ARIZONA ACADEMIC STANDARDS

GRADE 6

State of Arizona
Arizona Department of Education

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ARIZONA ACADEMIC STANDARDS
GRADE 6

CONTENTS

Additional information about the Arizona Academic Standards including glossaries of terms may be found at http://www.ade.az.gov/standards/contentstandards.asp.

The Arts Standard 2006

Grade 6

ARIZONA ACADEMIC STANDARDS IN THE ARTS
ARTICULATED FOR SIXTH GRADE

Philosophy and Rationale for the Arts

The arts are essential in education for they provide students with the means to think, feel, and understand the world around them in ways unique and distinct from other academic disciplines. These skills have been recognized as essential to lifelong success both in and out of school by a variety of education and civic leaders, including the National Association of State Boards of Education, the Education Commission of the States, the Arts Education Partnership, and *BusinessWeek*.

Arts Education in Arizona

Arizona has recognized the importance of arts education for its students in a variety of ways, including:

- Requiring music and visual arts be taught in grades K-8
- Creating high quality certifications (endorsements) for teachers in the areas of dance, music, theatre and visual arts
- Requiring a fine arts high school credit for admission to our state's universities
- Adopting Academic Standards in the Arts, with rigorous, sequential guidelines for creating quality arts education for Arizona's students.

Arts Standards Articulation for Sixth Grade

- The Arts Standards are divided into four discipline areas: dance, music, theatre and visual arts.
- The Music Standard is articulated for general music by grade level for Kindergarten – 8th grade.
- The remaining Standards (Dance, Theatre, Visual Arts) are articulated by **skill level**, reflecting the variety of ways in which the arts are taught in Arizona schools. Included in this **Sixth Grade** packet are the **Intermediate Skill Level Performance Objectives** for Dance, Theatre and Visual Arts. If your students are more or less advanced, or if you would like to see how these skill articulated standards build on one other, the Department encourages you to view the arts standards in their entirety at http://www.ade.az.gov/standards/contentstandards.asp.

Additional Resources for Arts Education

Additional resources on arts education can be accessed at http://www.ade.az.gov/asd/arts/ or by calling the Department's Arts Education Specialist at 602-364-1534.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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INTERMEDIATE DANCE

Strand 1 - Create

Concept 1: Body Intermediate Objectives	
Healthy Practices	PO 201 Identify and apply individual patterns and habits that influence a safe and healthy body in dance (e.g. **injury prevention**)**.**
Anatomy	PO 202 Identify skeletal components and major muscle groups.
Dynamic Alignment	PO 203 Demonstrate **dynamic alignment** through extended, more complex movement combinations and varying dance styles.
Fundamental Movement Patterns	PO 204 Apply **fundamental movement patterns** to warm-ups and improvisation.
Body Skills	PO 205 Apply **basic body skills** in all movement applications including warm-ups, improvisation, choreography etc.

Concept 2: Movement Skills Intermediate Objectives	
Axial/Non-locomotor	PO 201 Utilize dynamic alignment while performing sequenced combinations of basic **axial movements**.
Locomotor	PO 202 Utilize dynamic alignment while performing sequenced combinations of basic **locomotor movements**.
Axial and locomotor combinations	PO 203 Perform more complex combinations, which require increased motor memory and coordination.
Articulation of movement skills	PO 204 Apply **breath support, initiation of movement, connectivity,** and **transition** from one movement to another in performing short movement phrases.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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Strand 1 – Create (continued)

Concept 3: Elements of Dance Intermediate Objectives	
Time: Tempo *See also "Relating Dance and Music"*	PO 201 Demonstrate moving while maintaining a steady beat in a variety of tempos.
Time: Meter	PO 202 Demonstrate the ability to perform a phrase in both duple and triple time.
Time: Rhythm	PO 203 Demonstrate moving in relation to and coordination with changes in rhythm and meter in even and **syncopated** rhythms.
Space: Direction, Facing, Pathway	PO 204 Demonstrate clarity of facings in space while moving in different directions.
Space: Level	PO 205 Demonstrate the ability to move through space at low, middle and high levels.
Space: Shapes	PO 206 Demonstrate the ability to work with a partner and/or group to create a variety of shapes.
Space: Size and Range	PO 207 Use size and range to vary an existing movement phrase and analyze the effect of such changes.
Space: Focus and Intent	PO 208 Demonstrate use of various **points of focus** to convey meaning.
Energy: Movement Qualities	PO 209 Apply the **movement qualities** to develop and revise movement phrases.
Energy: Effort	PO 210 Apply the **effort principles** to develop and revise movement phrases.

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Strand 1 – Create (continued)

Concept 4: Improvisation/Choreography Intermediate Objectives	
Improvisational Strategies	PO 201 Identify and apply more **advanced improvisational strategies** (e.g. props, responding to movement of others, literal/abstract, contact).
Using the Elements of Dance to Communicate	PO 202 Using the elements of dance, create dance phrases that communicate meaning.
Ideas and Themes	PO 203 Create dance **phrases** that use ideas and themes as motivation.
Choreographic Processes	PO 204 Identify and demonstrate the use of **choreographic devices** to create dance phrases.
Choreographic Forms	PO 205 Create dance **phrases** that incorporate a single **choreographic form**.
Choreographic Principles	PO 206 Using the **choreographic principles**, analyze and revise existing dance phrases.
Technology	PO 207 Use technology or software to record a dance or phrase.
	PO 208 Use technology or the internet to share choreography and discussion between two different schools/groups.

Concept 5: Performance Values Intermediate Objectives	
Focus and Concentration	PO 201 Maintain consistent concentration and focus while moving or holding a fixed position.
Kinesthetic and Spatial Awareness	PO 202 Demonstrate appropriate **kinesthetic awareness** while performing alone or with a group.
Performance Qualities	PO 203 Identify and perform dance with projection and overall expression.

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Strand 1 – Create (continued)

Concept 6: Production Design Intermediate Objectives	
Production terms, crew, elements	PO 201 Identify the roles of the production **crew members**.
Marketing and budget	PO 202 Identify and analyze components, sources and steps in budgeting for a dance concert.
Technology	PO 203 Observe and discuss the ways to use technology in design and production of a theatrical performance.

Strand 2 - Relate

Concept 1: Dance Forms/History Intermediate Objectives	
Production terms, crew, elements	PO 201 Demonstrate knowledge of the historical development and continued evolution of the various dance forms.
Marketing and budget	PO 202 Discuss and demonstrate how historical influences affect the theoretical and technical differences of various dance forms.
Technology	PO 203 Describe the historical evolution of the use of technology in dance.

Concept 2: Social and Cultural Influences Intermediate Objectives	
Cultural Dances	PO 201 Perform dances from a variety of cultures. Compare the styles and movements of the different dances in relation to the elements of dance.
Meaning of Cultural Dances	PO 202 Compare and contrast the meaning, purpose and roles people play in various **social/cultural** and **folk** dances.
Contemporary Cultural Dances	PO 203 Identify and analyze the influence of pop culture on social dance (e.g. various decades).

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Concept 3: Dance and Literacy Intermediate Objectives	
Using text to create movement	PO 201 Create a thematic movement phrase to express images, ideas, situations, and feelings found in text.
Using text to describe and understand movement	PO 202 Apply descriptive language (similes and metaphors) and dance terminology to express images, ideas and feelings that are danced.

Concept 4: Dance and other disciplines Intermediate Objectives	
Using movement with other disciplines	PO 201 Create a thematic movement phrase to express ideas, concepts and images (e.g. numbers, patterns, sounds, textures, animals) found in other disciplines.
Integrating dance and other art forms	PO 202 Relate the elements used in dance to the elements of other art forms.
Careers	PO 203 List the skills learned through dance and how they relate to other career fields (e.g. problem solving, discipline, collaboration, anatomy).

Concept 5: Dance and Music Intermediate Objectives	
Elements of music	PO 201 Identify and explore (e.g. discussion, body percussion, locomotors, other body movements). rhythmic structure of various music examples.
Rhythmic Patterns/Variations	PO 202 Demonstrate the ability to alter the tempo, rhythm and/or meter of a movement phrase.
Technology	PO 203 Using current technology create a sound-score for dance.

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Strand 3 – Evaluate

Concept 1: Understanding Dance Intermediate Objectives	
Dance Terminology	PO 201 After observing a dance, using dance terminology, discuss how the **elements of dance** have been manipulated within the choreography.
Production Elements	PO 202 After observing a dance, analyze how the production elements have enhanced the intent of the choreographer.
Communicating Meaning	PO 203 Interpret how the **elements of dance** and **choreographic strategies** can be used to communicate meaning in dance.
Evaluation Criteria	PO 204 Using selected criteria, evaluate its effectiveness in dance choreography or performance.
Personal Interpretation	PO 205 Explain your reaction to a dance and identify how your personal experiences lead you to your response.
Technology	PO 206 Use technology over time to understand and analyze individual progress of technique, choreography and performance values.

Concept 2: Professionalism Intermediate Objectives	
Classroom, rehearsal and performance behaviors	PO 201 Contribute to and support a nurturing and safe classroom, rehearsal and performance environment. by modeling appropriate practices.
Audience Etiquette	PO 202 Demonstrate appropriate **audience behavior** in all performance situations and respond with relevant and supportive comments.
Portfolio collection and maintenance	PO 203 At regular intervals, record and discuss movement skills acquired, choreography and performances. Self-assess progress. Maintain records for future use.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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GRADE 6 MUSIC

Strand 1: Create

Concept 1: Singing, alone and with others, music from various genres and diverse cultures.
PO 1. Singing expressively on **pitch** with an appropriate tone quality, **diction**, posture, **dynamics**, phrasing, interpretation, and **tempo**.
PO 3. *Singing songs from written **notation**.*
*PO 4. Responding expressively to conducting **cues** (e.g., **legato**, **dynamics***

Concept 2: Playing instruments, alone and with others, music from various genres and diverse cultures.
PO 1. Playing expressively with appropriate **dynamics**, phrasing, interpretation, **articulation** and **tempo**.
PO 2. Playing by rote **rhythmic** patterns using sixteenth notes and **syncopation** in 2/4, 3/4, and 4/4 time **signatures**.
PO 4. Playing with technical accuracy (e.g., posture, tone quality, breath control, mallet technique).

Concept 3: Improvising rhythms, melodies, variations, and accompaniments
PO 1. Playing an improvised **accompaniment** using **tonic** and **dominant chords**.

Concept 4: Composing and arranging music.
PO 1. Composing and notating short pieces using standard musical **notation** in the treble **clef** within specified guidelines.

Concept 5: Reading and notating music.
PO 2. Conducting patterns and **cues** in duple and triple **meter** in time to the music.
PO 3. Identifying the letter names for the lines and spaces of bass **clef**.
*PO 4. Reading and notating music using standard musical **notation**.*
*PO 5. Defining terms and symbols used in music **notation** as identified in previous grade levels.*

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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Strand 2: Relate

Concept 1: Understanding the relationships among music, the arts, and other disciplines outside the arts.
PO 1. Identifying/describing ways in which the principles and subject matter of other disciplines are related to music (e.g., science, math, history).
PO 2. Describing the effect an instrument's physical properties will have upon its sound.
PO 3. Comparing in two or more arts how the basic elements of each art can be used to express similar events, emotions, scenes, or ideas (e.g., emotions can be expressed with words in poetry, color in visual arts, sound in music, and gestures in dance).
PO 4. Exploring and analyzing the relationship of music to language arts, visual arts, literature

Concept 2: Understanding music in relation to history and culture.
PO 3. Comparing in two or more arts how the basic elements of each art can be used to express similar events, emotions, scenes, or ideas (e.g., emotions can be expressed with words in poetry, color in visual arts, sound in music, and gestures in dance).
PO 4. Exploring and analyzing the relationship of music to language arts, visual arts, literature
PO 4. Comparing and contrasting different musical careers.

Concept 3: Understanding music in relation to self and universal themes.
PO 1. Explaining personal reactions to musical experiences, and identifying which musical aspects evoke these reactions.
PO 2. Distinguishing music preferences (I like it because…) from music judgments (It is good because) from cultural judgments (It is important because…).

Strand 3: Evaluate

Concept 1: Listening to, analyzing, and describing music.
PO 1. Classifying **chords** as major and minor.
PO 2. Identifying instruments, Western and non-western, by family (e.g., woodwind, percussion, brass, strings, membrano-phones, idiophones).
PO 4. Classifying musical examples by culture.
PO 3. Identifying contrasting **meters** and note/rest values.

Concept 2: Evaluating music and music performances.
PO 1. Creating and applying established criteria to evaluate performances and **compositions**.
PO 2. *Listening attentively while others perform and showing appropriate audience behavior for the context and style of the music performed.*

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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INTERMEDIATE THEATRE

Strand 1 - Create

Concept 1: Collaboration Intermediate Objectives
PO 201. Collaborate to create a scenario/**script** as a team.
PO 202. Collaborate to **design** and choose the **environmental** elements for a scenario/**script**.
PO 203. Collaborate and communicate in the **rehearsal** process.
PO 204. Collaborate in informal **performances**

Concept 2: Acting Intermediate Objectives
PO 201. Work individually to create **characters** for theatre and/or other media productions (e.g., for **classical**, contemporary, realistic, and non-realistic **improvisations** and **scripted plays**)
PO 202. As a **character**, play out her/his wants by interacting with others, maintaining concentration, and contributing to the **action** of classroom **improvisations** (e.g., **scenes** based on personal experience and heritage, imagination, literature, and history).
PO 203. Demonstrate mental and physical attributes required to communicate **characters** different from themselves (e.g., concentration, sense recall, ability to remember lines and cues, breath and vocal control, body alignment, flexibility, and coordination).
PO 204. Communicate sensory images through movement, vocal, visual, or written expression
PO 205. Implement theatre etiquette in rehearsal and production settings.

Concept 3: Theatre Technology and Design Intermediate Objectives
PO 201. Develop designs that use visual and aural elements to convey **environments** that clearly support the **text**.
PO 202. Implement technical theatre etiquette in **rehearsal** and production settings.
PO 203. Use available art materials, tools, and/or stock scenery (e.g., **rehearsal** blocks, puppets, curtains, backdrops) to create and convey **props** and/or **setting**.
PO 204. Create floor plans and **props**.
PO 205. Construct or locate appropriate **props** to enhance a **scene** or production.
PO 206. Use available lighting sources to enhance formal and informal theatre, film/video, and electronic media productions to create design elements.
PO 207. Create sound effects and select music to enhance a scene or production
PO 208. Create costume drawings and/or make-up charts.
PO 209. Use standard procedures to efficiently and safely operate tools and equipment for technical aspects of formal and informal theatre, film/video, and electronic media productions.
PO 210. Develop technical designs based on design concepts (musical and visual art principles) that meet the requirements of the dramatic work, film/video, and electronic media production.

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Strand 1 – Create (continued)

Concept 4: Playwriting Intermediate Objectives
PO 201. Adapt a short, non-dramatic literary selection (e.g., folktale, poem, life story) into a scripted dramatic format.
PO 202. Dramatize and document scenes using a variety of characters to develop monologues and/or dialogue.
PO 203. Dramatize and document scenes based on life experiences using a variety of conflicts to create resolution to the story.
PO 204. Dramatize and document, both individually and in groups, scenarios that develop theme, plot, conflict, and dialogue.

Concept 5: Directing Intermediate Objectives
PO 201. Analyze dramatic **text** (e.g., folktale, myth, poetry, narrative, **monologue**, **scene**, **play**, etc.) to develop an informal **performance** describing **character motivations**, structure of the story, and the **role** of the **environment** in the story.
PO 202. Develop an understanding of how actors' qualities and skills are considered when casting various **characters** or **roles**.
PO 203. Make directorial decisions about group work and informal dramatic presentations (including **movement**, **voice**, etc.).
PO 206. Provide actor warm-ups that help them develop sensory recall, as needed, or as a means of accessing their characters.
PO 207. Implement theatre etiquette as a director in rehearsal and production settings.

Strand 2 – Relate

Concept 1: Collaboration Intermediate Objectives
PO 201. Identify social issues and individual attitudes that promote or impede the collaborative process.
PO 202. Discuss and implement the skills that address social issues in the collaborative process (e.g., accept leader/follower roles, how to negotiate differences of ideas) in an **informal production** and other school-related projects.
PO 203. Discuss how participation in theatre benefits other life skills and other content areas.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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Strand 2 – Relate (continued)

Concept 2: Acting Intermediate Objectives
PO 201. Using self-evaluation and reflection, determine the influences of creative work on the individual and his/her community.
PO 202. Analyze the emotional and social impact (e.g., historical and contemporary) of **performances** in their lives and the lives of others.
PO 203. Analyze the historical, cultural effects on the **characters** and story of a dramatic concept, class **improvisation**, and theatre or other media production.
PO 204. Demonstrate how interrelated conditions (time, place, other **characters**, and the situation) influence the **characters** and stories in **formal productions** of theatre, film/video, and **electronic media**.
PO 205. Analyze the effects of their own cultural experiences on their dramatic work.
PO 206. Explain how one's own behavior might change in response to a performance (e.g., drug or alcohol abuse, criminal behavior, friendship, or family relationships).

Concept 3: Theatre Technology and Design Intermediate Objectives
PO 201. Research historical and cultural influences from a variety of resources (e.g., **text**, library, artifact, internet) to implement with credible **design** choices.
PO 202. Compare and contrast how nature, social life, and visual art practices and products influence and affect **design** choices for theatre, film/television, and **electronic media** productions in the past and the present.
PO 203. Analyze a variety of dramatic works for artistic (e.g., color, **style**, line, texture) and technical requirements influenced by history and culture.

Concept 4: Playwriting Intermediate Objectives
PO 201. Demonstrate and identify a **character**'s wants and needs, and physical, emotional, and social qualities based on historical and cultural influences.
PO 203. Research and identify contemporary social issues that can be explored through classroom **improvisation**.
PO 204. Discuss a class **improvisation** or **performance**'s storylines, **characters**, **dialogue**, and **actions**, and how they relate to real life situations.
PO 205. Compare how similar themes are treated in dramas of different genres and styles from various cultural and historical periods.
PO 206. Analyze the historical and cultural effects on the characters and story of a dramatic concept, class improvisation, and theatre or other media production.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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Strand 2 – Related (continued)

Concept 5: Directing Intermediate Objectives
PO 201. Research and use cultural, historical, and **symbolic** clues to develop an interpretation for visual and aural production choices.
PO 202. Present selected information from research to the **ensemble** to support the production process.
PO 203. Analyze the effects of personal and cultural experiences on the dramatic work.
PO 204. Analyze the historical and cultural effects on the **characters** and story of a dramatic concept, class **improvisation**, and theatre or other media production.

Strand 3: Evaluate

Concept 1: Collaboration Intermediate Objectives
PO 201. Model and use appropriate ways to give, take, and use praise and constructive **criticism**.

Concept 2: Acting Intermediate Objectives
PO 201. Describe physical and vocal attributes appropriate to the **characters** in the **play** in class and professional **performances**.
PO 202. Describe physical concentration and **character** interaction that advance the **plot** in class and professional **performances**.
PO 203. Evaluate a **role** by responding and deconstructing deeper meanings of the **text** and **character.**
PO 204. Develop and articulate criteria to analyze, interpret, and evaluate classroom, informal and formal theatre, or media productions.
PO 205. Use developed criteria to interpret dramatic text and performances in an organized oral or written presentation.

Concept 3: Theatre Technology and Design Intermediate Objectives
PO 201. Evaluate how the historical and cultural influences of technical elements affect a variety of performed dramatic works.
PO 202. Develop criteria to evaluate technical elements for formal and informal theatre, film/video, and **electronic media** productions.
PO 204. Evaluate and interpret technical elements in a variety of performed dramatic works including theatre, film/video, and **electronic media** productions.
PO 205. Evaluate their own and their peers' execution of duties and responsibilities on a technical crew.

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Strand 3: Evaluate (continued)

Concept 4: Playwriting Intermediate Objectives
PO 201. Develop criteria to analyze, interpret, and evaluate a **play script** (e.g., structure, language, **characters**).
PO 202. Describe how the **setting**, storyline, and **characters** are interrelated in scenarios and **scripts**.
PO 203. Use developed criteria to analyze a variety of dramatic works (e.g., formal and informal theatre, film/video, and **electronic media** productions) according to **style**, **genre**, dramatic elements, and **characters**.
PO 204. Develop and articulate criteria to analyze, interpret, and evaluate classroom, informal and formal theatre, or media productions.
PO 205. Use developed criteria to interpret dramatic text and performances in an organized oral or written presentation.
PO 206. Justify the perception of a performance and critique its production elements.
PO 207. Evaluate and justify, with examples, the meanings constructed from a dramatic text or performance relating to daily life.

Concept 5: Directing Intermediate Objectives
PO 201. Explain and justify personal criteria for evaluating the basic elements of **text**, **acting**, and production values in their work and the work of others.
PO 202. Develop and articulate criteria to analyze, interpret, and evaluate classroom, informal and formal theatre, or media productions.
PO 203. Use criteria to interpret dramatic **text** and **performances** in an organized oral or written presentation.
PO 204. Evaluate and justify, with examples, the meanings constructed from a dramatic **text** or **performance** relating to daily life.
PO 205. Justify the director's concept of a performance and critique its production elements.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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INTERMEDIATE VISUAL ARTS

Strand 1: Create

Concept 1: **Creative Process - The student will develop, revise, and reflect on ideas for expression in his or her own artwork** Intermediate Objectives
PO 201. *Contribute to a discussion about ideas for his or her own artwork .*
PO 202. *Make and explain revisions in his or her own artwork .*
PO 203. Develop plans for his or her own artwork , (e.g., sketches, models, and notes).

Concept 2: **Materials, Tools, and Techniques • The student will use materials, tools, and techniques in his or her own artwork .** Intermediate Objectives
PO 201*. Identify and experiment with materials, tools, and techniques* appropriately and expressively *in his or her own artwork .*
PO 202. Demonstrate purposeful use of materials, tools, and techniques in his or her own artwork .

Concept 3: **Elements and Principles - The student will judge the effectiveness of the artist's use of elements of art and principles of design in communicating meanings and/or purposes, in artworks.** Intermediate Objectives
PO 201. *Identify,* select*, and use **elements** and **principles*** to organize the **composition** *in his or her own artwork .*

Concept 4: **Meanings or Purposes - The student will judge an artist's success in communicating meaning or purpose in their artwork.** Intermediate Objectives
PO 201. Explain purposeful use of subject matter, **symbols,** and/or **themes** in his or her own artwork .
PO 202. Create an artwork that serves a function.

Concept 5: **Quality - The student will apply criteria for judging the quality of specific artwork.** Intermediate Objectives
PO 201. *Identify successful aspects of his or her own artwork and possible revisions.*
PO 202. Identify and apply **technical, functional, formal,** and/or **expressive** criteria in the evaluation of his or her own artwork (e.g., self-evaluations, group critiques, artist's statements).

ARIZONA ACADEMIC STANDARDS IN THE ARTS
ARTICULATED FOR SIXTH GRADE
Strand 2 - Relate

Concept 1: **Artworlds - The student will describe the role that art plays in culture and how it reflects, records, and interacts with history in various times, places, and traditions.** Intermediate Objectives
PO 201. *Contribute to a discussion about who artists are, what they do, and why they create art*.
PO 202. *Discuss how artworks are used to communicate stories, ideas, and emotions.*
PO 203. *Discuss what an **artworl**d is and its place in a culture.*
PO 204. Discuss the roles of various **artworld** experts (e.g., critics, art historians, curators, archeologists, conservators and others).
PO 205. Make connections between art and other curricular areas (e.g., clay production relates to science, contextual information relates to social studies).
PO 206. Discuss how artworks reflect, ideas, images and symbols from the culture within which they were made.

Concept 2: **Materials, Tools, and Techniques • The student will use materials, tools, and techniques in his or her own artwork .** Intermediate Objectives
PO 201. *Identify the relationship between tools, materials, and/or techniques.*
PO 202. Describe what tools, materials, and techniques were used to create artwork from diverse cultures and times.
PO 203. Describe how scientific and technological advances influence the materials, tools, and techniques used by artists.

Concept 3: **Elements and Principles - The student will judge the effectiveness of the artist's use of elements of art and principles of design in communicating meanings and/or purposes, in artworks.** Intermediate Objectives
PO 201. *Identify visual/tactile characteristics of artworks from diverse cultures, different places, or times.*

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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Strand 2 – Relate (continued)

Concept 4: **Meanings or Purposes - The student will judge an artist's success in communicating meaning or purpose in their artwork.** Intermediate Objectives
PO 201. *Interpret meanings and/or purposes of an artwork using subject matter,* ***symbols,*** *and/or* **themes**.
PO 202. ***Discuss*** *themes* ***in artworks that illustrate common human experiences that transcend culture, time, and place.***
PO 203. Use **contextual** information to investigate and interpret meanings and purposes in artworks from the viewpoint of the culture in which it was made.

Concept 5: **Quality - The student will apply criteria for judging the quality of specific artwork.** Intermediate Objectives
PO 201. *Contribute to a discussion about why artworks have been valued within the context of the culture in which they were made*
PO 202. *Demonstrate respect while responding to others' artwork.*
PO 203. Compare the characteristics of artworks valued by diverse cultures.

Strand 3 – Evaluate

Concept 1: **Art Issues and Values - The student will justify general conclusions about the nature and value of art.** Intermediate Objectives
PO 201. *Form and support opinions about art (e.g., what art is and why it is important)*
PO 202. Debate whether art is different from **visual culture** in general.
PO 203. *Discuss reasons why people value art (e.g., sentimental, financial, religious, political, and historical).*
PO 204. Discuss people's criteria for determining how, or whether, art should be cared for and/or protected.

Concept 2: **Materials, Tools, and Techniques • The student will use materials, tools, and techniques in his or her own artwork .** Intermediate Objectives
PO 201. Explain how an artist's use of tools, materials, and techniques affect an artwork's meaning, purpose, and value.
PO 202. Develop and use criteria to evaluate **craftsmanship** in an artwork.

ARIZONA ACADEMIC STANDARDS IN THE ARTS
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Strand 3 – Evaluate (continued)

Concept 3: **Elements and Principles - The student will judge the effectiveness of the artist's use of elements of art and principles of design in communicating meanings and/or purposes, in artworks.** Intermediate Objectives
PO 201. Describe an artist's use of elements and **principles** *in an artwork support its meaning and/or purpose.*

Concept 4: **Meanings or Purposes - The student will judge an artist's success in communicating meaning or purpose in their artwork.** Intermediate Objectives
PO 201. *Discuss how an artist* uses subject matter, symbols, and/or themes to *communicate meaning and/or purpose in an artwork.*

Concept 5: **Quality - The student will apply criteria for judging the quality of specific artwork.** Intermediate Objectives
PO 201. Understand how the difference in quality between an original and a reproduction affects the viewer's interpretation of an artwork *(e.g. ,make a museum/artist's studio visit to compare details, size, luminosity, three dimensionality, surface texture).*
PO 202. Distinguish art preferences "I like it because..." from art judgments "It is good because…" from cultural judgments "It is important because. ..".
PO 203. Use established criteria to make and support a judgment about the quality of an artwork.

Comprehensive Health Education/ Physical Activity Standards 1997

Essentials (Grades 4-8)

Comprehensive Health Rationale

Parents and Guardians

It is understood that parents and guardians are the primary educators in their children's health; therefore, it is important to include the applicable statutes and state Board of Education rule in the comprehensive health education standards. Parents and guardians must be provided opportunities to preview school district policies, curriculum and take-home materials.

The ultimate goal of comprehensive health education is to help young people in Arizona achieve their fullest potential by attaining their highest level of health and wellness as students and adults. Basic to health education is the knowledge about the importance of the interrelationships of physical, behavioral, and social well-being and the prevention of diseases and other health problems. Students should learn to accept responsibility for personal health decisions and practices, work with others to maintain a healthy environment, as well as become informed consumers.

Rationale for Standard 1*:* Students comprehend concepts related to health promotion and disease prevention.

Comprehension of health promotion strategies and disease prevention concepts enables students to become health literate, self-directed learners, which establishes a foundation for leading healthy and productive lives.

Rationale for Standard 2: Students demonstrate the ability to access accurate health information.

Accessing valid health information and health promoting products and services is important in the prevention, early detection and treatment of most health problems. Applying skills of information analysis, organization, comparison, synthesis and evaluation to health issues provides a foundation for individuals to move toward becoming health literate and responsible, productive citizens.

Rationale for Standard 3: Students demonstrate the ability to practice health-enhancing behaviors and reduce health risks.

Research confirms that many diseases and injuries can be prevented by reducing harmful and risk-taking behaviors. Accepting responsibility and practicing health-enhancing behaviors can contribute to a positive quality of life.

Rationale for Standard 4: Students analyze the influence of culture, media, technology and other factors on health.

Health is influenced by a variety of factors that coexist within society. The ability to analyze, evaluate and interpret the influence of culture, media and technology on health

is important in a rapidly changing world. The health literate, responsible and productive citizen draws upon the contributions of these factors to strengthen individual, family and community health.

Rationale for Standard 5: Students demonstrate the ability to use interpersonal skills to enhance health.

Personal, family and community health are enhanced through effective communication. The ability to organize and to convey information, beliefs, opinions, and feelings (both verbal and nonverbal) are skills that strengthen interactions and can reduce or avoid conflict. When communicating, individuals who are health literate demonstrate care, consideration, and respect for self and others.

Rationale for Standard 6: Students demonstrate the ability to use goal setting and decision-making skills to enhance health.

Decision-making and goal setting are essential lifelong skills needed to implement and sustain health-enhancing behaviors. These skills make it possible for individuals to transfer health knowledge into healthy lifestyles, thus improving the quality of life.

Rationale for Standard 7: Students demonstrate the ability to advocate for personal, family and community health.

Quality of life is dependent on an environment that protects and promotes the health of individuals, families and communities. Responsible citizens who are health literate communicate and advocate for positive health in their communities.

§ 15-102. Parental involvement in the school; definition

A. The governing board, in consultation with parents, teachers and administrators, shall develop and adopt a policy to promote the involvement of parents and guardians of children enrolled in the schools within the school district, including:
   1. A plan for parent participation in the schools which is designed to improve parent and teacher cooperation in such areas as homework, attendance and discipline.
   2. Procedures by which parents may learn about the course of study for their children and review learning materials.
   3. Procedures by which parents who object to any learning material or activity on the basis that it is harmful may withdraw their children from the activity or from the class or program in which the material is used. Objection to a learning material or activity on the basis that it is harmful includes objection to a material or activity because it questions beliefs or practices in sex, morality or religion.

B. The policy adopted by the governing board pursuant to this section may also include the following components:
   1. A plan by which parents will be made aware of the district's parental involvement policy and the provisions of this section, including:
      (a) Rights under the family educational rights and privacy act of 1974 relating to access to children's official records.
      (b) The parent's right to inspect the school district policies and curriculum.

2. Efforts to encourage the development of parenting skills.
3. The communication to parents of techniques designed to assist the child's learning experience in the home.
4. Efforts to encourage access to community and support services for children and families.
5. The promotion of communication between the school and parents concerning school programs and the academic progress of the parents' children.
6. Identifying opportunities for parents to participate in and support classroom instruction at the school.
7. Efforts to, with appropriate training, support parents as shared decision makers and to encourage membership on school councils.
8. The recognition of the diversity of parents and the development of guidelines that promote widespread parental participation and involvement in the school at various levels.
9. The development of preparation programs and specialized courses for certificated employees and administrators that promote parental involvement.
10. The development of strategies and programmatic structures at schools to encourage and enable parents to participate actively in their children's education.

C. For the purposes of this section, "parent" means the parent or person who has custody of the child.

R7-2-303. Sex Education

A. Instruction in sex education in the public schools of Arizona shall be offered only in conformity with the following requirements.

1. Common schools: Nature of instruction; approval; format.
   a. Supplemental/elective nature of instruction. The common schools of Arizona may provide a specific elective lesson or lessons concerning sex education as a supplement to the health course study.
      i. This supplement may only be taken by the student at the written request of the student's parent or guardian.
      ii. Alternative elective lessons from the state-adopted optional subjects shall be provided for students who do not enroll in elective sex education.
      iii. Elective sex education lessons shall not exceed the equivalent of one class period per day for one-eighth of the school year for grades K-4.
      iv. Elective sex education lessons shall not exceed the equivalent of one class period per day for one-quarter of the school year for grades 5-8.
   b. Local governing board approval. All elective sex education lessons to be offered shall first be approved by the local governing board.
      i. Each local governing board contemplating the offering of elective sex education shall establish an advisory committee with membership representative of district size and the racial and ethnic composition of the community to assist in the development of lessons and advise the local governing board on an ongoing basis.
      ii. The local governing board shall review the total instruction materials for lessons presented for approval.

iii. The local governing board shall publicize and hold at least two public hearings for the purpose of receiving public input at least one week prior to the local governing board meeting at which the elective sex education lessons will be considered for approval.

iv. The local governing board shall maintain for viewing by the public the total instructional materials to be used in approved elective sex education lessons within the district.

c. Format of instruction.

i. Lessons shall be taught to boys and girls separately.

ii. Lessons shall be ungraded, require no homework, and any evaluation administered for the purpose of self-analysis shall not be retained or recorded by the school or the teacher in any form.

iii. Lessons shall not include tests, psychological inventories, surveys, or examinations containing any questions about the student's or his parents' personal beliefs or practices in sex, family life, morality, values or religion.

2. High Schools: Course offering; approval; format.

a. A course in sex education may be provided in the high schools of Arizona.

b. The local governing board shall review the total instructional materials and approve all lessons in the course of study to be offered in sex education.

c. Lessons shall not include tests, psychological inventories, surveys, or examinations containing any questions about the student's or his parents' personal beliefs or practices in sex, family life, morality, values or religion.

d. Local governing boards shall maintain for viewing by the public the total instructional materials to be used in all sex education courses to be offered in high schools within the district.

3. Content of instruction: Common schools and high schools.

a. All sex education materials and instruction shall be age appropriate, recognize the needs of exceptional students, meet the needs of the district, recognize local community standards and sensitivities, shall not include the teaching of abnormal, deviate, or unusual sexual acts and practices, and shall include the following:

i. Emphasis upon the power of individuals to control their own personal behavior. Pupils shall be encouraged to base their actions on reasoning, self-discipline, sense of responsibility, self-control and ethical considerations such as respect for self and others; and

ii. Instruction on how to say "no" to unwanted sexual advances and to resist negative peer pressure. Pupils shall be taught that it is wrong to take advantage of, or to exploit, another person.

b. All sex education materials and instruction which discuss sexual intercourse shall:

i. Stress that pupils should abstain from sexual intercourse until they are mature adults;

ii. Emphasize that abstinence from sexual intercourse is the only method for avoiding pregnancy that is 100 percent effective;

iii. Stress that sexually transmitted diseases have severe consequences and constitute a serious and widespread public health problem;

iv. Include a discussion of the possible emotional and psychological consequences of preadolescent and adolescent sexual intercourse and the consequences of preadolescent and adolescent pregnancy;
v. Promote honor and respect for monogamous heterosexual marriage; and
vi. Advise pupils of Arizona law pertaining to the financial responsibilities of parenting, and legal liabilities related to sexual intercourse with a minor.

B. Certification of compliance. All districts offering a local governing board-approved sex education course of lesson shall certify, under the notarized signature of both the president of the local governing board and the chief administrator of the school district, compliance with this rule except as specified in paragraph (C). Acknowledgment of receipt of the compliance certification from the state Board of Education is required as a prerequisite to the initiation of instruction. Certification of compliance shall be in a format and with such particulars as shall be specified by the Department of Education.
C. All districts offering state Board approved sex education lessons or courses prior to the effective date of this rule shall comply with this rule on or before June 30, 1990.

§ 15-716. Instruction on acquired immune deficiency syndrome; department assistance

A. Each common, high and unified school district may provide instruction to kindergarten programs through the twelfth grade on acquired immune deficiency syndrome and the human immunodeficiency virus.
B. Each district is free to develop its own course of study for each grade. At a minimum, instruction shall:
   1. Be appropriate to the grade level in which it is offered.
   2. Be medically accurate.
   3. Promote abstinence.
   4. Discourage drug abuse.
   5. Dispel myths regarding transmission of the human immunodeficiency virus.
C. No district shall include in its course of study instruction which:
   1. Promotes a homosexual life-style.
   2. Portrays homosexuality as a positive alternative life-style.
   3. Suggests that some methods of sex are safe methods of homosexual sex.
D. At the request of a school district, the department of health services or the department of education shall review instruction materials to determine their medical accuracy.
E. At the request of a school district, the department of education shall provide the following assistance:
   1. A suggested course of study.
   2. Teacher training
   3. A list of available films and other teaching aids.
F. At the request of a parent, a pupil shall be excused from instruction on the acquired immune deficiency syndrome and the human immunodeficiency virus as provided in subsection A of this section. The school district shall notify all parents of their ability to withdraw their child from the instruction.

ADDENDUM

A Brief Description of Ten Major Content Areas in Comprehensive School Health Education

1. **Community Health** includes topics such as individual responsibility; healthful school, home and community environments; community health resources and facilities; official and nonofficial health agencies; health service careers; pollution control; community involvement; current issues; and trends in medical care.

2. **Consumer Health** addresses health care resources i.e., knowing what is available and how to be an educated consumer.

3. **Environmental Health** addresses individual and community responsibility, pollution, effects of environment on health, environmental protection agencies, population density, world health, waste disposal, sanitation, laws and career choices.

4. **Family Life Education** covers information about family dynamics, building relationships, child abuse, choices about relationships, family planning, parenting skills, sex education, and sexually transmitted diseases such as HIV infection and AIDS.

5. **Injury Prevention and Safety** includes learning about first aid and emergency health care and addresses the prevention of unintentional injuries. (Many schools include violence prevention and homicide as health issues within this content area.)

6. **Mental and Emotional Health** includes building self-esteem, effectively coping with stress, and communication skills, among others.

7. **Nutrition** addresses a balanced diet, food preparation, reading and understanding food labels, differences in nutritional needs for pregnant women, and more.

8. **Personal Health** includes physical fitness and lifetime activities, cardiovascular health, sleep, rest, relaxation, recreation, growth and development, oral health, vision and hearing, body systems and their functions, aging, personal wellness plans, and positive health habits and choices.

9. **Prevention and Control of Disease** addresses heart disease, stroke, diabetes, cancer, HIV/AIDS and others.

10. **Substance Use and Abuse** refers to the use and misuse of tobacco, alcohol, and other drugs and often includes topics such as positive decision-making, individual responsibility, substances beneficial to humankind, the classification of substances and their effects on the body, and the formation of habits and their influence.

The ten major content areas in this addendum are provided to assist local school districts in developing sequential curricula. It will be left to the discretion of the local district to determine the emphasis of each of the content areas. The Comprehensive Health Education and Physical Activity Standards are the required competency indicators, while the addendum is a tool to be used by school districts as a cross-reference.

COMPREHENSIVE HEALTH STANDARDS
ESSENTIALS (GRADES 6-8)

STANDARD 1

Students comprehend concepts related to health promotion and disease prevention.

- **1CH-E1. Explain the relationship between positive health behaviors and health care and the prevention of injury, illness, disease, disability and premature death**

  PO 1. Illustrate how positive health behaviors can prevent common injuries, diseases and conditions
  PO 2. Illustrate the harmful effects of use of tobacco, alcohol and other drugs

- **1CH-E2. Describe the interrelationship of mental, emotional, social and physical health during adolescence**

  PO 1. Describe how thoughts, feelings, dealing with people and being physically healthy are all interconnected
  PO 2. Illustrate how the variables stated above (in PO 1) interact as seen in case studies, movies, etc.

- **1CH-E3. Explain how health, growth and development are influenced by the interaction of body systems, genetics, environment and lifestyle**

  PO 1. Develop a plan for a healthy environment and lifestyle and apply it to health, growth and development

- **1CH-E4. Describe how family and peers influence the health of adolescents**

  PO 1. Illustrate how family and peers effect the choices you make regarding health

- **1CH-E5. Explain how environmental health and personal health are interrelated**

  PO 1. Compare healthy environments and healthy people with unhealthy environments and unhealthy people

- **1CH-E6. Describe ways to reduce risks related to adolescent health problems**

  PO 1. Identify personal health behaviors that reduce health problems

COMPREHENSIVE HEALTH STANDARDS
ESSENTIALS (GRADES 6-8)

- **1CH-E7. Describe how lifestyle and family history are related to the cause and prevention of disease and other health problems**

  PO 1. Describe how living a healthy lifestyle and knowing family health history can help a person live a more healthy life

- **1CH-E8. Explain how basic nutrients are utilized by the body and the relationship of a balanced diet and essential nutrients to appropriate weight, appearance and wellness**

  PO 1. Classify nutrients and their uses in the body
  PO 2. Apply this knowledge of nutrients and balanced diets to your weight, appearance and wellness

STANDARD 2

Students demonstrate the ability to access accurate health information.

- **2CH-E1. Obtain and utilize accurate health resources from home, school and community**

  PO 1. Apply health information from home, school and community

- **2CH-E2. Describe how media influences the selection of health information and products (e.g., exercise equipment, cosmetics)**

  PO 1. Illustrate how the media affects what you know about health and health products

- **2CH-E3. Compare the costs and effectiveness of health products**

  PO 1. Describe similar health products' cost and effectiveness in treating health problems

- **2CH-E4. Describe situations requiring professional health services**

  PO 1. Same as concept

- **2CH-E5. Identify emergency preparedness and emergency resources (e.g., first aid, CPR)**

  PO 1. Describe a variety of emergency situations
  PO 2. List emergency resources

COMPREHENSIVE HEALTH STANDARDS
ESSENTIALS (GRADES 6-8)

STANDARD 3

Students demonstrate the ability to practice health-enhancing behaviors and reduce health risks.

- **3CH-E1. Explain the importance of assuming responsibility for personal health behaviors**

  PO 1. Illustrate examples of responsible healthy behavior

- **3CH-E2. Identify strengths of, and risks to, one's personal and family health (e.g., heart disease, diabetes, high blood pressure) and implement strategies to improve or maintain both**

  PO 1. Rank personal and family strengths and risks
  PO 2. Develop a plan that would improve health and reduce risks

- **3CH-E3. Distinguish between responsible and risky/harmful behaviors (e.g., responsible: exercise, sleep, nutrition; risky: the use of tobacco, alcohol and other drugs)**

  PO 1. Identify responsible and risky behaviors

- **3CH-E4. Develop injury prevention and management strategies for personal and family health including ways to avoid and reduce threatening situations**

  PO 1. Identify existing prevention and management strategies regarding personal and family health
  PO 2. Identify ways to avoid threatening situations

- **3CH-E5. Demonstrate strategies to manage stress**

  PO 1. Choose five ways to reduce stress

- **3CH-E6. Perform basic safety, first aid and life saving techniques**

  PO 1. Apply basic first aid and basic life saving techniques

COMPREHENSIVE HEALTH STANDARDS ESSENTIALS (GRADES 6-8)

STANDARD 4

Students analyze the influence of culture, media, technology and other factors on health.

- **4CH-E1. Describe health behaviors and the use of health services in different cultures and explain the factors responsible for the differences**

  PO 1. Distinguish how different cultures utilize health services
  PO 2. Describe the factors responsible for the differences in health care

- **4CH-E2. Explain how messages from media and other sources influence health behaviors**

  PO 1. Identify a variety of media messages and determine how they influence your health

- **4CH-E3. Describe the influence of technology on personal and family health**

  PO 1. Describe five ways that technology can hurt or improve your health

- **4CH-E4. Describe how information from peers influences health**

  PO 1. Same as concept

STANDARD 5

Students demonstrate the ability to use interpersonal skills to enhance health.

- **5CH-E1. Demonstrate ways to communicate care, consideration and respect of self and others**

  PO 1. Choose five ways you can show respect for self and others

- **5CH-E2. Identify the causes of conflict among youth in schools and communities and demonstrate refusal and negotiation skills to enhance health**

  PO 1. Identify a minimum of two reasons for conflict among young people
  PO 2. Apply two ways to let the other person know that you mean “no” to something you do not want
  PO 3. Apply two things you can use to come to an agreement in a conflict and foster health

COMPREHENSIVE HEALTH STANDARDS
ESSENTIALS (GRADES 6-8)

- **5CH-E3. Demonstrate strategies to manage conflict in healthy ways**

  PO 1. Determine which ways can control conflict
  PO 2. Apply five healthy ways to control conflict

STANDARD 6

Students demonstrate the ability to use goal setting and decision-making skills to enhance health.

- **6CH-E1. Apply a sound decision-making process that includes an examination of alternatives and consequences and determines a course of action to resolve health issues and problems individually or collaboratively**

  PO 1. Describe collaboratively the decision-making process
  PO 2. List three alternatives and consequences regarding a health issue
  PO 3. Collectively choose which solution best fits the health issue

- **6CH-E2. Explain how decisions regarding health behaviors have consequences for self and others**

  PO 1. Identify five (positive or negative) health behaviors that relate to adolescence
  PO 2. Explain the consequences of the above health behaviors

- **6CH-E3. Describe how personal health goals are influenced by information, abilities, priorities and responsibilities**

  PO 1. Identify three personal health goals
  PO 2. Correlate the relationship between knowledge of health and personal selected goals

- **6CH-E4. Develop a plan that addresses personal strengths, needs and health risks, and apply strategies and skills needed to attain personal health goals**

  PO 1. Develop three personal health goals
  PO 2. Design a plan to improve strengths, realize needs, and reduce health risks
  PO 3. Describe attainment of personal health goals

STANDARD 7

Students demonstrate the ability to advocate for personal, family and community health.

- **7CH-E1. Research various media for language, subject matter and visual techniques used to influence health-related information and decision-making**

PO 1. Compare three different types of health information found in the media
PO 2. Select which language, subject matter and visual techniques did the best job of informing you about health

- **7CH-E2. Present information about health issues**

  PO 1. Choose two health issues
  PO 2. Present positive and negative aspects of selected health issues

- **7CH-E3. Identify barriers to effective communication of information about health issues**

  PO 1. Name three barriers of communication about a health issue

- **7CH-E4. Demonstrate the ability to support others in making positive health choices**

  PO 1. Distinguish three positive strategies to support someone making health choices

- **7CH-E5. Demonstrate the ability to work cooperatively when advocating for healthy individuals, families and schools**

  PO 1. Identify the various roles in a cooperative setting
  PO 2. Construct a cooperative group where everyone has a role toward promoting health awareness for a person, family or school
  PO 3. Determine ways to make this cooperative group successful

Physical Activity Standards Rationale

A wealth of information has been accumulated to point to the importance of physical activity in promoting health and wellness. Evidence also indicates that habits (lifestyles) established in youth are likely to influence adult lifestyles and associated health and wellness. Physical activity, a primary risk factor for many chronic health conditions, is an integral part of comprehensive school health education but also must be promoted as an important educational goal. Meeting physical activity standards includes both promotion of physical activity among youth and promotion of lifelong physical activity that will enhance workplace skills, fitness and wellness associated with quality of life. Achieving lifetime physical activity standards results in learning real life skills. Higher order skills include decision-making and problem solving required to become informed, lifetime physical activity consumers.

Rationale for Standard 1: Students demonstrate proficiency and the achievement of higher order cognitive skills necessary to enhance motor skills.

Movement competence implies the development of sufficient ability to enjoy participation in physical activities and re-establish a foundation to facilitate continued motor skill acquisition and increased ability to engage in developmentally appropriate daily physical activities. In addition to achieving competence in a few movement forms, which increases the likelihood of lifetime activity participation, the students apply concepts from exercise science disciplines that will help them achieve independence in developing movement competence in new movement forms. The focus is on movement forms appropriate for lifetime activity involvement and the establishment of personal competence.

Rationale for Standard 2: Students comprehend basic physical activity principles and concepts that enable them to make decisions, solve problems and become self-directed lifelong learners who are informed physical activity consumers.

Accessing accurate physical activity information, products and services is important to become informed, responsible physical activity consumers.

Rationale for Standard 3: Students exhibit a physically active lifestyle.

The intent of this standard is to establish patterns of regular participation in meaningful physical activity. This standard connects what is taught in school with students' choices for physical activity outside of school. Students are more likely to participate in physical activities if they have had opportunities to develop interests that are personally meaningful to them.

Rationale for Standard 4: Students achieve and maintain a health-enhancing level of physical fitness.

The intent of this standard is for the student to achieve a health-enhancing level of physical fitness. Students should be encouraged to develop personal fitness levels above those necessary for health-enhancement, based on unique personal needs and interests and necessary for many work situations and active leisure participation. Health-related fitness components include cardio-respiratory endurance, muscular strength and endurance, flexibility, and body composition. Expectations for students' fitness levels should be established on a personal basis, taking into account variation in entry levels, rather than setting a single standard for all children at a given grade level.

Rationale for Standard 5: Students develop self-initiated behaviors that promote effective personal and social interactions in physical activity settings.

The intent of this standard is achievement of self-initiated behaviors that promote personal and group success in activity settings. Behaviors such as safe practices, adherence to rules and procedures, etiquette, cooperation and teamwork, ethical behavior in sports, and positive social interaction are necessary for all students to develop effective communication skills.

Rationale for Standard 6: Students demonstrate understanding and respect for differences among people in physical activity settings.

The intent of this standard is to develop respect for similarities and differences through positive interaction among participants in physical activity. Similarities and differences include characteristics of culture, ethnicity, motor performance, disabilities, physical characteristics (e.g., strength, size, shape), gender, race and socioeconomic status.

Rationale for Standard 7: Students develop behavioral skills (self-management skills) essential to maintaining a physically active lifestyle.

The intent of this standard is for students to develop an awareness of the intrinsic benefits of participation in lifelong physical activity. Physical activity can provide opportunities for enjoyment, physical fitness and personal challenge.

PHYSICAL ACTIVITY STANDARDS
ESSENTIALS (GRADES 6-8)

STANDARD 1

Students demonstrate proficiency and the achievement of higher order cognitive skills necessary to enhance motor skills.

- **1PA-E1. Demonstrate competence in a variety of movement forms**

  PO 1. Throw, strike and kick a variety of objects demonstrating both accuracy and force
  PO 2. Dribble and pass a variety of objects to a moving target/receiver (e.g., hands, feet, equipment)
  PO 3. Perform a variety of rhythmic movements

- **1PA-E2. Apply more advanced movement and game strategies**

  PO 1. Utilize basic offensive and defensive skills in a modified version of a team sport
  PO 2. Adapt and combine locomotor and nonlocomotor and manipulative skills to meet the demands of increasingly complex movement activities

- **1PA-E3. Identify the critical elements of more advanced movement skills**

  PO 1. Identify the critical elements of a more advanced movement (e.g., golf swing, cartwheel, tennis serve) made by a fellow student and provide feedback to that student

- **1PA-E4. Identify the characteristics of highly skilled performance in a few movement forms**

  PO 1. Identify the characteristics which differentiate a highly skilled performer from other performers

- **1PA-E5. Apply more advanced discipline-specific knowledge (e.g., conditioning and fitness in a selected sport)**

  PO 1. Apply specialized movement skills that use similar patterns and transfer concepts from one to another (e.g., follow-through, opposition, force)

PHYSICAL ACTIVITY STANDARDS
ESSENTIALS (GRADES 6-8)

STANDARD 2

Students comprehend basic physical activity principles and concepts that enable them to make decisions, solve problems and to become self-directed lifelong learners who are informed physical activity consumers.

- **2PA-E1. Describe the relationship between a healthy lifestyle and feeling good**

  PO 1. Explain that success in physical activities leads to recognition
  PO 2. Explain the value of exercise in relieving stress

- **2PA-E2. Apply basic principles of training to improve physical fitness**

  PO 1. Participate in physical activities at home for personal enjoyment and benefit
  PO 2. Describe principles of training and conditioning for specific physical activities

- **2PA-E3. Describe physiological indicators of exercise during and after physical activity**

  PO 1. Demonstrate ability to calculate resting and target heart rate
  PO 2. Maintain a record of moderate to vigorous physical activity
  PO 3. Monitor heart rate before, during and after vigorous physical activity

- **2PA-E4. Explain the concept of target zones for health-related physical fitness**

  PO 1. Same as concept

STANDARD 3

Students exhibit a physically active lifestyle.

- **3PA-E1. Participate regularly in health-enhancing physical activities to accomplish personal health goals**

  PO 1. Participate in an individualized physical activity program designed with the help of the teacher
  PO 2. List long-term physiological, psychological, and cultural benefits that may result from regular participation in physical activity

- **3PA-E2. Participate in a variety of physical activities of personal interest**

  PO 1. Participate in activities both in and out of school based on individual interests and capabilities (e.g., aquatics, self-defense, gymnastics, games, sports, dance and outdoor pursuits)
  PO 2. Design a program to improve skills in a favorite activity

PHYSICAL ACTIVITY STANDARDS
ESSENTIALS (GRADES 6-8)

STANDARD 4

Students achieve and maintain a health-enhancing level of physical fitness.

- **4PA-E1. Accomplish the health-related fitness standards as defined by Fitnessgram**

  PO 1. Correctly demonstrate activities designed to improve and maintain muscular strength and endurance, flexibility, cardio-respiratory functioning, and proper body composition

- **4PA-E2. Apply basic principles of training to improve or maintain health-related physical fitness**

  PO 1. Demonstrate proper warm-up and cool-down techniques and the reasons for using them
  PO 2. Engage in physical activity at the target heart rate for a minimum of 10 minutes
  PO 3. Calculate heart rate before, during and after vigorous physical activity
  PO 4. Examine the impact of such factors as nutrition, relaxation, stress and substance abuse on the body
  PO 5. Incorporate the FITT principle into a regular activity program to improve or maintain fitness

STANDARD 5

Students develop self-initiated behaviors that promote effective personal and social interactions in physical activity settings.

- **5PA-E1. Explain the influence of peer pressure in physical activity settings**

  PO 1. Identify positive and negative peer influence
  PO 2. List positive ways to exert independence

- **5PA-E2. Identify potential consequences when confronted with a behavior choice**

  PO 1. Remain on task without close teacher monitoring
  PO 2. Solve problems by analyzing causes and potential solutions

- **5PA-E3. Cooperate with a group to achieve group goals in competitive as well as cooperative settings**

  PO 1. Participate in establishing rules, procedures and etiquette that are safe and effective for specific activity situations
  PO 2. Resolve interpersonal conflicts with a sensitivity to rights and feelings of others

PHYSICAL ACTIVITY STANDARDS
ESSENTIALS (GRADES 6-8)

- **5PA-E4. Identify the social benefits of participation in physical activity**
  PO 1. Demonstrate appropriate sportsmanship

STANDARD 6

Students demonstrate understanding and respect for differences among people in physical activity settings.

- **6PA-E1. Explain the role of sports, games and dance in modern culture**

  PO 1. Explain the role of games, sports and dance in getting to know and understand others of like and different backgrounds
  PO 2. Demonstrate an understanding of the ways sport and dance influence American culture

- **6PA-E2. Identify behaviors that are supportive and inclusive in physical activity settings**

  PO 1. Display sensitivity to the feelings of others during interpersonal interaction
  PO 2. Demonstrate cooperation (through verbal and nonverbal behaviors) with peers of different gender, race and ethnicity in a physical activity setting

- **6PA-E3. Participate in physical activities with others regardless of diversity and ability**

  PO 1. Same as concept

STANDARD 7

Students develop behavioral skills (self-management skills) essential to maintaining a physically active lifestyle.

- **7PA-E1. Establish personal physical activity goals**

  PO 1. Establish personal health-related fitness status and develop goals to meet health-related fitness
  PO 2. Participate daily in some sort of physical activity

- **7PA-E2. Explore a variety of new physical activities for personal interest**

  PO 1. Identify opportunities for participation in physical activity in the community

- **7PA-E3. Participate in new and challenging activities**

  PO 1. Participate in a variety of physical activities, both in and out of school, based upon individual interests and capabilities

Foreign and Native Language Standards 1997

Essentials (Grades 4-8)

Foreign and Native Language* Standards Rationale

Today's students prepare for the tomorrow in which they will need to function in varied contexts. The constant shrinking of the globe will expand their experience beyond that of previous generations to include contacts with other languages and cultures, both in their private lives and in their work. Languages are increasingly demanded in a wide range of professions. To succeed, students will need new tools, many of which are available primarily, if not solely, through the study of other languages. They include:

- ***the ability to communicate well for varied purposes*.** In other languages, as well as in English, effective communication requires an understanding of both the target language and culture under study and one's own, which implies the ability to interact confidently within many arenas, including the workplace and communities where the language is spoken.

- ***a solid foundation in basic subject matter and skills*.** All core subjects must contribute to this end, in an integrated fashion, to aid students in realizing the connections among the parts of their education. Basic subject matter includes the development of verbal reasoning, and listening skills and knowledge of the great achievements of human cultures, e.g., artistic, literary, scientific. The study of another language has been shown to enhance student performance in other academic fields. Learnings from other fields can also be reinforced in the foreign language classroom.

- ***an understanding and appreciation of the diversity of languages and cultures, including one's own*.** These tools aid students to function as responsible, informed, and confident citizens and enhance their personal development. They allow the finding of one's own place in the wider world.

Introduction to the Foreign Language Standards

The foreign language standards state what students need to know about languages and cultures, including their own; what students need to be able to do; and how this knowledge and these abilities relate to the subject matter of other core areas. The standards are stated clearly and in measurable terms:

- what students need to **know** in order to function successfully as they enter a new millennium that promises major changes in communications and contacts with other languages and cultures;

- what students need to be able to **do**. Knowing about a language and its culture(s), while essential, is not sufficient; students will develop skills for functioning effectively in varied contexts; and

- the integration of foreign languages into the rest of the curriculum so that the connections are clear and so that learning in all areas is facilitated, including the development of a deeper understanding of one's own language and culture. The five strands under which the standards are organized–Communication, Culture, Connections, Comparisons and Communities–are meant to be interwoven among themselves as well, rather than taught as separate entities. Meeting the standards for each one will contribute to reaching the standards of the others.

These standards for foreign language study are highly challenging for all students. They assume an extended sequence of learning throughout the students' school career, thus reflecting the likely nature of schools in the future. Meeting these standards will require the study of grammar–the forms and structures of the language–as well as effective learning strategies. Students will also need to use technologies that will bring the language and the culture to them in new ways and enhance their opportunities to learn.

In these standards we refer to "the target language," which may stand for "world language," "foreign language," "second language," or "heritage language" (i.e., the language that is the predominant language in the home).

Descriptions of Language Abilities for Each Level

Readiness

Students use basic vocabulary related to people, places, things and actions close to their own lives. They express themselves in phrases, short sentences and memorized material. Their language is characterized by an emerging control of the most common basic grammatical forms and structures. Because comprehension of oral and written language normally exceeds production, students are able to comprehend simple descriptions, narratives, and authentic materials such as advertisements, on topics studied in class. Pronunciation and fluency are such that students often might not be understood by native speakers. They are able to write accurately what they can say.

Foundations

Students speak and write extemporaneously using short sentences and sentence strings in present tense on topics within their experience with the language. They can describe, ask and answer questions; engage in simple conversations; and carry out simple realistic functions such as ordering a meal, buying something, or introducing themselves or others to a group. Since their knowledge of the forms and structures of the language has grown rapidly but their practice has been limited, their speech is likely to contain numerous linguistic errors. Students are comprehensible to sympathetic listeners who have experience with non-native speakers of their language. Their written language still mirrors their oral language, although they may be able to express more ideas more accurately in writing, given time to reflect, review and revise.

Essentials

Students speak with somewhat longer utterances and begin to display an ability to connect phrases and sentences to show relations between ideas expressed. Although patterns of errors are still common, students now speak and write extemporaneously in past, present and future time, using vocabulary related to their own lives and interests. Accent and intonation are generally accurate, although pauses and false starts may be common, as students give simple instructions and directions, make comparisons, solve problems together, and engage in conversations on a range of topics including leisure activities, professions and current events. In written work, students' spelling and punctuation are mostly accurate; and they organize their ideas well.

Proficiency

Students use paragraph-length connected discourse to narrate, describe, and discuss ideas and opinions. On topics of interest to them and within their experience, they show few patterns of linguistic errors, they are generally comprehensible to native speakers of the language, and their vocabulary is sufficient to avoid awkward pauses. They are able to circumvent linguistic gaps or lapses by "finding another way to say it." Given time to reflect and revise, they are able to express their ideas completely and interestingly in writing, with generally accurate grammar, vocabulary, spelling, accents and punctuation. They comprehend most authentic expository and fictional material produced for contemporary native speakers.

Distinction

Students show almost no patterns of linguistic errors and are able to carry out almost any task that they can execute in English, albeit with less fluency and control or breadth of vocabulary and grammar. They can argue a point effectively and extemporaneously, explaining their point of view in detail. In writing, their ideas are well organized and clearly, completely, and interestingly presented, with accurate use of the language's writing system. They can comprehend any non-technical material produced for the general public of native speakers in the standard language.

FOREIGN AND NATIVE LANGUAGE STANDARDS ESSENTIALS (GRADES 4-8)

STANDARD 1: COMMUNICATION
Students understand and interpret written and spoken communication on a variety of topics in the target language.

- **1FL-E1. Comprehend the main idea in authentic oral and written materials on a familiar topic**
- **1FL-E2. Comprehend well-developed paragraphs containing complex sentences and idiomatic expressions**
- **1FL-E3. Comprehend, interpret and analyze the style of a short piece of fiction or essay on familiar topics**
- **1FL-E4. Identify characteristics of a variety of literary genres, e.g., short stories, plays, essays**
- **1FL-E5. Identify emotions and feelings from selected reading material**
- **1FL-E6. Read a poem and analyze its components**

STANDARD 2: COMMUNICATION
Students engage in oral and written exchanges which include providing and obtaining information, expressing feelings and preferences, and exchanging ideas and opinions in the target language.

- **2FL-E1. Express and react to a variety of feelings**
- **2FL-E2. Develop and propose solutions to issues and problems cooperatively with other students**
- **2FL-E3. Support opinions with factual information**
- **2FL-E4. Use idiomatic expressions in oral and written communication**

STANDARD 3: COMMUNICATION
Students present information and ideas in the target language on a variety of topics to listeners and readers.

- **3FL-E1. Present understandable written reports and summaries**
- **3FL-E2. Perform short, student-created skits and scenes**
- **3FL-E3. Present a brief speech (monologue)**

FOREIGN AND NATIVE LANGUAGE STANDARDS ESSENTIALS (GRADES 4-8)

- **3FL-E4. Prepare tape- (audio) or video-recorded materials**

- **3FL-E5. Retell a story**

STANDARD 4: CULTURE
Students know "what to do when" and "what to say while doing it" in the culture and use this knowledge to interact appropriately. They also understand the relationships between cultural perspectives, products and practices within cultures.

- **4FL-E1. Investigate and participate in age-appropriate cultural practices related to business, sports and entertainment**

- **4FL-E2. Use and respond appropriately to idiomatic verbal and nonverbal expressions**

- **4FL-E3. Identify, experience or produce expressive products of the culture, e.g., advertisements, stories, poems**

- **4FL-E4. Recognize simple themes, ideas or perspectives of the culture and the relationships to socially acceptable behavior**

- **4FL-E5. Identify the areas in the U.S. where the target language is most commonly spoken, noting the impacts**

- **4FL-E6. Recognize how the target language and its culture add to the richness of our own cultural diversity**

- **4FL-E7. Recognize when to switch between formal and informal language**

STANDARD 5: CONNECTIONS
Students use the target language and authentic sources to reinforce and/or learn other content from the other subject areas.

- **5FL-E1. Present reports in the target language orally and/or in writing on topics being studied in other classes**

- **5FL-E2. Generate reports for other content areas using information acquired through sources in the target language**

FOREIGN AND NATIVE LANGUAGE STANDARDS ESSENTIALS (GRADES 4-8)

STANDARD 6: COMPARISONS

Students develop insights into their own language and their own culture through the study of the target language.

- **6FL-E1. Understand how idiomatic expressions impact communication and reflect culture**
- **6FL-E2. Demonstrate an awareness that there is more than one way to express ideas across languages**
- **6FL-E3. Recognize that there are linguistic and cultural concepts that exist in one language and not in another**
- **6FL-E4. Compare and contrast a variety of art forms (e.g., music, dance, visual arts, drama) with their own culture through oral and/or written descriptions and/or performance**

STANDARD 7: COMMUNITIES

Students use the target language within and beyond the school setting.

- **7FL-E1. Research and present a topic related to the target language or culture, using resources available outside the classroom**
- **7FL-E2. Write letters or electronic messages to native speakers**
- **7FL-E3. Interview community members who speak the target language on topics of personal or professional interest; report the results orally or in writing**
- **7FL-E4. Write letters to U.S. communities and other countries where the target language is used to request information on topics of interest; report orally or in writing about the information received**
- **7FL-E5. Identify and select written or oral materials of individual interest; report on them to others**

Reading Standard Articulated by Grade Level 2003

Grade 6

Reading Standard Articulated by Grade Level

INTRODUCTION

Reading is a complex skill that involves learning language and using it effectively in the active process of constructing meaning embedded in text. It requires students to fluently decode the words on a page, understand the vocabulary of the writer, and use strategies to build comprehension of the text. It is a vital form of communication in the 21st century and a critical skill for students of this "information age" as they learn to synthesize a vast array of texts.

The Reading Standard Articulated by Grade Level will provide a clear delineation of what students need to know and be able to do at each grade level. This allows teachers to better plan instructional goals for students at any grade.

BACKGROUND

The state Board of Education adopted the Arizona Academic Standards in 1996 to define what Arizona's students need to know and be able to do by the end of twelfth grade. Developed by committees comprised of educators, parents, students, and business and community leaders, these standards were written in grade-level clusters with benchmarks at grades 3, 5, 8, and high school.

RATIONALE

Requirements in the *No Child Left Behind Act of 2001* (NCLB) and the standard practice of conducting periodic review of the state academic standards prompted the decision by the Arizona Department of Education to refine and articulate the academic standards for mathematics and reading by grade level. This refinement and articulation project was started in July 2002, and was completed in March 2003.

METHODOLOGY

Work teams for reading consisted of a representative sample of educators from around the state designed to include large and small schools, rural and urban schools, and ethnic diversity. National reading consultants, university professors, and test company consultants advised the teams. The goal was to articulate, or align, the current academic standards by grade level (K-12).

The Reading Articulation Teams utilized information from the National Council of Teachers of English and the findings of the National Reading Panel, which promote quality instruction, based on current, pedagogical, and researched practices.

The articulation process included a restructuring of the Arizona Academic Content Standards to better facilitate the alignment of performance objectives by grade level, while maintaining the content integrity of the existing standards. Over a period of

months, the articulation team and smaller sub-committees of the teams refined the documents. Reasonableness, usefulness, and appropriateness were the guidelines for the articulation process.

External reviews by nationally recognized consultants brought a broad perspective to the articulation process. Internal reviews by university and local experts provided additional validation.

Another important step in the project was the request for public comment. In December 2002, drafts of the Standards Articulated by Grade Level, along with a survey to gather feedback, were posted on the Arizona Department of Education website. This provided the public with easy access to the documents, and the survey allowed reviewers a means for submitting comments. The public and all educators had the opportunity to submit comments and suggestions, either electronically or in writing, until the survey closing date of January 31, 2003. In January, six public hearings were held throughout the state, offering further opportunities for public input.

After all the public comments were collected and organized by topic, the articulated teams met one last time to determine what modifications to the standards documents would be appropriate, based on this information. All public comments were given equal consideration.

The completion of the standards articulation process was followed by the development of rationales, glossaries, and crosswalks. These additional documents were designed to assist educators with the transition from the 1996 standards to the Reading Standard Articulated by Grade Level.

READING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 1: Reading Process

Reading Process consists of the five critical components of reading, which are Phonemic Awareness, Phonics, Fluency, Vocabulary and Comprehension of connected text. These elements support each other and are woven together to build a solid foundation of linguistic understanding for the reader.

Concept 1: Print Concepts
Demonstrate understanding of print concepts.

(Grades K-3)

Concept 2: Phonemic Awareness
Identify and manipulate the sounds of speech.

(Grades K-2)

Concept 3: Phonics
Decode words, using knowledge of phonics, syllabication, and word parts.

(Grades K-3)

Concept 4: Vocabulary
Acquire and use new vocabulary in relevant contexts.

PO 1. Determine the effect of affixes on root words.

PO 2. Use context to identify the meaning of unfamiliar words (e.g., definition, example, restatement, synonym, contrast).

PO 3. Use context to identify the intended meaning of words with multiple meanings (e.g., definition, example, restatement, or contrast).

PO 4. Determine the meaning of figurative language, including similes, metaphors, personification, and idioms in prose and poetry.

PO 5. Identify the meanings, pronunciations, syllabication, synonyms, antonyms, and parts of speech of words, by using a variety of reference aids, including dictionaries, thesauri, glossaries, and CD-ROM and the Internet when available.

Concept 5: Fluency
Read fluently.

PO 1. Read from a variety of genres with accuracy, automaticity (immediate recognition), and prosody (expression).

READING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 6: Comprehension Strategies
Employ strategies to comprehend text.

PO 1. Predict text content using prior knowledge and text features (e.g., illustrations, titles, topic sentences, key words).

PO 2. Confirm predictions about text for accuracy.

PO 3. Generate clarifying questions in order to comprehend text.

PO 4. Use graphic organizers in order to clarify the meaning of the text.

PO 5. Connect information and events in text to experience and to related text and sources.

PO 6. Apply knowledge of the organizational structures (e.g., chronological order, time-sequence order, cause and effect relationships) of text to aid comprehension.

PO 7. Use reading strategies (e.g., drawing conclusions, determining cause and effect, making inferences, sequencing) to comprehend text.

Strand 2: Comprehending Literary Text

Comprehending Literary Text identifies the comprehension strategies that are specific in the study of a variety of literature.

Concept 1: Elements of Literature
Identify, analyze, and apply knowledge of the structures and elements of literature.

PO 1. Describe the plot and its components (e.g., main events, conflict, rising action, climax, falling action, resolution).

PO 2. Identify the theme in works of prose, poetry, and drama.

PO 3. Describe the motivations of major and minor characters.

PO 4. Identify the narrative point of view (e.g., first person, third person, omniscient) in a literary selection.

PO 5. Analyze the influence of setting (e.g., time of day or year, historical period, place, situation) on the problem and resolution

PO 6. Draw conclusions about the style, mood, and meaning of literary text based on the author's word choice.

PO 7. Identify the characteristics and structural elements of poetry (e.g., stanza, verse, rhyme scheme, line breaks, alliteration, consonance, assonance, rhythm, repetition, figurative language).

PO 8. Identify various genres of fiction (e.g., mysteries, science fiction, historical fiction, adventures, fantasies, fables, myths) based upon their characteristics.

READING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 2: Historical and Cultural Aspects of Literature

Recognize and apply knowledge of the historical and cultural aspects of American, British, and world literature.

PO 1. Describe the historical and cultural aspects found in cross-cultural works of literature.

PO 2. Identify common structures and stylistic elements in literature, folklore, and myths from a variety of cultures.

Strand 3: Comprehending Informational Text

Comprehending Informational Text delineates specific and unique skills that are required to understand the wide array of informational text that is a part of our day-to-day experiences.

Concept 1: Expository Text

Identify, analyze, and apply knowledge of the purpose, structures, and elements of expository text.

PO 1. Restate the main idea (explicit or implicit) and supporting details in expository text.

PO 2. Summarize the main idea and critical details of expository text, maintaining chronological or logical order.

PO 3. Distinguish fact from opinion in expository text, providing supporting evidence from text.

PO 4. Identify the author's stated or implied purpose(s) for writing expository text.

PO 5. Locate specific information by using organizational features (e.g., table of contents, headings, captions, bold print, italics, glossaries, indices, key/guide words, topic sentences, concluding sentences) of expository text. (Connected to Research Strand in Writing)

PO 6. Locate appropriate print and electronic reference sources (e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodical, CD-ROM, website) for a specific purpose. (Connected to Research Strand in Writing)

PO 7. Interpret graphic features (e.g., charts, maps, diagrams, illustrations, tables, timelines, graphs) of expository text. (Connected to Research Strand in Writing)

PO 8. Identify the organizational structures (e.g., chronological order, comparison and contrast, cause and effect relationships, logical order) of expository text.

PO 9. Draw valid conclusions about expository text, supported by text evidence.

Concept 2: Functional Text

Identify, analyze, and apply knowledge of the purpose, structures, clarity, and relevancy of functional text.

PO 1. Use information from text and text features to determine the sequence of activities needed to carry out a procedure.

PO 2. Identify the text features (e.g., directions, legend, illustrations, diagram, sequence, bold face print, headings) of functional text.

PO 3. Interpret details from functional text for a specific purpose (e.g., to follow directions, to solve a problem, to perform a procedure, to answer questions).

READING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 3: Persuasive Text
Explain basic elements of argument in text and their relationship to the author's purpose and use of persuasive strategies.

PO 1. Determine the author's specific purpose for writing the persuasive text.

PO 2. Identify the facts and details that support the author's argument regarding a particular idea, subject, concept, or object.

PO 3. Describe the intended effect of persuasive strategies and propaganda techniques (e.g., bandwagon, peer pressure, repetition, testimonial, transfer, loaded words) that an author uses.

Writing Standard Articulated by Grade Level 2004

Grade 6

Writing Standard Articulated by Grade Level

INTRODUCTION

The purpose of the Writing Standard Articulated by Grade Level is to equip students with the skills and knowledge needed to participate in society as literate citizens. The ability to communicate effectively in writing will be essential to their success in their communities and careers. Students may realize personal fulfillment and enjoyment as they learn to become proficient writers and continue as writers throughout their lives.

Writing is a complex skill that involves learning language and using it effectively to convey meaning through text. This standard recognizes that students' abilities in writing develop from their earliest stages with phonetic spelling; to limited understanding of a certain genre; to the ability to produce conventional, coherent, unified documents. Their ideas are expressed in various forms, such as notes, lists, letters, journal writing, stories, web postings, instant messaging, essays, and reports. Effective writing may be evaluated by examining the use of ideas, organization, voice, word choice, sentence fluency, and conventions.

The Writing Standard Articulated by Grade Level will provide a clear delineation of what students need to know and be able to do at each grade level. This allows teachers to better plan instructional goals for students at any grade.

BACKGROUND

The state Board of Education adopted the Arizona Academic Standards in 1996 to define what Arizona's students need to know and be able to do by the end of twelfth grade. Developed by committees comprised of educators, parents, students, and business and community leaders, these standards were written in grade-level clusters with benchmarks at grades 3, 5, 8, and high school.

RATIONALE

Requirements in the No Child Left Behind Act of 2001 (NCLB) and the standard practice of conducting periodic review of the state academic standards prompted the decision by the Arizona Department of Education to refine and articulate the academic standards for mathematics, reading, writing, and science by grade level. This refinement and articulation project was started in December 2003, and was completed in June 2004.

METHODOLOGY

Writing Standard refinement began in January 2004, expanding the standard to include performance objectives for all grade levels, kindergarten through twelfth grade. The writing articulation teams consisted of educators from around the state, representing large and small schools, rural and urban schools, and ethnic diversity. National consultants, university professors, and Arizona Department of Education staff advised the teams. The goal was to articulate and align the current academic standards by grade level (K-12).

The Writing Articulation Committee utilized resources and information from current, effective classroom practices, from other states' standards, and from the National Council of Teachers of English, which promotes quality literacy instruction.

The articulation process included a restructuring of the Arizona Academic Content Writing Standards to better facilitate the alignment of performance objectives by grade level, while maintaining the content integrity.

Over a period of months, the articulation team and smaller subcommittees of the teams refined the documents. Reasonableness, usefulness, and appropriateness were the guidelines for the articulation process.

External reviews by nationally recognized consultants brought a broad perspective to the articulation process. Internal reviews by university and local experts provided additional validation.

Another important step in the project was the request for public comment. In May 2004, a draft of the Writing Standard Articulated by Grade Level, along with a survey to gather feedback, was posted on the Arizona Department of Education website. This provided the public with easy access to the documents, and the survey allowed reviewers a means for submitting comments. The public and all educators had the opportunity to submit comments and suggestions, either electronically or in writing, until the public review closing date of May 27, 2004. In May, three public hearings were held throughout the state, offering further opportunities for public input.

Based on public comment and online survey results, the articulation team met to determine necessary modifications to the standard. All public comments were given equal consideration.

Included in the standard articulation process the development of a rationale, glossary, and a crosswalk (correlation between the 1996 Writing Standard and revised, articulated standard). These additional documents were designed to assist educators with the transition from the 1996 Writing Standards to the 2004 Writing Standard Articulated by Grade Level.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 1: Writing Process

Research has established the major steps of the writing process. These steps are identified in the five concepts of this strand, each supported with specific performance objectives. While all steps are needed and used by effective writers as they compose text, different skills may be emphasized in individual assignments. These steps may be used recursively as a piece moves toward completion. Throughout the process, students should reflect on their own writing skills, set goals, and evaluate their own progress.

Concept 1: Prewriting Prewriting includes using strategies to generate, plan, and organize ideas for specific purposes.
*PO 1. Generate ideas through a variety of activities (e.g., **prior knowledge**, discussion with others, printed material or other sources).*
PO 2. Determine the purpose (e.g., to entertain, to inform, to communicate, to persuade, to explain) of an intended writing piece.
PO 3. Determine the intended audience of a writing piece.
PO 4. Establish a central idea appropriate to the type of writing.
*PO 5. Use organizational strategies (e.g., outline, chart, table, graph, **Venn Diagram**, **web**, **story map**, **plot pyramid**) to plan writing.*
PO 6. Maintain a record (e.g., lists, journal, folder, notebook) of writing ideas.
*PO 7. Use **time management strategies**, when appropriate, to produce a writing product within a set time period.*

Concept 2: Drafting Drafting incorporates prewriting activities to create a first draft containing necessary elements for a specific purpose.
*PO 1. Use a **prewriting plan** to develop a draft with **main idea**(s) and supporting details.*
PO 2. Organize writing into a logical sequence that is clear to the audience.

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 3: Revising Revising includes evaluating and refining the rough draft for clarity and effectiveness. (Ask: Does this draft say what you want it to say?)
PO 1. Evaluate the draft for use of ideas and content, organization, voice, word choice, and sentence fluency. (See Strand 2)
PO 2. Add details to the draft to more effectively accomplish the purpose.
PO 3. Delete irrelevant and/or redundant information from the draft to more effectively accomplish the purpose.
PO 4. Rearrange words, sentences, and paragraphs to clarify the meaning or to enhance the writing style.
PO 5. Add **transitional words**, phrases and/or sentences to clarify meaning or enhance the writing style.
PO 6. Use a variety of sentence structures (i.e., **simple**, **compound**) to improve sentence fluency in the draft.
PO 7. *Apply appropriate tools or strategies (e.g., **peer review**, checklists, **rubrics**) to refine the draft.*
PO 8. Use resources and reference materials to select more precise vocabulary.

Concept 4: Editing Editing includes proofreading and correcting the draft for conventions.
PO 1. Identify punctuation, spelling, and grammar and usage errors in the draft. (See Strand 2)
PO 2. Use resources (e.g., dictionary, word lists, spelling/grammar checkers) to correct conventions.
*PO 3. Apply **proofreading marks** to indicate errors in conventions.*
*PO 4. Apply appropriate tools or strategies (e.g., **peer review**, checklists, **rubrics**) to edit the draft.*

Concept 5: Publishing Publishing includes formatting and presenting a final product for the intended audience.
PO 1. Prepare writing in a format (e.g., oral presentation, manuscript, multimedia) appropriate to audience and purpose.
PO 2. Use margins and spacing to enhance the final product.
PO 3. Use graphics (e.g., drawings, charts, graphs), when applicable, to enhance the final product.
PO 4. Write legibly.

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: Writing Components

This strand focuses on the elements of effective writing. Good writing instruction incorporates multiple performance objectives into an integrated experience of learning for the student. Throughout the process, students should reflect on their own writing skills, set goals, and evaluate their own progress. The order of the concepts and performance objectives is not intended to indicate a progression or hierarchy for writing instruction. Instructional activities may focus on just one concept or many.

Concept 1: Ideas and Content Writing is clear and focused, holding the reader's attention throughout. Main ideas stand out and are developed by strong support and rich details. Purpose is accomplished.
PO 1. Use clear, focused ideas and details to support the topic.
PO 2. Provide content and selected details that are well suited to audience and purpose.
PO 3. Develop a sufficient explanation or exploration of the topic.
PO 4. Include ideas and details that show original perspective.

Concept 2: Organization Organization addresses the structure of the writing and integrates the central meaning and patterns that hold the piece together.
*PO 1. Use a structure that fits the type of writing (e.g., letter format, **narrative**, play, essay).* (See Strand 3)
PO 2. Develop a strong beginning or introduction that draws in the reader.
PO 3. Place details appropriately to support the main idea.
PO 4. Include effective transitions among all elements (sentences, paragraphs, ideas).
PO 5. Construct paragraphs by arranging sentences with an organizing principle (e.g., to develop a topic, to indicate a chronology)**.**
*PO 6. Create an ending that provides a sense of **resolution** or closure.*

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 3: Voice Voice will vary according to the type of writing, but should be appropriately formal or casual, distant or personal, depending on the audience and purpose.
PO 1. Show awareness of the audience through word choice and style.
PO 2. Convey a sense of identity through originality, sincerity, liveliness, or humor appropriate to the topic and type of writing.
PO 3. Use language appropriate for the topic and purpose.
PO 4. Choose appropriate voice (e.g., formal, informal) for the audience and purpose.

Concept 4: Word Choice Word choice reflects the writer's use of specific words and phrases to convey the intended message and employs a variety of words that are functional and appropriate to the audience and purpose.
PO 1. Use accurate, specific, powerful words that effectively convey the intended message.
PO 2. Use words and phrases that consistently support style and type or writing. (See R06-S2C1)
PO 3. Use vocabulary that is original, varied, and natural.
PO 4. Use **literal** and **figurative language** where appropriate to purpose. *(See R06-S1C4-04)*

Concept 5: Sentence Fluency Fluency addresses the rhythm and flow of language. Sentences are strong and varied in structure and length.
PO 1. Write **simple and compound sentences**.
PO 2. Write sentences that flow together and sound natural when read aloud.
PO 3. Vary sentence beginnings, lengths, and patterns to enhance the flow of the writing.
*PO 4. Use effective and natural **dialogue** when appropriate.*

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 6: Conventions
Conventions addresses the mechanics of writing, including capitalization, punctuation, spelling, grammar and usage, and paragraph breaks.

PO 1. Use capital letters correctly for:

a. ***proper nouns***
- *holidays*
- *product names*
- *languages*
- *historical events*
- *organizations*
- academic courses (e.g., algebra/Algebra I)
- place
- regional names (e.g., West Coast)

b. *words used as names (e.g., Grandpa, Aunt Lyn)*
c. *literary titles (i.e., story, poem, play, song)*
d. *titles*
e. *abbreviations*
f. **proper adjectives**

PO 2. Use commas to correctly punctuate:

a. *items in a series*
b. *greetings and closings of letters*
c. *introductory words*
d. ***direct address***
e. **interrupters**
f. **compound sentences**

PO 3. Use quotation marks to punctuate:

a. ***dialogue***
b. titles of short works (e.g., chapter, story, article, song, poem)
c. exact words from sources

PO 4. Use italics (in typed copy) and underlining (in handwriting) to indicate titles of longer works (e.g., books, plays, magazines, movies, TV series).

PO 5. Use colons to punctuate business letter salutations.

PO 6. Use apostrophes to punctuate:

a. contractions
b. singular possessives

PO 7. Spell ***high frequency words*** *correctly.*

PO 8. Use common spelling patterns/generalizations to spell words correctly.

PO 9. Use ***homonyms*** *correctly in context.*

PO 10. Use resources to spell correctly.

PO 11. Use paragraph breaks to indicate an organizational structure.

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

*PO 12. Use the following parts of speech correctly in **simple sentences**:*

- *a. nouns*
- *b. action/linking verbs*
- *c. personal pronouns*
- *d. adjectives*
- *e. adverbs*
- *f. conjunctions*
- g. prepositions
- *h.* interjections

*PO 13. Use subject/verb agreement in **simple** and **compound sentences**.*

Strand 3: Writing Applications

Writing skills particular to the applications listed here may be taught across the curriculum, although some applications may lend themselves more readily to specific content areas. It is imperative that students write in all content areas in order to increase their communication skills, and ultimately to improve their understanding of content area concepts. When appropriate, other content standards are referenced to show interdisciplinary connections

.

Concept 1: Expressive

Expressive writing includes **personal narratives**, stories, poetry, songs, and dramatic pieces. Writing may be based on real or imagined events.

PO 1. Write a **narrative** that includes:

- a. an engaging **plot** based on imagined or real ideas, observations, or memories of an event or experience
- b. effectively developed characters
- c. a clearly described **setting**
- d. **dialogue**, as appropriate
- e. **figurative language,** or descriptive words and phrases to enhance style and **tone**

PO 2. Write in a variety of expressive forms (e.g., poetry, skit) that, according to type of writing, employ:

- a. **figurative language**
- b. **rhythm**
- c. **dialogue**
- d. **characterization**
- e. **plot**
- f. appropriate format

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 2: Expository Expository writing includes nonfiction writing that describes, explains, informs, or summarizes ideas and content. The writing supports a **thesis** based on research, observation, and/or experience.
PO 1. Record information (e.g., observations, notes, lists, charts, map labels and legends) related to the topic.
PO 2. Write a summary based on the information gathered that include(s): a. a topic sentence b. supporting details c. relevant information (See R06-S3C1-02)
PO 3. Write a **process essay** that includes: a. a **thesis statement** b. supporting details introductory, body, and concluding paragraphs

Concept 3: Functional Functional writing provides specific directions or information related to real-world tasks. This includes letters, memos, schedules, directories, signs, manuals, forms, recipes, and technical pieces for specific content areas.
PO 1. Write a variety of functional texts (e.g., directions, recipes, procedures, **rubrics**, labels, posters, graphs/tables). (See R06-S3C2; M06-S2C1)
PO 2. Write a **friendly letter** that includes a: a. heading b. salutation c. body d. closing e. signature
PO 3. Write a **formal letter** that follows a conventional business letter format.
PO 4. Address an envelope for correspondence that includes: a. *an appropriate return address* b. *an appropriate recipient address*

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

WRITING STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 4: Persuasive
Persuasive writing is used for the purpose of influencing the reader. The author presents an issue and expresses an opinion in order to convince an audience to agree with the opinion or to take a particular action.

PO 1. Write persuasive text (e.g., essay, paragraph, written communications) that:
- a. establishes and develops a **controlling idea**
- b. supports arguments with detailed **evidence**
- c. includes **persuasive techniques**
- d. excludes irrelevant information

(See R06-S3C3)

Concept 5: Literary Response
Literary response is the writer's reaction to a literary selection. The response includes the writer's interpretation, analysis, opinion, and/or feelings about the piece of literature and selected elements within it.

PO 1. Write a response to literature that:
- a. presents several clear ideas
- b. supports **inferences** and conclusions with examples from the text, personal experience, references to other works, or reference to non-print media
- c. relates own ideas to supporting details in a clear and logical manner

(See R06-S2C1)

Concept 6: Research
Research writing is a process in which the writer identifies a topic or question to be answered. The writer locates and evaluates information about the topic or question, and then organizes, summarizes, and synthesizes the information into a finished product.

PO 1. Write a summary of information from sources (e.g. encyclopedias, websites, experts) that includes:
- a. paraphrasing to convey ideas and details from the source
- b. **main idea**(s) and relevant details

(See R06-S3C1-05, -06, -07)

PO 2. Write an informational report that includes:
- a. a focused topic
- b. appropriate facts and relevant details
- c. a logical sequence
- d. a concluding statement
- e. a list of sources used

(See R06-S3C1-05, -06, -07)

Italics denotes a repetition of a performance objective (learned in an earlier grade) that is to be applied to more complex writing.
The bulleted (lettered) items within a performance objective indicate specific content to be taught.
Words shown in bold print are referenced in the glossary.

Language Arts Standards 1996

Standard 3: Listening and Speaking
Standard 4: Viewing and Presenting

Essentials (Grades 4-8)

Language Arts Standards Rationale

A Vision for Arizona's Students

Arizona's students must be able to communicate effectively in their schools and communities. The communication skills of reading, writing, listening, speaking, viewing and presenting form the core of language and literacy. The ultimate purpose of the following language arts standards is to ensure that all students be offered the opportunities, the encouragement and the vision to develop the language skills they need to pursue lifelong goals, including finding personal enrichment and participating as informed members of society. The language art standards presented in this document are organized into four areas:

- Reading
- Writing
- Listening and Speaking
- Viewing and Presenting

Reading, writing, listening and speaking are commonly recognized as language skills. Visual communication skills have long been applied in language arts classrooms through the use of media and visual resources. However, with the increase in the availability and variety of media, students are faced with numerous demands for interpreting and creating visual messages. In this document, viewing (interpreting visual messages) and presenting (creating visual messages) are the two aspects of visual communication. Resources available for teaching visual communication range from charts, graphs and photographs to the most sophisticated electronic media.

The interdependency of reading, writing, listening, speaking, viewing and presenting requires that language arts skills be integrated in two ways:

- Within language art
- Across other content areas

Students use language skills to understand academic subject matter and to enrich their lives. They develop literacy at different rates and in a variety of ways. Consequently, interdependent language arts skills and processes should be taught in a variety of learning situations.

Assessment of language arts skills and processes should be comprehensive, authentic and performance based. Multiple assessment methods should be used to evaluate a student's knowledge base and the application of reading, writing, listening, speaking, viewing and presenting. Assessment tasks should reflect those experiences encountered in the home, community and workplace. Issues concerning assessment of specific populations pose complex questions with no simple solutions. As programs and assessments are developed, these issues must be resolved to enable all students to meet the standards.

In conclusion, the standards in the language arts framework form the core of every student's ability to function effectively in society. Students will need a wide repertoire of communication strategies and skills to succeed as learners, citizens, workers and fulfilled individuals in the 21st century.

LANGUAGE ARTS STANDARD
STRAND 3 – LISTENING AND SPEAKING AND
STRAND 4 – VIEWING AND PRESENTING
ESSENTIALS (GRADES 4-8)

STANDARD 3: LISTENING AND SPEAKING

Students effectively listen and speak in situations that serve different purposes and involve a variety of audiences.

- **LS-E1. Prepare and deliver an organized speech and effectively convey the message through verbal and nonverbal communications with a specific audience**

- **LS-E2. Prepare and deliver an oral report in a content area and effectively convey the information through verbal and nonverbal communications with a specific audience**

- **LS-E3. Interpret and respond to questions and evaluate responses both as interviewer and interviewee**

- **LS-E4. Predict, clarify, analyze and critique a speaker's information and point of view**

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**

Mathematics Standard Articulated by Grade Level 2008

Grade 6

Mathematics Standard Articulated by Grade Level

The Arizona Mathematics Standard Articulated by Grade Level describes a connected body of mathematical understandings and competencies that provide a foundation for all students. This standard is coherent, focused on important mathematics, and well articulated across the grades. Concepts and skills that are critical to the understanding of important processes and relationships are emphasized.

The need to understand and use a variety of mathematical strategies in multiple contextual situations has never been greater. Utilization of mathematics continues to increase in all aspects of everyday life, as a part of cultural heritage, in the workplace, and in scientific and technical communities. Today's changing world will offer enhanced opportunities and options for those who thoroughly understand mathematics.

Communication, problem solving, reasoning and proof, connections, and representation are the process standards as described in the *Principles and Standards for School Mathematics* from the National Council of Teachers of Mathematics (NCTM). These process standards are interwoven within each of the content strands of the Arizona Mathematics Standard and are explicitly connected to the teaching of specific performance objectives in the grade level documents. The process standards emphasize ways to acquire and apply the content knowledge.
Mathematics education should enable students to fulfill personal ambitions and career goals in an informational age. In the NCTM *Principles and Standards* document it asks us to "*Imagine a classroom, a school, or a school district where all students have access to high-quality, engaging mathematics instruction. There are ambitious expectations for all, with accommodations for those who need it".*[1] The Arizona Mathematics Standard Articulated by Grade Level is intended to facilitate this vision.

BACKGROUND

The State Board of Education adopted the Mathematics Standard Articulated by Grade Level in 2003 to define what Arizona students need to know and be able to do at each grade level through the end of tenth grade. Developed by a committee comprised of a diverse group of educators, this standard was written in response to the requirements of *No Child Left Behind Act of 2001* (NCLB).

RATIONALE

In 2007 the State Board of Education began the process for increasing the high school graduation requirement in mathematics from two to four years. This requirement was approved in December 2007 effective with the graduating class of 2013. This increase, along with the need to complete a periodic review of the standard, prompted the Arizona Department of Education to initiate the process of refining and rearticulating the Mathematics Standard. This refinement and articulation project began in June 2007 and was completed in June 2008.

1 National Council of Teachers of Mathematics, Principles and Standards for School Mathematics, NCTM Publications, Reston, VA, 2000, p. 3.

METHODOLOGY

Work teams representing populations from around the state were formed. These groupings were comprised of large and small schools, rural and urban schools, and were ethnically diverse. Included were classroom teachers, curriculum directors, mathematics teacher leaders, Career and Technical Education teachers, second-career teachers, and university/community college faculty. The goal was to revise and articulate the Mathematics Standard K-12 to align with the increased state requirement of four years of high school mathematics.

The mathematics revision teams utilized the National Council of Teachers of Mathematics *Principles and Standards* as a reference in the development of the revised Mathematics Standard. Additionally, the findings and recommendations from the National Mathematics

Advisory Panel, the American Diploma Project Benchmarks, the National Assessment of Educational Progress Framework, the Curriculum Focal Points, the Framework for 21st Century Skills, and other states' frameworks were used as guiding documents.

The revision grade level teams created draft documents with performance objectives articulated to the appropriate grade levels. Over a period of months, these teams and smaller sub-committees of teams refined the draft documents based on clarity, cohesiveness, and comprehensiveness. Reasonableness, usefulness, and appropriateness were key guidelines for the articulation process. The measurability of each performance objective was also a consideration.

External reviews by nationally recognized consultants brought a broader perspective to the refinement process. Another important step in the process was the gathering of public comment. In March 2008, drafts of the Revised Mathematics Standard Articulated by Grade Level, along with a survey to gather feedback, were posted on the Arizona Department of Education website. This provided the public with easy access to the documents, and a survey allowed reviewers a means for submitting comments. Also, crosswalks were created from the Draft 2008 Mathematics Standard to the 2003 Mathematics Standard and were posted on the website. The public had the opportunity to submit comments and suggestions, either electronically or in writing, until the survey closing date of March 28, 2008. Additionally, five public hearings were held in March throughout the state offering further opportunities for public feedback.

After all the public comments were collected, organized, and categorized by grade level and topic, the revision teams met to determine what modifications to the standard document would be appropriate. Upon completion of the revision work, crosswalks were created to assist educators with the transition from the 2003 Arizona Mathematics Standard Articulated by Grade Level to the revised 2008 Mathematics Standard.

ORGANIZATION OF THE MATHEMATICS STANDARD

The Mathematics Standard Articulated by Grade Level is divided into five main strands:

- Number and Operations
- Data Analysis, Probability, and Discrete Mathematics
- Patterns, Algebra, and Functions
- Geometry and Measurement
- Structure and Logic.

Each strand is divided into concepts that broadly define the skills and knowledge that students are expected to know and be able to do. Under each concept are performance objectives (POs) that more specifically delineate the ideas to be taught and learned.

The comprehensive document (K-12) is designed so that teachers can read the performance objectives across grade levels to incorporate learning from previous, current, and future grade levels. The standard is separated into two separate documents due to the addition of College Work Readiness (grades 11-12). The first document spans grade levels K through 6, and the second document covers grades 7 through College Work Readiness. Viewing the Mathematics Standard document from left to right helps the teacher to see the mathematics continuum across the grade levels. There is a purposeful clustering of performance objectives in order to emphasize certain key understandings. Every effort was made to eliminate repetitions. The intent was to build on the learning in previous grade levels, connect important ideas, and highlight new content each year. This coherency supports students in developing new understandings and skills. Looking down each individual column enables a teacher to see the performance objectives that students are expected to know and be able to do at any grade level.

This organization does not imply that the teaching and learning of mathematics should be fragmented or compartmentalized. Mathematics is a highly interconnected discipline; important mathematical ideas from all five mathematics strands need to be continuously integrated as needed to make meaning and connections to other concepts and performance objectives. In each grade level document, these connections are highlighted.

The order of the strands, concepts, and performance objectives (POs) in the Mathematics Standard document are not intended to be a checklist for mathematics instruction. Mathematical concepts develop with a spiraling of ideas/skills that are interconnected and dependent on each other, and this is reflected in the standard document. Effective instruction often incorporates several performance objectives into an integrated experience of learning for the student.
The content in College Work Readiness (grades 11-12) is a new addition to the Mathematics Standard. This content is separated into the five main strands. Performance objectives highlighted in italics in the document have been identified as core to an Algebra II course. As districts/schools create additional high school mathematics courses, they may select from the comprehensive set of performance objectives contained within the five strands.

New to the 2008 Mathematics Standard is the development of more comprehensive grade level documents. The format of these documents will support the implementation of the revised standard. After each concept statement, there are summary expectations appropriate for that specific grade level. These statements provide a roadmap for instruction. Teachers will notice that there are now three columns of information. The first column lists the performance objectives with accompanying strand/concept and content area connections. The middle column highlights explicit connections to Strand 5, Concept 2 performance objectives. These performance objectives are grounded in the core processes of logic, reasoning, problem-solving and proof. The third column provides instructional support to teachers in the form of explanation and examples.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of all mathematical strands.

Strand 1: Number and Operations

Number sense is the understanding of numbers and how they relate to each other and how they are used in specific context or real-world application. It includes an awareness of the different ways in which numbers are used, such as counting, measuring, labeling, and locating. It includes an awareness of the different types of numbers such as, whole numbers, integers, fractions, and decimals and the relationships between them and when each is most useful. Number sense includes an understanding of the size of numbers, so that students should be able to recognize that the volume of their room is closer to 1,000 than 10,000 cubic feet. Students develop a sense of what numbers are, i.e., to use numbers and number relationships to acquire basic facts, to solve a wide variety of real-world problems, and to estimate to determine the reasonableness of results.

Concept 1: Number Sense

Understand and apply numbers, ways of representing numbers, and the relationships among numbers and different number systems.

In Grade 6, students broaden their knowledge of fractions, decimals, percents, and ratios, and the relationships between each. They compare and order integers, fractions, decimals, and percents. They explore the inverse relationships between perfect squares and cubes, and their roots and are introduced to absolute value.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Convert between expressions for positive rational numbers, including fractions, decimals, percents, and ratios. Connections: M06-S1C1-03, M06-S1C1-04, M06-S1C3-01, M06-S2C2-01, M06-S2C2-02	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Students need many opportunities to use multiple representations in meaningful contexts. Continued on next page Example:

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
		• A baseball player's batting average is 0.625. What is his batting average when written as a fraction, ratio, and percent? Solution: o The player hit the ball $\frac{5}{8}$ of the time they were at bat; o The player hit the ball 62.5% of the time; or o The player has a ratio of 5 hits to 8 at bats (5:8).
PO 2. Use prime factorization to • express a whole number as a product of its prime factors and • determine the greatest common factor and least common multiple of two whole numbers. Connections: M06-S1C1-06	M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	Students are expected to use exponents where appropriate to summarize the prime factors. Examples: • What is the prime factorization of 24? (solution: $2^3 \cdot 3$) • What is the prime factorization of 36? (solution: $2^2 \cdot 3^2$) • What is the greatest common factor (GCF) of 24 and 36? How can you use the prime factorizations to find the GCF? (solution: $2^2 * 3 = 12$) • What is the least common multiple (LCM) of 24 and 36? How can you use the prime factorizations to find the LCM? (solution: $2^3 * 3^2 = 72$)
PO 3. Demonstrate an understanding of fractions as rates, division of whole numbers, parts of a whole, parts of a set, and locations on a real number line. Connections: M06-S1C1-01, M06-S1C1-04, M06-S4C4-02, M06-S4C4-03	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Students are expected to demonstrate understanding when working with fractions in multiple contexts. These contexts include but are not limited to common rates (charges/minutes, cost/item, miles/gallon, miles/hour), fair share problems, ratio tables, number lines, and expressions. This builds on students' previous work with ratios and unit rates in grade 5. Continued on next page

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
	M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	Examples: • The Gab Line Phone Company charges $20.00/month plus $0.05/minute for cell phone service, and $0.10/text message. If you used 246 minutes and sent 454 text messages, how much should you expect your bill this month to be? Does this fall within the $50 limit your parents have set? • Students should recognize the fraction bar as a grouping symbol that indicates division in the context of expressions. $\frac{3(2+0.5)}{7}$ can also be written as [3(2+0.5)]÷7. • Two afterschool clubs are having pizza parties. For the Math Club, the teacher will order 3 pizzas for every 5 students. For the student council, the teacher will order 5 pizzas for every 8 students. Since you are in both groups, you need to decide which party to attend. How much pizza would you get at each party? If you want to have the most pizza, which party should you attend? • The science club is donating a fish tank for the front office. They want to make a replica of the fish tank in their classroom but 4 times larger. There are 40 fish in the classroom tank, with a ratio of 5:3 (goldfish to guppies). How many of each type of fish will be needed for the larger tank? Write your answer as a ratio that describes the number of each type of fish. • Draw a number line to show the placement of $2\frac{4}{5}$. Continued on next page

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

<table>
<tr><th>Performance Objectives</th><th>Process Integration</th><th>Explanations and Examples</th></tr>
<tr><td>Students are expected to:</td><td></td><td></td></tr>
<tr><td></td><td></td><td>• A credit card company charges 17% interest on any charges not paid at the end of the month. Make a ratio table to show how much the interest would be for several amounts. If your bill totals $450 for this month, how much interest would you have to pay if you let the balance carry to the next month?

<table><tr><td>Charges</td><td>$1</td><td>$50</td><td>$100</td><td>$200</td><td>$450</td></tr><tr><td>Interest</td><td>$0.17</td><td>$8.50</td><td>$17</td><td>$34</td><td>?</td></tr></table></td></tr>
<tr><td>PO 4. Compare and order integers; and positive fractions, decimals, and percents.

Connections: M06-S1C1-01, M06-S1C1-03, M06-S1C3-01, M06-S1C3-02</td><td>M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.</td><td>Positive rational numbers include values greater than zero, such as proper fractions, improper fractions, mixed numbers, and percents both greater and less than 100%.

Example:
• List the numbers: $\frac{2}{3}, -3, 1.2, -1, \frac{11}{5}$ in increasing order. Explain the strategies you used to order the numbers.</td></tr>
<tr><td>PO 5. Express that a number's distance from zero on the number line is its absolute value.

Connections: M06-S1C2-01</td><td></td><td>Content critical to development of student understanding of absolute value include the definition of absolute value, a visual representation of absolute value on a number line, and the symbols used to designate absolute value.</td></tr>
<tr><td>PO 6. Express the inverse relationships between exponents and roots for perfect squares and cubes.

Connections: M06-S1C1-02</td><td>M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.</td><td>Examples:
• $2^2 = 2 \cdot 2 = 4$ and $\sqrt{4} = \sqrt{2 \bullet 2} = 2$
• $2^3 = 2 \cdot 2 \cdot 2 = 8$ and $\sqrt[3]{8} = \sqrt[3]{2 \bullet 2 \bullet 2} = 2$</td></tr>
</table>

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 1: Number and Operations
Concept 2: Numerical Operations

Understand and apply numerical operations and their relationship to one another.

In Grade 6, students build upon their prior knowledge of operations with rational numbers by multiplying and dividing fractions and decimals. They extend their computation of decimals to include division of whole numbers and decimals by a decimal. They expand their understanding of the real number system by modeling the concepts of addition and subtraction of integers. Students simplify numerical expressions using order of operations that now include exponents. They continue to apply properties of the real number system to evaluate expressions.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Apply and interpret the concepts of addition and subtraction with integers using models. Connections: M06-S1C1-05	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Students need multiple opportunities to build conceptual understanding of addition and subtraction of integers though models. Models may include, but are not limited to number lines, two color chips, and integer balances.
PO 2. Multiply multi-digit decimals through thousandths. Connections: M06-S1C2-05, M06-S1C2-06, M06-S1C2-07, M06-S1C3-02, M06-S3C1-01, M06-S3C3-04, M06-S5C1-01	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Students multiply with decimals efficiently and accurately as well as solve problems in both contextual and non-contextual situations.
PO 3. Divide multi-digit whole numbers and decimals by decimal divisors with and without remainders. Connections: M06-S1C2-05, M06-S1C2-06, M06-S1C2-07, M06-S1C3-02, M06-S3C1-01, M06-S3C3-04, M06-S5C1-01	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Students divide with decimals efficiently and accurately as well as solve problems in both contextual and non-contextual situations.

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 4. Multiply and divide fractions. Connections: M06-S1C2-05, M06-S1C2-06, M06-S1C2-07, M06-S1C3-02, M06-S3C1-01, M06-S3C3-04, M06-S5C1-01	M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	Students are expected to multiply and divide fractions including proper fractions, improper fractions and mixed numbers. They multiply and divide fractions efficiently and accurately as well as solve problems in both contextual and non-contextual situations.
PO 5. Provide a mathematical argument to explain operations with two or more fractions or decimals. Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-07, M06-S5C1-01	M06-S5C2-08. Make and test conjectures based on information collected from explorations and experiments.	Mathematical arguments may include, but are not be limited to models, pictures, or written explanations that demonstrate conceptual understanding. Example: • The product of fractions can be demonstrated using an array model. o In the example $\frac{2}{3} \bullet \frac{1}{4}$, the first fraction (two thirds) is modeled by dividing the rectangle horizontally into 3 parts and then shading 2 of the 3 rectangles (shown by the gray shaded lines).  Continued on next page

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
		o The second fraction (one fourth) is modeled by dividing the rectangle vertically into 4 parts and then shading 1 of the 4 rectangles (shown by the dark shading). The product is modeled by the overlap of the shaded areas (there are 2 pieces in which the overlap is shaded and there are 12 pieces total  $\frac{2}{3} \bullet \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$
PO 6. Apply the commutative, associative, distributive, and identity properties to evaluate numerical expressions involving whole numbers. Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-07	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Examples: • Which properties can you use to simplify this expression? Justify your choice. 4(3 + 2) • Simplify $6(20+4)$, with and without the use of the distributive property. • Evaluate $d-4(2d-5)+3e$ when d = 13 and e = 3. How can you use properties (commutative, associative and distributive) to help you evaluate the expression?

The bulleted items within a performance objective indicate the specific content to be taught.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 7. Simplify numerical expressions (involving fractions, decimals, and exponents) using the order of operations with or without grouping symbols. Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-05, M06-S1C2-06	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Examples: • $4 \div \frac{1}{2} + 5^2$ • 7 + 0.25 (3.6 – 1.35)

Strand 1: Number and Operations
Concept 3: Estimation

Use estimation strategies reasonably and fluently while integrating content from each of the other strands.

In Grade 6, students continue to develop estimation strategies to predict and verify solutions. They use estimation to determine the reasonableness of solutions and continue to use benchmarks for the comparison of rational numbers.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Use benchmarks as meaningful points of comparison for rational numbers. Connections: M06-S1C1-01, M06-S1C1-04	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Example: • Order the following numbers from least to greatest on a number line, and explain your reasoning. Which benchmarks were you able to use to help you order the numbers? 0.75, $\frac{1}{3}$, -2, $\sqrt{4}$

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Make estimates appropriate to a given situation and verify the reasonableness of the results. Connections: M06-S1C1-04, M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S2C1-03, M06-S2C2-02, M06-S3C3-02, M06-S3C3-04, M06-S3C4-01, M06-S4C4-01, M06-S4C4-02, M06-S4C4-03, M06-S4C4-04, M06-S4C4-05	M06-S5C2-01. Analyze a problem situation to determine the question(s) to be answered. M06-S5C2-02. Identify relevant, missing, and extraneous information related to the solution to a problem. M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Students should estimate using all four operations with whole numbers, fractions, and decimals. Estimation skills include identifying when estimation is appropriate, determining the level of accuracy needed, selecting the appropriate method of estimation, and verifying solutions or determining the reasonableness of situations using various estimation strategies. Estimation strategies for calculations with fractions and decimals extend from students' work with whole number operations. Estimation strategies include, but are not limited to: • front-end estimation with adjusting (using the highest place value and estimating from the front end making adjustments to the estimate by taking into account the remaining amounts), • clustering around an average (when the values are close together an average value is selected and multiplied by the number of values to determine an estimate), • rounding and adjusting (students round down or round up and then adjust their estimate depending on how much the rounding affected the original values), • using friendly or compatible numbers such as factors (students seek to fit numbers together - i.e., rounding to factors and grouping numbers together that have round sums like 100 or 1000), and • using benchmark numbers that are easy to compute (students select close whole numbers for fractions or decimals to determine an estimate). Specific strategies also exist for estimating measures. Students should develop fluency in estimating using standard referents (meters, yard, etc) or created referents (the window would fit about 12 times across the wall).

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: Data Analysis, Probability, and Discrete Mathematics
This strand requires students to use data collection, data analysis, statistics, probability, systematic listing and counting, and the study of graphs. This prepares students for the study of discrete functions as well as to make valid inferences, decisions, and arguments. Discrete mathematics is a branch of mathematics that is widely used in business and industry. Combinatorics is the mathematics of systematic counting. Vertex-edge graphs are used to model and solve problems involving paths, networks, and relationships among a finite number of objects.

Concept 1: Data Analysis (Statistics)

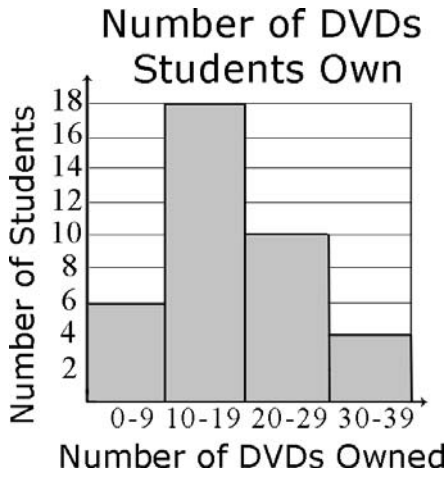
Understand and apply data collection, organization, and representation to analyze and sort data.

In Grade 6, students apply their understanding of fractions, decimals, and percents as they construct, analyze, and describe data. They are introduced to data displays and summary statistics to analyze the distribution of data and compare two data sets.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Solve problems by selecting, constructing, and interpreting displays of data, including histograms and stem-and-leaf plots. Connections: M06-S2C1-02, M06-S2C1-03, M06-S2C1-04, SC06-S1C3-01, SC06-S1C3-04, SC06-S1C4-01, SC06-S1C4-02, SS06-S1C1-01, SS06-S1C1-02, SS06-S2C1-01, SS06-S2C1-02, SS06-S4C1-01, SS06-S4C1-02	M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	Students are expected to use appropriate labels, intervals, and title for an appropriate visual representation of collected data. Students will use histograms and stem-and-leaf plots in addition to all previously learned graphs. It is important that students have opportunities to choose the appropriate display for the representation of collected data.

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Formulate and answer questions by interpreting, analyzing, and drawing inferences from displays of data, including histograms and stem-and-leaf plots. Connections: M06-S2C1-01, M06-S2C1-03, M06-S2C1-04, SC06-S1C1-02, SC06-S1C3-04, SC06-S1C3-06, SS06-S1C1-02, SS06-S2C1-02, SS06-S4C1-02	M06-S5C2-01. Analyze a problem situation to determine the question(s) to be answered. M06-S5C2-02. Identify relevant, missing, and extraneous information related to the solution to a problem. M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Students are expected to make estimates and compute with a data set. Examples: • The histogram below shows the number of DVDs students own: o How many students own 20 or more DVDs? o How many students own fewer than 30 DVDs? o How many students own exactly 15 DVDs? (Students should notice that histograms display intervals, not individual pieces of data.)  Continued on next page

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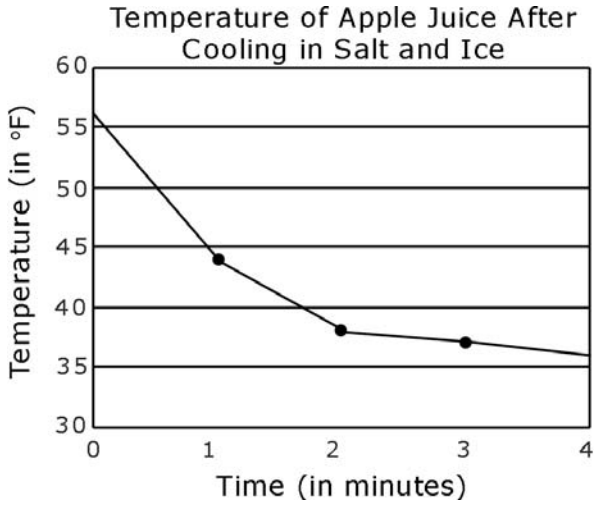
Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
		• The line graph below shows the temperature of a can of juice over time, after placing it in an ice and salt mixture. Describe any conclusions you can make about the data. What are some possible questions you could ask using the data? 

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 3. Use extreme values, mean, median, mode, and range to analyze and describe the distribution of a given data set. Connections: M06-S1C3-02, M06-S2C1-01, M06-S2C1-02, M06-S2C1-04	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Students use sets of data and graphical representations of data sets from real-world contexts. Example: • Use the stem and leaf plot below to determine the extreme values (maximum and minimum values represented), mean, median, mode and range. What do these values show about the distribution of the data? **Key: 2 | 3 = 23** **Spelling Test Scores** 1 | 3 2 | 3 | 4 | 5 | 2 4 6 | 3 3 7 | 4 5 6 6 7 8 | 2 5 7 8 9 9 | 0 1 3 4 4 10 | 0 0 0
PO 4. Compare two or more sets of data by identifying trends. Connections: M06-S2C1-01, M06-S2C1-02, M06-S2C1-03, SC06-S1C3-01	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Students analyze data to identify trends (increasing, decreasing, constant). Students also analyze two or more sets of data to determine how the trends in multiple sets of data compare.

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: Data Analysis, Probability, and Discrete Mathematics
Concept 2: Probability

Understand and apply the basic concepts of probability.

In Grade 6, students begin to make and test conjectures about theoretical probability by predicting outcomes of experiments, performing experiments, comparing experimental outcomes to a prediction, and replicating experiments for the comparison of results. They determine possible outcomes using a variety of systematic approaches.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Use data collected from multiple trials of a single event to form a conjecture about the theoretical probability. Connections: M06-S1C1-01, M06-S2C2-02, M06-S2C2-03	M06-S5C2-08. Make and test conjectures based on information collected from explorations and experiments.	Example: • Each group receives a bag that contains 4 green marbles, 6 red marbles, and 10 blue marbles. Each group performs 50 pulls, recording the color of marble drawn and replacing the marble into the bag before the next draw. Students compile their data as a group and then as a class. They summarize their data as experimental probabilities and make conjectures about theoretical probabilities (How many green draws would you expect if you were to conduct 1000 pulls? 10,000 pulls?). Students create another scenario with a different ratio of marbles in the bag and make a conjecture about the outcome of 50 marble pulls with replacement. (An example would be 3 green marbles, 6 blue marbles, 3 blue marbles.) Students try the experiment and compare their predictions to the experimental outcomes to continue to explore and refine conjectures about theoretical probability.

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Use theoretical probability to • predict experimental outcomes, • compare the outcome of the experiment to the prediction, and • replicate the experiment and compare results. Connections: M06-S1C1-01, M06-S1C3-02, M06-S2C2-01, M06-S2C2-03	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Students need multiple opportunities to perform probability experiments and compare these results to theoretical probabilities. Critical components of the experiment process are making predictions about the outcomes by applying the principles of theoretical probability, comparing the predictions to the outcomes of the experiments, and replicating the experiment to compare results. Experiments can be replicated by the same group or by compiling class data. Experiments can be conducted using various random generation devices including, but not limited to, bag pulls, spinners, number cubes, coin toss, and colored chips.
PO 3. Determine all possible outcomes (sample space) of a given situation using a systematic approach. Connections: M06-S2C2-01, M06-S2C2-02, M06-S2C3-01	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Systematic approaches may include, but are not limited to, frequency tables, tree diagrams, charts/tables, ordered pairs, and matrices. Example: • What are all of the outcomes of flipping a coin three times? <u>Systematic List</u> HHH TTT HTH HHT THH HTT TTH THT

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: Data Analysis, Probability, and Discrete Mathematics
Concept 3: Systematic Listing and Counting

Understand and demonstrate the systematic listing and counting of possible outcomes.

In Grade 6, students explore three attribute counting problems using Venn diagrams to build on prior learning about different counting problems. They learn to create and analyze tree diagrams where data repeats and expand their prior learning of the multiplication principle of counting.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Build and explore tree diagrams where items repeat. Connections: M06-S2C2-03	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Students have had opportunities to build tree diagrams in balanced situations, that is, when a consistent outcome happens at every step. They will be challenged by counting problems where an item is repeated. This seemingly little twist in the problem requires students to count the outcomes differently and makes the problem harder to solve. For example, how many ways can you arrange the letters in the word "FREE." Although you have a total of four letters in the word, there are only three possible choices for the first letter (F, R, or E); the repeated letter E throws a different twist into the construction of the tree diagram, namely it makes it "unbalanced." Look at the tree diagram below. Can you find where a different number of options are possible? Students should notice that after the first choice of a letter "F," there will only be two possible letters that could come next – namely, either R or E. But if their choice for a first letter was "E," they would have three possible letters for their second choice, namely, F, R, or E. When students look at the three subgroups in this tree, they will notice that the structure of the "E" subgroup is different from the structure of "R" subgroup, and from the structure of the "F" subgroup. The tree is not balanced. Continued on next page

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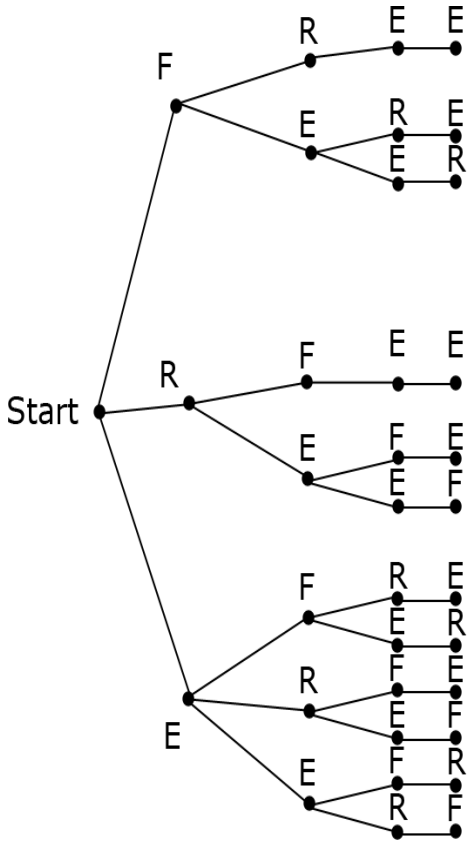
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
		Example: • All possible arrangements of the letters in the word FREE. 

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Explore counting problems with Venn diagrams using three attributes. Connections: M06-S5C2-07	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Example: • Ms. Taft's class has 35 students. Ms. Taft surveyed her students to find out the games they like to play in class. o $\frac{1}{5}$ said they liked to play only dodge ball. o $\frac{2}{5}$ said they like to play only basketball. o $\frac{1}{5}$ said they like to play only soccer. o $\frac{1}{5}$ said they liked to play dodge ball, basketball and soccer. Record the results in a Venn diagram that shows the fraction of students and number of students in each group. What is the total number of students who said they enjoy each sport?

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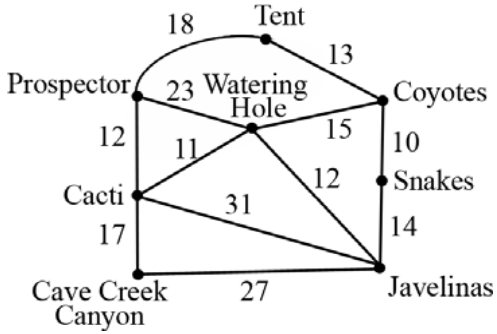
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: Data Analysis, Probability, and Discrete Mathematics
Concept 4: Vertex-Edge Graphs

Understand and apply vertex-edge graphs.

In Grade 6, students learn about Hamilton paths and circuits in comparison to prior learning of Euler paths and circuits in fifth grade. They learn to solve real-world problems related to Hamilton paths and circuits.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Investigate properties of vertex-edge graphs • Hamilton paths, • Hamilton circuits, and • shortest route. Connections: M06-S2C4-02	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	A Hamilton path in a vertex-edge graph is a path that starts at some vertex in the graph and visits every other vertex of the graph exactly once. Edges along this path may be repeated. A Hamilton circuit is a Hamilton path that ends at the starting vertex. The shortest route may or may not be a Hamilton path. Depending upon the constraints of a problem, each vertex may not need to be visited. Example • If the park ranger is required to visit every location on the vertex-edge graph below, what route should he take? Where should he begin and end his trip?  Continued on next page

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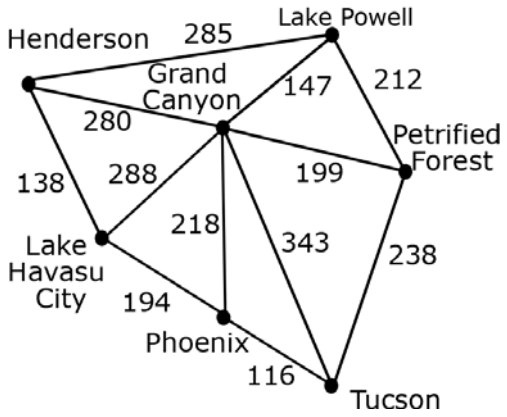
Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
		• One possible Hamilton path is: Prospector-Tent-Coyotes-Snakes-Javelinas-Watering Hole-Cacti-Cave Creek Canyon. Can you find other Hamilton paths? • Is it possible to start at one vertex (site) on the vertex-edge graph and visit every other vertex just once and return to the starting vertex? If it is possible, name that circuit. • What is the shortest route between Cave Creek Canyon and the Tent?
PO 2. Solve problems related to Hamilton paths and circuits. Connections: M06-S2C4-01	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Example: • The Clark family is vacationing in the southwestern part of the United States. They are going to visit every location on the graph below. What is the shortest route they can take? Where should the first vacation stop be for the Clark family? The last stop? 

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 3: Patterns, Algebra, and Functions
Patterns occur everywhere in nature. Algebraic methods are used to explore, model and describe patterns, relationships, and functions involving numbers, shapes, iteration, recursion, and graphs within a variety of real-world problem solving situations. Iteration and recursion are used to model sequential, step-by-step change. Algebra emphasizes relationships among quantities, including functions, ways of representing mathematical relationships, and the analysis of change.

Concept 1: Patterns

Identify patterns and apply pattern recognition to reason mathematically while integrating content from each of the other strands.

In Grade 6, students expand prior knowledge about sequences involving whole numbers, fractions, and decimals to include sequences that use the four basic operations.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Recognize, describe, create, and analyze a numerical sequence involving fractions and decimals using all four basic operations. Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S3C2-01	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Example: • Analyze each of the following sequences. What would the next term be? How did you determine what the next term would be? Write a general rule describing each sequence using words or mathematical symbols. o $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \ldots$ o $0, 2\frac{1}{2}, 5, 7\frac{1}{2}, \ldots$ o 0.3, 0.5, 0.9, 1.7, …

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 3: Patterns, Algebra, and Functions
Concept 2: Functions and Relationships

Describe and model functions and their relationships.

In Grade 6, students examine the relationship between two sets of numbers represented by a chart, graph, table, written language, or an expression.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Recognize and describe a relationship between two quantities, given by a chart, table, or graph, using words and expressions. Connections: M06-S3C1-01, M06-S3C3-03, M06-S3C4-01, SC06-S1C3-01, SC06-S1C3-04, SS06-S2C1-01, SS06-S2C1-02, SS06-S4C1-02	M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	Example: • What is the relationship between the two variables? Write an expression that illustrates the relationship. *x* | 1 | 2 | 3 | 4 *y* | 2.5 | 5 | 7.5 | 10

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 3: Patterns, Algebra, and Functions
Concept 3: Algebraic Representations

Represent and analyze mathematical situations and structures using algebraic representations.

In Grade 6, students write and use algebraic expressions and equations containing fractions and decimals to represent and solve contextual problems. They extend this skill to create and solve two-step equations containing positive rational coefficients. They use mathematical terminology and symbols to translate between written and verbal mathematical expressions and equations that have the four basic operations.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Use an algebraic expression to represent a quantity in a given context. Connections: M06-S3C3-02, M06-S4C1-02	M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	Examples: • Maria has three more than twice as many crayons as Elizabeth. Write an algebraic expression to represent the number of crayons that Maria has. (Solution: 2*c*+3 where *c* represents the number of crayons that Elizabeth has.) • An amusement park charges $28 to enter and $0.35 per ticket. Write an algebraic expression to represent the total amount spent. (Solution: 28 + 0.35*t* where *t* represents the number of tickets purchased.)
PO 2. Create and solve two-step equations that can be solved using inverse properties with fractions and decimals. Connections: M06-S1C3-02, M06-S3C3-01, M06-S4C1-02	M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	Students are expected to create and solve two-step equations in which the leading coefficients have positive values. Example: • $\frac{1}{2}n + 7 = 14$

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 3. Translate both ways between a verbal description and an algebraic expression or equation. Connections: M06-S3C2-01, M06-S3C3-01	M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	Examples: • Andrew has a summer job doing yard work. He is paid $15 per hour and a $20 bonus when he completes the yard. He was paid $85 for completing one yard. Write an equation to represent the amount of money he earned. • Describe a problem situation that can be solved using the equation $2C + 3 = 15$; where C represents the cost of an item
PO 4. Evaluate an expression involving the four basic operations by substituting given fractions and decimals for the variable. Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C3-02, M06-S4C4-04, M06-S4C4-05	M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	Example: • $5(n + 3) - 7n$, when $n = \frac{1}{2}$.

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 3: Patterns, Algebra, and Functions
Concept 4: Analysis of Change

Analyze how changing the values of one quantity corresponds to change in the values of another quantity.

In Grade 6, students extend prior learning about patterns of change to predict missing values on line graphs or scatterplots.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Determine a pattern to predict missing values on a line graph or scatterplot. Connections: M06-S1C3-02, M06-S3C2-01, SC06-S1C3-01	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Example: • Use the graph below to determine how much money a person makes after working exactly 9 hours. 

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MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 4: Geometry and Measurement

Geometry is a natural place for the development of students' reasoning, higher thinking, and justification skills culminating in work with proofs. Geometric modeling and spatial reasoning offer ways to interpret and describe physical environments and can be important tools in problem solving. Students use geometric methods, properties and relationships, transformations, and coordinate geometry as a means to recognize, draw, describe, connect, analyze, and measure shapes and representations in the physical world. Measurement is the assignment of a numerical value to an attribute of an object, such as the length of a pencil. At more sophisticated levels, measurement involves assigning a number to a characteristic of a situation, as is done by the consumer price index. A major emphasis in this strand is becoming familiar with the units and processes that are used in measuring attributes.

Concept 1: Geometric Properties

Analyze the attributes and properties of 2- and 3- dimensional figures and develop mathematical arguments about their relationships.

In Grade 6, students extend their exploration of 2-dimensional figures to include circles. They investigate the relationship between the radius, diameter and circumference of a circle to define π. Students investigate and solve problems with angle relationships by applying the properties of supplementary, complementary, and vertical angles.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Define π (pi) as the ratio between the circumference and diameter of a circle and explain the relationship among the diameter, radius, and circumference.	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Students develop the relationship between the circumference and the diameter, and the circumference and the radius of a circle. The relationships are connected since the diameter is equal to two radii. Example: • Measure the diameter and circumference of three circular objects in the classroom. Add your measurements to the class data chart and graph. Describe the pattern that you see in the data. Write the table in terms of the radius versus the circumference. Describe the pattern that you see in the data. Write a paragraph about the relationship between the diameter, radius, and circumference of a circle.

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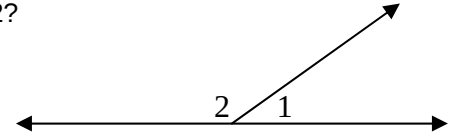
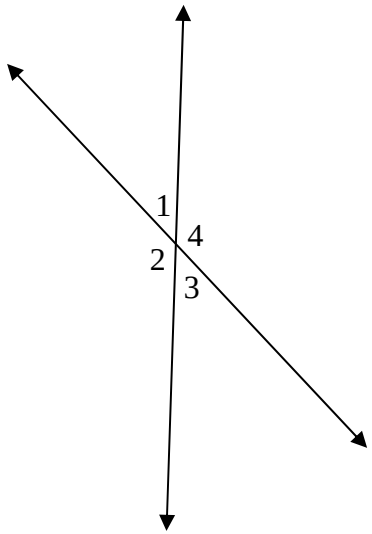
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Solve problems using properties of supplementary, complementary, and vertical angles. Connections: M06-S3C3-01, M06-S3C3-02	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Examples: • If the measure of $\angle 1 = 35^\circ$, what is the measure of $\angle 2$?  • If the measure of $\angle 2 = 135^\circ$, what are the measures of all of the other angles? Explain the properties that you used to figure out the measures. 

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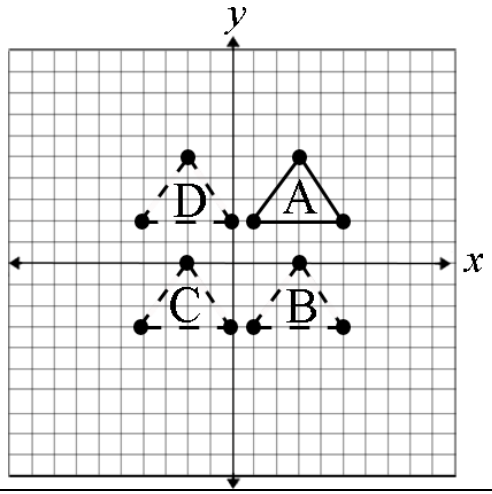
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 4: Geometry and Measurement
Concept 2: Transformation of Shapes

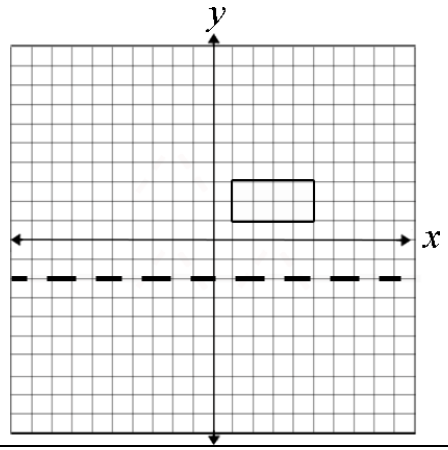
Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations.

In Grade 6, students build on their knowledge of translations and reflections to perform transformations in all four quadrants of the coordinate plane. They differentiate between vertical and horizontal lines of reflection to reflect polygons in all four quadrants.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Identify a simple translation or reflection and model its effect on a 2-dimensional figure on a coordinate plane using all four quadrants. Connections: M06-S4C2-02	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Example: • Triangle A is in quadrant I. It is moved five units to the left and five units down. Which triangle below shows this transformation? 

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Draw a reflection of a polygon in the coordinate plane using a horizontal or vertical line of reflection. Connections: M06-S4C2-01, M06-S4C3-01, M06-S4C3-02	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Example: • Draw the reflection of the rectangle using the dotted line as the line of reflection. 

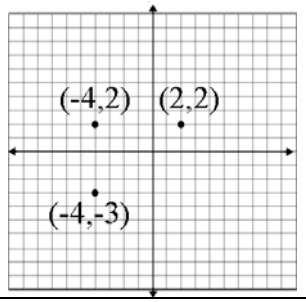
The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 4: Geometry and Measurement
Concept 3: Coordinate Geometry

Specify and describe spatial relationships using rectangular and other coordinate systems while integrating content from each of the other strands.

In Grade 6, students expand their understanding of graphing ordered pairs to all four quadrants. They use their understanding of geometric properties to justify the location of a missing coordinate in a figure.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Graph ordered pairs in any quadrant of the coordinate plane. Connections: M06-S4C2-02, M06-S4C3-02		Example: • Graph and label the points below on a coordinate plane. o A (0, 0) o B (2, -4) o C (5, 5) o D (-4, 1) o E (2.5, -6) o F (-3, -2)
PO 2. State the missing coordinate of a given figure on the coordinate plane using geometric properties to justify the solution. Connections: M06-S4C2-02, M06-S4C3-01	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Example: • If the points on the coordinate plane below are the three vertices of a rectangle, what are the coordinates of the fourth vertex? How do you know? 

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 4: Geometry and Measurement
Concept 4: Measurement

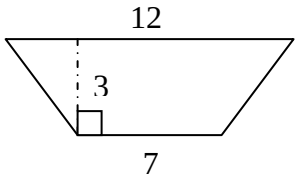
Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.

In Grade 6, students build upon their prior knowledge of measurement to determine the appropriate unit of measure, tool, and necessary precision to solve problems. They convert within systems of measurement to solve problems. They use scale drawings to estimate the measure of an object. Students also apply formulas for area and perimeter to solve problems and explore the relationship between volume and area.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Determine the appropriate unit of measure for a given context and the appropriate tool to measure to the needed precision (including length, capacity, angles, time, and mass). Connections: M06-S1C3-02, SC06-S1C2-04	M06-S5C2-01. Analyze a problem situation to determine the question(s) to be answered.	Example: • In your science class, you want to measure leaf width and plant heights to determine the effects of different kinds of fertilizers. What tools and units of measures would you use to make the measurements? To what degree of precision should you measure? Explain and justify your choices.
PO 2. Solve problems involving conversion within the U.S. Customary and within the metric system. Connections: M06-S1C1-03, M06-S1C3-02	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	
PO 3. Estimate the measure of objects using a scale drawing or map. Connections: M06-S1C1-03, M06-S1C3-02, SS06-S4C1-03	M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	Example: • On a drawing of an airplane, 2.5 inches is the same as 10 feet on an actual airplane. Estimate the length of the actual plane if the scale drawing shows a length of 5.75 inches.

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 4. Solve problems involving the area of simple polygons using formulas for rectangles and triangles. Connections: M06-S1C3-02, M06-S3C3-04, M06-S5C1-02	M06-S5C2-02. Identify relevant, missing, and extraneous information related to the solution to a problem. M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Examples: • Find the area of a triangle with a base length of three units and a height of four units. • Find the area of the trapezoid shown below using the formulas for rectangles and triangles. 
PO 5. Solve problems involving area and perimeter of regular and irregular polygons. Connections: M06-S1C3-02, M06-S3C3-04, M06-S5C1-02	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Examples: • A rectangle measures 3 inches by 4 inches. If the lengths of each side double, what is the effect on the area? What is the effect on the perimeter? • The area of the rectangular school garden is 24 square units. The length of the garden is 8 units. What is the length of the fence needed to enclose the entire garden?
PO 6. Describe the relationship between the volume of a figure and the area of its base.	M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	Students need multiple opportunities to measure volume by filling rectangular prisms with blocks and looking at the relationship between the total volume and the area of the base. Students derive the volume formula (volume equals the area of the base times the height) and explore how this idea would apply to other prisms and cylinders.

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 5: Structure and Logic
This strand emphasizes the core processes of problem solving. Students draw from the content of the other four strands to devise algorithms and analyze algorithmic thinking. Strand One and Strand Three provide the conceptual and computational basis for these algorithms. Logical reasoning and proof draws its substance from the study of geometry, patterns, and analysis to connect remaining strands. Students use algorithms, algorithmic thinking, and logical reasoning (both inductive and deductive) as they make conjectures and test the validity of arguments and proofs. Concept two develops the core processes as students evaluate situations, select problem solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.

Concept 1: Algorithms and Algorithmic Thinking

Use reasoning to solve mathematical problems.

In Grade 6, students expand their understanding of algorithms to analyzing algorithms for multiplying and dividing fractions and decimals using properties of the real number system. They use their knowledge of parallelograms and triangles to create and defend algorithms for calculating the area of compound figures.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 1. Analyze algorithms for multiplying and dividing fractions and decimals using the associative, commutative, and distributive properties Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-05	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Examples: • Commutative Property 7 • 0.359 becomes 0.359 • 7 to set up the multiplication problem with the most number of digits above the number with the least number of digits. • Associative Property 0.47 • 7.3 • 1.8 can be written as (0.47 • 7.3) • 1.8 to allow the product of the first two numbers to be multiplied by the third number. • Distributive Property 7 • 5 ½ can be written as 7 (5 + ½) and then distributed to get 7 • 5 + 7 • ½

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:		
PO 2. Create and justify an algorithm to determine the area of a given compound figure using parallelograms and triangles. Connections: M06S4C4-04, M06S4C4-05	M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Justifications may include numbers, words, a model of physical objects, or equations.

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 5: Structure and Logic
Concept 2: Logic, Reasoning, Problem Solving, and Proof

Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.

In Grade 6, students continue to use a variety of problem-solving strategies, and analyze them for efficiency and appropriateness for contextual situations. They communicate their thinking using multiple representations, synthesize and organize information from multiple sources to make inferences, draw conclusions, and justify their reasoning. Students begin to solve simple logic problems using conditional statements.

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:	Some of the Strand 5 Concept 2 performance objectives are listed throughout the grade level document in the Process Integration Column (2nd column). Since these performance objectives are connected to the other content strands, the process integration column is not used in this section next to those performance objectives.	
PO 1. Analyze a problem situation to determine the question(s) to be answered. Connections: SC06-S1C1-02		
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.		Students are expected to determine what information is needed to solve a problems and if the problem cannot be solved, which information is missing. If possible, students should state their assumption about the missing information and solve the problem using their assumptions.
PO 3. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.		

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:	Some of the Strand 5 Concept 2 performance objectives are listed throughout the grade level document in the Process Integration Column (2nd column). Since these performance objectives are connected to the other content strands, the process integration column is not used in this section next to those performance objectives.	
PO 4. Apply a previously used problem-solving strategy in a new context.		
PO 5. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution. Connections: SC06-S1C4-02		Multiple representations may include but are not limited to numbers, symbols, graphs, equations, pictures, or words.
PO 6. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. Connections: SC06-S1C4-03		Students are expected to begin to use formal notation in expressing algebraic and geometric concepts.
PO 7. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning. Connections: M06-S2C3-02, SC06-S1C3-02, SS06-S1C1-07, SS06-S2C1-07, SS06-S4C4-03		Students need multiple opportunities to make inferences, draw conclusions and justify their reasoning using problems from all of the content strands. Students are expected to write justifications and explain their thinking to other students.

The bulleted items within a performance objective indicate the specific content to be taught.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Performance Objectives	***Process Integration***	***Explanations and Examples***
Students are expected to:	Some of the Strand 5 Concept 2 performance objectives are listed throughout the grade level document in the Process Integration Column (2nd column). Since these performance objectives are connected to the other content strands, the process integration column is not used in this section next to those performance objectives.	
PO 8. Make and test conjectures based on information collected from explorations and experiments.		
PO 9. Solve simple logic problems, including conditional statements, and justify solution methods and reasoning.	M07-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem. M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	Example: • In a magic square below, if the sum of every row and column is the same, then what values can be placed in the empty boxes? Explain how you know your answer is correct. 6 | 7 | 8 | 3 | 4

The bulleted items within a performance objective indicate the specific content to be taught.

Science Standard Articulated by Grade Level 2004

Grade 6

Science Standard Articulated by Grade Level

INTRODUCTION

Students are naturally curious about the world and their place in it. Sustaining this curiosity and giving it a scientific foundation must be a high priority in Arizona schools. Application of scientific thinking enables Arizona students to strengthen skills that people use every day: solving problems creatively, thinking critically, working cooperatively in teams, using technology effectively, and valuing lifelong learning.

Science education is much more than merely learning content. It is the active process of investigation and the critical review of evidence related to the world around us, both visible and invisible. Science is a dynamic process of gathering and evaluating information, looking for patterns, and then devising and testing possible explanations. Active engagement in scientific investigation leads students to think critically and to develop reasoning skills that allow them to become independent, lifelong learners. Science methods and thought processes have application well beyond the bounds of science and support learning goals in all subject areas.

The Arizona Science Standard Articulated by Grade Level has been written for ALL students. The science standard is set with the expectation that science instruction occurs at all grade levels – beginning in early grades with simple exploration, progressing to increasingly organized and sophisticated science investigations in higher grades.

Underlying all of the science standard strands are the five unifying concepts as identified in the National Science Education Standards (1995):

- Systems, Order, and Organization
- Evidence, Models, and Explanation
- Constancy, Change, and Measurement
- Evolution and Equilibrium
- Form and Function

This conceptual framework provides students with productive and insightful ways of considering and integrating a range of basic ideas that explain the natural world. Because the understanding and abilities associated with major conceptual and procedural schemes need to be developed over an entire education, the unifying concepts and processes transcend disciplinary boundaries.

These unifying concepts can be introduced in early grades and developed appropriately through the elementary grades and high school. Students should be explicitly shown how each of these unifying concepts apply to and connect life, physical, and Earth and space sciences. These science content areas can be taught in conjunction with each other, as well as with other subject areas in an interdisciplinary approach. The unifying

concepts in science education help focus instruction and provide a link to other disciplines.

BACKGROUND

The state Board of Education adopted the Arizona Academic Standards in 1998 to define what Arizona's students need to know and be able to do by the end of twelfth grade. Developed by committees comprised of educators, parents, students, and business and community leaders, these standards were written in grade-level clusters with benchmarks at 3, 5, 8, and high school.

RATIONALE

Requirements in the *No Child Left Behind Act of 2001* (NCLB) and the need for periodic review of the state academic standards prompted the decision by the Arizona Department of Education (ADE) to refine and articulate the academic standard for science by grade level. This refinement and articulation project was started in April 2003, and was completed in May 2004.

METHODOLOGY

The Science Standard Revision Committee was composed of a statewide representation of scientists and science educators to reflect school districts large and small, rural and urban, as well as the ethnic diversity of Arizona. National science consultants, university professors, and community members advised the committee and provided valuable reviews of the work in progress. The goal was to articulate, or align, the current academic standards by grade level (K-8) and in high school with the state requirement of two years of high school science.

The committee utilized several nationally recognized publications to establish content guidelines during the development of the draft:

- National Research Council (NRC)
    - *National Science Education Standards*
    - *Inquiry and the National Science Education Standards*
    - *Designing Mathematics or Science Curriculum Programs*
- The American Association for the Advancement of Science
    - *Atlas of Science Literacy*
    - *Benchmarks for Science Literacy*
    - *Design for Science Literacy*
    - *Science for All Americans*
- *Science Framework for the 1996 and 2000 National Assessment of Educational Progress (NAEP)*

The committee created draft documents by first reviewing the existing standards. The performance objectives were articulated, or aligned, to the appropriate grade levels. Over a period of months, subcommittees, composed of representatives of the full committee, met to refine the documents. A guiding principle in the articulation process was whether a performance objective was reasonable, useful, and appropriate. The measurability of each performance objective was also considered.

External reviews by nationally recognized consultants and reviews by university and local experts provided additional guidance and perspective to the committees.

Public review of the Science Standard Articulated by Grade Level occurred during the month of February 2004. A draft of the standard was placed on the ADE website with the option for individuals to make comments online. Six public hearings occurred throughout the state to collect additional comments. After all public comments were collected and organized, the committee met to review them and to recommend appropriate modifications to the standard. This final draft was presented to the state Board of Education in May 2004 for adoption as the Arizona Science Standard Articulated by Grade Level.

SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

The goal in the development of the standard was to assure that the six strands and five unifying concepts are interwoven into a fabric of science that represents the true nature of science. Students have the opportunity to develop both the skills and content knowledge necessary to be scientifically literate members of the community.

Strands 1, 2, and 3 are designed to be explicitly taught and embedded within each of the content Strands 4, 5, and 6, and are not intended to be taught in isolation. The processes, skills, and content of the first three strands are designed to "umbrella" and complement the content of Life Science, Physical Science, and Earth and Space Science.

Strand 1: Inquiry Process

Inquiry Process establishes the basis for students' learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 1: Observations, Questions, and Hypotheses

Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.

PO 1. Differentiate among a question, hypothesis, and prediction.

PO 2. Formulate questions based on observations that lead to the development of a hypothesis.
(See M06-S2C1-01)

PO 3. Locate research information, not limited to a single source, for use in the design of a controlled investigation.
(See W06-S3C6-01, R06-S3C1-06, and R06-S3C2-03)

Concept 2: Scientific Testing (Investigating and Modeling)

Design and conduct controlled investigations.

PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.

PO 2. Design an investigation to test individual variables using scientific processes.

PO 3. Conduct a controlled investigation using scientific processes.

PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).
(See M06-S4C4-02)

PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.
(See W06-S3C2-01 and W06-S3C3-01)

SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 3: Analysis and Conclusions

Analyze and interpret data to explain correlations and results; formulate new questions.

PO 1. Analyze data obtained in a scientific investigation to identify trends.
(See M06-S2C1-03)

PO 2. Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).

PO 3. Evaluate the observations and data reported by others.

PO 4. Interpret simple tables and graphs produced by others.

PO 5. Analyze the results from previous and/or similar investigations to verify the results of the current investigation.

PO 6. Formulate new questions based on the results of a completed investigation.

Concept 4: Communication

Communicate results of investigations.

PO 1. Choose an appropriate graphic representation for collected data:

- line graph
- double bar graph
- stem and leaf plot
- histogram

(See M06-S2C1-02)

PO 2. Display data collected from a controlled investigation.
(See M06-S2C1-02)

PO 3. Communicate the results of an investigation with appropriate use of qualitative and quantitative information.
(See W06-S3C2-01)

PO 4. Create a list of instructions that others can follow in carrying out a procedure (without the use of personal pronouns).
(See W06-S3C3-01)

PO 5. Communicate the results and conclusion of the investigation.
(See W06-S3C6-02)

Italics denote a repetition of a performance objective (learned in an earlier grade) that is to be applied to grade level content or at a higher level of complexity.
The bulleted items within a performance objective indicate specific content to be taught.

SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: History and Nature of Science

Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the inclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 1: History of Science as a Human Endeavor

Identify individual, cultural, and technological contributions to scientific knowledge.

PO 1. Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Jacques Cousteau [inventor, marine explorer], supports Strand 4; William Beebe [scientist], supports Strand 4; Thor Heyerdahl [anthropologist], supports Strand 6).

PO 2. Describe how a major milestone in science or technology has revolutionized the thinking of the time (e.g., Cell Theory, sonar, SCUBA, underwater robotics).

PO 3. Analyze the impact of a major scientific development occurring within the past decade.

PO 4. Describe the use of technology in science-related careers.

Concept 2: Nature of Scientific Knowledge

Understand how science is a process for generating knowledge.

PO 1. Describe how science is an ongoing process that changes in response to new information and discoveries.

PO 2. Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.

PO 3. Apply the following scientific processes to other problem solving or decision making situations:

- observing
- questioning
- communicating
- comparing
- measuring
- classifying
- predicting
- organizing data
- inferring
- generating hypotheses
- identifying variables

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SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 3: Science in Personal and Social Perspectives

Science in Personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world – as living creatures, consumers, decision makers, problem solvers, managers, and planners.

Concept 1: Changes in Environments

Describe the interactions between human populations, natural hazards, and the environment.

PO 1. Evaluate the effects of the following natural hazards:

- sandstorm
- hurricane
- tornado
- ultraviolet light
- lightning-caused fire

PO 2. Describe how people plan for, and respond to, the following natural disasters:

- drought
- flooding
- tornadoes

Concept 2: Science and Technology in Society

Develop viable solutions to a need or problem.

PO 1. Propose viable methods of responding to an identified need or problem.

PO 2. Compare possible solutions to best address an identified need or problem.

PO 3. Design and construct a solution to an identified need or problem using simple classroom materials.

PO 4. Describe a technological discovery that influences science.

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SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 4: Life Science

Life Science expands students' biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

Concept 1: Structure and Function in Living Systems

Understand the relationships between structures and functions of organisms.

PO 1. Explain the importance of water to organisms.

PO 2. Describe the basic structure of a cell, including:
- cell wall
- cell membrane
- nucleus

PO 3. Describe the function of each of the following cell parts:
- cell wall
- cell membrane
- nucleus

PO 4. Differentiate between plant and animal cells.

PO 5. Explain the hierarchy of cells, tissues, organs, and systems.

PO 6. Relate the following structures of living organisms to their functions:

Animals
- respiration – gills, lungs
- digestion – stomach, intestines
- circulation – heart, veins, arteries, capillaries
- locomotion – muscles, skeleton

Plants
- transpiration – stomata, roots, xylem, phloem
- absorption – roots, xylem, phloem
- response to stimulus (phototropism, hydrotropism, geotropism) – roots, xylem, phloem

PO 7. Describe how the various systems of living organisms work together to perform a vital function:
- respiratory and circulatory
- muscular and skeletal
- digestive and excretory

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SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 2: Reproduction and Heredity

Understand the basic principles of heredity.

No performance objectives at this grade level

Concept 3: Populations of Organisms in an Ecosystem

Analyze the relationships among various organisms and their environment.

PO 1. Explain that sunlight is the major source of energy for most ecosystems.
(See Strand 5 Concept 3 and Strand 6 Concept 2)

PO 2. Describe how the following environmental conditions affect the quality of life:

- water quality
- climate
- population density
- smog

Concept 4: Diversity, Adaptation, and Behavior

Identify structural and behavioral adaptations.

No performance objectives at this grade level

Italics denote a repetition of a performance objective (learned in an earlier grade) that is to be applied to grade level content or at a higher level of complexity.
The bulleted items within a performance objective indicate specific content to be taught.

SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 5: Physical Science

Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in a system, and the processes by which energy is transferred between systems and surroundings.

Concept 1: Properties and Changes of Properties in Matter

Understand physical and chemical properties of matter.

No performance objectives at this grade level

Concept 2: Motion and Forces

Understand the relationship between force and motion.

No performance objectives at this grade level

Concept 3: Transfer of Energy

Understand that energy can be stored and transferred.

PO 1. Identify various ways in which electrical energy is generated using renewable and nonrenewable resources (e.g., wind, dams, fossil fuels, nuclear reactions).

PO 2. Identify several ways in which energy may be stored.

PO 3. Compare the following ways in which energy may be transformed:
- mechanical to electrical
- electrical to thermal

PO 4. Explain how thermal energy (heat energy) can be transferred by:
- conduction
- convection
- radiation

Italics denote a repetition of a performance objective (learned in an earlier grade) that is to be applied to grade level content or at a higher level of complexity.
The bulleted items within a performance objective indicate specific content to be taught.

SCIENCE STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 6: Earth and Space Science

Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understandings of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, students can make informed decisions about issues affecting the planet on which they live.

Concept 1: Structure of the Earth

Describe the composition and interactions between the structure of the Earth and its atmosphere.

PO 1. Describe the properties and the composition of the layers of the atmosphere.

PO 2. Explain the composition, properties, and structure of the Earth's lakes and rivers.

PO 3. Explain the composition, properties, and structures of the oceans' zones and layers.

PO 4. Analyze the interactions between the Earth's atmosphere and the Earth's bodies of water (water cycle).

PO 5. Describe ways scientists explore the Earth's atmosphere and bodies of water.
(See Strand 2 Concept 1)

Concept 2: Earth's Processes and Systems

Understand the processes acting on the Earth and their interaction with the Earth systems.

PO 1. Explain how water is cycled in nature.

PO 2. Identify the distribution of water within or among the following:
- atmosphere
- lithosphere
- hydrosphere

PO 3. Analyze the effects that bodies of water have on the climate of a region.

PO 4. Analyze the following factors that affect climate:
- ocean currents
- elevation
- location

PO 5. Analyze the impact of large-scale weather systems on the local weather.

PO 6. Create a weather system model that includes:
- the Sun
- the atmosphere
- bodies of water

Concept 3: Earth in the Solar System

Understand the relationships of the Earth and other objects in the solar system.

No performance objectives at this grade level

Italics denote a repetition of a performance objective (learned in an earlier grade) that is to be applied to grade level content or at a higher level of complexity.
The bulleted items within a performance objective indicate specific content to be taught.

Social Studies Standard Articulated by Grade Level 2006

Grade 6

Social Studies Standard Articulated by Grade Level

INTRODUCTION

To maintain the Union that supports our freedoms, we must rely on the knowledge, skills, and character of its citizens and those they elect to public office. Critical to the preservation and improvement of America's republican form of government is the study of our founding principles, namely those detailed in the United States Constitution, the Declaration of Independence, and *The Federalist Papers*. The standard includes the study of rich and diverse contributions that people of many backgrounds have made to American life and institutions while emphasizing our shared heritage. Well-informed citizens understand our political, cultural and economic interaction with the rest of the world. Geographic knowledge expands the understanding of our development and identity in the world. The standard requires that students attain knowledge of essential facts, concepts, people, and events as well as a firm grasp of reasoning, inquiry, and research skills. Students must learn how to frame and test hypotheses, distinguish logical from illogical reasoning, develop informed opinions based on different points of view, and employ reflective thinking and evaluation. In this way students will be prepared to fulfill their responsibilities as citizens of our democratic republic. The standard presents academic content and skills in the four interrelated disciplines of history, geography, civics/government, and economics that are essential to an understanding of our human experience, past and present.

BACKGROUND

The state Board of Education began the development process for the Arizona academic standards in 1996 to define what Arizona students need to know and be able to do by the end of twelfth grade. The Social Studies Standards were adopted in 2000 and partially revised in 2003. Developed by committees comprised of educators, subject matter experts, and business and community leaders, the Social Studies Standard was fully revised and written in articulated grade-specific performance objectives in 2004 - 2005.

RATIONALE

Requirements in the *No Child Left Behind Act of 2001* (NCLB) and the practice of periodic review of the state academic standards prompted the decision by the Arizona Department of Education to refine and articulate the academic standards for mathematics, reading, writing, and science by grade level. An articulation of the social studies standard was included in the process in order to provide consistency across content areas. The skills and content of social studies are not only a critical component of a comprehensive curriculum they also support student success in other areas.

METHODOLOGY

A committee to articulate the social studies standard was formed consisting of a representative sample of educators from around the state. It represented large and small schools, rural and urban districts, and ethnic diversity. Subject matter experts, university professors, and community members advised the committees. The goal was to articulate, or align, the current academic standards by grade level (K-12).

The Social Studies Articulation Committee utilized information from the National Council for the Social Studies, the National Council for Geographic Education, the Arizona Council on Economics Education, the Arizona Geographic Alliance, the Bill of Rights Institute, and other sources to promote quality instruction based on current, pedagogical, and research-based practices.

The articulation process included a restructuring of the Arizona Academic Content Standards to better facilitate the alignment of performance objectives by grade level, while maintaining the content integrity of the existing standards. Over a period of months, the articulation committees and smaller sub-committees refined the documents. Reasonableness, usefulness, and appropriateness were the guidelines for the articulation process.

External reviews by nationally recognized consultants and reviews by university and local experts provided additional guidance and perspective to the committee.

SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Sixth Grade History Strands emphasize World history from its earliest cultures through the Enlightenment, including the early cultures of the Americas.

Strand 1: American History

A study of American History is integral for students to analyze our national experience through time, to recognize the relationships of events and people, and to interpret significant patterns, themes, ideas, beliefs, and turning points in Arizona and American history. Students will be able to apply the lessons of American History to their lives as citizens of the United States.

Concept 1: Research Skills for History

Historical research is a process in which students examine topics or questions related to historical studies and/or current issues. By using primary and secondary sources effectively students obtain accurate and relevant information. An understanding of chronological order is applied to the analysis of the interrelatedness of events. These performance objectives also appear in Strand 2: World History. They are intended to be taught in conjunction with appropriate American or World History content, when applicable.

PO 1. Construct charts, graphs, and narratives using historical data.

PO 2. Interpret historical data displayed in graphs, tables, and charts.

PO 3*. Construct timelines of the historical era being studied (e.g., presidents/ world leaders, key events, people).*

PO 4. Formulate questions that can be answered by historical study and research.

PO 5*. Describe the difference between primary and secondary sources.*

PO 6. Determine the credibility and bias of primary and secondary sources.

PO 7. Analyze cause and effect relationships between and among individuals and/or historical events.

PO 8. *Describe how archaeological research adds to our understanding of the past.*

Concept 2: Early Civilizations Pre 1500

The geographic, political, economic and cultural characteristics of early civilizations made significant contributions to the later development of the United States.

PO 1. Describe the characteristics of hunting and gathering societies in the Americas.

PO 2. Describe how farming methods and domestication of animals led to the development of cultures and civilizations from hunting and gathering societies.

PO 3. Describe the cultures of the Mogollon, Ancestral Puebloans (Anasazi), and Hohokam:
- a. location, agriculture, housing, arts, and trade networks
- b. how these cultures adapted to and altered their environment

PO 4. Describe the Adena, Hopewell, and Mississippian mound-building cultures:
- a. location, agriculture, housing, arts, and trade networks
- b. how these cultures adapted to and altered their environment

PO 5. Describe the Mayan, Aztec, and Incan/Inkan civilizations:
- a. location, agriculture, housing, and trade networks
- b. achievements (e.g., mathematics, astronomy, architecture, government, social structure, arts and crafts)
- c. how these cultures adapted to and altered their environment

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 3: Exploration and Colonization 1500s – 1700s

The varied causes and effects of exploration, settlement, and colonization shaped regional and national development of the U.S.

No performance objectives at this grade.

Concept 4: Revolution and New Nation 1700s – 1820

The development of American constitutional democracy grew from political, cultural, and economic issues, ideas, and events.

No performance objectives at this grade.

Concept 5: Westward Expansion 1800 – 1860

Westward expansion, influenced by political, cultural, and economic factors, led to the growth and development of the U.S.

No performance objectives at this grade.

Concept 6: Civil War and Reconstruction 1850 – 1877

Regional conflicts led to the Civil War and resulted in significant changes to American social, economic, and political structures.

No performance objectives at this grade.

Concept 7: Emergence of the Modern United States 1875 – 1929

Economic, social, and cultural changes transformed the U.S. into a world power.

No performance objectives at this grade.

Concept 8: Great Depression and World War II 1929 – 1945

Domestic and world events, economic issues, and political conflicts redefined the role of government in the lives of U.S. citizens.

No performance objectives at this grade.

Concept 9: Postwar United States 1945 – 1970s

Postwar tensions led to social change in the U.S. and to a heightened focus on foreign policy.

No performance objectives at this grade.

Concept 10: Contemporary United States 1970s – Present

Current events and issues continue to shape our nation and our involvement in the global community.

PO 1. *Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).*

PO 2. Identify the connection between current and historical events and issues studied at this grade level using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

PO 3. Describe how key political, social, and economic events of the late 20th century and early 21st century affected, and continue to affect, the United States.

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 2: World History

A study of World History is integral for students to analyze the human experience through time, to recognize the relationships of events and people, and to interpret significant patterns, themes, ideas, beliefs, and turning points in American and world history. Students should be able to apply the lessons of World History to their lives as citizens of the United States and members of the world community.

Concept 1: Research Skills for History

Historical research is a process in which students examine topics or questions related to historical studies and/or current issues. By using primary and secondary sources effectively students obtain accurate and relevant information. An understanding of chronological order is applied to the analysis of the interrelatedness of events. These performance objectives also appear in Strand 1: American History. They are intended to be taught in conjunction with appropriate American or World History content, when applicable.

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PO 2. Interpret historical data displayed in graphs, tables, and charts.

PO 3. *Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).*

PO 4. Formulate questions that can be answered by historical study and research.

PO 5. *Describe the difference between primary and secondary sources.*

PO 6. Determine the credibility and bias of primary and secondary sources.

PO 7. Analyze cause and effect relationships between and among individuals and/or historical events.

PO 8*. Describe how archaeological research adds to our understanding of the past.*

Concept 2: Early Civilizations

The geographic, political, economic and cultural characteristics of early civilizations significantly influenced the development of later civilizations.

(Note: Early civilizations were introduced in Grades 1[Egypt], 2 [Asia], 3 [Greece and Rome], 4 [North and South America].)

PO 1. Describe the lifestyles of humans in the Paleolithic and Neolithic Ages.

PO 2. Determine how the following factors influenced groups of people to develop into civilizations in Egypt, India, Mesopotamia, and China:

a. farming methods
b. domestication of animals
c. division of labor
d. geographic factors

Connect with: Strand 4 Concept 2, 4,6, Strand 5 Concept 1

PO 3. Describe the importance of the following river valleys in the development of ancient civilizations:

a. Tigris and Euphrates - Mesopotamia
b. Nile - Egypt
c. Huang He - China
d. Indus- India

Connect with: Strand 4 Concept 1, 2, 4, 5

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

PO 4. Compare the forms of government of the following ancient civilizations:
- a. Mesopotamia – laws of Hammurabi
- b. Egypt – theocracy
- c. China – dynasty

Connect with: Strand 3 Concept 3, 5

PO 5. Describe the religious traditions that helped shape the culture of the following ancient civilizations:
- a. Sumeria, India (i.e., polytheism)
- b. Egypt (i.e., belief in an afterlife)
- c. China (i.e., ancestor worship)
- d. Middle East (i.e., monotheism)

PO 6. Analyze the impact of cultural and scientific contributions of ancient civilizations on later civilizations:
- a. Mesopotamia (i.e., laws of Hammurabi)
- b. Egypt (i.e., mummification, hieroglyphs, papyrus)
- c. China (i.e., silk, gun powder/fireworks, compass)
- d. Central and South America (i.e., astronomy, agriculture)

Connect with: Strand 5 Concept 2

PO 7. Describe the development of the following types of government and citizenship in ancient Greece and Rome:
- a. democracy
- b. republics/ empires

Connect with: Strand 3 Concept 5

PO 8. Describe scientific and cultural advancements (e.g., networks of roads, aqueducts, art and architecture, literature and theatre, mathematics, philosophy) in ancient civilizations.

Connect with: Strand 4 Concept 2, 4, 5, Strand 5 Concept 2

PO 9. Identify the roles and contributions of individuals in the following ancient civilizations:
- a. Greece and Greek empires (i.e., Socrates, Plato, Aristotle, Sophocles, Euripides, Pericles, Homer, Alexander the Great)
- b. Rome (i.e., Julius Caesar, Augustus)
- c. China (i.e., Qin Shi Huan Di, Confucius)
- d. Egypt (i.e., Hatshepsut, Ramses, Cleopatra)

Connect with: Strand 3 Concept 5

PO 10. Describe the transition from the Roman Empire to the Byzantine Empire:
- a. “decline and fall” of the Roman Empire
- b. Empire split in eastern and western regions
- c. capital moved to Byzantium/ Constantinople
- d. Germanic invasions

Connect with: Strand 4 Concept 2

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 3: World in Transition

People of different regions developed unique civilizations and cultural identities characterized by increased interaction, societal complexity and competition.

(Note: The Middle Ages were introduced in Grade 4.)

PO 1. Describe aspects (e.g., geographic origins, founders and their teachings, traditions, customs, beliefs) of Hinduism, Buddhism, Judaism, Christianity, and Islam.
Connect with: Strand 4 Concept 2, 4

PO 2. Describe the development of the Medieval kingdoms of Ghana, Mali, and Songhai:
a. Islamic influences
b. mining of gold and salt
c. centers of commerce
Connect with: Strand 5 Concept 1

PO 3. Describe the culture and way of life of the Arab Empire:
a. Muslim religion (i.e., Mohammad, Mecca)
b. extensive trade and banking network
c. interest in science (i.e., medicine, astronomy)
d. translation and preservation of Greek and Roman literature
Connect with: Strand 5 Concept 1

PO 4. Describe the Catholic Church's role in the following activities during the Middle Ages:
a. Crusades
b. Inquisition
c. education
d. government
e. spread of Christianity

PO 5. Describe the transition from feudalism to nationalism at the end of the Middle Ages.

PO 6. Describe the trade routes that established the exchange of goods (e.g., silk, salt, spices, gold) between eastern and western civilizations during the 15th and 16th centuries.
Connect with: Strand 4 Concept 2, 4, Strand 5 Concept 1

PO 7. Describe how trade routes led to the exchange of ideas (e.g., religion, scientific advances, literature) between Europe, Asia, Africa and the Middle East during the 15th and 16th centuries.
Connect with: Strand 3 Concept 1, Strand 4 Concept 4,5, Strand 5 Concept 1

Concept 4: Renaissance and Reformation

The rise of individualism challenged traditional western authority and belief systems resulting in a variety of new institutions, philosophical and religious ideas, and cultural and social achievements.

PO 1. Describe how the Renaissance was a time of renewal and advancement in Europe:
a. rebirth of Greek and Roman ideas
b. new ideas and products as a result of trade
c. the arts
d. science Connect with: Strand 3 Concept 5, Strand 4 Concept 2, 4, 5, Strand 5 Concept 1, 2

PO 2. Describe the contributions or accomplishments of the following individuals during the Renaissance and Reformation:
a. Leonardo da Vinci
b. Michelangelo
c. Gutenberg
d. Martin Luther Connect with: Strand 3 Concept 1, Strand 4 Concept 4

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 5: Encounters and Exchange

Innovations, discoveries, exploration, and colonization accelerated contact, conflict, and interconnection among societies world wide, transforming and creating nations.

PO 1. Describe how new ways of thinking in Europe during the Enlightenment fostered the following changes in society:

a. Scientific Revolution (i.e., Copernicus, Galileo, Newton)
b. natural rights (i.e., life, liberty, property)
c. governmental separation of powers vs. monarchy
d. religious freedom
e. Magna Carta

Connect with: Strand 3 Concept 1, 4, 5, Science Strand 2 Concept 1

Concept 6: Age of Revolution

Intensified internal conflicts led to the radical overthrow of traditional governments and created new political and economic systems.

No performance objectives at this grade.

Concept 7: Age of Imperialism

Industrialized nations exerted political, economic, and social control over less developed areas of the world.

No performance objectives at this grade.

Concept 8: World at War

Global events, economic issues and political ideologies ignited tensions leading to worldwide military conflagrations and diplomatic confrontations in a context of development and change.

No performance objectives at this grade.

Concept 9: Contemporary World

The nations of the contemporary world are shaped by their cultural and political past. Current events, developments and issues continue to shape the global community.

PO 1. *Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).*

PO 2. Identify the connection between current and historical events and issues using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 3: Civics/Government

The goal of the civics strand is to develop the requisite knowledge and skills for informed, responsible participation in public life; to ensure, through instruction, that students understand the essentials, source, and history of the constitutions of the United States and Arizona, American institutions and ideals (ARS 15-710). Students will understand the foundations, principles, and institutional practices of the United States as a representative democracy and constitutional republic. They will understand the importance of each person as an individual with human and civil rights and our shared heritage in the United States. Students will understand politics, government, and the responsibilities of good citizenship. Citizenship skills include the capacity to influence policies and decisions by clearly communicating interests and the ability to build coalitions through negotiation, compromise, and consensus. In addition, students will learn that the United States influences and is influenced by global interaction.

Concept 1: Foundations of Government

The United States democracy is based on principles and ideals that are embodied by symbols, people and documents.

PO 1. Discuss the important ideas of the Enlightenment Period (e.g., Natural Rights, separation of powers, religious freedom) that fostered the creation of the United States government.

Connect with: Strand 2 Concept 4, 5

Concept 2: Structure of Government

The United States structure of government is characterized by the separation and balance of powers.

No performance objective at this grade level

Concept 3: Functions of Government

Laws and policies are developed to govern, protect, and promote the well-being of the people.

PO 1. Describe the impact of the Laws of Hammurabi on the lives of ancient people and how it relates to current laws.

Connect with: Strand 2 Concept 2

PO 2. Describe the impact of the Greek democracy on ancient Greeks and how it relates to current forms of government.

Connect with: Strand 2 Concept 2

PO 3. Describe the impact of the Roman republic on ancient Romans and how it relates to current forms of government.

Connect with: Strand 2 Concept 2

Concept 4: Rights, Responsibilities, and Roles of Citizenship

The rights, responsibilities and practices of United States citizenship are founded in the Constitution and the nation's history.

***PO 1**. Describe ways an individual can contribute to a school or community.*

***PO 2**. Discuss the character traits (i.e., respect, responsibility, fairness, involvement) that are important to the preservation and improvement of constitutional democracy in the United States.*

Connect with: Strand 2 Concept 5

PO 3. Describe the importance of citizens being actively involved in the democratic process (e.g., voting, student government, involvement in political decision making, analyzing issues, petitioning public officials).

Connect with: Strand 2 Concept 5

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 5: Government Systems of the World

Different governmental systems exist throughout the world. The United States influences and is influenced by global interactions.

PO 1. Describe the structure of the following governments:

a. theocracy
b. dictatorship
c. republic
d. monarchy
e. democracy
f. anarchy

Connect with: Strand 2 Concept 2, 4, 5

Strand 4: Geography

The goal of the geography strand is to provide an understanding of the human and physical characteristics of the Earth's places and regions and how people of different cultural backgrounds interact with their environment. Geographic reasoning is a way of studying human and natural features within a spatial perspective. Through the study of geography, students will be able to understand local, national, regional, and global issues. Students will interpret the arrangement and interactions of human and physical systems on the surface of the Earth. As these patterns have changed over time and are important to governments and economies, geographic reasoning will enhance students' understanding of history, civics, and economics.

Concept 1: The World in Spatial Terms

The spatial perspective and associated geographic tools are used to organize and interpret information about people, places and environments.

PO 1. Construct maps, charts, and graphs to display geographic information.

PO 2. Identify purposes of, and differences among, maps, globes, aerial photographs, charts, and satellite images.

PO 3. Interpret maps, charts, and geographic databases using geographic information.

PO 4. Locate physical and human features (e.g., significant waterways, mountain ranges, cities, countries) in the United States and in regions of the world on a map.

Connect with: Strand 2 Concept 2

PO 5. Interpret thematic maps, graphs, charts, and databases depicting various aspects of world regions. (Apply to regions studied).

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 2: Places and Regions

Places and regions have distinct physical and cultural characteristics.

PO 1. Identify regions studied in Strand 2 using a variety of criteria (e.g., climate, landforms, culture, vegetation).
Connect with: Strand 2 Concept 2

PO 2. Describe the factors that cause regions and places to change.
Connect with: Strand 2 Concept 2

PO 3. Describe the interactions of people in different places and regions.
Connect with: Strand 2 Concept 3, 4, 5

PO 4. Explain why places and regions serve as cultural symbols such as Jerusalem being a sacred place for Jews, Christians, and Muslims.
Connect with: Strand 2 Concept 2

PO 5. Describe the physical and human characteristics of places and regions of a Middle Eastern country studied.
Connect with: Strand 2 Concept 2

Concept 3: Physical Systems

Physical processes shape the Earth and interact with plant and animal life to create, sustain, and modify ecosystems. These processes affect the distribution of resources and economic development. Science Strands are summarized as they apply to Social Studies content in Grades K-8. In High School, the Performance Objectives are a summary of skills and content for grades 9 -12. These concepts are reinforced in Social Studies classes, but assessed through Science.

(Science Strands are summarized below as they apply to Social Studies content in Grades K-8. These concepts are reinforced in Social Studies classes, but assessed through Science.)

PO 1. Identify the physical processes that influence the formation and location of resources such as oil, coal, diamonds, and copper.

Connect with:
Science Strand 3 Concept 1 Evaluate the effects of, and describe how people plan for and respond to natural disasters.

Science Strand 4 Concept 3 Describe how sunlight, water quality, climate, population density and pollution affect quality of life.

Science Strand 6 Concept 1 Describe the composition of and interactions between bodies of water and the atmosphere.

Science Strand 6 Concept 2 Explain the water cycle and factors that affect climate.

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SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Concept 4: Human Systems

Human cultures, their nature, and distribution affect societies and the Earth.

PO 1. Interpret the demographic structure of places and regions using a population pyramid.

PO 2. Describe the environmental, economic, cultural, and political effects of human migrations and cultural diffusion on places and regions.

PO 3. Analyze the causes and effects of settlement patterns.
Connect with: Strand 1 Concept 2, Strand 2 Concept 2

PO 4. Identify how factors such as river/coastal civilizations and trade influenced the location, distribution, and interrelationships of economic activities over time and in different regions.
Connect with: Strand 2 Concept 2, 3, 4

PO 5. Identify cultural norms that influence different social, political, and economic activities of men and women.
Connect with: Strand 2 Concept 2

Concept 5: Environment and Society

Human and environmental interactions are interdependent upon one another. Humans interact with the environment- they depend upon it, they modify it; and they adapt to it. The health and well-being of all humans depends upon an understanding of the interconnections and interdependence of human and physical systems.

PO 1. Describe ways that human dependence on natural resources influences economic development, settlement, trade, and migration.

PO 2. Describe the intended and unintended consequences of human modification (e.g., irrigation, aqueducts, canals) on the environment.
Connect with: Strand 2 Concept 2

PO 3. Explain how changes in the natural environment (e.g., flooding of the Nile) can increase or diminish its capacity to support human activities.
Connect with: Strand 2 Concept 2

PO 4. Identify the way humans respond to/ prepare for natural hazards (i.e., lightning, flash floods, dust storms, tornadoes, hurricanes, floods, earthquakes) in order to remain safe.

Concept 6: Geographic Applications

Geographic thinking (asking and answering geographic questions) is used to understand spatial patterns of the past, the present, and to plan for the future.

PO 1. Describe ways geographic features and conditions influenced settlement in various locations (e.g., near waterways, on high terrain, with adequate fresh water, on good land for farming, in temperate climates) throughout different periods of time, places, and regions.
Connect with: Strand 2 Concept 2

PO 2*. Use geographic knowledge and skills (e.g., recognizing patterns, mapping, graphing) when discussing current events.*

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Approved 9.26.05 Updated 5.22.06

SOCIAL STUDIES STANDARD ARTICULATED BY GRADE LEVEL
GRADE 6

Strand 5: Economics

The goal of the economics strand is to enable students to make reasoned judgments about both personal economic questions and broader questions of economic policy. Students will develop an economic way of thinking and problem solving to understand and apply basic economic principles to decisions they will make as consumers, members of the workforce, citizens, voters, and participants in a global marketplace. This will prepare students to weigh both short-term and long-term effects of decisions as well as possible unintended consequences. The study of economics explains historical developments and patterns, the results of trade, and the distribution of income and wealth in local, regional, national, and world economies. Students will be able to analyze current issues and public policies and to understand the complex relationships among economic, political, and cultural systems.

Concept 1: Foundations of Economics

The foundations of economics are the application of basic economic concepts and decision-making skills. This includes scarcity and the different methods of allocation of goods and services.

PO 1. Identify how limited resources and unlimited human wants cause people to choose some things and give up others.

PO 2. Determine how scarcity, opportunity costs, and trade-offs influence decision-making.

PO 3. Explain why specialization improves standards of living.
Connect with: Strand 2 Concept 2

PO 4. Compare how money, as opposed to barter, facilitates trade.

PO 5. Explain how trade promoted economic growth throughout world regions.
Connect with: Strand 2 Concept 3, Strand 2 Concept 4

Concept 2: Microeconomics

Microeconomics examines the costs and benefits of economic choices relating to individuals, markets and industries, and governmental policies.

No performance objectives at this grade.

Concept 3: Macroeconomics

Macroeconomics examines the costs and benefits of economic choices made at a societal level and how those choices affect overall economic well being.

No performance objectives at this grade.

Concept 4: Global Economics

Patterns of global interaction and economic development vary due to different economic systems and institutions that exist throughout the world.

No performance objectives at this grade.

Concept 5: Personal Finance

Decision-making skills foster a person's individual standard of living. Using information wisely leads to better informed decisions as consumers, workers, investors and effective participants in society.

PO 1. Compare the cost and benefits of using credit.

PO 2. Explain how interest is the price paid to borrow money.

PO 3. Describe the factors lenders consider before lending money.

i.e. - (abbreviation for *that is*) precedes a specific list of items in which all of the items should be used; i.e. examples ***will*** be used in a testing situation
e.g. - (abbreviation for *for example*) precedes a list of examples provided as options; other examples may be appropriate but not included; e.g. examples ***may*** be used in a testing situation
italicized performance objectives - a performance objective repeated verbatim from year to year; it is understood that the depth, complexity, and difficulty level developmentally match the grade level expectations

Technology Standards 2000

Essentials (Grades 4-8)

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
ESSENTIALS (GRADES 4-8)

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS
Students understand the operations and function of technology systems and are proficient in the use of technology.

- **1T-E1. Communicate about technology using developmentally appropriate and accurate terminology**
  See: Language Arts (VP-E)
  PO 1. Use basic vocabulary related to technology (e.g., FireWire, USB, parallel, serial, scanning, digitizing, OCR)
  PO 2. Use basic vocabulary related to systems (e.g., network, infrastructure, Internet, Intranet, LAN, WAN, Ethernet, firewall, server, TCP-IP)

- **1T-E2. Demonstrate increasingly sophisticated operation of technology components**
  See: Arts {Music} (1AM-E9-10), Mathematics (1M-E6, 2M-E1), Science (1SC-E2) and Workplace Skills (7WP-E1)

  PO 1. Use touch-typing strategies to reach a minimum of 25 words per minute with accuracy (e.g., meets school-identified standard for accuracy)
  PO 2. Retrieve and save information remotely (e.g., network servers, Internet, Intranet, peripheral devices)
  PO 3. Demonstrate functional operation of technology devices (e.g., presentation devices, digital cameras, scanners, document cameras, scientific probes) (*See Technology 3T-E2, PO1)*

- **1T-E3. When a system is not working properly, demonstrate an understanding of hardware, software and connectivity problem solving processes**
  See: Science (1SC-E1)

  PO 1. Use troubleshooting strategies to solve applications problems (e.g., file management strategies, online help strategies, documentation, collaboration with others)
  PO 2. Use troubleshooting strategies to solve basic hardware problems (e.g., use online help, use documentation, collaboration with others)
  PO 3. Use troubleshooting strategies to identify basic connectivity problems (e.g., use online help, use documentation, collaboration with others)

TECHNOLOGY EDUCATION STANDARDS
ESSENTIALS (GRADES 4-8)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

- **2T-E1. Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use**

  See: Comprehensive Health (4CH-E3), Science (2SC-E2) and Social Studies (2SS-E2, PO1, 2SS-E5, PO1, 2SS-E7, PO1)

  PO 1. Explain the purpose of an Acceptable Use Agreement/Policy and the consequences of in appropriate use
  PO 2. Describe and practice safe Internet/Intranet usage (e.g., do not post inappropriate or harmful material; do not reveal personal information; follow district Acceptable Use Policy)
  PO 3. Describe and practice "netiquette" when using the Internet and electronic mail (e.g., publish photographs of people only with their permission)

- **2T-E2. Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse**

  PO 1. Follow the rules for deciding when permission is needed for using the work of others, (e.g., some sites specify whether permission is required or not, some work is in public domain)
  PO 2. Obtain permission to use the work of others (See Technology 5T-E2, PO3)
  PO 3. Provide complete citations from electronic media (e.g., use age-level appropriate, district developed standardized reference formats for citing source of information) (See Technology 5T-E2, PO5)
  PO 4. Explain copyright laws and "fair use" guidelines (e.g., in relationship to print, video, computer software, multimedia project, music)
  PO 5. Describe copyright guidelines[3] for multimedia creation and Internet development
  PO 6. State personal consequences (e.g., fines, loss of privileges, grade reduction, academic probation) related to violations of:
    a) Copyright (e.g., sheet music, prerecorded music, print, video, images)
    b) Password security
    c) Privacy (e.g., student files on a network, floppy disk and hard drive)
    d) Internet usage (e.g., inappropriate postings, accessing inappropriate material)
  PO 7. Discuss the negative impact of unauthorized intrusions into networked data and describe actions to prevent these intrusions

[3] http://literacy.kent.edu/Oasis/Workshops/copytoc.html; and http://lcweb.loc.gov/copyright/circs/circ1.html

TECHNOLOGY EDUCATION STANDARDS
ESSENTIALS (GRADES 4-8)

- **2T-E3. Demonstrate knowledge of current changes in technologies and the effect those changes have on the workplace and society**
  See: Comprehensive Health (4CH-E2) and Social Studies (3SS-E6, PO8, 3SS-E7, PO5)

  PO 1. Compare information technologies from past to present and describe the implications of computer power doubling every 18 months (Moore's Law) (e.g., size, speed, cost)
  PO 2. Describe the impact of technology use on individuals at home and in the workplace (e.g., computer has replaced the TV for some individuals; free time is spent using technology versus outdoor activities; jobs have been created and/or eliminated due to technological advances; possible infringement of privacy)
  PO 3. Discuss the social implications of the "digital divide" (e.g., homes and schools with much technology and connectivity versus those with less or none)

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-E1. Use formatting capabilities of technology tools for communicating and illustrating**
  See: Language Arts (W-F1, PO5)

  PO 1. Use word processing editing tools to revise a document (e.g., cut and paste, tabs and margins, font size, font style, delete and undo, selecting, spell check, click and drag)
  PO 2. Design a word processing document with graphical elements (e.g., clip art, digital photographs, symbols, using text wrap, cropping, sizing, drawing tools)

- **3T-E2. Use a variety of technology tools for data collection and analysis**
  See: Mathematics (5M-E6) and Social Studies (1SS-E8, PO1)

  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)

TECHNOLOGY EDUCATION STANDARDS
ESSENTIALS (GRADES 4-8)

- **3T-E3. Publish and present information using technology tools**
  See: Science (1SC-E3, PO2 grades 4-5, or PO1, grades 6-8)
  PO 1. Design and create a multimedia presentation or Web page using multiple digital sources (e.g., from camera, video, scanner, CD-ROM, Internet)
  PO 2. Publish or present the above production (*See Technology 4T-E2, PO1 or 4T-E3)*

- **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**
  See: Language Arts (W-E3-E6)

  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-E2. Use technology tools for individual and collaborative writing, communication and publishing activities to create curricular related products for audiences inside and outside the classroom**
  See: Language Arts (W-E2-E7, LS-E)

  PO 1. Plan, design and present an academic product using technology tools (e.g., multimedia authoring, presentation software, digital cameras, scanners, projection devices)

- **4T-E3. Collaboratively use telecommunications and online resources**
  See: Arts {Theatre} (2AT-E1) and Social Studies (1SS-E8, PO2, grades 6-8)
  (For Internet safety issues see Technology 2T-E1)

  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, videoconferencing)
  PO 3. Present an academic product to share data and/or solutions (e.g., Web site, multimedia presentation, video)

TECHNOLOGY EDUCATION STANDARDS
ESSENTIALS (GRADES 4-8)

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.

Note: The performance objectives described in Standard 5 rely upon the mastery of skills and understanding of concepts from Standards 1-4 of this document

- **5T-E1. Locate information from electronic resources**
  See: Arts {Theatre} (2AT-E4), Language Arts (W-E8) and Mathematics (2M-E1, PO1)

  PO 1. Identify electronic research resources
  PO 2. Define subject searching and devise a search strategy to locate information using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources, grade level appropriate Internet resources)
  PO 3. Explain the difference between subject and keyword searching
  PO 4. Construct keyword searches including basic Boolean logic using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources and grade level appropriate Internet resources)
  PO 5. Identify the author, copyright date and publisher of information located in electronic resources, including Internet resources

- **5T-E2. Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources**
  See: Social Studies (1SS-E1, PO2 and 1SS-E8, PO5-6)

  PO 1. Create citations for electronic research sources following a prescribed format (*See Technology 2T-E2,PO2)*
  PO 2. Gather research from a variety of electronic sources and identify the most appropriate information for answering the research question (*See Technology 5T-D2, PO2)*
  PO 3. Obtain permission, when appropriate, to use the work of others (*See Technology 2T-E2, PO3)*
  PO 4. Identify the components of a URL to determine the source of the information
  PO 5. Identify the author of the information found from electronic resources and determine whether the author is an authority, displays bias and is a primary or secondary source

TECHNOLOGY EDUCATION STANDARDS
ESSENTIALS (GRADES 4-8)

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING

Students use technology to make and support decisions in the process of solving real-world problems.

Note: Problem solving is inherent in all disciplines. Technology Standard 6 is designed to provide a cumulative (capstone) experience
See: Science 3SC in its entirety and Workplace Skills 3WP in its entirety

- **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)

Workplace Skills Standards 1997

Essentials (Grades 4-8)

Workplace Skills Standards Rationale

Most students will spend more than a third of their lives in a diverse and constantly changing workplace. Regardless of personal, career, or educational plans, students must demonstrate proficiency both in academics and the following workplace standards.

The Workplace Skills Standards are designed to be integrated into the traditional curriculum taught in schools at all levels and are most effectively learned in the context of an integrated effort involving parents, educators, business partners and members of the community. Student acquisition of critical workplace skills, with an emphasis on application, is a developmental process which encompasses an individual's entire lifetime. The demonstration of these skills is essential for individuals and contributes to the foundation of an educated citizenry.

WORKPLACE SKILLS STANDARDS
ESSENTIALS (GRADES 4-8)

STANDARD 1
Students use principles of effective oral, written and listening communication skills to make decisions and solve workplace problems.

- **1WP-E1. Deliver a speech clearly, with expression and in an organized fashion, making eye contact with audience, and convey the message through nonverbal as well as verbal communications**

  PO 1. Prepare a coherent speech with an introduction, body, and conclusion
  PO 2. Present verbal and non-verbal forms of communication in presenting the speech
  PO 3. Select a variety of forms of print and non-print material to convey the message

- **1WP-E2. Describe communications practices used with sensory-impaired individuals**

  PO 1. Describe more than one way to communicate with a visually-impaired individual
  PO 2. Describe more than one way to communicate with a hearing-impaired individual

- **1WP-E3. Demonstrate correct grammar and punctuation in writing**

  PO 1. Spell correctly
  PO 2. Punctuate correctly (e.g., sentence endings, commas, semicolons, colons)
  PO 3. Apply rules of capitalization correctly (e.g., sentence beginnings, titles, abbreviations, proper nouns)
  PO 4. Apply standard grammar and usage (e.g., subject/verb agreement, simple and compound sentence, appropriate verb tenses, plurals)
  PO 5. Organize paragraphs with a variety of sentence structures (e.g., simple, compound, complex)

- **1WP-E4. Respond to oral and written presentations by formulating relevant feedback, expressing opinions, discerning the main idea and distinguishing fact from opinion**

  PO 1. Summarize main ideas of an oral or written presentation
  PO 2. Differentiate between facts and opinions in a presentation ***(Grades 6-8)***
  PO 3. Formulate related questions in a presentation
  PO 4. Express opinions relating to the main idea in a presentation

- **1WP-E5. Interpret, clarify, and evaluate a presenter's point of view**

  PO 1. Explain the presenter's point of view ***(Grades 4-5)***
  PO 2. Compare the presenter's point of view with personal point of view ***(Grades 6-8)***

WORKPLACE SKILLS STANDARDS
ESSENTIALS (GRADES 4-8)

- **1WP-E6. Speak in a content area (e.g., science, social studies, literature), using vocabulary of the subject accurately; locate and interpret information in documents such as manuals, graphs, and schedules**

  PO 1. Deliver a factual presentation using appropriate terminology
  PO 2. Use a variety of formats such as data, graphs and technical manuals to support a presentation

- **1WP-E7. Identify the relevant details and facts of written materials**

  PO 1. Identify the purpose of written material and response expected from reader
  PO 2. Identify relevant facts contained in selected written material

- **1WP-E8. Write formal communications that have a definite audience and clear purpose; contain no gaps, omissions or assumptions which impede comprehension; and follow the proper form whether it be a personal or business letter, message, memo, manual directions or applications**

  PO 1. Write a formal communication in an appropriate format for a specific audience and purpose
  PO 2. Organize ideas in a meaningful sequence using transitional words or phrases
  PO 3. Write ideas that are clear and directly related to the topic

STANDARD 2

Students apply computation skills and data analysis techniques to make decisions and solve workplace problems.

Note: The Essentials Level is central to preparation for the workplace and is adequately covered in the Mathematics Standards document. The Proficiency and Distinction Levels include additional references to what students need to know and do as it relates to the workplace.

- **2WP-E1. Apply math standards 1-6 to a variety of workplace scenarios**

STANDARD 3

Students apply critical and creative thinking skills to make decisions and solve workplace problems.

- **3WP-E1. Utilize information acquired from several sources and transfer information learned in one situation to another**

  PO 1. Research a designated topic using a wide array of information sources
  PO 2. Analyze the information obtained from the research
  PO 3. Classify the information obtained from the research
  PO 4. Compare the information to a new situation

WORKPLACE SKILLS STANDARDS
ESSENTIALS (GRADES 4-8)

- **3WP-E2. Devise and implement a plan of action by specifying goals and constraints**

  PO 1. Define goals and objectives
  PO 2. Develop appropriate time line
  PO 3. Identify constraints to achieving goals
  PO 4. Identify resources needed to accomplish goals
  PO 5. Develop criteria to evaluate plan of action

- **3WP-E3. Generate alternatives, consider risks, evaluate and choose solutions**

  PO 1. Select from possible solutions in a designated scenario
  PO 2. Evaluate possible solutions in a designated scenario
  PO 3. Identify risks in a designated scenario
  PO 4. Assess risks and risk factors in a designated scenario

- **3WP-E4. Monitor progress and make adjustment to meet stated objectives**

  PO 1. Identify activities for given objectives
  PO 2. Designate assessment tasks to measure progress towards objectives
  PO 3. Evaluate progress towards objective
  PO 4. Revise activities when necessary to achieve objective

- **3WP-E5. Reflect on the action taken to determine what has been gained, lost or achieved**

  PO 1. Evaluate what has been gained, lost or achieved

- **3WP-E6. Identify a need for data, obtain it and develop a validation instrument for determining its accuracy**

  PO 1. Compare the results with the criteria for accuracy
  PO 2. Collect data to analyze workplace problems

STANDARD 4

Students work individually and collaboratively within team settings to accomplish objectives.

- **4WP-E1. Identify ways to build mutual trust and respect and develop an action plan for negotiating concerns**

  PO 1. Identify characteristics of mutual trust
  PO 2. Identify characteristics of mutual respect
  PO 3. Describe ways to build mutual trust and respect

PO 4. Design action plan for negotiating concerns

- **4WP-E2. Analyze the difference between individual and group decisions and accomplishments**

  PO 1. Identify the characteristics of individual decisions and accomplishments
  PO 2. Identify the characteristics of group decisions and accomplishments
  PO 3. Compare the characteristics of individual and group decisions and accomplishments

- **4WP-E3. Exert a high level of effort and perseverance toward goal attainment, as a team member**

  PO 1. Identify the team goal
  PO 2. Identify the team member roles and responsibilities
  PO 3. Develop tool to measure effort and perseverance of individual team members

- **4WP-E4. Assume leadership roles in team settings**

  PO 1. Define leadership skills
  PO 2. Examine self roles/skills in a group setting
  PO 3. Demonstrate leadership roles/skills in a group
  PO 4. Develop a tool to evaluate the roles/skills of self and group

STANDARD 5

Students will demonstrate a set of marketable skills that enhance career options.

- **5WP-E1. Evaluate areas of interest and/or potential career choices**

  PO 1. Identify areas of interest (e.g., personal, career)
  PO 2. Evaluate individual skills
  PO 3. Evaluate a variety of potential career choices

- **5WP-E2. Demonstrate work ethics and behaviors for success as defined by school and community**

  PO 1. Identify characteristics of work ethics and behavior as defined by school and community
  PO 2. Demonstrate identified work ethics and behaviors in your school and community

WORKPLACE SKILLS STANDARDS
ESSENTIALS (GRADES 4-8)

- **5WP-E3. Demonstrate the connection between academic skills and career pathways by identifying required education and training to achieve career choice(s)**

  PO 1. Identify academic preparation necessary for a variety of careers

- **5WP-E4. Identify careers which capitalize on individual strengths and interests**

  PO 1. Identify areas of interest (e.g., personal, career)
  PO 2. Evaluate individual skills
  PO 3. Evaluate a variety of potential career choices

- **5WP-E5. Apply the basic academic skills to develop a resume, job application and interviewing techniques**

  PO 1. Develop a resume
  PO 2. Complete a job application
  PO 3. Participate in the interview process

STANDARD 6

Students illustrate how social, organizational and technological systems function.

> *Definition: A system equals an organized framework made up of interrelated components acting together as a whole, in which a change in one component may affect the entire operation. Examples of systems are social (e.g., family, school) and technological (e.g., local area network, telephone).*

- **6WP-E1.Identify the factors impacting the level of effectiveness of systems**

  PO 1. Define a system
  PO 2. Identify numerous systems that impact students' daily lives
  PO 3. Compare how systems vary in effectiveness
  PO 4. Identify how factors influence the effectiveness of a system

WORKPLACE SKILLS STANDARDS
ESSENTIALS (GRADES 4-8)

STANDARD 7
Students demonstrate technological literacy for productivity in the workplace.

- **7WP-E1. Demonstrate basic computer operation skills in a variety of applications to organize information**

  PO 1. Use technology to retrieve, organize and manipulate electronic information using media such as CD-ROM, videodisks and telecommunication systems

- **7WP-E2. Use technology to organize information resources such as library and interlibrary catalog databases**

  PO 1. Use organizational features of electronic information (e.g., microfiche headings and numbering; headings for accessing nested information in hypertext media, electronic media, library, interlibrary catalog databases)

STANDARD 8
Students apply principles of resource management and develop skills that promote personal and professional well-being.

- **8WP-E1. Set and prioritize a set of balanced goals related to school, home, education, and career planning and allocate sufficient time, materials and resources to each task**

  PO 1. Define a personal/professional goal
  PO 2. Create personal/academic goals
  PO 3. Develop a community service goal
  PO 4. Develop a time management program

- **8WP-E2. Describe the importance of balancing home, school and community activities to reduce stress**

  PO 1. Define personal stress factors
  PO 2. Identify how home, school, community activities can affect stress