Teaching Standards

as they relate to the Paper Project Website
Arizona & National

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Arizona Department of Education Academic Standards

VISUAL ARTS

Rationale

Study in the visual arts develops students' skills of observation as they learn to examine the objects and events of their lives. At the same time, they grow in their ability to describe, interpret, evaluate and respond to work in the visual arts. The visual arts are extremely rich. This broad category includes the traditional fine arts such as drawing, painting, printmaking, sculpture, photography and communication; design arts such as film, television, graphics and product design; architecture and environmental arts such as urban, interior and landscape design; folk arts; and works in ceramics, fiber and jewelry, as well as in wood, paper and other materials. Through examination of their own work and that of other people at various times in various places, students learn to unravel the essence of artwork and to appraise its purpose and importance. Further, they learn to make choices that enhance communication of their ideas.

STANDARD 1: CREATING ART (Visual Arts)

Students know and apply the arts, disciplines, techniques and processes to communicate in original or interpretive work.

- **1AV-E1. Choose the most appropriate media, techniques, and processes to enhance communication of one's own ideas and experiences**

(Grades 6-8)

PO 1. Create artwork using the most appropriate techniques and processes to communicate ideas and experiences

PO 2. Analyze the effectiveness of the characteristics of the specific media used to enhance the communication of experiences and ideas

- **1AV-E2. Demonstrate increasing technical ability and skill to complete visual arts assignments**

(Grades 4-8)

PO 1. Demonstrate technical ability and skill to complete visual arts assignments

- **1AV-E3. Identify and demonstrate the basic physical and scientific properties of the technical aspects of visual arts media (e.g., glazes, paints, printing equipment, photo papers/chemicals, fiber dyes, kilns, cameras, computer software and hardware, mathematics, light, tensile strength)**

(Grades 4-8)

PO 1. Identify basic physical and scientific properties of the technical aspects of visual arts media

PO 2. Demonstrate, within one's own artworks, the basic physical and scientific properties of the technical aspects of visual arts media

Possible links to: Mathematics – ratios; Science - properties of materials; Technology - advances, use of tools

- **1AV-E4. Continue to expand knowledge and use of different arts media, acquiring several new techniques**

(Grades 6-8)

PO 1. Compare different arts media and techniques

PO 2. Select a combination of known techniques and apply them in new and different ways creating artworks
Possible links to: Language Arts - reading instructions; Science - properties of materials; Social Studies - social and cultural advancements; Technology - use of tools and materials to create a product

● **3AV-E7. Describe ways in which the principles and subject matter of other disciplines in the curriculum are interrelated with visual arts**

(Grades 6-8)
PO 1. Explain how the curriculum concepts translate from other disciplines into the visual arts (e.g., measurements in mathematics, writing and public speaking in language arts)
PO 2. Employ the curriculum concepts from other disciplines to the visual arts (e.g., measurements in mathematics, writing, and public speaking in language arts)

Technology Education Standards
Rationale

Technology encompasses the tools and strategies for solving problems, using information, increasing productivity and enhancing personal growth. The word *technology* summons an image of a variety of tools ranging from shovels to gene splitters. When asked to develop the original Technology Standards, adopted in 1997, the Committee did so without the benefit of seeing the integration of various technologies into other curricular standards. Over the past four years, significant advances in technology have occurred. These changes have caused many national organizations to review what students need to know and be able to do in relation to technology. Therefore, when asked to review the current standards, the Revision Committee examined national standards (National Educational Technology Standards, Information Power, Information Technology in Education and Technology for All Americans), along with current Arizona standards. The Revision Committee also analyzed current research on technology skills important to business and industry. The Revision Committee reviewed technology that is currently integrated into other content area standards with the vision that as other standards are revised, technology will be seamlessly integrated. The goal is to help students live, learn and work successfully and responsibly in an increasingly complex, technology-driven society. These Technology Standards are designed to provide foundational skills and processes that students need in order to work productively and creatively in their studies, at work and at home. Research on the transfer of learning strongly supports the position that instruction and educational activities should closely parallel the final desired behavior. It is essential that technology instruction be an integral part of a student's educational experience. Education's role is to help students meet the challenge of the future. Arizona must encourage, assist and provide all students with the required tools and instruction to enable them
to acquire knowledge, develop skills and apply these tools successfully in our world.
The following definition of technology is supported in this document:
Technology is the application of tools to solve problems that extend human potential for the benefit of society

TECHNOLOGY EDUCATION STANDARDS
STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS
Students use technology tools to enhance learning, to increase productivity and creativity, and to construct technology-enhanced models, prepare publications and produce other creative works.

● **3T-E2. Use a variety of technology tools for data collection and analysis**
PO 1. Use technology device(s) to collect and record data (e.g., science probe, graphing calculator, PDA {personal digital assistant}, alternative keyboards, webcams, GPS and Internet)
PO 2. Create and use a spreadsheet to analyze data (e.g., use formulas, create charts and graphs)
PO 3. Create a database with multiple fields to manipulate data in a variety of ways (e.g., sort, merge, list and report)

● **3T-E4. Use technology tools to support system analysis and modeling**
See: Mathematics (2M-E5,6M-E1), Science (1SC-E2, E5) and Workplace Skills(6WP-E1)
PO 1. Manipulate several variables in a computer simulation to reach a desired outcome (e.g., simulation software, Web-based simulation, textbook support software)

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS
Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

● **4T-E1. Use telecommunications efficiently and effectively to access remote information and communicate with others in support of facilitated and independent learning**
PO 1. Communicate independently via e-mail, Internet, and/or videoconference with people in a remote location *(For Internet safety see Technology 2T-E1)*
● **4T-E3. Collaboratively use telecommunications and online resources**
PO 1. Request collaborative exchanges among people in local and/or remote locations (e.g., e-mail, online discussions, Web environments)
PO 2. Communicate electronically to collaborate with experts, peers and others to analyze data and/or develop an academic product (e.g., e-mail, discussion group, video conferencing)

STANDARD 5: TECHNOLOGY RESEARCH TOOLS

Students will utilize technology-based research tools to locate and collect information pertinent to the task as well as evaluate and analyze information from a variety of sources.

● **5T-E1. Locate information from electronic resources**
PO 1. Identify electronic research resources

● **5T-E2. Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias**

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING ANDDECISION-MAKING
Students use technology to make and support decisions in the process of solving real-world problems.
● **6T-E1. Determine when technology is useful and select and use the appropriate tools and technology resources to solve problems**
PO 1. Based on a problem selected by the student, identify and use appropriate technology tools to:
a) collect data (e.g., counting versus using a probe, book index versus online index)
b) interpret data (e.g., use of a spreadsheet instead of a graphic organizer)

c) develop a solution to the problem (e.g., creating a model versus using a spreadsheet)
d) present findings (e.g., create a poster versus an electronic presentation)

Language Arts

STANDARD 4: VIEWING AND PRESENTING

Students use a variety of visual media and resources to gather, evaluate and synthesize information and to communicate with others.

- **VP-E1. Analyze visual media for language, subject matter and visual techniques used to influence opinions, decision making and cultural perceptions**
- **VP-E2. Plan, develop and produce a visual presentation, using a variety of media such as videos, films, newspapers, magazines and computer images**
- **VP-E3. Compare, contrast and establish criteria to evaluate visual media for purpose and effectiveness**

SOCIAL STUDIES STANDARDS

STANDARD 1: HISTORY

Students analyze the human experience through time, recognize the relationships of events and people, and interpret significant patterns, themes, ideas, beliefs, and turning points in in Arizona, American, and world history.

- **1SS-E1. Understand and apply the basic tools of historical research, including chronology and how to collect, interpret, and employ information from historical materials.**

PO 1. Place key events on a timeline and apply chronological terms correctly, including B.C.E. (B.C.), C.E. (A.D.), decade, century, and generation
PO 2. Identify primary and secondary sources historians use to construct an understanding of the past, using such sources as letters, diaries, newspaper articles, archaeological evidence, maps, and government records

Science

STANDARD 2: HISTORY AND NATURE OF SCIENCE

Students understand the nature of scientific ways of thinking. Students understand that scientific investigation grows from the contributions of many people.

- **2SC-E1. Identify major milestones in science that have revolutionized the thinking of the time**

(Grades 6-8)

PO 1. Describe the effects of major scientific events on society
PO 2. Describe a recent scientific event that has impacted the quality of life

- **2SC-E2. Describe how science and technology are interrelated**

(Grades 6-8)

PO 1. Describe a technological discovery that influences science
PO 2. Describe a scientific discovery that influences technology
PO 3. Determine scientific processes involved in a technological advancement

STANDARD 5: PHYSICAL SCIENCE

Students understand the nature of matter and energy including their forms, the changes they undergo and their interactions.

- **5SC-E1. Examine, describe, compare, measure, and classify objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, electrical charge, density, boiling points, pH, magnetism, solubility)**

(Grades 4-5)

PO 1. Identify common physical and chemical properties

PO 2. Compare physical and chemical properties of common objects

PO 3. Compare physical and chemical properties of common mixtures

(Grades 6-8)

PO 1. Classify objects and mixtures of substances based on physical and chemical properties

PO 2. Analyze physical and chemical properties of objects and mixtures

- **5SC-E2. Classify and describe matter in terms of elements, compounds, mixtures, atoms and molecules**

(Grades 4-5)

PO 1. Distinguish among matter, mixtures and compounds

(Grades 6-8)

PO 1. Classify matter in terms of elements, compounds, mixtures, atoms and molecules

PO 2. Describe elements, compounds, mixtures, atoms and molecules as they relate to matter

National Standards

National Art Standards
Content Standard #1: Understanding and applying media, techniques, and processes
Achievement Standard:

- Students select media, techniques, and processes; analyze what makes them effective or not effective in communicating ideas; and reflect upon the effectiveness of their choices
- Students intentionally take advantage of the qualities and characteristics of art media, techniques, and processes to enhance communication of their experiences and ideas

Technology Foundation Standards for All Students
The technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking performance indicators within the Profiles for Technology Literate Students to the standards. Teachers can use these standards and profiles as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.
3.Technology productivity tools

- Students use technology tools to enhance learning, increase productivity, and promote creativity.
- Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

4.Technology communications tools

- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

5.Technology research tools

- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

Project 2061 Benchmarks
Benchmark
Knows that substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties
Vocabulary Terms
chemical reaction, chemical compound, properties of substances

Benchmark
Knows factors that influence reaction rates (e.g., types of substances involved, temperature, concentration of reactant molecules, amount of contact between reactant molecules)
Vocabulary Terms

reaction rate, properties of substances, temperature, concentration of reactants, surface area of reactants

Benchmark
Knows that all organisms are composed of cells, which are the fundamental units of life; most organisms are single cells, but other organisms (including humans) are multicellular
Vocabulary Terms
organism, cell, fundamental unit of life, unicellular organism, multicellular organism

Benchmark
Knows that multicellular organisms have a variety of specialized cells, tissues, organs, and organ systems that perform specialized functions (e.g., digestion, respiration, reproduction, circulation, excretion, movement, control and coordination, protection from disease)
Vocabulary Terms
multicellular organism, specialized cell, specialized tissue, specialized organ, specialized organ system, structure and function in organisms, digestive system, respiratory system, reproductive system, circulatory system, excretory system, skeletal system, muscular system, nervous system, immune system