, writer of script, packaging, seed development, technology used, sales department, advertisement, price development, marketing strategies etc...).

3) Have students write out questions and put them in order of importance.

Letter Writing

Objective:

Write a letter of inquiry to contact person in the business researched.

Material:

Information from research component, computer.

Teacher:

1) Ask students why we need to write letters?

2) Ask students about various letter types- friendship, business, thank you, complaint etc...

3) Lead students through the parts of a letter- letterhead, date, person written to, body of letter, salutation.

4) Have students compose a letter to the company.

5) Make sure students introduce themselves, explain reason for inquiry and if further communication is possible.

6) Students write rough draft.

7) Students write final draft.

Interview

Objective:

Develop interview questions with regard to career opportunities, education needed, salary, benefits.

Material:

Sample interview questions from a local business.

Teacher:

1) Ask students, why someone asks questions?

2) Ask students, where are places that questions are asked? School, work, store, friends, parents, children etc…

3) Ask students, what type of questions do people ask? Why, where, what, how, how much(directions, destination, explanation, price, understanding, clarifying).

4) Ask students, who asks questions? (police, doctor, parent, employer).

5) Ask students, what questions would they ask if they were applying for employment? (pay, education needed, hours, benefits, location, skills).

6) Lead students in a discussion about various questions they could ask when investigating a company for future employment.

7) Ask students to create interview questions they would ask a future employer.

8) Have students create questions they would ask a future employee.

Resume

Objective:

Develop a resume.

Material:

Sample resume (resume wizards can be found on a computer, the Internet, and/or career search books).

Teacher:

1) Explain what a resume is, using interview questions as a starting point. (Sometimes employees need to introduce themselves to potential employers before an interview can be scheduled; A resume is a good way to keep track of a person's accomplishments).

2) Introduce the parts of the resume(personal information, education, skills, work experience, vocational training, volunteer experience, extracurricular activities/interests, awards, certificates, references).

3) Depending on the grade level, each of these segments can be explained and practiced separately.

4) Have students create a resume. This can be done even with kindergarten.

5) Have students add to the resume each quarter and each year, as the student progresses their experiences grow and so do their skills.

Portfolio

Objective:

Create a Portfolio.

Material:

Sample of a portfolio (contact a high school department to have a student bring a sample of their Interdisciplinary portfolio or art portfolio. Note: this would be a good time for students to develop a question for the student to practice interviewing).

Teacher:

1) Ask students, if they wanted to show a specific assignment what would they use and why?

2) Ask students, if they had to prove they were learning what would they use?

3) Ask students, how would an employer find out if a future employee were as talented or skillful as they claim?

4) Give the definition of a portfolio and why people use them.

5) Ask students what they would put in their portfolio to show their talents. (Math papers, art work, spelling tests, pictures of them working on their projects).

6) Have students create a portfolio with samples of work that reflect the skills they listed on their resume.

7) Have students write an explanation why they picked the.

Journal

Objective:

Documentation/journalizing.

Material:

A Documentary film on agriculture or related subjects. Trade Magazines and art supplies and paper.

Teacher:

1) Ask students, what a documentary film is?

2) Ask students, why someone would want to document something?

3) Show a documentary film, relevant to grade level Social Science Standards.

4) Ask students, (after seeing a documentary) what is in a documentary?

5) Ask students to document a segment of the day, each student responsible for a different time segment.

6) Have students present their documentation in sequential, chronological order.

7) Explain what a journal is.

8) Have students create a journal with a unique cover that conveys self-expression or the area to be documented.

9) Have students observe and document their garden everyday or so and discuss the observed changes.

Evaluation

Objective:

Write an evaluation.

Material:

Evaluation form from the school or district, Dictionary, Thesaurus.

Teacher:

1) Use a dictionary and have students look up the word evaluation. (In a computer lab have them look for the definition).

2) Have students write out the definition.

3) Have students look in a thesaurus for synonyms.

4) Discuss with the students the reason a person is evaluated.

5) Ask what type of person is evaluated?

6) Ask students how people are evaluated.

7) Ask students, why people are evaluated?

8) Discuss the different evaluations (Likert, report cards, parent conference, IEP's, etc…).

9) Have students create an evaluation sheet incorporating some of the answers from the previous questions.

10) Have the students evaluate the teacher, or school.

Presentation

Objective:

Create a presentation about the agricultural business researched.

Material:

Poster board, Computer with clipart and Powerpoint (optional), art supplies student research on agricultural business.

Teacher:

1) Ask students to review the information they have gathered through their research and correspondence.

2) Ask students to write down the key points gathered.

3) Demonstrate an outline format to them.

4) Have students create an outline of the research.

5) Demonstrate how to display the information gathered and how to find pictures and create titles for the pictures.

6) Have students create their display boards.

Quiz

Objective:

Create a quiz from presentation material.

Material:

Student Presentation, sample quiz.

Teacher:

1) Ask students, why do teachers give quizzes?

2) Ask students, what is in a quiz?

3) Demonstrate how a quiz is developed.

4) Have students retrieve their outline and research from their project.

5) Have students create a quiz for their project.

6) Have students create an answer sheet.

Review of Career Awareness

Students will:

1) a. Research an area of agriculture and pick a business.

   b. Research a contact person for the chosen business.

   c. Develop questions about the business.

2) Write a letter to the business.

3) Develop interview questions.

4) Develop a resume.

5) Create a portfolio.

6) Create a journal.

7) Document in a journal.

8) Write an evaluation.

9) Create a presentation.

10) Create a quiz.

SECTION TWO:

INTERGRADED CURRICULUM

Introduction

The purpose of this section is to give teachers a foundation in which to integrate Academic Content Standards into the utilization of the garden. Section one compliments these components and can be adapted to the various grade levels using the themes introduced and investigating the businesses in the area suggested.

Kindergarten

Objective:

Introduce the garden and vegetables through the holiday of Thanksgiving

Material:

Book on Thanksgiving and pilgrims, potatoes or corn.

Teacher:

Introduction of holidays.

1) Ask what is a holiday?

2) Can any student name a holiday? (name all including religious holidays)

3) Why do we have holidays?

4) Are there different holidays? (Distinguish between religious, person and government holidays)

Activities:

1) Read a story about Thanksgiving.

2) Have students get in a circle:

   a. Have students count around the circle.

   b. Have a number of potatoes (about a third of the number of students).

   c. Have students count how many potatoes there are.

   d. Have students pass potatoes around the circle to music.

   e. When the music stops, have the students notice who has a potato and who does not.

   f. Then tell students this is all there is to eat for all the students.

g. Guide the students with potatoes to decide to share.

h. Ask how we can get more potatoes? (guide the students to answer-grow more).

3) Read or tell the students how the Native Americans taught the pilgrims how to grow food.

4) Investigate how potatoes grow and grow some in class in jars and pots (this information can be found on the Internet and in garden books).

5) Have students verbalize the changes that occur to the potato.

6) Make a chart about the potatoes growth.

Careers to Research:

Potato growers, food processing plants, packaging, labeling.

First Grade

Objective:

Students become aware of their community in the present and in the past, determine whether the community is or ever was agricultural and investigate what vegetables could grow in the community environment.

Material:

History of the community, climate of the area, seed packets, soil, clear plastic liter bottles, grow light if no windows.

Teacher:

1) Ask students to describe the community they live in.

2) Record their descriptions.

3) Invite a member of the City Council, Chamber of Commerce or City Manager to speak to students about the history of the community.

4) Invite a Master Gardner to speak about the climate and conditions for growing in the community (primarily the seasons for growing and types of vegetables for those seasons).

5) Have students find a book on gardens or a story with the garden incorporated into the story.

Activities:

1) Have students bring a clear plastic liter bottle from home (Ask colleagues to donate extra bottles).

   a. Carefully cut a three-sided opening half way up the side of bottle.

   b. Fill with planting soil for seeds just below opening.

   c. Lightly tap soil in place.

d. Select some bottles to be for seeds in season and others for seeds out of season.

e. Plant seeds according to directions on the seed packet.

f. Lightly moisten the soil.

g. Remove bottle cap.

h. Have students write a label for bottle with type of seed.

i. Keep soil damp to touch NOT soggy wet.

j. Put bottles in a window with good light or under a grow light.

2) Have the students record results and growing patterns of the bottle plants.

3) Investigate when plants are ready for transplanting.

4) Observe the plants and determine when the plant is ready for transplanting.

5) Invite the master gardener to return and help students to transplant the seedlings in the school garden.

6) Have the students continue to document the successes and failures of the seedlings.

7) When the vegetables start to ripen have students document each plants yield of vegetables.

a. Have students make a guess/estimate on the plants average yield.

b. Compare the various yields of plants sown.

c. Have the students determine what plants would grow best in their community and in which season the plants should be grown.

Careers to Research:

Horticulturist, Nurseryman, wholesale growers, local University/college Instructor, classes offered.

Second Grade

Objective:

Investigate people that have contributed to the agricultural industry and the well being of the workers. Start seeds and plants in various containers to observe root and growth patterns.

Material:

Seeds, soil, containers, plants for propagation, water, window with light or a grow light, computer with Internet access, Books on Cesar Chavez, Thomas Jefferson, George Washington.

Teacher:

1) Have students read on seed development.

2) Invite a Master Gardener to help in the classroom or a parent knowledgeable in growing plants.

Activities:

1) Have the students plant seeds and propagate plants (Ask for Master Gardeners to help).

   a. Students can tour the school campus and take cuttings from various plants.

   b. Plant the cuttings either in soil or water in a jar to encourage root growth.

   c. Have the students record directions for these procedures.

   d. Have the students observe and record the growth pattern for each plant.

2) If plants are baring fruit or vegetables have students compare a store bought vegetable with the cost of the vegetable grown.

   a. Have the students list the cost of soil, seeds, and container.

b. Then add all items for the total cost.

c. Divide the yield of the plant to determine the value of the classroom grown produce.

3) Have the students read or investigate in what capacity did Cesar Chavez, Thomas Jefferson and George Washington contribute to the agricultural industry.

a. Ask how we celebrate these individuals?

b. What is the difference between the holidays?

4) Have the students create a poster about the individuals and their contribution to agriculture.

Careers to Research:

Growers, farmers, wholesale food brokers, food processing, biotech companies, commodities broker.

Third Grade

Objective:

Investigate the history of the community and identify the local resources, discover the topography of the area and research the various manmade changes to the area. Determine the crops grown in the area past and present.

Materials:

Access to a library with computers with Internet access, soil and planting area.

Teacher:

1) Invite speakers that are knowledgeable in the history of the community.

2) Have students investigate the growing habits in various geographical areas.

3) Communicate with students in other countries about the food cultivation of their country.

4) Write a report with illustrations about the subjects investigated.

Activities:

Using geometric shapes:

1) Design and create a garden that is thematic to the various cultures represented in the classroom.

2) Design and create a garden that is conducive to the geographical area of the school.

3) Design and create a garden that needs to be adapted to survive in the geographical area.

4) Compare and contrast the various garden bed shapes:

   a. Identify the shapes used.

b. Which shapes work better than the other shapes and why?

c. Which shape has more growing area?

Careers to Research:

Landscape Architect, horticulturist, water department, biologist, geologist.

Fourth Grade

Objective:

Investigate and design a garden using information from the mission era. Test the soil around planned garden and create compost for amending the soil.

Material:

Books on California Missions and the crops that were grown for the missions. Soil test kits, graph paper, rulers, clear plastic bottles, worms luncheon waste from the campus cafeteria.

Teacher:

1) Have students investigate gardens of the California Missions.

2) Have students investigate vermi-composting (worms) and soil amendments.

3) Have students investigate soil composition and the type of soil needed for plant growth.

4) Invite a Master Gardener to help with the planning.

Activities:

1) Using graph paper plan an garden

   a. Go outside with a long tape measure and discuss length and space needed for a Mission garden.

   b. Inside discuss how to modify the measurements on translate them onto the graphing paper.

   c. Measure the space needed for movement between planting beds using desks to form aisles.

   d. Design a garden on the graph paper with ledger.

2) Take the soils testers outside and test the soil on the school grounds.

   a. Have students read the directions on how to use the soil testers.

   b. Add soil to the testers.

   c. Determine type of soil.

   d. Discuss what needs to be assed to the soil so it is compatible to growing plants.

3) Worm farms.

   a. Have students bring a clear plastic bottle to school.

   b. From the investigating the students have done regarding vermi-composting have students make a list of what is needed.

   c. Gather vegetables from the school garden and other needed components.

   d. Order some worms from the Internet.

   e. Make two bottles up one with worms the other without.

   f. Document the progress of both bottles.

   g. Predict the best composting method.

Careers to Research:

Landscape architect, geologist, horticulturist, botanist, historian, archeologist.

Fifth Grade

Objective:

Investigate the crops utilized by the pre-Columbian peoples, native peoples of North America and create a chart of natural crops and their natural growing cycle. Investigate the natural waterways utilized for growing purposes and how the rivers have been modified for present crop growth and development. Plant a garden with Native American plants used for food and medicinal purposes.

Material:

Geography maps past and present. Access to the Internet, small planter boxes, soil and Native American seeds.

Teacher:

1) Invite a geologist to speak about the rivers.

2) Have various Native American speakers and shamans talk about medicinal plants.

3) Invite a Natural path, and Nutritionist to speak on how plants are used today for medicine.

Activities:

1) Research plants of pre-Columbia and native peoples of North America.

   a. Discuss the plains, river, mountain, and forest regions.

   b. Investigate the crops that were grown in those regions.

   c. Investigate the crops grown in those regions today.

   d. Compare and contrast the past and present crop growth.

   e. Make a chart of both past and present using colors to represent crops.

2) Compare and contrast the natural waterways of the past to the modified rivers of today.

   a. Look at a Louis and Clark Map of rivers.

   b. Compare their map to a map from the nineteenth century.

   c. Compare those two maps and to a current map.

   d. What is the difference?

   e. How have the rivers been modified?

   f. Investigate the China lake, Mono lake and Los Angeles water district.

   g. Write a report on the consequences of river modification.

3) Investigate the medicinal plants of the Indigenous People.

   a. What are medicinal plants?

   b. How are they used today?

   c. What plants did the Native Americans use?

   d. How did they use those plants?

   e. Can those plants be grown today?

   f. Create a Native American garden?

   g. Order plants.

   h. Have a Master Gardener come in and help plant the garden.

Careers to Research:

Geologist, archeologist, botanist, biologist, historian, topographer, anthropologist.

Sixth Grade

Objective:

Develop a map and chart of the ancient civilizations. Include the crops and innovations of each civilization and create a timeline to the inventions of today.

Material:

Internet and computer access maps of the world and chart/graphing paper.

Teacher:

1) Invite an archeologist to speak about crops and food of the ancients.

2) Invite a Master Gardener to help build the garden.

3) Have students investigate Ancient civilizations of Rome, Greece, Egypt, and China.

4) Have students investigate the crops and innovations of the civilization.

5) Compare and contrast the civilizations document the differences and similarities.

Activities:

1) Develop a chart with planting seasons and crops for each season of the ancient civilization.

2) Develop a chart with innovations from each ancient civilization.

3) Plan a garden as if the school was an ancient civilization.

   a. Ask, what material would be used to build the garden?

   b. Ask, how would the students bring water to the garden?

c. Where would the ancients get seeds?

d. What crops were grown in the summer?

e. Actually build a garden as the ancients.

Careers to Research:

Historian, Landscape architect, masonary, archeologist, anthropologist.

Seventh Grade

Objective:

Develop a map and chart of the Medieval age civilizations. Include the crops and innovations of each civilization and create a timeline to the inventions of today.

Material:

Internet and computer access maps of the world and chart/graphing paper.

Teacher:

1) Invite an archeologist to speak about crops and food of the medieval age.

2) Invite a Master Gardener to help build the garden.

3) Have students investigate medieval age civilizations of Japan, Europe, Africa and China.

4) Have students investigate the crops and innovations of the civilization.

5) Compare and contrast the civilizations document the differences and similarities.

Activities:

1) Develop a chart with planting seasons and crops for each season of the medieval civilization.

2) Develop a chart with innovations from each medieval civilization.

3) What was the measurement used in crop sales?

4) Plan a garden as if school was in medieval civilization.

   a. Ask, What material would be used to build the garden?

b. Ask, how would the students bring water to the garden?

c. Where would the medieval get seeds?

d. What crops were grown in the summer?

e. Actually build a garden as in the medieval ages.

5) Investigate the spices and tea route of the medieval age.

6) Investigate how tea is grown.

7) Where are spices grown?

8) Grow an herbal and spice garden.

Careers to Research:

Historian, Landscape architect Tea grower, archeologist, anthropologist, import/export businesses.

Eighth Grade

Objective:

Develop a map and chart of the Mesoamerican civilizations. Include the crops and innovations of each civilization and create a timeline to the inventions of today.

Material:

Internet and computer access maps of the world and chart/graphing paper.

Teacher:

1) Invite an archeologist to speak about crops and food of the ancients.

2) Invite a Master Gardener to help build the garden.

3) Have students investigate civilizations of the Mayan, Incan and Aztec.

4) Have students investigate the crops and innovations of the civilizations.

5) Compare and contrast the civilizations document the differences and similarities.

Activities:

1) Develop a chart with planting seasons and crops for each season of the Mesoamerican civilization.

2) Develop a chart with innovations from each Mesoamerican civilization.

3) Plan a garden as if school was in a Mesoamerican civilization.

   a. Ask, what material would be used to build the garden?

   b. Ask, how would the students bring water to the garden?

c. Where would the Mesoamericans get seeds?

d. What crops were grown in the summer?

e. Actually build a garden as the Mesoamericans.

4) Write a folklore story similar to one of the Mesoamericans, but use the school garden.

5) What were the measurement systems used by the civilizations of Mesoamerica?

Careers to Research:

Historian, Landscape architect, masonry, archeologist, anthropologist, mathematician.

SECTION THREE:

THEMATIC CURRICULUM

Introduction

Section three is the thematic section and can be used by itself or with the career awareness section. Each segment features a different vegetable or component of the agricultural business. The curriculum is designed to allow for teacher creativity and adaptability. It contains an objective, materials needed, teacher-guided questions, suggested activities and careers to research for the career awareness component. Standards for all three sections are listed in section four.

Potato

Objective:

Discover the history, growing patterns, uses for and careers behind the potato.

Material:

Computer access, potatoes, plastic bag, straw, jar, long skewers, soil and planting area.

Teacher:

1) What is a potato?

2) How many different types of potatoes are there?

3) How are potatoes grown?

4) What can you do with a potato? (Chips, French fry, baked etc…)

Activities:

1) Have students research the history of the potato (Notice the different varieties of potatoes is associated with the Inca civilization).

2) Have students research how potatoes are grown. (There is a connection between the potato famine in Ireland and crop selection, rotation, lack of variety) Key: Did the Incas have a potato blight?

3) Have students grow potatoes in a variety of methods they have researched.

   a. Document the differences and yields.

   b. Do different varieties need different conditions?

4) Then students can do a price analysis between buying processed food and food prepared by the person.

a. Have students compare Frozen French fries to a potato sliced in sections the size of the frozen fries.

b. How many potatoes does it take to fill the bag of frozen French fries?

c. How much do frozen fries cost?

d. How much does it cost to buy a comparable amount of fresh potatoes and make home made fries?

e. Which is more economical?

f. Which is more nutritious?

5) What other ethnic groups use the potato as a food staple?

Careers to Research:

Potato growers, frozen food manufacturers, potato chip companies, bio research/technology companies (potato blight, harmful insects).

Corn

Objective:

Discover the history, growing patterns, uses for and careers behind corn.

Material:

Computer access, corn, soil and planting area.

Teacher:

1) What is corn?

2) How many different types of corn are there?

3) How is corn grown?

4) What can you do with a corn? (Eat it, animal feed, ethanol, recycle-replacement for plastic, sugar replacement, chips)

Activities:

1) Have students research the history of corn (Notice the different varieties of corn and its association with the Meso-American and Native American civilizations, also investigate folklore).

2) Have the students research how corn is grown.

3) Have students grow a variety of corn, that they have researched.

   a. Document the differences and yields.

   b. Do different varieties need different conditions?

4) Students can do a price analysis between buying processed food and food prepared by the person.

5) Have the students compare Frozen corn to a corn-on-the-cob sliced off the cob similar to the frozen corn.

6) How many cobs of corn does it take to fill the bag of frozen corn?

7) How much does frozen corn cost?

8) How much does it cost to buy a comparable amount of fresh corn and make it at home?

9) Which is more economical?

10) Which is more nutritious?

11) What other ethnic groups use corn as a food staple?

Careers to research:

Corn growers, frozen food manufacturers, Ethanol manufacturers, and bio-research/technology companies (Genetically engineered corn, harmful insects, diseases).

Wheat

Objective:

Discover the history, growing patterns, uses for and careers behind wheat.

Material:

Computer access, Wheat or grains, grinder, bread-making machine.

Teacher:

1) What is wheat?

2) How many different types of wheat is there?

3) How is wheat grown?

4) What can you do with wheat? (Bread, pasta, etc…)

Activities:

1) Have students research the history of wheat (Notice the different varieties of wheat and its association with the ancient Egyptian civilizations).

2) Have the students research how wheat is grown (There is a connection between the wheat shortage/famine in Soviet Union and crop selection/rotation/lack of variety, world economics).

3) Have students investigate a variety of methods of harvesting wheat.

   a. Document the differences in various countries and the machinery used for harvest.

   b. Do different varieties need different conditions?

4) Have students learn a method of harvest and learn the measurement used to sell the wheat.

5) If available, students can learn the process of grinding wheat to flour [(This could be a group project of research, students could invite a manufacturer to participate) (flour mills, bakeries, homefarm)].

6) Students can do a price analysis between buying processed bread and bread prepared by the person.

7) Have students compare store bought bread to bread made at home.

8) How long does it take for the preparation of the bread making?

9) How much does a loaf of bread cost?

10) How much does it cost to make bread (include the cost of machine, do a make down according to estimated loaf yield)?

11) Which is more economical?

12) Which is more nutritious?

13) What other ethnic groups use wheat to make bread as a food staple?

Careers to research:

Wheat growers, bakeries, pasta manufacturers, bio research/technology companies (wheat diseases, harmful insects), and commodities market.

Cotton

Objective:

Discover the history, growing patterns, uses for and careers behind cotton.

Material:

Computer access, cotton, soil and planting area.

Teacher:

1) What is cotton?

2) How was it discovered?

3) What countries use cotton? [India, (Ghandi) China, United States etc]

4) Are there different types of cotton?

5) How is cotton grown?

6) What can you do with cotton? (Clothing etc…)

7) Is cotton blended with other material?

8) How is it blended?

9) How has farm machinery improved to harvest cotton?

Activities:

1) Have students research the history of cotton (Important aspects-Slavery, Ghandi/India-Eli Whitney, John Deere).

2) Have students research how cotton is grown (There is a connection between the cotton and self rule).

3) Have students compare US/slavery with India/self-rule.

4) Have students grow cotton.

5) Have students have and manually separate seed from pod and fiber.

   a. Document the struggle.

   b. Discuss other methods of seed separation.

   c. Investigate cotton gin and its function.

6) Then students can do a price analysis between harvesting cotton and buying cotton on the commodities market.

   a. Have students compare yield of one plant, compute number of plants needed for a bale of cotton.

   b. How much land would be needed to produce the bale of cotton.

   c. How much cotton does it take to produce a Tee shirt?

   d. How long does it take to harvest cotton by hand versus by machinery?

   e. What method is more efficient?

7) Which is more economical?

Careers to research:

Cotton growers, clothing manufacturers, farm equipment companies, bio research/technology companies (cotton blends, harmful insects).

Grapes

Objective:

Discover the history, growing patterns, uses for and careers behind grapes.

Material:

Computer access, planting area against a wall, grape plants, material on Cesar Chavez, farm worker movement, commodities market.

Teacher:

1) What are grapes?

2) How many different types of grapes are there?

3) How are grapes grown?

4) What can you do with grapes? (Juice, eat them, wine, vitamins? etc…)

5) Where are grapes grown in California? Other countries?

6) What is an export?

7) What is an import?

Activities:

1) Have students research the history of the grapes.

2) Have students research how grapes are grown.

3) Document the different grapes, uses, yields and countries/regions where they are grown. Do different varieties need different conditions?

4) Have students investigate how are we able to have grapes to eat year -round?

   a. Have students compare import grapes with grapes grown in California.

b. What are the different regulations imposed, insecticides, labor issues?

c. Are there price differences?

5) Who is Cesar Chavez?

a. What movement did he organize?

b. Why?

c. What did he help change?

d. What changes could still be made?

6) What other ethnic groups grow grapes?

Careers to research:

Grape growers, frozen food manufacturers, juice companies, import/export companies, wineries, bio research/technology companies (harmful insects).

Lettuce

Objective:

Discover the history, growing patterns, uses for and careers behind the lettuce.

Material:

Computer access, lettuce seeds, containers, grow lights, soil and planting area.

Teacher:

1) What is lettuce?

2) How many different types of lettuce are there?

3) How is lettuce grown?

4) What can you do with lettuce? (Salad)

5) How is lettuce packaged?

Activities:

1) Have students research the history of the lettuce.

2) Have students research how lettuce is grown. What weather conditions are needed?

   a. What season is lettuce planted and grown?

   b. If lettuce needs a certain season and weather to grow, how can the markets carry it year-round?

3) Have students grow lettuce in a variety of methods they have researched (Indoors under grow lights, outdoors in the ground, and in containers.).

   a. Document the differences and yields.

   b. Do different varieties need different conditions?

c. Then students can do a price analysis between buying processed salad and salad prepared by the person.

4) Have students compare packaged salad/lettuce to a lettuce sliced in sections the size of the packaged lettuce.

5) How many lettuce plants does it take to fill the bag of salad?

6) How much does packaged salad cost?

7) How much does it cost to buy a comparable amount of fresh lettuce and make home made salad?

8) Which is more economical?

9) Which is more nutritious?

10) What insects and diseases can harm lettuce?

a. What preventative measures are used to prevent damage through disease and insects?

b. Are there alternatives to insecticides and herbicides?

c. Are they as effective?

d. What is organic farming?

Careers to research:

Lettuce growers, food packaging and processing manufacturers, organic farmers, bio research/technology companies (disease control, harmful insects), beneficial insects.

Tomatoes

Objective:

Discover the history, growing patterns, uses for and careers behind tomatoes.

Material:

Computer access, tomatoes seeds and plants, containers, soil and planting area.

Teacher:

1) What are tomatoes?

2) How many different types of tomatoes are there?

3) How are tomatoes grown?

4) What can you do with tomatoes? (Fresh, canned, sauce, salad dressing etc…)

5) What is a business enterprise?

Activities:

1) Have students research the history of tomatoes (Notice there was a controversy about tomatoes and if they are harmful).

   a. Have students research how tomatoes are grown.

   b. What diseases and harmful insects are tomatoes prone to get?

2) Have students grow tomatoes in a variety of methods they have researched.

   a. Document the differences and yields.

   b. Do different varieties need different conditions?

3) How do you prepare and process tomatoes?

4) Then students can do a price analysis between buying processed tomatoes and tomatoes prepared by the person.

5) Have students compare canned sauce to a tomato sauce prepared in class (ask the high school advanced foods class or a culinary academy, for help).

6) How many tomatoes does it take to make the sauce?

   a. What else is added? What supplies are needed?

   b. Special conditions?

7) How much does canned sauce cost?

8) How much does it cost to buy a comparable amount of fresh tomatoes and/or grow the tomatoes at home?

9) Which is more economical?

10) Which is more nutritious?

11) What would you need to develop a business to sell tomatoes sauce?

12) What other schools use the tomato and or the garden as a business enterprise? How did they get started?

13) Which food label donates its profits to charity?

Careers to research:

Tomato growers, process plants, canning plants, small business bureau, bio research/technology companies (disease, harmful insects) organic growers.

Seeds

Objective:

Discover the history, growing patterns, uses for and careers behind the seeds.

Material:

Computer access, several seed packages from different seed companies, art supplies, envelops.

Teacher:

1) What is a seed packet?

2) How many different types of seeds are there?

3) How are seeds grown and gathered?

4) How do you know what is in the packet?

5) How do you know when to plant the seeds?

6) What is germination?

Activities:

1) Have students research the history of seed packaging (Notice the different parts to packaging, art work, seed count and development, growing season and growing directions).

2) Have students research how seeds are produced.

3) Have students collect seeds from plants left after harvest.

   a. Have students draw a picture of the plant in flower or vegetable ready for harvest.

   b. After picture is approved, transfer the picture to the envelope by photocopy, scanning or re-drawing.

   c. Write a description of the plant, growing directions and other important information.

d. With the help of a graphic artist, organize the written type so it fits onto the envelope. Create and fill the seed packet.

e. Evaluate time and supplies to determine price of seed packet.

f. How many plants does it take to fill a packet?

g. How many plants do large seed packet producers need to keep the cost down to its current price?

Careers to research:

Seed producers, seed companies, graphic artists, packaging companies, envelope manufacturers, bio research/technology companies (genetic engineering, patents).

Water Conservation

Objective:

Discover the history of, uses for and careers behind water conservation.

Material:

Computer access, water access, maps of watersheds.

Teacher:

1) What is water conservation?

2) Where does the water in the area come from?

3) How is water collected and stored?

4) What do we use water for?

5) Is there different water and different uses for that water?

Activities:

1) Have students research water conservation. Have students research the Roman Empire, concrete, irrigation canals and waterways.

2) Have students research natural plants and their water needs for the area in which the students live.

   a. Then students can do a cost analysis between natural plants and growing plants not in their natural habitat.

   b. How is water priced?

   c. Can people save water where they live?

   d. How?

   e. Research various conservation methods, grey water, etc….

3) Which is economical to conserve?

4) What areas in the United States have water shortages? How are the water shortages addressed?

5) What ethnic groups/countries have water shortages? How do they strive to conserve their resource?

Careers to research:

Geologists, Civil engineers, water and water processing companies, bio research/technology companies (clean water processing), environmentalist.

Hydroponics

Objective:

Discover the history, growing patterns, uses for and careers behind the hydroponics.

Material:

Computer access, jars, long skewers, soil and planting area.

Teacher:

1) What does hydroponics mean?

2) How is hydroponics used? How many different methods are there?

3) Can vegetables be grown hydroponically?

4) What else is grown in the water? (Fish, kelp, shellfish, plankton)

Activities:

1) Have students research harvesting the ocean. What nations use kelp as food and compost/soil amendment?

2) Have students research fish farms.

3) What are water plants? Can the plants be harvested for food?

4) Have students grow plants in a variety of methods they have researched.

   a. Can gardens be grown hydroponically?

   b. Investigate hydroponic gardens?

5) Are hydroponic gardens economical?

6) What other ethnic groups and countries use hydroponics as a means for growing food?

7) Investigate NASA, the space station and the food source for the station.

Careers to research:

Water plant growers, hydroponic manufacturers, fish farms, Fish and Wildlife agency, bio-research/technology companies.

Composting

Objective:

Discover the history, uses for and careers behind composting.

Material:

Computer access, food scraps (no dairy and animal scrapes), plastic bag or jar, soil and planting area.

Teacher:

1) What is compost?

2) How many different types of composting methods are there?

3) How is compost packaged?

4) What can you do with compost?

5) What are nutrients?

6) How do you test the condition of the soil?

Activities:

1) Have students research the composting and the different methods of soil enhancement.

2) Investigate how and why we know soil needs to be amended.

   a. What are alkaline and phosphate and how are they used?

   b. How do they react to the soil?

   c. Which plants need what additives?

   d. How do you test for the need for the additives?

3) Have students research soil testing methods.

4) Have students construct and make their own compost using methods they have researched.

   a. Document the differences and yields/time for decomposing.

   b. Do different methods need different conditions?

5) Then students can do a price analysis between buying compost and soil amendments and creating their own.

6) Have students start a worm farm.

7) How much do worms cost?

8) How much does it cost to buy a comparable amount of compost to that compost made by worms?

9) Which is more economical?

10) What other countries reuse and recycle their food waste?

Careers to research:

Waste management, compost manufacturers, soil test companies, bio research/ technology companies, worm farms environmentalist, and ecologists.

Beneficial Insects

Objective:

Discover beneficial insects, uses for and careers behind beneficial insects.

Material:

Computer access, and books on insects.

Teacher:

1) What are beneficial insects?

2) How many different types of beneficial insects are there?

3) How are these insects helpful?

4) How can you get these insects?

Activities:

1) Have students research the pattern of harmful versus beneficial insects.

2) Have students research how these beneficial insects are produced.

   a. Name the most popular beneficial insects.

   b. Are butterflies beneficial?

   c. Can insects be used instead of insecticide?

   d. How are the genetically engineered plants affecting the insect population?

3) What are the effects of using insecticide and herbicides to the environment?

4) How do other countries utilize beneficial insects?

5) Which country is the most environmentally friendly?

6) Which country is the largest polluter?

Careers to research:

Insect farms, insecticide and herbicide manufacturers, and bio research/technology companies (disease, genetically engineered plants, harmful insects).

Organic gardening

Objective:

Discover the history, growing patterns, uses for and careers behind organic gardening.

Material:

Computer access, soil and planting area.

Teacher:

1) What is organic gardening?

2) How many different types gardening are there?

3) How are plants grown in an organic garden?

4) Why plants organically?

Activities:

1) Have students research the history of the organic gardening.

2) Where can consumers purchase organic vegetables?

3) Have students grow two different plots one organically grown the other using traditional methods.

   a. Document the differences and yields.

   b. Then students can do a price analysis between buying organic food and food produced insecticides and herbicides.

4) Which is more economical?

5) Which is more nutritious?

6) Have students create a chart with helpful hints on growing organic gardens.

Careers to research:

Organic growers, food manufacturers, bio research/ technology companies, environmentalist, ecologist, and nutritionists.

SECTION FOUR:

STATE CONTENT STANDARDS

English-Language Arts

Kindergarten

Reading

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students know about letters, words, and sounds. They apply this knowledge to read simple sentences.

2.0 Reading Comprehension

Students identify the basic facts and ideas in what they have read, heard, or viewed. They use comprehension strategies (e.g., generating and responding to questions, comparing new information to what is already known).

3.0 Literary Response and Analysis

Students listen and respond to stories based on well-known characters, themes, plots, and settings.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students listen and respond to oral communication. They speak in clear and coherent sentences.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver brief recitations and oral presentations about familiar experiences or interests, demonstrating command of the organization and delivery strategies outlined in Listening and Speaking Standard 1.0.

First grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students understand the basic features of reading. They select letter patterns and know how to translate them into spoken language by using phonics, syllabication, and word parts. They apply this knowledge to achieve fluent oral and silent reading.

2.0 Reading Comprehension

Students read and understand grade-level-appropriate material. They draw upon a variety of comprehension strategies as needed (e.g., generating and responding to essential questions, making predictions, comparing information from several sources.

Literary Response and Analysis

Students read and respond to a wide variety of significant works of children's literature. They distinguish between the structural features of the text and the literary terms or elements (e.g., theme, plot, setting, characters).

Writing

1.0 Writing Strategies

Students write clear and coherent sentences and paragraphs that develop a central idea. Their writing shows they consider the audience and purpose. Students progress through the stages of the writing process (e.g., prewriting, drafting, revising, editing successive versions).

2.0 Writing Applications (Genres and Their Characteristics)

Students write compositions that describe and explain familiar objects, events, and experiences. Student writing demonstrates a command of standard American English and the drafting, research, and organizational strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students listen critically and respond appropriately to oral communication. They speak in a manner that guides the listener to understand important ideas by using proper phrasing, pitch, and modulation.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver brief recitations and oral presentations about familiar experiences or interests

that are organized around a coherent thesis statement. Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Second Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students understand the basic features of reading. They select letter patterns and know how to translate them into spoken language by using phonics, syllabication, and word parts. They apply this knowledge to achieve fluent oral and silent reading.

2.0 Reading Comprehension

Students read and understand grade-level-appropriate material. They draw upon a variety of comprehension strategies as needed (e.g., generating and responding to essential questions, making predictions, comparing information from several sources) including a good representation of grade-level-appropriate narrative and expository text (e.g., classic and contemporary literature, magazines, newspapers, online information).

3.0 Literary Response and Analysis

Students read and respond to a wide variety of significant works of children's literature. They distinguish between the structural features of the text and the literary terms or elements (e.g., theme, plot, setting, characters).

Writing

1.0 Writing Strategies

Students write clear and coherent sentences and paragraphs that develop a central idea. Their writing shows they consider the audience and purpose. Students progress through the stages of the writing process (e.g., prewriting, drafting, revising, editing successive versions).

2.0 Writing Applications (Genres and Their Characteristics)

Students write compositions that describe and explain familiar objects, events, and experiences. Student writing demonstrates a command of standard American English and the drafting, research, and organizational strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students listen critically and respond appropriately to oral communication. They speak in a manner that guides the listener to understand important ideas by using proper phrasing, pitch, and modulation.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver brief recitations and oral presentations about familiar experiences or interests that are organized around a coherent thesis statement. Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Third Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students understand the basic features of reading. They select letter patterns and know how to translate them into spoken language by using phonics, syllabication, and word parts. They apply this knowledge to achieve fluent oral and silent reading.

2.0 Reading Comprehension

Students read and understand grade-level-appropriate material. They draw upon a variety of comprehension strategies as needed (e.g., generating and responding to essential questions, making predictions, comparing information from several sources

3.0 Literary Response and Analysis

Students read and respond to a wide variety of significant works of children's literature.

They distinguish between the structural features of the text and literary terms or elements (e.g., theme, plot, setting, characters).

Writing

1.0 Writing Strategies

Students write clear and coherent sentences and paragraphs that develop a central idea. Their writing shows they consider the audience and purpose. Students progress through the stages of the writing process (e.g., prewriting, drafting, revising, editing successive versions).

2.0 Writing Applications (Genres and Their Characteristics)

Students write compositions that describe and explain familiar objects, events, and experiences. Student writing demonstrates a command of standard American English and the drafting, research, and

organizational strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students listen critically and respond appropriately to oral communication. They speak in a manner that guides the listener to understand important ideas by using proper phrasing, pitch, and modulation.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver brief recitations and oral presentations about familiar experiences or interests that are organized around a coherent thesis statement. Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and

Fourth Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students understand the basic features of reading. They select letter patterns and know how to translate them into spoken language by using phonics, syllabication, and word parts. They apply this knowledge to achieve fluent oral and silent reading.

2.0 Reading Comprehension

Students read and understand grade-level-appropriate material. They draw upon a variety of comprehension strategies as needed (e.g., generating and responding to essential questions, making predictions, comparing information from several sources, including a good representation of grade-level-appropriate narrative and expository text (e.g., classic and contemporary literature, magazines, newspapers, online information).

3.0 Literary Response and Analysis

Students read and respond to a wide variety of significant works of children's literature. They distinguish between the structural features of the text and the literary terms or elements (e.g., theme, plot, setting, characters).

Writing

1.0 Writing Strategies

Students write clear, coherent sentences and paragraphs that develop a central idea. Their writing shows they consider the audience and purpose. Students progress through the stages of the writing process (e.g., prewriting, drafting, revising, editing successive versions).

2.0 Writing Applications (Genres and Their Characteristics)

Students write compositions that describe and explain familiar objects, events, and experiences. Student writing demonstrates a command of standard American English and the drafting, research, and organizational strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students listen critically and respond appropriately to oral communication. They speak in a manner that guides the listener to understand important ideas by using proper phrasing, pitch, and modulation.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver brief recitations and oral presentations about familiar experiences or interests that are organized around a coherent thesis statement. Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Fifth Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students use their knowledge of word origins and word relationships, as well as historical and literary context clues, to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words.

2.0 Reading Comprehension (Focus on Informational Materials)

Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose.

3.0 Literary Response and Analysis

Students read and respond to historically or culturally significant works of literature. They begin to find ways to clarify the ideas and make connections between literary works.

Writing

1.0 Writing Strategies

Students write clear, coherent, and focused essays. The writing exhibits the students' awareness of the audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.

2.0 Writing Applications (Genres and Their Characteristics)

Students write narrative, expository, persuasive, and descriptive texts of at least 500 to 700 words in each genre. Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and

interests of the audience. They evaluate the content of oral communication.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver well-organized formal presentations employing traditional rhetorical strategies (e.g., narration, exposition, persuasion, description). Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Sixth Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students use their knowledge of word origins and word relationships, as well as historical and literary context clues, to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words.

2.0 Reading Comprehension (Focus on Informational Materials)

Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose.

3.0 Literary Response and Analysis

Students read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They clarify the ideas and connect them to other literary works.

Writing

1.0 Writing Strategies

Students write clear, coherent, and focused essays. The writing exhibits students' awareness of the audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.

2.0 Writing Applications (Genres and Their Characteristics)

Students write narrative, expository, persuasive, and descriptive texts of at least 500 to 700 words in each genre. Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver well-organized formal presentations employing traditional rhetorical strategies (e.g.,

narration, exposition, persuasion, description). Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Seventh Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students use their knowledge of word origins and word relationships, as well as historical and literary context clues, to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words.

2.0 Reading Comprehension (Focus on Informational Materials)

Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose.

3.0 Literary Response and Analysis

Students read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They clarify the ideas and connect them to other literary works. The selections in

Writing

1.0 Writing Strategies

Students write clear, coherent, and focused essays. The writing exhibits students' awareness of the audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.

2.0 Writing Applications (Genres and Their Characteristics)

Students write narrative, expository, persuasive, and descriptive texts of at least 500 to 700 words in each genre. The writing demonstrates a command of standard American English and the research, organizational, and drafting strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to the grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. Students evaluate the content of oral communication.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver well-organized formal presentations employing traditional rhetorical strategies (e.g., narration, exposition, persuasion, description). Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Eighth Grade

1.0 Word Analysis, Fluency, and Systematic Vocabulary Development

Students use their knowledge of word origins and word relationships, as well as historical and literary context clues, to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words.

2.0 Reading Comprehension (Focus on Informational Materials)

Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose. The selections in

3.0 Literary Response and Analysis

Students read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They clarify the ideas and connect them to other literary works.

Writing

1.0 Writing Strategies

Students write clear, coherent, and focused essays. The writing exhibits students' awareness of audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.

2.0 Writing Applications (Genres and Their Characteristics)

Students write narrative, expository, persuasive, and descriptive essays of at least 500 to 700 words in each genre. Student writing demonstrates a command of standard American English and the research,

organizational, and drafting strategies outlined in Writing Standard 1.0.

Written and Oral

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1.0 Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1.0 Listening and Speaking Strategies

Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver well-organized formal presentations employing traditional rhetorical strategies (e.g., narration, exposition, persuasion, description). Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

Math

Kindergarten

1.0 Students understand the relationship between numbers and quantities (i.e., that a set of objects has the same number of objects in different situations regardless of its position or arrangement):

2.0 Students understand and describe simple additions and subtractions:

3.0 Students use estimation strategies in computation and problem solving that involve numbers that use the ones and tens places:

Algebra and Functions

1.0 Students sort and classify objects:

Measurement and Geometry

1.0 Students understand the concept of time and units to measure it; they understand that objects have properties, such as length, weight, and capacity, and that comparisons may be made by referring to those properties:

2.0 Students identify common objects in their environment and describe the geometric features:

Statistics, Data Analysis, and Probability

1.0 Students collect information about objects and events in their environment:

Mathematical Reasoning

1.0 Students make decisions about how to set up a problem:

2.0 Students solve problems in reasonable ways and justify their reasoning:

First Grade

1.0 Students use number sentences with operational symbols and expressions to solve problems:

Measurement and Geometry

1.0 Students use direct comparison and nonstandard units to describe the measurements of objects:

2.0 Students identify common geometric figures, classify them by common attributes, and describe their relative position or their location in space:

Statistics, Data Analysis, and Probability

1.0 Students organize, represent, and compare data by category on simple graphs and charts:

2.0 Students sort objects and create and describe patterns by numbers, shapes, sizes, rhythms, or colors:

Mathematical Reasoning

1.0 Students make decisions about how to set up a problem:

2.0 Students solve problems and justify their reasoning:

3.0 Students note connections between one problem and another.

Second Grade

3.0 Students model and solve simple problems involving multiplication and division:

4.0 Students understand that fractions and decimals may refer to parts of a set and parts of a whole:

5.0 Students model and solve problems by representing, adding, and subtracting amounts of money:

6.0 Students use estimation strategies in computation and problem solving that involve numbers that use the ones, tens, hundreds, and thousands places:

Algebra and Functions

1.0 Students model, represent, and interpret number relationships to create and solve problems involving addition and subtraction:

Measurement and Geometry

1.0 Students understand that measurement is accomplished by identifying a unit of measure, iterating (repeating) that unit, and comparing it to the item to be measured:

2.0 Students identify and describe the attributes of common figures in the plane and of common objects in space:

Statistics, Data Analysis, and Probability

1.0 Students collect numerical data and record, organize, display, and interpret the data on bar graphs and other representations:

2.0 Students demonstrate an understanding of patterns and how patterns grow and describe them in general ways:

Mathematical Reasoning

1.0 Students make decisions about how to set up a problem:

2.0 Students solve problems and justify their reasoning:

3.0 Students note connections between one problem and another.

Third Grade

1.0 Students choose and use appropriate units and measurement tools to quantify the properties of objects:

2.0 Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems:

Statistics, Data Analysis, and Probability

1.0 Students conduct simple probability experiments by determining the number of possible outcomes and make simple predictions:

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

2.0 Students use strategies, skills, and concepts in finding solutions:

3.0 Students move beyond a particular problem by generalizing to other situations:

Fourth grade

1.0 Students use and interpret variables, mathematical symbols, and properties to write and simplify expressions and sentences:

2.0 Students know how to manipulate equations:

Measurement and Geometry

1.0 Students understand perimeter and area:

2.0 Students use two-dimensional coordinate grids to represent points and graph lines and simple figures:

3.0 Students demonstrate an understanding of plane and solid geometric objects and use this knowledge to show relationships and solve problems:

Statistics, Data Analysis, and Probability

1.0 Students organize, represent, and interpret numerical and categorical data and clearly communicate their findings:

2.0 Students make predictions for simple probability situations:

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

2.0 Students use strategies, skills, and concepts in finding solutions:

3.0 Students move beyond a particular problem by generalizing to other situations:

Fifth Grade

Measurement and Geometry

1.0 Students understand and compute the volumes and areas of simple objects:

2.0 Students identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures:

Statistics, Data Analysis, and Probability

1.0 Students display, analyze, compare, and interpret different data sets, including data sets of different sizes:

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

2.0 Students use strategies, skills, and concepts in finding solutions:

3.0 Students move beyond a particular problem by generalizing to other situations:

Sixth Grade

1.0 Students compare and order positive and negative fractions, decimals, and mixed numbers. Students solve problems involving fractions, ratios, proportions, and percentages:

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:

Algebra and Functions

1.0 Students write verbal expressions and sentences as algebraic expressions and equations; they evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results:

2.0 Students analyze and use tables, graphs, and rules to solve problems involving rates and proportions:

3.0 Students investigate geometric patterns and describe them algebraically:

Measurement and Geometry

1.0 Students deepen their understanding of the measurement of plane and solid shapes and use this understanding to solve problems:

2.0 Students identify and describe the properties of two-dimensional figures:

Statistics, Data Analysis, and Probability

1.0 Students compute and analyze statistical measurements for data sets:

2.0 Students use data samples of a population and describe the characteristics and limitations of the samples:

3.0 Students determine theoretical and experimental probabilities and use these to make predictions about events:

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

2.0 Students use strategies, skills, and concepts in finding solutions:

3.0 Students move beyond a particular problem by generalizing to other situations:

Seventh Grade

Measurement and Geometry

1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:

2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how

perimeter, area, and volume are affected by changes of scale:

3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:

Statistics, Data Analysis, and Probability

1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

2.0 Students use strategies, skills, and concepts in finding solutions:

3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:

Eighth Grade

Math standards for eighth grade are not included because this starts algebra. Even though algebra can be related to the garden in many areas and can be easily be integrated with the social science curriculum, teacher agreement needs to be sought.

Science

Kindergarten

Physical Sciences

1. Properties of materials can be observed, measured, and predicted.

Life Sciences

2. Different types of plants and animals inhabit the earth.

Earth Sciences

3. Earth is composed of land, air, and water.

Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

First Grade

Physical Sciences

1. Materials come in different forms (states), including solids, liquids, and gases.

Life Sciences

2. Plants and animals meet their needs in different ways.

Earth Sciences

3. Weather can be observed, measured, and described.

Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

Second Grade

Life Sciences

2. Plants and animals have predictable life cycles.

Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing

Third Grade

Life Sciences

3. Adaptations in physical structure or behavior may improve an organism's chance for survival.

Investigation and Experimentation

5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations

Fourth Grade

Life Sciences

2. All organisms need energy and matter to live and grow. 3. Living organisms depend on one another and on their environment for survival.

Investigation and Experimentation

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

Fifth Grade

Life Sciences

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.

Earth Sciences

3d. Students know that the amount of fresh water located in rivers, lakes, under-ground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.

3e. Students know the origin of the water used by their local communities.

Investigation and Experimentation

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. examining evidence, and drawing conclusions.

Sixth grade

Ecology (Life Science)

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment.

Resources

6. Sources of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation.

Investigation and Experimentation

7. Scientific progress is made by asking meaningful questions and conducting careful investigations.

As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

Seventh Grade

Cell Biology

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

Evolution

2. Biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Structure and Function in Living Systems

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Investigation and Experimentation

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

Eighth Grade

Chemistry of Living Systems

6. Principles of chemistry underlie the functioning of biological systems.

Investigation and Experimentation

9. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three

strands, students should develop their own questions and perform investigations.

Social Science

Kindergarten

1. Students understand that being a good citizen involves acting in certain ways.

2. Students recognize national and state symbols and icons such as the national and state flags, the bald eagle, and the Statue of Liberty.

3. Students match simple descriptions of work that people do and the names of related jobs at the school, in the local community, and from historical accounts.

4. Students compare and contrast the locations of people, places, and environments and describe their characteristics.

5. Students put events in temporal order using a calendar, placing days, weeks, and months in proper order.

6. Students understand that history relates to events, people, and places of other times.

First Grade

1. Students describe the rights and individual responsibilities of citizenship.

2. Students compare and contrast the absolute and relative locations of places and people and describe the physical and/ or human characteristics of places.

3. Students know and understand the symbols, icons, and traditions of the United States that provide continuity and a sense of community across time.

4. Students compare and contrast everyday life in different times and places around the world and recognize that some aspects of people, places, and things change over time while others stay the same.

5. Students describe the human characteristics of familiar places and the varied backgrounds of American citizens and residents in those places.

6. Students understand basic economic concepts and the role of individual choice in a free-market economy.

Second Grade

1. Students differentiate between things that happened long ago and things that happened yesterday.

2. Students demonstrate map skills by describing the absolute and relative locations of people, places, and environments.

3. Students explain governmental institutions and practices in the United States and other countries.

4. Students understand basic economic concepts and their individual roles in the economy and demonstrate basic economic reasoning skills.

5. Students understand the importance of individual action and character and explain how heroes from long ago and the recent past have made a difference in others' lives (e.g., from biographies of Abraham Lincoln, Louis Pasteur, Sitting Bull, George Washington Carver, Marie Curie, Albert Einstein, Golda Meir, Jackie Robinson, Sally Ride).

Third grade

1. Students describe the physical and human geography and use maps, tables, graphs, photographs, and charts to organize information about people, places, and environments in a spatial context.

2. Students describe the American Indian nations in their local region long ago and in the recent past.

3. Students draw from historical and community resources to organize the sequence of local historical events and describe how each period of settlement left its mark on the land.

4. Students understand the role of rules and laws in our daily lives and the basic structure of the U.S. government.

5. Students demonstrate basic economic reasoning skills and an understanding of the economy of the local region.

Fourth Grade

1. Students demonstrate an understanding of the physical and human geographic features that define places and regions in California.

2. Students describe the social, political, cultural, and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods.

3. Students explain the economic, social, and political life in California from the establishment of the Bear Flag Republic through the Mexican-American War, the Gold Rush, and the granting of statehood.

4. Students explain how California became an agricultural and industrial power, tracing the transformation of the California economy and its political and cultural development since the 1850s.

5. Students understand the structures, functions, and powers of the local, state, and federal governments as described in the U.S. Constitution.

Fifth Grade

1. Students describe the major pre-Columbian settlements, including the cliff dwellers and pueblo people of the desert Southwest, the American Indians of the Pacific Northwest, the nomadic nations of the Great Plains, and the woodland peoples east of the Mississippi River.

2. Students trace the routes of early explorers and describe the early explorations of the Americas.

3. Students describe the cooperation and conflict that existed among the American Indians and between the Indian nations and the new settlers.

4. Students understand the political, religious, social, and economic institutions that evolved in the colonial era.

5. Students explain the causes of the American Revolution.

6. Students understand the course and consequences of the American Revolution.

7. Students describe the people and events associated with the development of the U.S. Constitution and analyze the Constitution's significance as the foundation of the American republic.

8. Students trace the colonization, immigration, and settlement patterns of the American people from 1789 to the mid-1800s, with emphasis on the role of economic incentives, effects of the physical and political geography, and transportation systems.

9. Students know the location of the current 50 states and the names of their capitals.

Sixth Grade

1. Students describe what is known through archaeological studies of the early physical and cultural development of humankind from the Paleolithic era to the agricultural revolution.

2. Students analyze the geographic, political, economic, religious, and social structures of the early civilizations of Mesopotamia, Egypt, and Kush.

3. Students analyze the geographic, political, economic, religious, and social structures of the Ancient Hebrews.

4. Students analyze the geographic, political, economic, religious, and social structures of the early civilizations of Ancient Greece.

5. Students analyze the geographic, political, economic, religious, and social structures of the early civilizations of India.

6. Students analyze the geographic, political, economic, religious, and social structures of the early civilizations of China.

7. Students analyze the geographic, political, economic, religious, and social structures during the development of Rome.

Seventh Grade

1. Students analyze the causes and effects of the vast expansion and ultimate disintegration of the Roman Empire.

2. Students analyze the geographic, political, economic, religious, and social structures of the civilizations of Islam in the Middle Ages.

3. Students analyze the geographic, political, economic, religious, and social structures of the civilizations of China in the Middle Ages.

4. Students analyze the geographic, political, economic, religious, and social structures of the sub-Saharan civilizations of Ghana and Mali in Medieval Africa.

5. Students analyze the geographic, political, economic, religious, and social structures of the civilizations of Medieval Japan.

6. Students analyze the geographic, political, economic, religious, and social structures of the civilizations of Medieval Europe.

7. Students compare and contrast the geographic, political, economic, religious, and social structures of the Meso-American and Andean civilizations.

Eighth Grade

1. Students understand the major events preceding the founding of the nation and relate their significance to the development of American constitutional democracy.

2. Students analyze the political principles underlying the U.S. Constitution and compare the enumerated and implied powers of the federal government.

3. Students understand the foundation of the American political system and the ways in which citizens participate in it.

4. Students analyze the aspirations and ideals of the people of the new nation.

5. Students analyze U.S. foreign policy in the early Republic.

6. Students analyze the divergent paths of the American people from 1800 to the mid-1800s and the challenges they faced, with emphasis on the Northeast.

7. Students analyze the divergent paths of the American people in the South from 1800 to the mid-1800s and the challenges they faced.

8. Students analyze the divergent paths of the American people in the West from 1800 to the mid-1800s and the challenges they faced.

9. Students analyze the early and steady attempts to abolish slavery and to realize the ideals of the Declaration of Independence.

10. Students analyze the multiple causes, key events, and complex consequences of the Civil War.

11. Students analyze the character and lasting consequences of Reconstruction.

12. Students analyze the transformation of the American economy and the changing social and political conditions in the United States in response to the Indus-trial Revolution.

The Secretary of Labor's Commission on Achieving Necessary Skills (SCANS)

These skills address two areas, foundational skills and competencies.

Foundational Skills

Foundational skills were divided into two categories, academic and behavioral. These categories include:

Basic Academic Skills - reading writing, speaking listening and mathematical concepts;

Thinking Skills - reasoning, creative thinking, problem-solving, and visualization;

Personal Qualities - responsibility, self-esteem, integrity, effective communication

The Competencies

The competencies listed in the report were divided into five categories:

Resources - identifying, organizing, planning and allocating money materials and workers;

Interpersonal Skills - communication, customer service, leadership, training others and teamwork;

Information Skills - processing information using computers, along with the acquiring, interpreting and evaluating communication information;

System Skills - understanding, monitoring improving and designing systems;

Technology Utilization Skills - selecting, applying, maintaining and troubleshooting technology (Whetzel, 1992).

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